



S.I.W.S.

N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS

AND

SMT. THIRUMALAI COLLEGE OF SCIENCE

MAJOR R. PARAMESHWARAN MARG, SEWRI - WADALA ESTATE,

PLOT NO. 337, WADALA, MUMBAI - 400 031.

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**Dr. Usha Iyer
Principal**

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Report - Bridge course conducted by the Department of Business Communication
Title: Elements of Communication

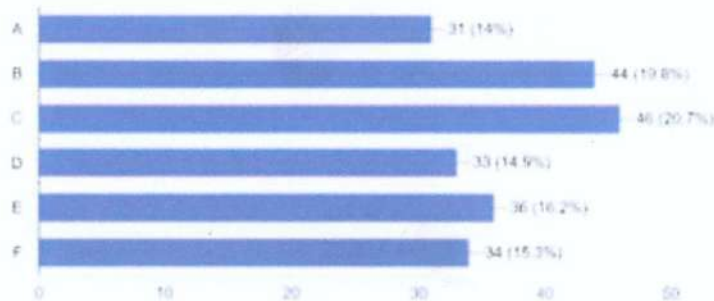
The Department of Business Communication, S.I.W.S. N.R. Swamy College of Commerce and Economics & Smt. Thirumalai College of Science conducted The **Bridge course (Elements of Communication)** from September 25, 2021 to October 30, 2021.

The course was designed to revise concepts in communication that were learnt at the higher secondary level and essential elements of communication that are required to build an enduring foundation in the subject.

The course was conducted in the respective Google classrooms of F.Y.B.Com. students. The topics specified in the syllabus were taught concisely. The course was a blend of written and oral communication. The sessions were interactive and written assignments were submitted by the students. 335 students took the test after the course concluded.

Participants provided feedback which is represented below:

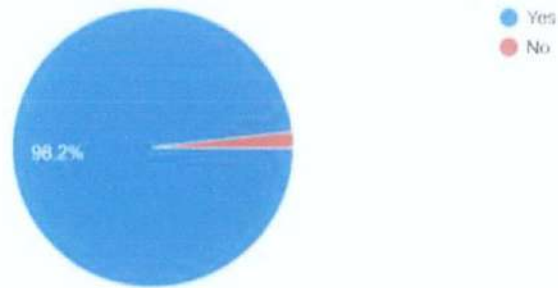
Division
222 responses



A. S. B.
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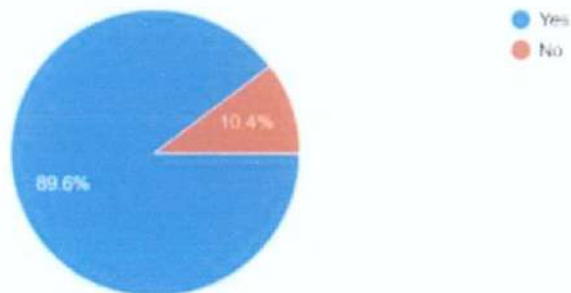
Did the course introduce you to Business Communication?


222 responses



Were you satisfied with the way in which Cs of communication were taught?

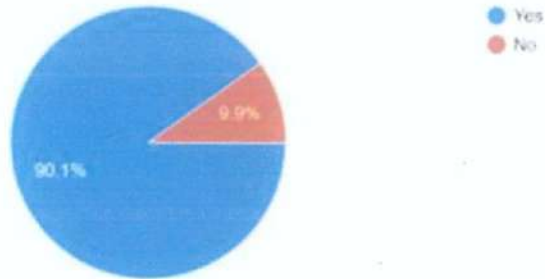
222 responses




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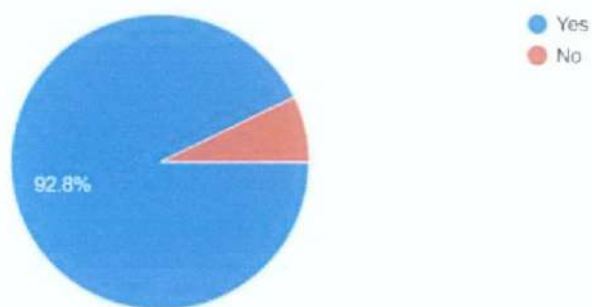
Were you satisfied with the way in which Parts of a Letter was taught?

222 responses



Did you enjoy making presentations in a group?

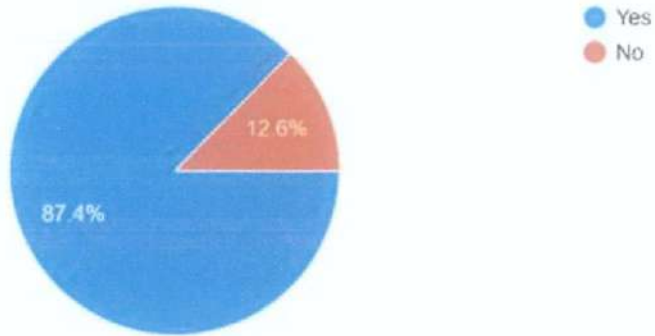
222 responses



J. K. K.
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Could you express yourself well in the creative writing exercise?

222 responses



222 responses

You are really doing good maam, I love the way you teach because it makes me feel comfortable to sit in the lecture.. Thank you

Its was really a helpful section it helped to to improve my communication skills

Thanks you mama

Happy to learn this course


This course is give a knowledge to all types of latter.

I satisfied with this course in which way of teacher was teaching us, I think with videos will you explain us that will be easy for us to understand.

I understand all the topic of business communication. I easily understand this subject well.

Nothing to suggest

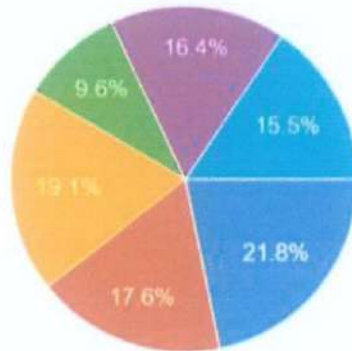



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Test response-Division wise- Students:

F.Y.B.Com. :

335 responses



- A
- B
- C
- D
- E
- F

Dr Kirti Y. Nakhare

Department of Business Communication

18 December, 2021

Dr. Usha S. Iyer

Principal

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16 September, 2021

Bridge Course

Title: Elements of Communication

For

F.Y.B.Com. Students

This course aims at preparing students of F.Y.B.Com. for comprehending lectures in Business Communication. The primary elements of communication which essentially have been taught at the higher secondary level will be included as part of the course. The course is a blend of theory and assignments, which will also be interactive. These activities will instil confidence in the students and stand them in good stead to attend Business Communication lectures.

Schedule

Days	Date	Time
Saturday	25/09/2021	12:00 noon – 1:00 pm
Tuesday	28/09/2021	12:00 noon – 1:00 pm
Thursday	30/09/2021	12:00 noon – 1:00 pm
Tuesday	05/10/2021	12:00 noon – 1:00 pm
Thursday	07/10/2021	12:00 noon – 1:00 pm
Saturday	09/10/2021	12:00 noon – 1:00 pm
Tuesday	12/10/2021	12:00 noon – 1:00 pm
Thursday	14/10/2021	12:00 noon – 1:00 pm
Thursday	21/10/2021	12:00 noon – 1:00 pm
Saturday	23/10/2021	12:00 noon – 1:00 pm
Tuesday	26/10/2021	12:00 noon – 1:00 pm
Saturday	30/10/2021	12:00 noon – 1:00 pm



[Handwritten Signature]

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Syllabus

Business Communication

Topics	Contents: Oral Communication	Hours Employed
Self-introduction	Introducing self on the basis of points discussed- Individual Oral Presentation	1 hour
Presentation Skills	Presenting Ideas in a logical manner Using technology to present ideas effectively-Group Presentation with written work submitted	2 hours
Topics	Contents: Written Aspect	
Self-introduction	Introducing self on the basis of points discussed- Written Work Uploaded on Google Classroom	1 hour
Creative Writing	Students will be provided with an opening line and an ending line to imaginatively express themselves within a certain word limit. Written Work Uploaded on Google Classroom	2 hours
Topics	Contents: Application of rules of grammar in everyday situations	
Parts of a letter	Compulsory and optional parts discussed and explained	2 hours
Cs of Communication	Essentials of communication- Conciseness, Clarity, Courtesy, Correctness, Comprehensiveness, Completeness, Concreteness.	4 hours

K. Y. Nakhare

Dr. Kirti Y. Nakhare
Dept. of Business Communication

V. Banjan

Mr. Vaibhav Banjan
Vice Principal & IQAC
Co-ordinator

Dr. Usha Iyer
Principal

U. Iyer


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saanuansari62@gmail.com	20 / 32	Ansari Saniya Mohd Akba	A	7718917980
koliakash2373@gmail.com	17 / 32	Akash koli	C	9821425488
shravanimogre11@gmail.co	24 / 32	Mogre Shravani Prashan	C	8451834727
2021222156@siwscollege.	32 / 32	Amar Gosavi	B	7715044588
2021222431@siwscollege.	8 / 32	Namita Shivaji Salunkhe	D	8104445964
2021222294@siwscollege.	22 / 32	MADIWAL SANTHOSHI	C	7715078422
rohitdevendra1111111111@	7 / 32	Rohit nagesh devendra	B	8291595924
reshmahadat32@gmail.com	32 / 32	Reshma kantilal hadat	B	7045253014
jigneshbariya87@gmail.cor	13 / 32	Bariya Tisha kishor	A	9867363770
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2021222167@siwscollege.	32 / 32	Atharva hanchate	B	8104881969
2021222710@siwscollege.	24 / 32	Pankaj jain	F	8433611808
alfiyakhan2704@gmail.com	32 / 32	Khan Alfiya Raj	A	8097604779
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2021222083@siwscolleg.e	17 / 32	Gupta Roshani omprakas	A	9372636716
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20212222313@siwscollege	25 / 32	Aniket Shrivastav	C	9321483898
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BRIDGE COURSE - FEEDBACK

F.Y.B.Com. Roll No	Division	Name of the student:	How would you grade the course on the scale of 1-5
2174	B	Jatin jain	5
2263	C	Khan Alisha gulam Mohamed	4
2182	B	Akshada jaldi	4
2256	C	Amreen Noor Mohammad Kazi	5
2020	A	vidya suresh	4
2045	A	Shrawani Abhay Chalke	4
2406	D	Yash Ganesh Patil	5
2259	C	Harsh Rajendra Kesarkar	5
2195	B	Aditya Navalde	3
2545	E	PRATHAMESH SINGH	5
2633	F	Ram Dindayal Upadhyay	5
2409	D	Sujal patwa	4
2018	A	Theerthana Murugan	5
2511	E	AMREEN AKHLAQUE SHAIKH	5
2155	B	Komal Shyam Goraksh	3
2328	C	Viraj Chalke	5
2702	F	Gudiya rajaram yadav	4
2722	F	Kalyani Ramesh Bhingi	3
2427	D	Lizza reddy	5
2127	B	Sanika Sudhir Dalvi	5
2603	E	Pragati	5
2383	D	Ajay Kumar Gurunathan	4
2173	B	Saloni jagtap	5
2634	F	Vadhel jay	5
2001	A	Aishwarya	4
2196	B	SUNIL CHITTARASAN	5
2598	E	Aashu rameshchandra rajbhar.	4
2570	E	Aarti Subramanian	5
2597	E	Ashika Shiva Kumar	3
2171	B	Samruddhi Subhash jadhav	5
2265	C	Ashrafulnisha khan	5
2265	C	Ashrafulnisha khan	5
2267	C	KHAN FIRDOUS ABDUR RAUF	5
Not given	E	Tulsi cohhetal sahani	4
2653	F	Rohit yadav	4
2273	C	Shadab khan	5
2151	B	Arpita Shashikant ghawali	5



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BRIDGE COURSE - FEEDBACK			
2212	B	ABHISHEK Bnadu Shirke	5
2460	D	KANNAN DEVENDRA	3
2520	E	HAMZA SHAIKH	3
2645	F	Diksha Anil wangade	5
2260	C	Roshani Yashwant Khadtar	3
2514	E	Shaikh Fatima Begam MD Sabir	5
2650	F	MAYUR SURESH YADAV	3
2165	B	Vaishnavi Eknath Gurav	4
2148	B	Shubham ghagare	1
2424	D	Harshada Mangesh Ratodkar	4
2186	B	Shravani Pravin Ghadi	4
2191	B	Vaishnavi Trimbak Gaikwad	4
2508	E	Rehman shah	3
2476	D	Yogita balraj	3
2397	D	Eshan pange	5
2164	B	Kaushal	3
2154	B	Priti Kashinath godhade	4
2523	E	Nagma shaikh	4
2291	C	Devashree Bhikaji Lingayat	5
2271	C	Mohammed Faiz khan	5
2272	C	Khan nadeem ahmed rafiq	3
2198	B	Srushti surendra chavan	3
224674	A	Gfruvddy	3
2654	F	Rohit Ramasre Yadav	5
2537	E	SANIKA SANTOSH SHIRKE	4
2166	B	Reshma kantilal hadat	4
2350	C	Rutuja Suryakant Thotam	5
2035	A	Bariya tisha Kishor	4
2642	F	Vishwas Suraj Sameer	4
2631	F	shivani tiwari	5
2220	B	Neha Purushottam chawla	3
2288	C	Mayuresh Santosh kuveskar	5
2299	C	Ankita Nilesh Mayekar	5
2694	F	Sujal Milind Naik	5
2526	E	Salman shaikh	4
2029	A	Ansari sultana fakre alam	4
2360	C	Prathmesh raju Devendra	3
2211	B	Suraj B sharma	5



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BRIDGE COURSE - FEEDBACK			
2077	A	Krishna Kanojiya	3
9765	D	Innocent boy	1
2030	A	Jyoti jagannath Astagi	1
2463	D	Priya Yadav	4
2299	C	Ankita Nilesh Mayekar	5
2021222309@siwsc	C, D	Mahek mulla	4
2501	E	Nakul satam	5
2528	E	Tayyaba	5
2557	E	Somya soni	5
2550	E	Sohani Ankita	5
2255	C	Priyanka katkar	4
2642	F	Vishwas Suraj Sameer	5
2033	A	Rohini Rajendra Bangar	4
2628	F	Sonali Sudhakar Tambe	4
2203	B	Pooja N. Adapat	5
2219	B	Laiba noori	5
2171	B	Samruddhi Subhash jadhav	5
2418	D	Chandan kumar	4
2649	F	krishnaveni	5
2559	E	SAURABH CHANDRAKANT SURVASE	4
2453	D	Yash Santosh Pansare	5
2082	A	Ansari faiyaz	4
2671	F	Kajal jaiswar	5
2421	D	Daiwata kishor Rane	3
2291	C	Devashree Bhikaji Lingayat	5
2251	C	Kamble Dashami	3
2266	C	Farhan Khan salim	4
2423	D	Ankush Basu Rathod	5
2300	C	Komalika Yallesh Medar	3
2701	F	Gayatri Raja Swami	3
2308	C	Laxmi Rajkishor Mourya	4
2274	C	Khan Zaherabi	5
2652	F	Yadav Pooja Rajesh	3
2330	C	Rupali gauda	5
2315	C	Sathya Sankarapandi	5
2649	F	krishnaveni murugan	5
2033	A	Rohini Rajendra Bangar	4
2054	A	2021222054	5



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BRIDGE COURSE - FEEDBACK			
2632	F	Sanket Sadashiv Toraskar	5
2126	C	Mandar Parshuram Dalvi	3
2252	C	Shrutee deepak kamble	5
2305	C	Mogre Shravani Prashant	5
2556	E	Simran soni	5
2378	D	Nadar Jency Gabrial	4
2159	B	Gupta Aman Manoj	5
2018	A	Theerthana Murugan	5
2234	B	Deepakpatwa	4
2172	B	Soham jadhav	4
546	E	Shanti ramjanam singh	3
2021222070	A	Siba bano khan tauhid	5
2431	D	Namita Shivaji Salunkhe	4
2414	D	Ruchi ashok kumar prajapati	3
2233	C	Kazi Abdul Rahman	5
2021222194	B	MAHARANA RAHUL GAUTAM	5
2019	A	Vidhyalakshmi Sankar	5
2511	E	AMREEN AKHLAQUE SHAIKH	5
2722	F	Kalyani Ramesh Bhingi	3
2697	F	Shaikh Duresha	4
2030	A	Jyoti jagannath Astagi	1
2233	C	Kazi Abdul Rahman	5
2702	F	Gudiya rajaram yadav	4
2059	A	Roshani Dakare	5
2260	C	Roshani Yashwant Khadtar	3
2648	F	Gulshan kevaldhari yadav	5
2658	F	Yadav Sneha Shyamdhari	4
2021222574	E	Yadav Suraj Kumar sherbahadur	4
2468	D	Muskan ansari	3
2593	E	Anshul sikarwar	5
2567	E	Priti goud	2
2269	C	KHAN MADIHA KHATOON ALI AHMED	5
2150	B	Archita Shashikant Ghawali	4
2729	F	Pranali Laxman kodag	1
2021222583	E	Sonu islam Mansuri	5
2114	A	Mulla zamir aslam ali	5
2661	F	Sana Nisar Ahmad	3
2427	D	Lizza reddy	5




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BRIDGE COURSE - FEEDBACK			
2063	A	Sanskriti Jadhav	5
2227	B	Shaikh Rehmat bee Abdul Kadir	4
2503	E	Mrunmayi sunil satpute	5
2542	E	Mohammad Muzammil Siddiqui	2
2503	E	Mrunmayi sunil satpute	5
2149	B	Omkar devidas ghatye	3
Roll no is not given	A	Anson Romer	4
2415	D	Anjali tilakram prasad	5
2176	B	Jaiswal pooja mohanlal	5
2643	F	Vadhel jay	5
2471	D	Muthu Saravanan	4
2332	C	Advait	4
Solankijignesh2004	C	Jignesh laxman solanki	4
2611	E	Awliya	3
2009	A	Sahaya saajan	3
2331	C	Arya Dhamale	2
2140	B	Mitesh Dhawale	4
2429	D	Nandini Sahani	5
2011	A	Sheba	5
2313	C	Aniket Shrivastav	4
2357	C	Harsh molparia	4
2660	F	Shaikh Eeram	4
2428	D	Anuja Sahani	4
2233	C	Kazi Abdul Rahman	5
2237	B	Sushmita goad	5
2644	F	NISHANT MAHENDRA WALMIKI	5
2607	E	Nisha Thakur	5
2323	C	Zakat Ali shah	3
2013	A	Sneka Venkatesh	5
2604	E	nafisa naimuddin khan	5
2319	C	afreen majibullah khan	5
2392	D	Uma Nishad	4
2232	B	Jagdale Shruti Shivdas	5
2413	D	Ponnam Pravalika	4
2292	C, D	Shruti dhanajay Lokhande	4
2226	B	khan muskan mohaamad husain	5
2645	F	Diksha wangade	3
2533	E	Samruddhi Yashwant Shigam	4



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BRIDGE COURSE - FEEDBACK

2212	B	Abhishek Bandu Shirke	4
2514	E	Shaikh Fatima Begam MD Sabir	5
2594	E	Bhavika Phondekar	3
2469	D	Maaz Khan	5
2285	C	NAVANEETHAKRISHNAN NARAYANAN	5
2157	B	Jayesh Gotad	4
2676	F	Vaishnavi Rajendra Shinde	5
2111	A	Aditya dashrath chorghe	5
2185	B	Prajval Mahadev Kadam	5
2037	A	Akanksha Vinayak Berde	4
2130	B	Sachin Vishvas Devarde	4
2095	A	Shaikh Shagufta Ali Mohammed Aslam	5
2398	D	Parab Samarth Subhash	4
2480	D	ROHIT SAINATH GAVHANE	5
2672	F	T. Esaisurtika	4
2094	A	Siddharth kadam	2
2737	F	Jain komal Roshan	2
2391	D	NISHAD SANJANA RAJARAM	5
2021222728	F	Jennifer Dourado	4
2402	D	Virjesh Rajaram Pasi	4
2462	D	Divya Deepak Tembe	5
2509	E	Sanjeeda vahid shah	4
2043	A	Shravani Pravin Bhosale	4
2346	C	Tufel shaha	5
2183	B	Neha Madhukar Juwale	5
2216	B	Shravani dilip bandkar	5
2561	E	Sakshi garud	3
2218	B	Shaikh Nagma	3
2361	C	Sukanya Naik Dessai	5
2096	A	Gupta Roshani Omprekash	1
238	B	Ansari mantasa mohd sarfraz	2
2074	A	Yash Ramvilas Tiwari	5
2215	B	Ansari md alkama md kalam	4



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MARG,
WADALA, MUMBAI – 400 031.

Bridge course

Title: Foundation course in Mathematics and Statistics

For

FYBCOM Students

The aim of this course is to prepare a student of FYBCOM for understanding lectures in Mathematics & Statistics. Fundamentals of Several important topics which were taught at XI and XII standard and useful for FYBCOM will be covered in the workshop. There will be interactive sessions to give confidence to the student in understanding Mathematics and Statistics lectures.

Schedule:

Days	Date	Time
Saturday	25/09/2021	12:00 noon – 1:00 pm
Tuesday	28/09/2021	12:00 noon – 1:00 pm
Thursday	30/09/2021	12:00 noon – 1:00 pm
Tuesday	05/10/2021	12:00 noon – 1:00 pm
Thursday	07/10/2021	12:00 noon – 1:00 pm
Saturday	09/10/2021	12:00 noon – 1:00 pm
Tuesday	12/10/2021	12:00 noon – 1:00 pm
Thursday	14/10/2021	12:00 noon – 1:00 pm
Thursday	21/10/2021	12:00 noon – 1:00 pm
Saturday	23/10/2021	12:00 noon – 1:00 pm
Tuesday	26/10/2021	12:00 noon – 1:00 pm
Saturday	30/10/2021	12:00 noon – 1:00 pm




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Syllabus:

Mathematics:

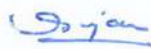
Topics	Contents
Sets & Functions	Introduction, Examples: Polynomial, Exponential & logarithmic functions.
Plotting the elementary graph	Sketching of simple graphs
Permutation and Combination	Fundamental principles of counting (Addition, Multiplication) , Factorial function (Properties, Example), Permutations (Definition, Properties & examples) and Combination (Definition, Properties & examples)
Business Mathematics-I	Percentage, Computation of profit/loss
Business Mathematics-II	Simple Interest & Compound interest

Statistics:

Topics	Contents
Classification and Tabulation of data	Introduction, collection of data, Statistical series (discrete & continuous), tally marks, Frequency distribution, grouped frequency distribution & cumulative frequency distribution
Statistical Representation of Data	Diagrammatic representation of data, Graphical representation of Frequency Distribution – Histogram, Ogive, Pie-chart
Measures of central tendency-I	Arithmetic Mean (for raw, discrete and continuous data)
Measures of central tendency-II	Median, Quartile & Mode (for Raw data)
Introduction to Probability	Probability formula, Conditional probability, Properties of conditional probability, independent events, Addition and Multiple rule.



Dr. G V Hemasundar
Dept. of Mathematics



Mr. Vaibhav Banjan
Vice Principal &
IQAC Co-ordinator



Dr. Usha Iyer
Principal



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Report for the Bridge course conducted by the Department of Mathematics

Title: Foundation course in Mathematics and Statistics

The Department of Mathematics, S.I.W.S. N.R. Swamy College of Commerce and Economics & Smt. Thirumalai College of Science conducted The **Bridge course (Foundation course in Mathematics and Statistics)** from September 25, 2021 to October 30, 2021. The course was focused to help students from Commerce background in gaining knowledge and confidence on the Basics of Mathematics and Statistics.

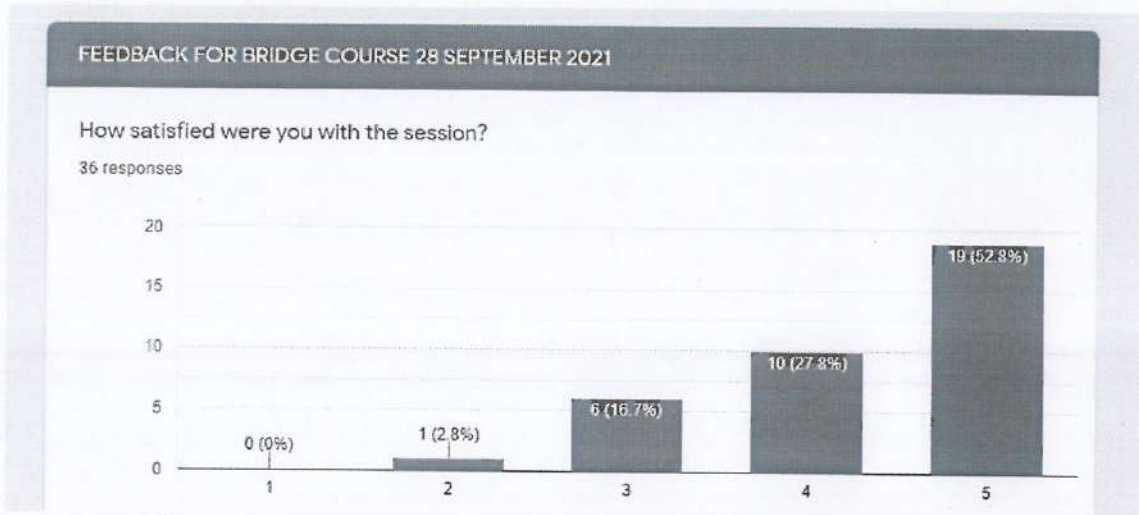
The Course was conducted in the respective Google classrooms of FYBCom Students. All the topics mentioned in the syllabus were covered in brief. An additional focus was given on solving problems. The sessions were interactive and encouraged to students to discuss and ask their doubts.

Around 98 students attended the course, who were admitted to FYBCom for the academic year 2021-22.



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All participants provided the feedback and statistics of the feedback was shown below:

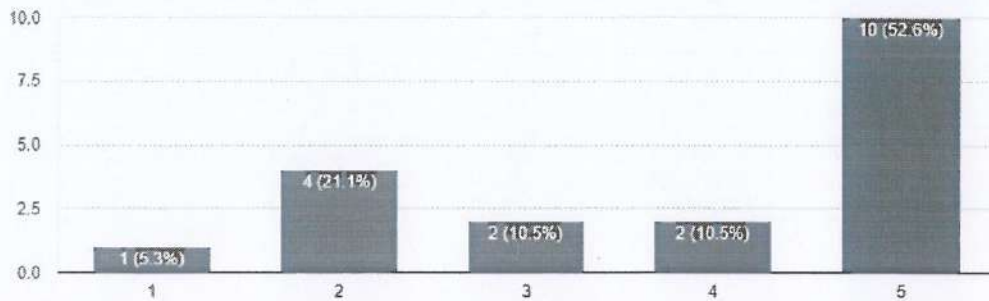


Anita
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Wadala, Mumbai 400 021

FEEDBACK FOR BRIDGE COURSE 9 OCTOBER 2021

How satisfied were you with the session?

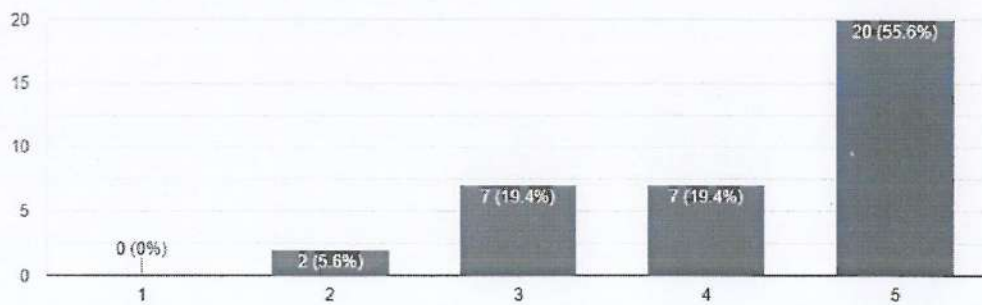
19 responses



Not very – 1, Very much – 5

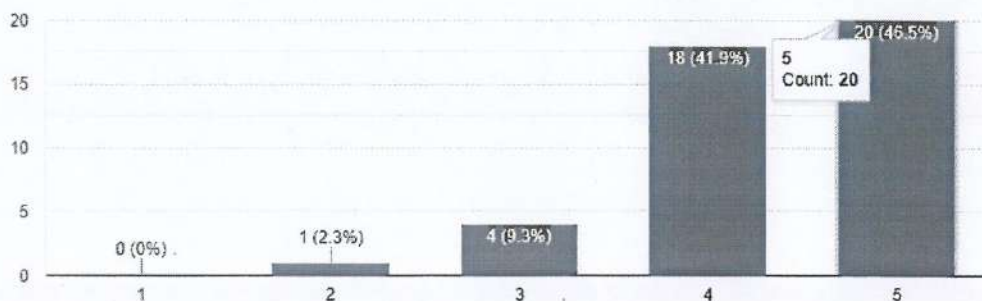
How relevant and helpful do you think it was in terms of Maths and Stats?

36 responses



How relevant and helpful do you think it was in terms of Maths and Stats?

43 responses

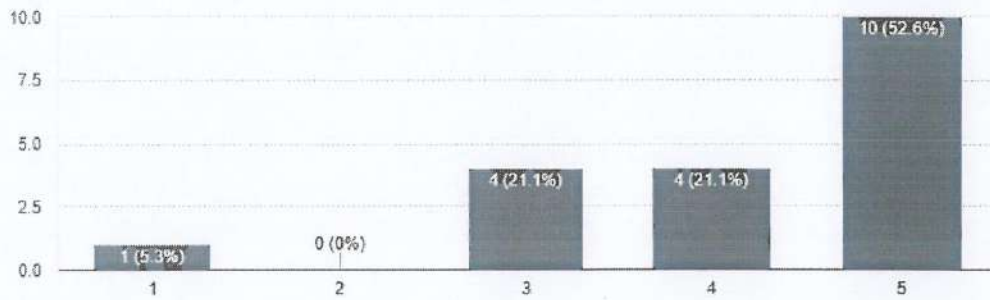


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How relevant and helpful do you think it was in terms of Maths and Stats?

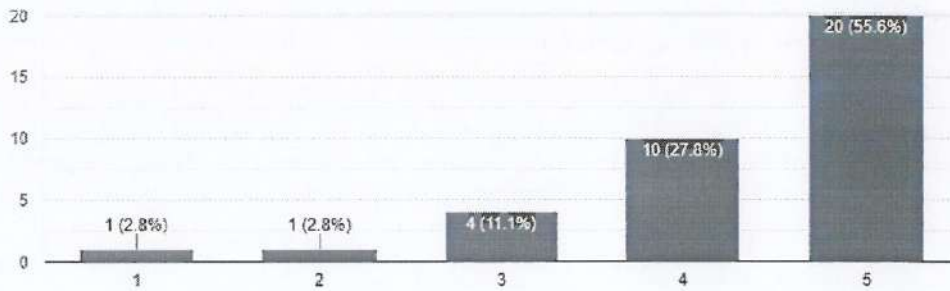
19 responses



Not very – 1, Very much – 5

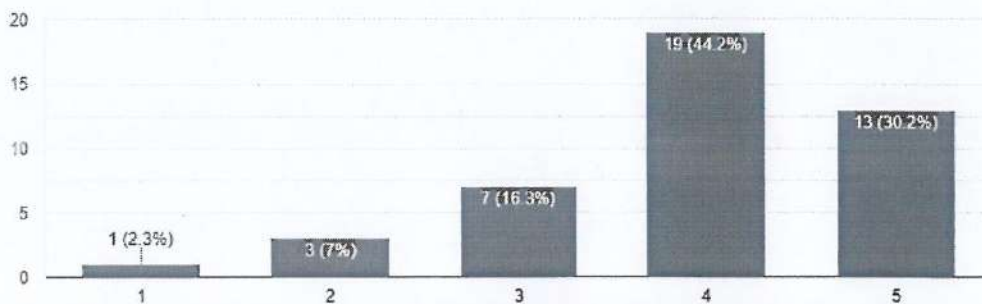
How satisfied were you with the session content?

36 responses



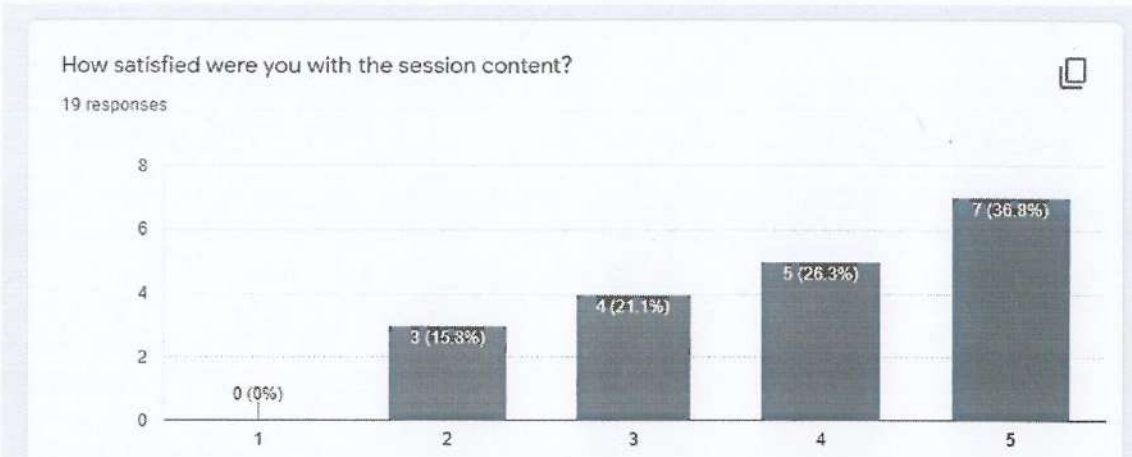
How satisfied were you with the session content?

43 responses

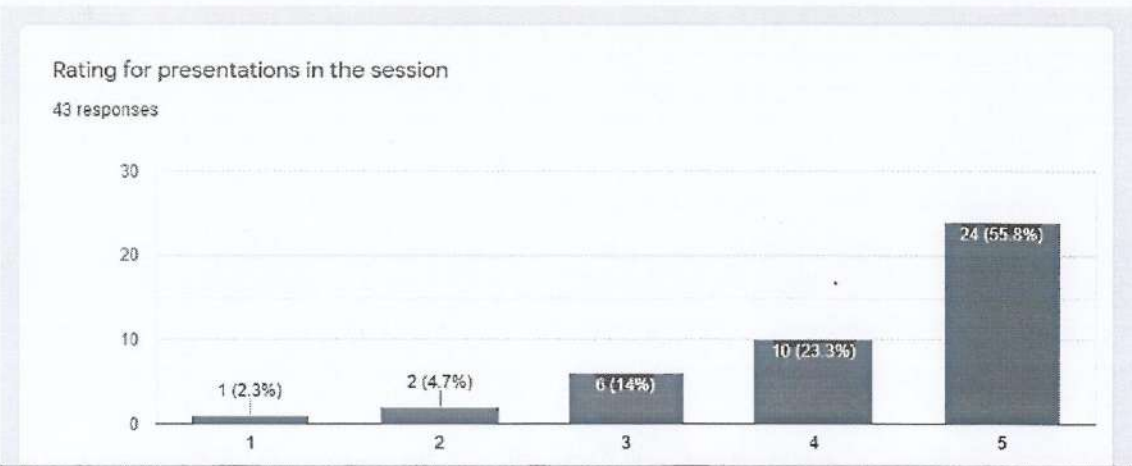
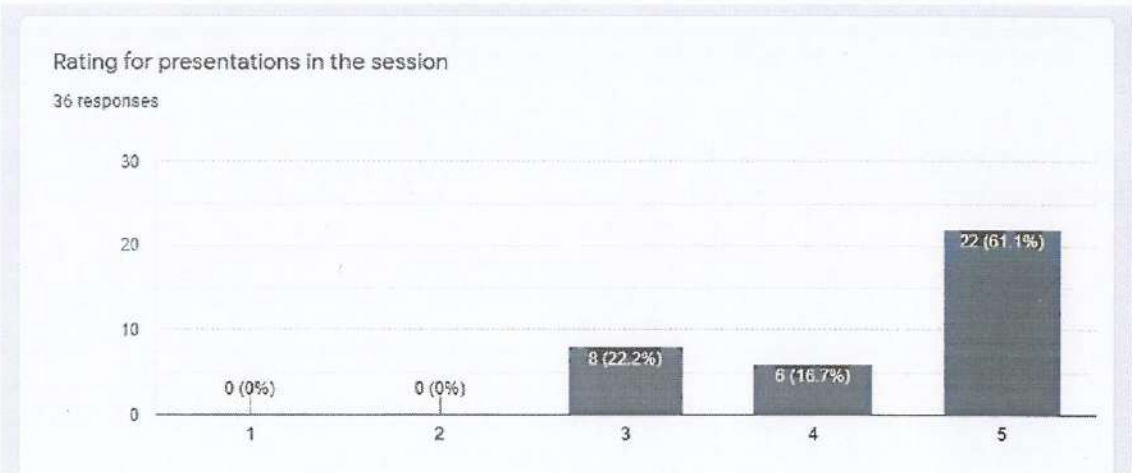


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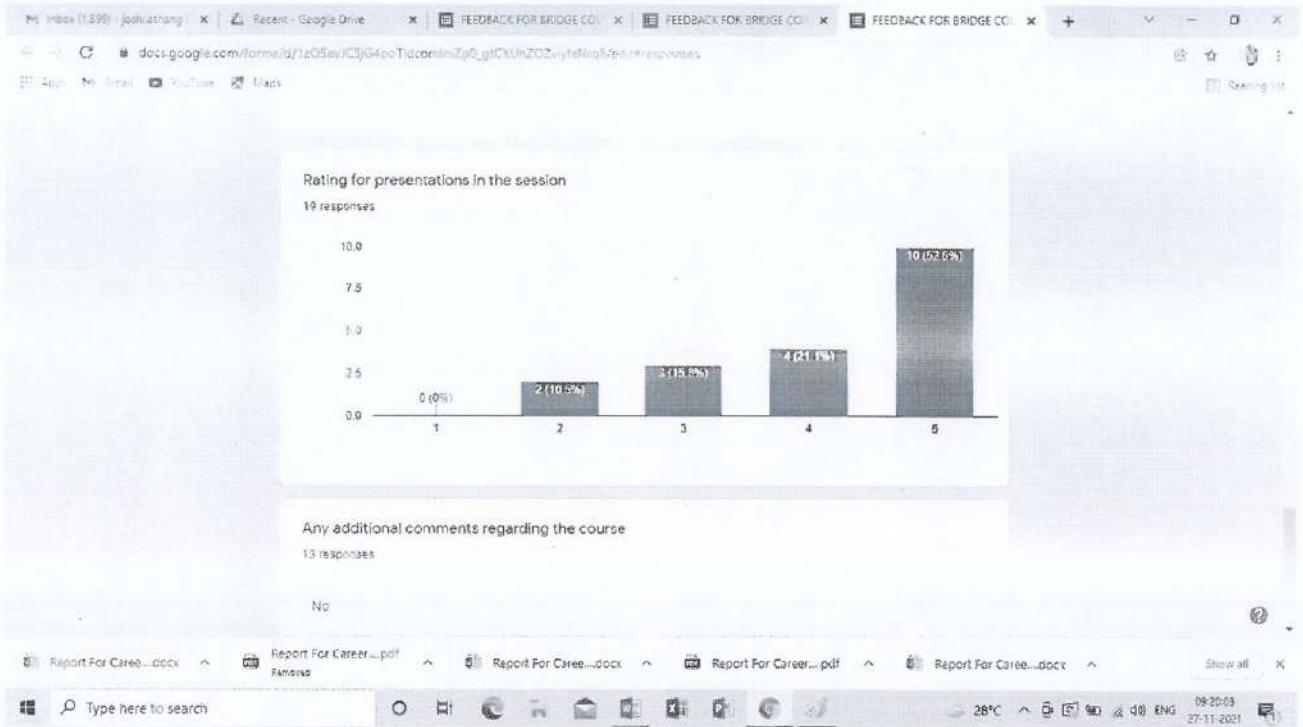
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Poor – 1, Excellent – 5



[Signature]
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Poor – 1, Excellent – 5

Few comments made by the students in the course are as follows:

- It is knowledgeable and helpful
- Helpful course
- proved to be very good for me
- Well explained

Dr. GVV Hemasundar

Head, Department of Mathematics

Dr. Usha Iyer

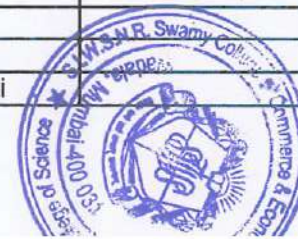
Principal



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T.Y.B.Sc. Microbiology Paper III

Semester V

2016-17

Unit 1 Class test

16th July 2016

Time: 45 mins

I. Write short notes on :

15marks

- 1) PTS
- 2) Active transport
- 3) Proteoliposomes

II. Differentiate between: (Five points of differences)

10 Marks

- 1) Facilitated transport and Passive diffusion
- 2) Permeases and Binding Proteins

III. Diagrammatically explain:

10 Marks

- 1) Maltose uptake system in E coli
- 2) Histidine uptake model




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Marksheet ---T.Y.B.Sc. Microbiology Paper III

2016-17

Semester V Unit 1

Class test

Name of the student	Marks out of 35
Mamtule Needa	33
Komal Pathak	32
Salmani Shabina	20
Shanti Kanojiya	19
Kalpana Jaiswar	25
Solanki Mittal	20
Patel Amit	27
Zainab Masuti	21
Aamir Khan	23
Shaikh Saima	28
Prajakta Damane	19
Afreen Siddiqui	18
Sharma Akanksha	22
Shaikh Arshi	21
Sayyed Salomi	20
Shaikh Afreen	16
K. Pinky	18

Neeta Khanolkar

Mrs. Neeta Khanolkar
Head, Department of Microbiology



Principal

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Wadala, Mumbai-400 031

TYBSc

CLASS: _____

DIVISION: _____

SUBJECT: _____

NAME OF THE PROF: _____

: Roll:

		12/7/16	13/7/16	14/7/16	15/7/16	16/7/16	16/7	16-7-16	16/8
Martose Needa	Needa	Needa	Needa	Needa	Needa	Needa	Needa	Needa	A
Komal Pathak	Pathak	Pathak	Pathak	Pathak	AB	Pathak	Pathak	Pathak	Pathak
Salmani Shabina	Shabini	Shabini	Shabini	Shabini	Shabini	Shabini	Shabini	Shabini	Shabini
Shanti Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya	Kanoliya
Kalpna S. Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar	Jaiswar
Solanki Mihir	Mihir	Mihir	Mihir	AB	AB	Mihir	Mihir	Mihir	A
PATEL Amit Kumar	Amit	Amit	Amit	AB	Amit	AB	AB	Amit	Amit
Zainab Masuti	M. Zainab	A	AB	AB	AB	AB	AB	A	M. Zainab
AAMIR KHAN	Aamir	Aamir	Aamir	Aamir	Aamir	Aamir	Aamir	Aamir	Aamir
Shaikh Saima	Saima	Saima	Saima	Saima	AB	Saima	Saima	Saima	Saima
Prajakta Damane	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta
Akseen Siddiqui	Akseen	A	Prajakta	AB	AB	AB	AB	Akseen	Akseen
Sharma Shasna	Shasna	Shasna	Shasna	Shasna	AB	AB	AB	A	A
Shaikh Arshi	Arshi	Arshi	Arshi	AB	Arshi	Arshi	Arshi	Arshi	Arshi
Sayyed Salomi	Salomi	Salomi	Salomi	Salomi	Salomi	Salomi	Salomi	Salomi	Salomi
Shaikh Afeen	Afeen	Afeen	Afeen	Afeen	Afeen	Afeen	Afeen	Afeen	Afeen
K. Pinky	AB	K. Pinky	AB	AB	AB	K. Pinky	K. Pinky	K. Pinky	K. Pinky
	AN	AB	AB	ON	AN	DN	DN	PS	PS
	x 2	x 2	x 1	x 3			x 2	x 1	x 1
						Unit 1 Class Test			



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T.Y.B.Sc. Microbiology Paper III

Semester V

2016-17

Unit 2 Class test

13th August 2016 Time: 45 mins

I. Answer the following questions

20 Marks


- 1) Differentiate between the ETC in bacteria and eukaryotes
- 2) Using a balance sheet, calculate number of ATP generated when one molecule of glucose is completely oxidized to CO₂ and H₂O. Also calculate the efficiency of the reaction if the ΔG° is -686 kcal/mol.
- 3) Briefly explain the biochemical reactions of bioluminescence in bacteria
- 4) Describe: 'Bacteriorhodopsin as a proton pump'

II. Diagrammatically/ Schematically explain

10 Marks

- 1) Mechanism of rotational catalysis by ATP synthase
- 2) Anaerobic ETC of *E.coli*




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Marksheet-- T.Y.B.Sc. Microbiology Paper III

2016-17

Semester V Unit 2

Class test

Roll No.	Marks out of 30
9201	25
9202	22
9203	28
9204	19
9205	15
9206	20
9207	27
9208	AB
9209	AB
9210	22
9211	19
9212	19
9213	22
9214	21
9215	20
9216	19
9217	18
9218	14

N. Khanolkar

Mrs. Neeta Khanolkar
Head, Department of Microbiology



A. A. A.

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Rolls

Total

	10/8/16	11-8-16	12/8	12/8	13/8/16	13/8/16	13/8	16/8/16	Total
1	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	
2	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	
3	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	Pratyaksha	
4	A	A	A	A	A	A	A	A	
5	K.Priya	K.Priya	K.Priya	K.Priya	K.Priya	K.Priya	K.Priya	K.Priya	
6	A	Needa	Needa	Needa	Needa	Needa	Needa	Needa	
7	M.Zainab	M.Zainab	M.Zainab	M.Zainab	M.Zainab	M.Zainab	M.Zainab	M.Zainab	
8	Arshi	Arshi	A	A	A	Arshi	Arshi	Arshi	
9	Kpathal	Kpathal	A	A	A	Kpathal	Kpathal	Kpathal	
10	Shabana	Shabana	Shabana	Shabana	Shabana	Shabana	Shabana	Shabana	
11	A	Saloni	Saloni	Saloni	Saloni	Saloni	Saloni	Saloni	
12	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	
13	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	
14	Arshi	A	A	A	Arshi	Arshi	Arshi	Arshi	
15	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	
16	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	
17	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	

SR

RB

DP
x 2

URB

SR

DN

Unit 2
Class test 2

[Signature]



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Warangal, Telangana-506 001



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T.Y.B.Sc. Microbiology Paper III

Semester V

2016-17

Unit 3 Class test

2nd September 2016

Time: 45 mins

I. With chemical structures of compounds and enzyme names represent: 25 Marks

- 1) Conversion of Glucose to 3 PGA
- 2) Non oxidative phase of HMP
- 3) ED pathway in Pseudomonas
- 4) Kreb's cycle
- 5) Anaplerotic reactions



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Marksheet T.Y.B.Sc. Microbiology Paper III

2016-17

Semester V Unit 3

Class test

Roll No.	Marks out of 25
9201	23
9202	22
9203	20
9204	AB
9205	15
9206	20
9207	17
9208	AB
9209	23
9210	22
9211	19
9212	18
9213	22
9214	AB
9215	AB
9216	AB
9217	AB
9218	12

Neeta Khanolkar

Mrs. Neeta Khanolkar
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Rolls	1/9/16	2/9/16	3/9/16	4/9/16	5/9/16	Total
9101	Sreyas	Sreyas	Sreyas	Sreyas	Sreyas	
9102	Aneesh	Aneesh	Aneesh	Aneesh	Aneesh	
9103	Kanishk	Kanishk	Kanishk	Kanishk	Kanishk	
9104	Kanishk	AB	AB	Kanishk	Kanishk	
9105	K.Pudiy	K.Pudiy	K.Pudiy	K.Pudiy	K.Pudiy	
9106	A	Neda	Neda	Neda	Neda	
9107	M.Zainab	M.Zainab	M.Zainab	M.Zainab	M.Zainab	
9108	Amal	AB	AB	Amal	Amal	
9109	A	AB	Karthik	Karthik	Karthik	
9110	Shabir	Shabir	Shabir	Shabir	Shabir	
9111	Saloni	Saloni	Saloni	Saloni	Saloni	
9113	Ahaz	Ahaz	Ahaz	Ahaz	Ahaz	
9114	Arshi	AB	AB	Arshi	Arshi	
9115	Arshi	AB	A	A	A	
9116	Asharma	AB	AB	Asharma	Asharma	
9117	Aheen	AB	AB	Aheen	A	
9118	Shankhraj	Shankhraj	Shankhraj	Shankhraj	Shankhraj	

RB DN SN ST RB

Unit 3
class test 3



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T.Y.B.Sc. Microbiology Paper III

2016-17

**Semester V Unit 4
mins**

Class test

23rd September 2016

Time: 45

I. With chemical structures of compounds and enzyme names represent: 25 Marks


- 1) Heterolactic fermentation
- 2) Butanediol fermentation
- 3) Butanol- acetone fermentation
- 4) Biosynthesis of peptidoglycan (Reactions taking place in the cytoplasm)
- 5) Propionic acid fermentation

II. Explain the following terms

5 Marks

- 1) Transketolase
- 2) Debranching enzyme
- 3) Gluconeogenesis
- 4) glycogen synthase
- 5) Transpeptidation




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Marksheet -- T.Y.B.Sc. Microbiology Paper III

2016-17

Semester V Unit 4

Class test

Roll No.	Marks out of 30
9201	25
9202	23
9203	21
9204	22
9205	17
9206	21
9207	18
9208	22
9209	21
9210	AB
9211	18
9212	AB
9213	20
9214	24
9215	AB
9216	17
9217	19
9218	15

N. Khanolkar

Mrs. Neeta Khanolkar
Head, Department of Microbiology



[Signature]

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Roll: 20/9/16 21/9/16 22/9/16 23/9/16 24/9/16 25/9/16 Total

01	Pranjali	Pranjali	Pranjali	Pranjali	Pranjali	Pranjali	Pranjali	Pranjali	
02	Heiswar	Heiswar	Heiswar	Heiswar	Heiswar	Heiswar	Heiswar	Heiswar	
03	Konoyya	Konoyya	Konoyya	Konoyya	Konoyya	Konoyya	Konoyya	Konoyya	
04									
05	K.Pinky	K.Pinky	K.Pinky	K.Pinky	K.Pinky	K.Pinky	K.Pinky	K.Pinky	
06	Needa	Needa	Needa	Needa	Needa	Needa	Needa	Needa	
07	M-Zainab	M-Zainab	M-Zainab	M-Zainab	M-Zainab	M-Zainab	M-Zainab	M-Zainab	
08	Amal	Amal	Amal	Amal	Amal	Amal	Amal	Amal	
09	Vpathap	Vpathap	Vpathap	Vpathap	Vpathap	Vpathap	Vpathap	Vpathap	
10	Shabari	Shabari	Shabari	Shabari	Shabari	Shabari	Shabari	Shabari	
11	Saloni	Saloni	Saloni	Saloni	Saloni	Saloni	Saloni	Saloni	
12									
13	Aarav	Aarav	Aarav	Aarav	Aarav	Aarav	Aarav	Aarav	
14	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	Arshi	
15	Saima	Saima	Saima	Saima	Saima	Saima	Saima	Saima	
16	Ashame	Ashame	Ashame	Ashame	Ashame	Ashame	Ashame	Ashame	
17	Ajeen	Ajeen	Ajeen	Ajeen	Ajeen	Ajeen	Ajeen	Ajeen	
18	Sankhita	Sankhita	Sankhita	Sankhita	Sankhita	Sankhita	Sankhita	Sankhita	

Remedial lecture
Sem 5, P II
Remedial lecture
Sem 5, P III



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Unit 4
Class test 4

Remedial lecture
Sem 5, P I



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Tutorial Activity

Department of Business Communication

The department of Business Communication conducts tutorials that aim at improving the writing, reading and spoken skills in English. To achieve this objective, activities are undertaken semester wise.

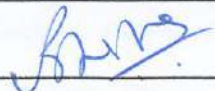
First Semester

Sr.no.	Topic	Description
1	Self-Introduction	Students introduce themselves orally and submit a write up. Oral and written skills are tested. This activity proves to be an ice breaker as it takes place at the beginning of the semester.
2	Note-Making	Students are taught note making skills which instil the skill of writing answers by identifying important points. Long answer questions are taken up for discussion and points are discussed after which students are ready to practice note making.
3	Letter Writing	Students are introduced to obligatory and optional parts of letter writing and are encouraged to write formal letters.

Second semester

Sr.no.	Topic	Description
1	Group Discussion	Students are introduced to elements of group discussion and mock group discussions are conducted on the following representative topics: Global Warming, Brain Drain, Is the Lokpal Bill relevant? Fashion should be practical or purposeful?




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2	Mock Interviews	Students are segregated in groups and are encouraged to role play and conduct panel interviews. Interviews are conducted for the following representative posts: Accountant, Data entry operator, Receptionist, Teacher etc.
3	Report Writing	Students are introduced to writing investigative, feasibility reports. Elements of report writing are discussed.
4	Drafting notice, agenda and resolutions	Students are introduced to meetings and trained to draft notice, agenda and resolutions for different types of meetings.

Dr Kirti Y. Nakhare

Faculty Member

Dept. of Business Communication

14 March, 2020

Dr Usha S. Iyer

Principal

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Define PR, describe & Promote ways of Promoting
Internal as well as External PR? 15/2/20

Defination: - The British Institute of Public relation is defined as Public relation is deliberate planned and sustained effort to establish and mutual understanding of an Organisation and a Public of an Organisation can be classified into Internal relation as well as External relation. Internal relation which consist of employees, External relation include stock holder of the company. It include consumer government agencies, financial institution and retailer etc. An Organisation maintain good relation between internal as well as external relation.

Internal Promoting Internal relation

Employee Motivation: - Employee should give both internal as well as External motivation. External ^{motivation} relation is essentially money based. It include good salary, bonus, medical and other allowances comfortable condition at Place of work etc. Internal ^{motivation} relation include award, appreciation, recognition, etc.

Film Shows: - In house Journal wallpaper Notice board etc. Instructional and informative films. In house Journal wallpaper Notice board etc. It given information about the activities, service product etc. of an Organisation and news, photograph and comfortable about of employees and employee of sense belonging pride and promote of internal public relation.

Radio & Television: - Radio & Television sets installed in canteens, common room etc help to provide staff member to relax and provide them in recreation. they also facilitate social interaction between staff member and maintain good relation among employees.

Visit - Sister Institution: - Such visit as informal and formal education. social interaction and fellow feeling. They also facilitate healthy exchange of ideas.



1) Social Get together: - Social Get together Organised festival, national days, and other Occasion with the staff member like birthday, anniversaries etc formal communal harmony, national integration and sense of belonging and importance among employees.

* Expo Promote External Learning Public relation: -
1) Electronic Media: - In the country like India, literacy level is low, Radio & television & cinemas are most important media of communication. External Public relation help this media either by advertising or sponsoring programmes in social messages.

2) Print Media: - Advertisement or Report in newspaper and magazine of an Organisation in positive light of external Public relation. They also help to clear doubt & misunderstanding in external Public relation.

3) Literature: - There is leaflets, Pamphlets, booklets, etc published and distributed of an Organisation.
or eg:- Baby book distributed by Nestle, Recipe book distributed by Prestige Pressure Cooker, etc

4) Vehicle Publicity: - Such social Awareness message on ~~the~~ vans, local buses etc. of goodwill and enhance Public relation. for eg:- AIDS Awareness Drug addiction, family Planning, vaccination, etc.

5) Related with relation Bodies: - We have to maintain good relation with local municipality, Police etc. and active participation and involve in Public welfare scheme to maintain and development Parks, water fountain etc. to provide by External Public Relation.

Name: - Diksha Kesharwani

Class: - F.Y. B-Com

Div: - C

Roll No: - 2274 46



[Signature]

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Draft a notice and agenda of the 12th Annual General Meeting of Stellar Company Pvt. Ltd. Draft a resolution on the following.

- 1) Appointment of Auditor
- 2) Declaring Dividend.

STELLAR ENTERPRISE Pvt. Ltd
M.G. Road, Worli Mumbai

62/10

4 March 2020

Notice

Notice is hereby given that the 12th Annual General Meeting of the Company will be held on the 26th day of March 2020, at 10:00 AM at White Hall, Churchgate for transact following business:-

- 1) Reading the Director report and audited Profit & Loss for the financial year
- 2) Appointing Auditor
- 3) Appointing Secretary
- 4) Declaring Dividend
- 5) Vote of thank to the chair

1) Appointed Auditor :- Resolve that M/S ^{sdl-Secretary} Eye Stellar and Company, Chartered Accounted is hereby appointed as auditor at remuneration of ₹ 4,00,000 per of the financial year 2020-

2) Declaration of Dividend :- Resolve that dividend the rate of 5% be and his hereby equity share of the Company.

Name:- Diksha Kesharwani Div:- C



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Swami College of Commerce & Economics

Summarization :

Millions of people would like use the internet to share information and to communicate. Individuals, business houses, Co-operate giants, Students, generalist, consultants, teachers and programmers are called harness the power of the Internet. With the internet one can send messages, notes, letters, documents, pictures, videos and sound clips - Just about any form of communication, as effortlessly, as making a phone call. The flood of information that the internet offers helps to open a the minds of people with the World wide web (www), anyone can publish his/her ideas. With the internet anyone has to do has to say something can be heard.

→ In today's generation ~~con~~ millions of people connect together through world wide network internet. So many peoples like students, teachers, businessmen, consultants etc ~~to~~ internet is necessary to them. Through internet any one can send msg, documents, voice documents etc from one place to another place by sitting at home. If they need communication they can call each other. In the generation of internet everybody has open minded they can also share his/her thoughts, ideas on internet ~~or~~ to anyone.



Ques-1) Define conference? Describe detail advantages and disadvantages of Conference.

Ans) A ^{word} conference is derived from the word 'conferentia' which is 'to bring together'.

- 1) It is a group of communication together.
- 2) In conference peoples get ideas they learn new things.
- 3) It is a field of developed themselves in the topic of conference.
- 4) People come together 'to conform' i.e to have discussions.

* The advantages of Conference is:

- There is no restrictions of people participants in conference.
- Anyone can participate in conference. Anyone can put up his/her ideas in conference.
- In a conference participants provide valuable angle analyzing the decisions.

* The disadvantages of Conference:

- Conference are not decision making bodies and therefore firms / organization becomes an intellectual ideas.

• In conference there is no rights

to ~~any~~ vote



• In Conference only a lead/manager can take a decision through

6/10/14



[Handwritten signature]

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PROFILE

Attitude
What's ur Attitude Today?

NAME : SHASHI KHUSHNUMA.
SUBJECT : MATHS - III
SEMESTER : III
CLASS : SY - Bsc.
UNIVERSITY NO. :
ACADEMIC YEAR : 2018 - 2019.
PROFESSOR IN CHARGE : Rama - V
DEPARTMENT : MATHEMATICS. HEAD OF DEPARTMENT : Mr. Mukesh.
UNIVERSITY : MUMBAI

Submitted
Rama

Attitude
What's ur Attitude Today?

Certificate

Class : Sy - Bsc.

Year : 2018 - 2019.

This is to Certify that the work entered in this journal is the work of Kumar / Kumari SHASHI KHUSHNUMA.

who has worked for the 1st Term / the 2nd Term / both the Term of the year 2018-2019 in the School / College Laboratory.

Rama
Professor-in-charge



Mr. Mukesh
Head of Department

Date : 19/10/18

23 OCT 2018



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Smt. Thirumalai College of Science,
Wadala, Mumbai - 400 031

INDEX



Expt. No.	Date			EXPERIMENT	Remarks	Signature
	D	M	Y			
1.	17	07	18	Practical no. 1		<i>[Signature]</i>
2.	24	07	18	Practical no. 2		<i>[Signature]</i>
3.	31	07	18	Practical no. 3		<i>[Signature]</i>
4.	07	08	18	Practical no. 4		<i>[Signature]</i>
5.	14	08	18	Practical no. 5		<i>[Signature]</i>
6.	21	08	18	Practical no. 6		<i>[Signature]</i>
7.	04	09	18	Practical no. 7		<i>[Signature]</i>
8.	09	10	18	Practical no. 8		<i>[Signature]</i>
9.	16	10	18	Practical no. 9.		<i>[Signature]</i>



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Wadala, Mumbai - 400 031

Practical No. 1

1] Write the following permutation in cyclic notations-

$$1. \sigma_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 2 & 5 & 1 \end{pmatrix}$$

$$= (1 \ 3 \ 2 \ 4 \ 5)$$

length of the cycle = 5.

$$2. \sigma_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 5 & 1 & 2 & 4 \end{pmatrix}$$

$$= (1 \ 3) (2 \ 5 \ 4)$$

length of the cycle = $(2)(3) = 5$.

$$3. \sigma_3 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 1 & 3 & 4 & 2 \end{pmatrix}$$

$$= (1 \ 5 \ 2) (3) (4)$$

length of the cycle = $(3)(1)(1) = 5$

$$4. \sigma_4 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 5 & 4 & 3 & 2 \end{pmatrix}$$

$$= (1) (2 \ 5) (3 \ 4)$$

length of the cycle = $(1)(2)(2) = 5$



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2] Write the following cycle of S_5 in the standard

1. $S_5 = (1\ 2\ 3)(4\ 5)$

Solution:- $S_5 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 5 & 4 & 1 & 2 \end{pmatrix}$

2. $S_5 = (1\ 2)(3\ 5)$

Solution:- $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 5 & 1 & 4 \end{pmatrix}$

3. $S_5 = (1\ 3\ 2\ 5\ 4)$

Solution:- $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 5 & 2 & 3 & 1 \end{pmatrix}$

4. $S_5 = (1\ 4\ 3)$

Solution:- $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 4 & 1 & 2 & 3 \end{pmatrix}$



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Q 3] Find the product?

$$1. \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 5 & 1 & 4 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 4 & 2 & 3 & 5 \end{pmatrix} \rightarrow \text{lower part}$$

Solution:

$$\sigma_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 5 & 1 & 4 \end{pmatrix}$$

$$\sigma_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 4 & 2 & 3 & 5 \end{pmatrix}$$

$$\sigma_1 \cdot \sigma_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 1 & 3 & 5 & 4 \end{pmatrix}$$

$$2. \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 2 & 5 & 1 & 4 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 5 & 1 & 2 & 3 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 4 & 5 & 3 & 1 \end{pmatrix}$$

Solution:

$$\sigma_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 2 & 5 & 1 & 4 \end{pmatrix}$$

$$\sigma_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 5 & 1 & 2 & 3 \end{pmatrix}$$

$$\sigma_3 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 4 & 5 & 3 & 1 \end{pmatrix}$$

$$\sigma_1 \cdot \sigma_2 \cdot \sigma_3 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 2 & 5 & 3 & 1 \end{pmatrix}$$



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4] Find the following of the product?

$$1 \quad (1 \ 2) \ (3 \ 5) \ (1 \ 4 \ 3) \ (5 \ 4 \ 1)$$

olution:- let,

$$1 \rightarrow 5 \rightarrow 5 \rightarrow 3 \rightarrow 3$$

$$2 \rightarrow 3 \rightarrow 1 \rightarrow 1 \rightarrow 2$$

$$2 \rightarrow 2 \rightarrow 2 \rightarrow 2 \rightarrow 1$$

$$4 \rightarrow 1 \rightarrow 4 \rightarrow 4 \rightarrow 4$$

$$5 \rightarrow 4 \rightarrow 3 \rightarrow 5 \rightarrow 5$$

$$\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 2 & 4 & 5 \end{pmatrix}$$

$$\sigma = (1 \ 3 \ 2) (4) (5)$$

$$2 \quad (3 \ 4 \ 1 \ 2) \ (5 \ 4 \ 2) \ (2 \ 3) \ (1 \ 4 \ 3)$$

olution:- let,

$$1 \rightarrow 4 \rightarrow 4 \rightarrow 2 \rightarrow 3$$

$$2 \rightarrow 2 \rightarrow 3 \rightarrow 3 \rightarrow 4$$

$$3 \rightarrow 1 \rightarrow 1 \rightarrow 1 \rightarrow 2$$

$$4 \rightarrow 3 \rightarrow 2 \rightarrow 5 \rightarrow 5$$

$$5 \rightarrow 5 \rightarrow 5 \rightarrow 4 \rightarrow 1$$

$$\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 2 & 5 & 1 \end{pmatrix}$$

$$\sigma = (1 \ 3 \ 2 \ 4 \ 5)$$



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$$3] \quad (2 \ 1) (4 \ 5) (1 \ 3 \ 2 \ 4) (1 \ 3 \ 2) (3 \ 5 \ 1)$$

tion: let,

$$1 \rightarrow 3 \rightarrow 2 \rightarrow 4 \rightarrow 5 \rightarrow 5$$

$$2 \rightarrow 2 \rightarrow 1 \rightarrow 3 \rightarrow 3 \rightarrow 3$$

$$3 \rightarrow 5 \rightarrow 5 \rightarrow 5 \rightarrow 4 \rightarrow 4$$


$$4 \rightarrow 4 \rightarrow 4 \rightarrow 1 \rightarrow 1 \rightarrow 2$$

$$5 \rightarrow 1 \rightarrow 3 \rightarrow 2 \rightarrow 2 \rightarrow 1$$

$$\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 4 & 2 & 1 \end{pmatrix}$$

~~$$\sigma = (1 \ 5) (2 \ 3 \ 4)$$~~




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5] Find the inverse of the following:-

1. $\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 1 & 5 & 4 \end{pmatrix}$

Solution:- $\sigma^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 2 & 5 & 4 \end{pmatrix}$

2. $\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 5 & 1 & 3 & 4 \end{pmatrix}$

Solution:- $\sigma^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 4 & 5 & 2 \end{pmatrix}$

3. $\alpha_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 1 & 4 & 2 \end{pmatrix}, \alpha_2 = \begin{pmatrix} 1 & 2 & 3 \\ 5 & 3 & 4 \end{pmatrix}$

Solati solution:- let, $\alpha_1 \cdot \alpha_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 1 & 4 & 3 & 5 \end{pmatrix}$

$\alpha_1 \alpha_2^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 1 & 4 & 3 & 5 \end{pmatrix}$

4. $\sigma = (1 \ 3 \ 5) (2 \ 4)$

Solution.



$\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 5 & 2 & 1 \end{pmatrix}$

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5. $(1\ 3\ 2\ 4\ 5)$

Solution:- let,
 $\alpha^{-1} = (5\ 4\ 2\ 3\ 1)$

6. $(1\ 3)\ (1\ 2)\ (1\ 5)\ (1\ 4)$

Solution let,
 $\sigma_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 3 & 1 & 5 & 2 \end{pmatrix}$

$$\sigma_1^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 5 & 2 & 1 & 4 \end{pmatrix}$$

7. $(2\ 3\ 1)\ (4\ 3)\ (2\ 5\ 1)$

Solution:- let,
 $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 5 & 4 & 1 & 2 \end{pmatrix}$

$$\alpha^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 5 & 1 & 3 & 2 \end{pmatrix}$$

8. $(3\ 1)\ (2\ 4)\ (1\ 4\ 3)\ (3\ 4)$

Solution:- let,
 $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 4 & 1 & 3 & 5 \end{pmatrix}$

$\alpha^{-1} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 4 & 2 & 5 \end{pmatrix}$



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INDEX

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Subject: Mathe - II

School/College: S.I.W.S. College

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1	Solving Exact and non-exact equations.	6/12/17		gms
2	Use of known solution to find general solution of homogeneous equation	13/12/17		gms
3	Solving Homogeneous equation with constant coefficients	3/1/18		gms
4	The method of undetermined coefficients.	10/1/18		gms
5	The Method of Variation of Parameters	17/1/18		gms
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6/12/17

Practical 1:- Solving exact and non exact equations

Q.1) Test the equation for exactness, if exact then solve it.

1) $e^y dx + (xe^y + 2y) dy = 0$

Soln:-

$$e^y dx + (xe^y + 2y) dy = 0 \quad - (1)$$

comparing with

$$M(x,y) dx + N(x,y) dy = 0$$

$$M = e^y \quad N = xe^y + 2y$$

$$\frac{\partial M}{\partial y} = e^y \quad \frac{\partial N}{\partial x} = e^y \quad - (2)$$

$$\therefore \frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

\therefore The given eqⁿ (1) is exact.

\therefore There exist a function $f(x,y) = c$ such that

$$\frac{\partial f}{\partial x} = e^y \quad - (3)$$

$$\& \frac{\partial f}{\partial y} = xe^y + 2y \quad - (4)$$

Integrating (3) w.r.t. x

$$\int \frac{\partial f}{\partial x} dx = \int e^y dx$$

$$f = xe^y + g(y) \quad - (5)$$



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Differentiating w.r.t y.

$$\frac{\partial f}{\partial y} = x e^y + g'(y) = x e^y + 2y \quad [\text{from (4)}]$$

$$\Rightarrow g'(y) = 2y.$$

$$\Rightarrow g(y) = \int 2y \cdot dy + c = y^2 + c$$

$$\therefore \text{from (5)} \quad f(x, y) = x e^y + y^2$$

$$\therefore \boxed{x e^y + y^2 = c.}$$

$$2] \quad (4x^3y^3 + \frac{1}{x}) dx + (3x^4y^2 - \frac{1}{y}) dy = 0$$

Solⁿ:-

$$(4x^3y^3 + \frac{1}{x}) dx + (3x^4y^2 - \frac{1}{y}) dy = 0 \quad \text{--- (1)}$$

Comparing with

$$M(x, y) dx + N(x, y) dy = 0$$

$$M = 4x^3y^3 + \frac{1}{x} \quad N = 3x^4y^2 - \frac{1}{y}$$

$$\frac{\partial M}{\partial y} = 12x^3y^2$$

$$\frac{\partial N}{\partial x} = 12x^3y^2 \quad \text{--- (2)}$$

$$\therefore \frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

\therefore The given equation is exact.

\therefore There exist a function $f(x, y) = c$ such that

$$\frac{\partial f}{\partial x} = 4x^3y^3 + \frac{1}{x} \quad \text{--- (3)}$$



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$$2 \frac{\partial f}{\partial y} = 3x^4 y^2 - \frac{1}{y} \quad \text{--- (4)}$$

Integrating eqⁿ (3) w.r.t. x.

$$\int \frac{\partial f}{\partial x} dx = \int (4x^3 y^3 + \frac{1}{x}) dx$$

$$f = \frac{4x^4 y^3}{4} + \log x + g(y)$$

$$f = x^4 y^3 + \log x + g(y) \quad \text{--- (5)}$$

diff eqⁿ (5) w.r.t. y.

$$\frac{\partial f}{\partial y} = \frac{d}{dy} (x^4 y^3 + \log x + g(y))$$

$$\frac{\partial f}{\partial y} = 3x^4 y^2 + g'(y)$$

$$\frac{\partial f}{\partial y} = 3x^4 y^2 - \frac{1}{y} \quad \text{[from (4)]}$$

$$\therefore g'(y) = -\frac{1}{y}$$

$$\int g'(y) dy = -\int \frac{1}{y} \cdot dy$$

$$g(y) = -\log y + c$$

\therefore from (5)

$$f(x, y) = x^4 y^3 + \log x - \log y$$

$$\boxed{x^4 y^3 + \log \left(\frac{x}{y} \right) + c}$$



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Q. 2) Solve the given equations.

$$1) \quad y dx + (x^2 y - x) dy = 0$$

Solⁿ:-

$$y dx + (x^2 y - x) dy = 0 \quad \text{--- (1)}$$

Comparing with $M dx + N dy = 0$

$$\therefore M = y \quad N = x^2 y - x$$

$$\frac{\partial M}{\partial y} = 1 \quad \frac{\partial N}{\partial x} = 2xy - 1$$

$$\therefore \frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$$

\therefore The given eqⁿ (1) is non exact.

Multiply eqⁿ (1) by $\frac{1}{x^2}$

$$\frac{y}{x^2} dx + \left(\frac{x^2 y - x}{x^2} \right) dy = 0$$

$$\frac{y}{x^2} dx + \left(y - \frac{1}{x} \right) dy = 0$$

$$\therefore M = \frac{y}{x^2} \quad N = y - \frac{1}{x}$$

$$\frac{\partial M}{\partial y} = \frac{1}{x^2} \quad \frac{\partial N}{\partial x} = \frac{1}{x^2}$$

$$\therefore \frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

Hence it is exact

$\therefore \frac{1}{x^2}$ is an integrating factor.



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The general solution of an exact differential Equation is given by

$$\int M dx + \int N dy = C.$$

$$\int \frac{y}{x^2} dx + \int y dy = C.$$

$$\frac{-y}{x} + yx = C.$$

$$-yx + yx^2 = C.$$

Above equation is the solution.

e) $xy dx - (x^2 + 2y^2) dy = 0.$

Solⁿ:-

$$xy dx - (x^2 + 2y^2) dy = 0. \quad - (1)$$

Comparing with $M dx + N dy = 0.$

$$M = xy \quad N = -(x^2 + 2y^2)$$

$$\frac{\partial M}{\partial y} = x \quad \frac{\partial N}{\partial x} = -2x.$$

$$\therefore \frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$$

Hence the given equation is exact.

But M and N are homogeneous function

$$M(x) + N(y)$$

$$= xy(x) + (-x^2 - 2y^2)(y)$$

$$= x^2y - x^2y - 2y^3$$

$$= -2y^3$$



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$$\therefore \frac{1}{M(x) + N(y)} = \frac{-1}{2y^3} \text{ is integrative f}$$

Divide eqn (1) by $-\frac{1}{2y^3}$

$$-\frac{2xy}{2y^3} dx + \frac{1}{2y^3} (x^2 + 2yz^2) dy = 0.$$

$$-\frac{x}{y^2} dx + \left(\frac{x^2}{2y^3} + \frac{z}{y} \right) dy = 0$$

$$-\frac{x}{y^2} dx + \left(\frac{x^2}{2y^3} + \frac{1}{y} \right) dy = 0$$

$$\therefore M = -\frac{x}{y^2} \quad \& \quad N = \frac{x^2}{2y^3} + \frac{1}{y}$$

$$\frac{\partial M}{\partial y} = \frac{\partial}{\partial y} \left(-\frac{x}{y^2} \right) = \frac{2x}{y^3}$$

$$\& \frac{\partial N}{\partial x} = \frac{\partial}{\partial x} \left(\frac{x^2}{2y^3} + \frac{1}{y} \right) = \frac{2x}{2y^3} = \frac{x}{y^3}$$

$$\therefore \frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

\therefore Now the equation is exact.

The general solution of an exact diff equation is given by

$$\int M dx + \int N dy = C.$$

$$\int -\frac{x}{y^2} dx + \int \left(\frac{x^2}{2y^3} + \frac{1}{y} \right) dy = C.$$

$$-\frac{x^2}{2y^2} + \frac{1}{2} \log y = C.$$

This is the solution of given equation



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TUTORIAL SHEET FOR F.Y.B.COM. SEM II FOR 2018-19 (MATHS. & STAT. TECH.)

- Q 1 Find the trend for the following data using
 i) 3 yearly moving average method ii) 5 yearly moving average method
 iii) 4 yearly moving average method

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sales	56	65	50	73	82	95	102	103	110

- Q 2 Fit a straight line trend by the method of least squares and hence estimate the sales for 2010 from the following data.

Year	2005	2006	2007	2008	2009
Sales	11	15	12	13	19

- Q 3 Fit a straight line trend by the method of least squares and hence estimate the expenditure for 2014 from following data.

Year	2007	2008	2009	2010	2011	2012
Expenditure in 000' Rs.	80	90	92	83	94	99

- Q 4 For the following data calculate i) Laspeyer's formula ii) Paasche's formula iii) Dorbush-Bowley's formula iv) Marshall-Edge worth formula v) Fisher's formula

Commodity	Year 2010		Year 2015	
	Price	Quantity	Price	Quantity
Rice	25	6	40	7
Dal	45	2	65	3
Sugar	35	4	42	5
Oil	62	3	78	4

- Q 5 Calculate the cost of living index number by family budget method for the following data.

Group	Price in 2005	Price in 2010	Weights
Food	8500	9000	35
Clothing	600	650	20
Fuel	350	400	25
Rent	7500	8500	15
Miscellaneous	4000	5000	5


- Q 6 Construct index number by weighted aggregative method.

Commodity	Price		Weight
A	2000	2014	12
B	1600	2000	4
C	800	800	8
D	520	540	6

- Q 7 Compute the seasonal indices from the following data using simple average method.

Year	Quarter			
	I	II	III	IV
2005	55	53	57	51
2006	56	55	60	53
2007	57	50	61	54




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Q8 Calculate by Karl Pearson method the coefficient of correlation for the following data or Calculate Product moment coefficient of correlation.

Demand	8	12	11	10	9	13	8
Price	6	10	8	11	7	10	13

Q9 Calculate Product Moment Correlation Coefficient from the following data.
 $\Sigma(x - \bar{x})(y - \bar{y}) = 29$; $\Sigma(x - \bar{x})^2 = 28$; $\Sigma(y - \bar{y})^2 = 42$;

Q10 Find Spearman's Rank Coefficient of correlation for the following data.

X	45	73	52	30	85	45
Y	38	66	48	39	60	48

Q11 The two regression equations are $x + 3y - 88 = 0$ and $2x + y - 71 = 0$. Find mean values of x and y. Also find correlation coefficient.

Q12 For a group of Men and Women works in an organisation the following data of wages (in Rs.) per day was given.

	Mean (X)	Women(Y)
Mean	75	60
Standard deviation	2.6	1.5
Coefficient of correlation (r)	= 0.65	

Q13 If $R = 2/3$, $\Sigma d^2 = 55$ then find the number of pairs of observations.

Q14 If an unbiased coin is tossed 5 times, find the probability that the number of heads is
 i) only one ii) at least 4

Q15 The possibility that a student will pass a test is 60%. If 4 students appearing for the examination are selected at random, find probability that out of them, the number of customers helped is
 i) all 4 pass
 ii) at most 1 pass

Q16 It is observed that 1% typing error is committed by a typist. Find the probability that in 100 pages, number of typing error is
 i) only 1 ii) less than 2 [Given : $e^{-1} = 0.3679$]

Q17 If X is a random variable following Poisson distribution with relation
 $4P(X=0) = P(X=1)$ obtain $P(X=3)$ [Given $e^{-4} = 0.0183$]

Q18 The company having 5000 workers whose wage distributed normally with average wage Rs 800 with standard deviation of wage Rs. 200, find the number of workers getting wages above 1000
 [Area between $z=0$ and $z=1$ is 0.3413]

Q19 One thousand students appeared for a competitive examination, the mean score were 59 and the standard deviation of the score was 5. Assuming the distribution of score to be Normal, find
 i) the number of students securing scores between 61 and 69
 ii) the percentage of students with scores below 54.

[Area under the normal curve $z=0$ and $z=1$ is 0.3413,
 Area under the normal curve $z=0$ and $z=2$ is 0.4772,
 Area under the normal curve $z=0$ and $z=0.4$ is 0.1554]

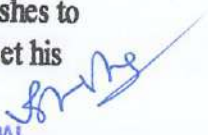
Q20 The company having 5000 workers whose wage distributed normally with average wage Rs. 800 with standard deviation of wage Rs. 200, find the number of workers getting wages above 1000
 [Area between $z=0$ and $z=1$ is 0.3413]



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- Q 1 Find derivatives of y with respect to x :
- i) $y = x - e^x + 29$ ii) $y = 6(x^5) + \log 90 + 2(4^x) + e^x$ iii) $y = 4x^7 - \log x + \sqrt{x}$
 iv) $y = x^5(2x + 4)$ v) $y = (\log x + x)(5x^2 + 55)$ vi) $y = (x + e^x)(\log x - 10)$
 vii) $y = (e^x + 2)(2x^2 + x + 4)$ viii) $y = \frac{e^x + 2^x}{x^2 + 1}$
- Q 2 The cost of manufacturing x items of a product is given by $C = 2x^2 + 3x + 10$. Find the total cost, average cost and marginal cost if 10 items are manufactured.
- Q 3 The total revenue R for quantity D is given by $R = 100D - D^2$. Find the total Revenue, the Average Revenue and the Marginal Revenue when $D = 10$.
- Q 4 Find the total revenue and marginal revenue for the demand function $p = 40 + 6D + 10D^2$ when demand(D) is 4.
- Q 5 If $MR = \text{Rs.} 25$, η with respect to p is 2. Find AR.
- Q 6 The demand function and the supply function for a commodity are given by $D = 400 - p^2$ and $S = 100 + 2p^2$ respectively. Find the rate of change in demand with respect to price at equilibrium price.
- Q 7 The demand function is given by $D = 44 - 4p - p^2$ where D is the demand and p is the price. Find the elasticity of demand w.r.t. price when price is 2.
- Q 8 Find the output at which profit is maximum and maximum profit if total revenue and total cost functions are given by $R = 260 - 3x^2$ and $C = 500 + 20x$.
- Q 9 Find the points of maxima and minima for the function $f(x) = x^3 - 9x^2 + 24x + 7$.
- Q 10 The total cost function is given by $C = x^2 - 10x + 525$. Find x for which the total cost is minimum. Also find the minimum total cost.
- Q 11 Find the points of maxima and minima for the function $f(x) = x^3 - 6x^2 + 9x$.
- Q 12 In how many years will Rs. 6400 amount to Rs. 7168 at 4% p.a. simple interest?
- Q 13 Find the maturity amount of a 2 years fixed deposit of Rs. 10000 at 10% p.a. if the interest is compounded half yearly.
- Q 14 Find the compound interest and the accumulated amount after 4 years of a principal sum of Rs. 20000 at 8% p.a.
- Q 15 The simple interest at 20% p.a. on a certain sum of money for 4 years is Rs. 25600. Find the compound interest on the sum at the same rate for the same period.
- Q 16 The difference between simple interest and compound interest on a sum of 4 years at 10% p.a. is Rs. 1025.60. Find the principal amount.
- Q 17 A principal amounts to Rs. 11880 after 4 years and to Rs. 14040 after 7 years. Find the principal and the rate of simple interest.
- Q 18 Aniket estimates that after 3 years he would require Rs. 500000 for his new business. He wishes to put aside some money now, invested in an instrument giving 7% p.a. compound interest to meet his requirements then. How much money should he invest presently?





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- Q 19 A person has to pay Rs. 40000 at the end of 2 years and another Rs. 20000 at the end of 4 years from now. If he decides to settle the payment now, what will he have to pay presently in lieu of the above payments if the interest is compounded at 10% p.a.?
- Q 20 Find the accumulated value after 4 years of an immediate annuity of Rs. 20000 p.a. with interest compounded at 6% p.a.
- Q 21 Find the number of years for which an annuity of Rs. 10,000 is paid at end of each year, if its accumulated value amount works out to be Rs. 53680 with interest compounded at 20% p.a.
- Q 22 Find the amount at the end of 1 year of an annuity of Rs. 5000 payable at each quarter with rate of interest 12% p.a.
- Q 23 A loan of Rs. 80000 is to be returned in 3 monthly instalments at the rate of 12% compounded monthly. Find the EMI using reducing balance method.
- Q 24 Rehan takes a loan Rs. 30,000 to be repaid in one year at 9% p.a. by reducing interest rate. Find the EMI.
- Q 25 For an immediate annuity to be paid for 4 years with interest compounded at 9% p.a. the present value of Rs. 10,000. Find the annuity payment for each year.
- Q 26 Find the present value of an immediate annuity of Rs. 10,000 per year for 3 years with interest compounded at 6% p.a.


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- 1 Calculate the Arithmetic mean and mode of marks of students
- | | | | | | |
|-----------------|------|-------|-------|-------|-------|
| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| No. of Students | 7 | 12 | 15 | 10 | 5 |
- 2 Calculate the mean and mode for the following data:
- | | | | | | |
|----------------|------|-------|-------|-------|--------|
| Age in Years | 0-20 | 20-40 | 40-60 | 60-80 | 80-100 |
| No. of Persons | 4 | 5 | 15 | 11 | 5 |
- 3 Find coefficient of variation from the following data
- | | | | | | |
|----------------------|-------|-------|-------|-------|-------|
| Age in Years | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
| No. of mobile person | 8 | 12 | 20 | 14 | 10 |
- 4 Draw less than ogive curve for the following frequency distribution and hence locate the median graphically.
- | | | | | | |
|-------------------------------|------|-------|-------|-------|-------|
| Production in number of units | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| No. of days | 12 | 16 | 24 | 15 | 13 |
- 5 Draw less than cumulative frequency curve for the following data and hence locate the median and two quartil graphically.
- | | | | | | | |
|----------------|-------|---------|---------|---------|---------|---------|
| Daily wages | 0-100 | 100-200 | 200-300 | 300-400 | 400-500 | 500-600 |
| No. of workers | 10 | 30 | 45 | 60 | 35 | 20 |
- 6 The following data gives the distribution of weights of boys and girls in the class find the combined arithmetic means and decide which group is more consistent.
- | | | |
|-------------|--------|--------|
| | Boys | Girls |
| Number | 55 | 65 |
| Mean weight | 58 kgs | 44 kgs |
| S.D | 3 kgs | 2kgs |
- 7 The following data gives the means and standard deviations of wages of two groups of workers.
- | | | |
|-----------------------|---------|----------|
| | Group I | Group II |
| Number | 50 | 100 |
| Mean wages(Rs) | 120 | 85 |
| Variance of Wages(Rs) | 9 | 16 |
- 9 In Which group is there greater variation in the distribution of wages? Find Quartile Deviation for the following data.
- | | | | | | |
|-----------------|------|-------|-------|-------|-------|
| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| No. of Students | 12 | 18 | 26 | 15 | 09 |
- 10 Three coins are tossed find the probability of getting
- All tails
 - At most two tails.
- 11 Find $E(X)$ and $V(X)$ for the following probability mass function of random variable X
- | | | | | |
|----------|-----|-----|-----|-----|
| X | 1 | 2 | 3 | 4 |
| $P(X=x)$ | 0.2 | 0.3 | 0.4 | 0.1 |
- 12 If $P(A^c)=2/3$, $P(B)=1/4$, $P(A \cup B)=5/12$ Find $P(A \cap B)$ and $P(A/B)$
- 13 A ticket is drawn from 35 lottery tickets numbered from 1 to 35. Find the probability that the number on the is divisible by 5 or 7.
- 14 Given $P(A)=0.5$, $P(B)=0.4$ & $P(A/B)=0.25$ find $P(\bar{B})$, $P(A \cap B)$ & $P(A \cup B)$.
- 15 A box contains 4 blue, 3 red and 2 black balls. If two balls are selected at random from the box, what is the probability that one is blue and one is red ball.
- 16 A problem on mathematics is given to 2 students A and B who attempt it independently. Their chances of solving the problem are $1/3$ and $1/4$ respectively. What is the probability that (i) the problem is solved (ii) it is solved by one.
- 17 Following is the probability distribution of number of smart phones sold in a shop per day.
- | | | | | | | |
|-------------|---|-----|------|------|-----|----|
| Number | 0 | 1 | 2 | 3 | 4 | 5 |
| Probability | K | 0.3 | 0.15 | 0.15 | 0.1 | 2K |




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Q11 Solve the following L.P.P. by graphical method.

$$\text{Maximize } z = 4x + 5y$$

$$\text{subject to } 2x + 3y \leq 12,$$

$$x + y \leq 5, \quad x \geq 0, \quad y \geq 0.$$

Q12 Solve the following L.P.P. by graphical method.

$$\text{Maximize } z = 2x + 3y$$

$$\text{subject to } x + y \leq 6,$$

$$3x + y \leq 12, \quad x \geq 0, \quad y \geq 0.$$

Q13 Solve the following L.P.P. by graphical method.

$$\text{Minimize } z = 9x + 10y$$

$$\text{subject to } x + 2y \geq 30,$$

$$3x + y \geq 30, \quad x \geq 0, \quad y \geq 0.$$

Q14 Solve the following L.P.P. by graphical method.

$$\text{Minimize } z = 25x + 10y$$

$$\text{subject to } 10x + 2y \geq 20,$$

$$x + 2y \geq 6, \quad x \geq 0, \quad y \geq 0.$$

Q15 A painter makes two paintings A and B. He spends 1 hour for drawing and 3 hours for coloring the painting A and he spends 3 hours for drawing and 1 hour for coloring the painting B. He can spend at most 8 hours and 9 hours for drawing and coloring respectively. The profit per painting of Type A is Rs. 4000 and that of type B is Rs. 5000. Formulate as Linear Programming Problem to maximize the profit.

Q16 A printing company prints two types of magazines A and B. The company earns Rs. 25 and Rs. 35 on each copy of magazines A and B respectively. The magazines are processed on three machines. Magazine A requires 2 hours on machine I, 4 hours on machine II and 2 hours on machine III. Magazine B requires 3 hours on machine I, 5 hours on machine II and 3 hours on machine III. Machines I, II, and III are available for 35, 50, and 70 hours per week respectively. Formulate the L.P.P. so as to maximize the total profit of the company.

Q17 In how many different ways can the letters of the word 'LEADING' be arranged such that the vowels should always come together?

Q18 Three boys and five girls are made to sit in a line for a music competition. How many different arrangements can be made so that no two boys are together?

Q19 A committee of 5 persons is to be formed from 6 doctors and 5 nurses. Find the total number of ways if committee consists of i) All doctors ii) 3 doctors and 2 nurses.

Q20 An organization consists of 9 members of which 4 are doctors. A selection of 4 persons is to be done amongst these members. Find how many selections will have i) no doctor ii) exactly 2 doctors.



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Practical Problems for lab session.

S.I.W.S. N.R. SWAMY COLLEGE OF COMMERCE PRACTICALS FOR TYBCOM SEMESTER VI CSA

Practicals in Advanced MS-Excel

1. Prepare a work sheet containing the name and taxable income in columns A and B respectively. The first row contains the headings and 2nd row to 10th row containing the data. Enter your own data.

Carry out the following operations on this worksheet.

- Save the work sheet under your name followed by your roll number and question number.
- Obtain the income tax in column C using the following income tax slabs.

Taxable income (RS)	Rate
First 1,00,000	Nil
Next 50,000	10%
Next 70,000	20%
Excess	30%

- Obtain the surcharge in column D, where surcharge is 3% of the income tax for those whose taxable income is above Rs.5,00,000.
- Obtain total tax in column E, as the sum of income tax and surcharge.

2. Prepare a work sheet containing the name of the salesman and sales for the months of January, February and March in columns A to D. The first row contains the headings and 2nd row to 8th row containing the data. Enter your own data ensuring that the sales entered in a month are minimum 100000 and maximum 300000.

Carry out the following operations on this work sheet.

- Enter the following bonus table in columns H and I.

SALES	BONUS
300000	2000
400000	3000
500000	4000
600000	5000
700000	6000
800000	7000
900000	8000

- Save the work sheet under your name followed by your roll number and question number.
- Obtain the total sales of each salesman in the first quarter in column E.
- Using VLOOKUP function obtain the bonus amounts to be given to each salesman in column F. (Note: if the total sales are say 5,21,000 then bonus is 4000.)

3. Prepare a work sheet containing Name and Marks in 7 subjects in column A to H. Type titles in A1 to H1. Enter your own data from A2 to H8.

Carry out the following operations on this worksheet.

- Save the work sheet under your name followed by your roll number and question number.
- Obtain the total marks of each student in column I.
- Construct the 3D pie diagram for the totals for each name.
- Display only those student's details that have total marks exceeding 420.
- Display only those students's details whose name begins with 'R'.



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4) Calculation of DA, HRA, PF, Gross Salary and Net Salary using MS-Excel.

Prepare a worksheet containing Employee Numbers Names and Basic salaries of 5 employees in columns A, B and C respectively. The first row contains the headings and second to sixth row contain the data. Enter your own data.

Carry out the following operations on this worksheet.

a) Save the work sheet under your name followed by your roll number and question number.

b) Obtain DA in column D where DA is 30% of basic salary.

c) Obtain HRA in column E as per following condition.

If basic salary ≥ 30000 , HRA is 35% of basic salary. If basic salary ≥ 20000 but less than 30000, HRA is 25% of basic. If basic salary < 20000 , HRA is 20% of basic salary.

d) Obtain PF in column F where PF is 15% of basic salary.

e) Obtain Gross Salary in column G where Gross salary = Basic + DA + HRA

f) Obtain Net Salary in column H where Net salary = Gross salary - PF


5) Consider the following worksheet containing the various expenditures incurred and income of a person.

	A	B	C	D
1		A Person's Budget		
2	Particulars	Expenditure		Income
3	Rent	11000		50000
4	Food	14000		
5	Phone Bills	500		
6	Clothes	1200		
7	Travelling	3000		
8	Club	5000		
9	Internet	700		
10	Books	600		
11	Health Care	1500		
12	EMIs	8000		
13				
14	Total Exp.	45500		
15	Income left			4500

Prepare scenarios where there is a change as follows:

Travelling decreases to 2500, Club fees decreases to 2500 and Internet decreases to 500




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6) Consider the following worksheet.

A	B	C
1 Cost Centers	Amount in 2014	Amount in 2020
2 Fees	200000	
3 Hostel Charges	15000	
4 Food & Clothing	25000	
5 Miscellaneous	10000	
6 Total Amount required	250000	
7		
8		

In the above worksheet the costs involved for education in 2014 under four categories is given. Write the steps to calculate the Amounts required in 2020 taking in to account increase in fees by 50%, Hostel charges by 25%, Food and Clothing by 50% and Miscellaneous amounts by 30%. Find the total amount required in B6 and C6 respectively Further assuming that this target amount required in 2020 taking into account various other factors is say 4,50,000 find using goal seek, the amount that has to be saved each month in the next 6 years in the cell A8 to meet this target amount assuming no interest being received on amounts saved.

7)

A company makes four products Printers, Monitors, Keyboards and Hard Disks whose sale price is Rs. 5000, Rs. 3000, Rs.1000 and Rs.3500 respectively. For the company to break-even, it has to achieve a total sale of Rs.1,00,00,000 in a year. Using Solver write the steps to find out the number of units of each of these four products that should be sold in order to meet the desired target sale, given that the Company has the capacity to make maximum 2000,1000,3000 and 1800 units of each of these four products respectively in a year.

Practicals in Visual Basics:

(VB)

- 8 Write a project in VB to design a suitable form to add two numbers and display their sum.
- 9 Write a project in VB to design a suitable form to enter sales and calculate and display the bonus which is 20% of sales.
- 10 Write a project in VB to design a suitable form to enter salary and calculate and display the DA which is 80% of salary.



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Solution - Computer Practical Sheet

T.Y.B.Com - Sem VI

PROBLEM 1

- a) 1) After typing the data in columns A and B, click on the office button and select 'save as'.
2) Select Excel workbook, type the name as 'MUKESH40011' and click on save.

- b) 1) Select C1 and type the heading 'INCOME TAX'.
2) Select C2 and type
 $=IF(B2 \leq 100000, 0, IF(B2 \leq 160000, (B2 - 100000) * 10\%, IF(B2 \leq 230000, 60000 * 10\% + (B2 - 160000) * 20\%, 60000 * 10\% + 70000 * 20\% + (B2 - 230000) * 30\%)))$ and press enter.
3) Select C2 and drag the fill handle to C10;

- c) 1) Select D1 and type the heading 'SURCHARGE'
2) Select D2 and type
 $=IF(B2 > 500000, C2 * 3\%, 0)$ and press enter.
3) Select D2 and drag the fill handle to D10.

- d) 1) Select E1 and type the heading 'TOTAL TAX'.
2) Select E2 and type $=C2 + D2$ and press enter.
3) Select E2 and drag the fill handle to E10.

PROBLEM 2

- a) 1) After typing the data in columns A to D and columns H, I, click on the office button and select 'save as'.
2) Select 'Excel workbook' type the name as 'MUKESH40012' and click on save.

- c) 1) Select E1 and type the heading 'TOTAL SALES'.
2) Select E2 and type $=SUM(B2:D2)$ and press enter.
3) Select E2 and drag the fill handle to E8.


- d) 1) Select F1 and type the heading 'BONUS'.
2) Select F2 and type
 $=VLOOKUP(E2, \$H\$2:\$I\$8, 2)$ and press enter.
3) Select F2 and drag the fill handle to F8.

PROBLEM 3

- a) 1) After typing the data in columns A to H, click on the office button and select 'save as'.
2) Select Excel Workbook, type the name as 'MUKESH40013' and click on save.


- b) 1) Select I1 and type the heading 'TOTAL'.
2) Select I2 and type $=SUM(B2:H2)$.
3) Select I2 and drag the fill handle to I8.




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- c) 1) Select the *non-contiguous* range A1 to A8 & I1 to I8 .
2) From the Insert menu, select option Pie under charts group, sub-option 3-D pie.
3) 3-D pie diagram appears.
4) Under layout menu of chart tools, select chart title, sub-option above chart and type the title 'TOTAL'.
- d) 1) Select the entire data.
2) In the Data menu, select Filter under Sort and Filter group.
3) Drop down arrows appears next to each column title.
4) Select the dropdown arrow next to the total column.
5) Under the number filters, select greater than.
6) Custom Auto filter window appears, type 420 and press OK.
7) Click at filter(Drop down arrow disappears)
- e) 1) Select the entire data.
2) Under Data menu, select Filter under Sort and Filter group.
3) Drop down arrows appears next to each column title.
4) Select the dropdown arrows next to the name column.
5) Under the text filters, select 'begins with'
6) Custom Auto Filter window appears, type R and press OK.




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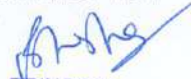
PRACTICAL 4

- a) 1) After typing the data in columns A, B & C, click on the save button and select 'save as'.
2) Select Excel workbook, type the name as 'MUKESH40091' and click on save.
- b) 1) Select D1 and type the heading 'DA'
2) Select D2 and type
 $=30/100 * C2$ and press enter.
3) Select D2 and drag the fill handle to D6.
- c) 1) Select E1 and type the heading 'HRA'
2) Select E2 and type
 $=IF(C2 >= 30000, 35/100 * C2, IF(C2 >= 20000, 25/100 * C2, 20/100 * C2))$ and press enter
3) Select E2 and drag the fill handle to E6.
- d) 1) Select F1 and type the heading 'PF'
2) Select F2 and type
 $= 15/100 * C2$ and press enter
3) Select F2 and drag the fill handle to F6
- e) 1) Select G1 and type the heading 'Gross salary'
2) Select G2 and type
 $=SUM(C2:E2)$ and press enter.
3) Select G2 and drag the fill handle to G6
- f) 1) Select H1 and type the heading 'Net Salary'
2) Select H2 and type
 $=G2 - F2$ and press enter.
3) Select H2 and drag the fill handle to H6

PRACTICAL 5

- a) Cell B14 : Type the formula $=SUM(B3:B12)$
- b) Cell D15 : Type the formula $=D3-B14$
- c) Step 1: Click on Data Menu --> Data Tools --> What-If Analysis --> Scenario Manager.
Step 2: We want to create a new scenario. So click the Add button.
Step 3: In the Add Scenario Dialog Box, in Scenario Name, type Original Budget.
In Changing Cells, type B7:B9. Click on OK. In Scenario Values dialog Box, Click on OK. Now we will get back the Scenario Manager dialog box.
Step 4 : Click the Add button again. Type a new Name as Budget Two. Click OK.
Again in Scenario values dialog box , change the values and press OK.
In Scenario Manager Dialog Box, Click on Original Budget and then click on Show button. Now click on Budget Two and then click on Show button.
Click the Close button in this dialog box.
Step 5 :-Click on Data Menu--> Data Tools --> What-If Analysis --> Scenario Manager.
From the Scenario Manager dialog box, click the Summary button to see the Scenario Summary dialog box. Click OK. The Scenario Summary Report appears in a separate worksheet which has the name Scenario Summary
This report shows the effect of new budget : Observe that the balance amount after new




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budget has become more (Rs. 7700 instead of the old 4500). The total expenditure has reduced from Rs. 45500 to Rs. 43200).

	Created by MUKESH on 26/11/2014	Created by MUKESH on 26/11/2014	
Changing Cells:			
\$B\$7	2500	3000	2500
\$B\$8	2500	5000	2500
\$B\$9	500	700	500
Result Cells:			
\$D\$15	7700	4500	7700
\$B\$14	42300	45500	42300
\$D\$3	50000	50000	50000

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

PRACTICAL 6

- 1) Select C2 and type =B2*1.50 and press enter.
- 2) Select C3 and type =B3*1.25 and press enter.
- 3) Select C4 and type = B4*1.50 and press enter.
- 4) Select C5 and type = B5*1.30 and press enter.
- 5) Select B6 and type =SUM(B2:B5) and press enter
- 6) Select B6 and drag the fill handle to C6.
- 7) Select C8 and type the formula =A8*12*6
- 8) From Data Tab select What-If analysis and then select Goal Seek
- 9) In 'Set cell' type C8.
- 10) In 'To value' type 450000. This is the goal seek value.
- 11) In 'By changing cell' type A8 and click on OK, the goal seek status dialog box indicates it has found the value, click on OK, the required amount to be saved each month is obtained in the cell A8.

Cost Centers	Amount in 2014	Amount in 2020
Fees	200000	300000
Hostel Charges	15000	18750
Food & Clothing	25000	37500
Miscellaneous	10000	13000
Total Amount required	250000	369250

6250



450000
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Solution: 7

1. In A1 type 5000, A2 type 3000, in A3 type 1000 and in A4 type ₹3500.
2. Type 0 in the cells B1,B2,B3 and B4.(Solver will enter the quantity to be sold of each of these 4 products in these cells.
3. Select C1 and type =A1*B1 (here we are asking Excel to multiply the selling price per unit with the quantity sold in order to obtain sales value.)
4. Select C1 and drag the fill handle to C4.
5. Select C5 and type =SUM(C1:C4) . This is the total sales to be achieved.
6. In D1 type Printer, D2 type Monitor, in D3 type Keyboard and in D4 type Hard Disk.
7. Select C5 and from the Data Tab select Solver.
8. In the dialog box in the 'Set objective' option the cell C5 is already selected.
9. In the 'To' option select 'Value of' and type 10000000 in the text box.
10. In the option 'By Changing Variable cells' text box enter B1:B4.
11. In the 'Subject to Constraints' select Add option.(as we want to add the constraints of the maximum number of units of each of these four products that the company can produce.)



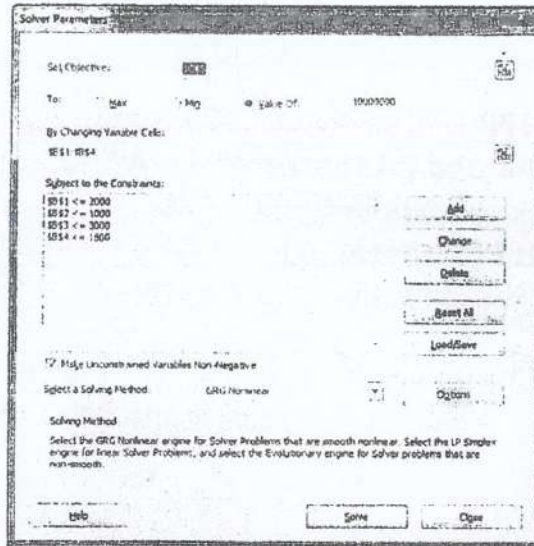
12. In 'Cell Reference' type B1 and in constraint type 2000 and click on Add.
13. In 'Cell Reference' type B2 and in constraint type 1000 and click on Add.
14. In 'Cell Reference' type B3 and in constraint type 3000 and click on Add.
15. In 'Cell Reference' type B4 and in constraint type 1800 and click on ok.

5000	1058	5291005	Printer
3000	635	1904762	Monitor
1000	212	211640.2	Keyboard
3500	741	2592593	Hard Disk
		10000000	




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16. Then click on Solve. When Solver will obtain the result, click on ok.
17. Round the numbers in Column B by using the decrease decimal option from the Home Tab. These are the required number of units of each of the four products that have to be sold in order to achieve the sales goal of ₹1,00,00,000.




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Practical 8

Write a project in Visual Basic to design a suitable form to add two numbers and display their sum.

Object	Property	Value
Form	Name	frmSum
	Caption	Sum of Two variables
Lable	Name	lblNum1
	Caption	Num1
Lable	Name	lblNum2
	Caption	Num2
Lable	Name	lblSum
	Caption	Sum
Text Box	Name	txtNum1
	Text	""(blank)
Text Box	Name	txtNum2
	Text	"" (blank)
Text Box	Name	txtSum
	Text	""(blank)
Command Button	Name	cmdSum
	Caption	&Sum
Command Button	Name	cmdClear
	Caption	&Clear
Command Button	Name	cmdQuit
	Caption	&Quit

```
frmSum - 1
```

```
Private Sub cmdClear_Click()
txtNum1.Text = ""
txtNum2.Text = ""
txtSum.Text = ""
txtNum1.SetFocus
End Sub
```

```
Private Sub cmdQuit_Click()
End
End Sub
```

```
Private Sub cmdSum_Click()
Dim a As Integer
Dim b As Integer
Dim s As Integer
a = txtNum1.Text
b = txtNum2.Text
s = a + b
txtSum.Text = s
End Sub
```

Num1

Num2

Sum



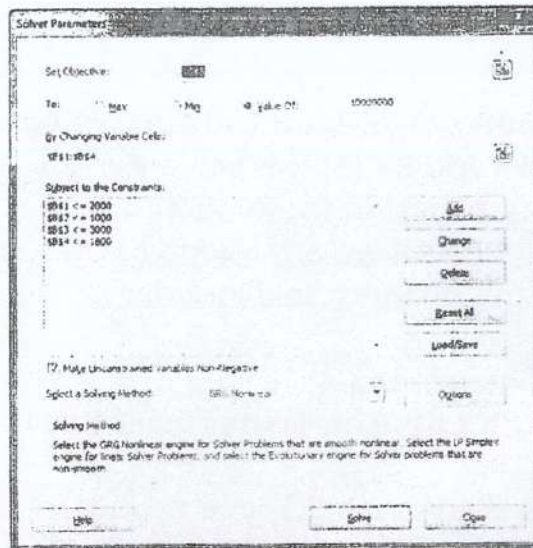
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Sum

Clear

Quit



16. Then click on Solve. When Solver will obtain the result, click on ok.
17. Round the numbers in Column B by using the decrease decimal option from the Home Tab. These are the required number of units of each of the four products that have to be sold in order to achieve the sales goal of ₹1,00,00,000.



Shree
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Practical 8

Write a project in Visual Basic to design a suitable form to add two numbers and display their sum.

Object	Property	Value
Form	Name	frmSum
	Caption	Sum of Two variables
Lable	Name	lblNum1
	Caption	Num1
Lable	Name	lblNum2
	Caption	Num2
Lable	Name	lblSum
	Caption	Sum
Text Box	Name	txtNum1
	Text	""(blank)
Text Box	Name	txtNum2
	Text	"" (blank)
Text Box	Name	txtSum
	Text	""(blank)
Command Button	Name	cmdSum
	Caption	&Sum
Command Button	Name	cmdClear
	Caption	&Clear
Command Button	Name	cmdQuit
	Caption	&Quit

frmSum - 1

```
Private Sub cmdClear_Click()
txtNum1.Text = ""
txtNum2.Text = ""
txtSum.Text = ""
txtNum1.SetFocus
End Sub
```

```
Private Sub cmdQuit_Click()
End
End Sub
```

```
Private Sub cmdSum_Click()
Dim a As Integer
Dim b As Integer
Dim s As Integer
a = txtNum1.Text
b = txtNum2.Text
s = a + b
txtSum.Text = s
End Sub
```

Num1

Num2

Sum

Sum

Clear

Quit



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Practical 9

Write a project in Visual Basic to design a suitable form to enter sales and calculate and display the bonus which is 20% of sales.

Object	Property	Value
Form	Name	frmBonus
	Caption	Bonus Calculation
Label	Name	lblSales
	Caption	Sales
Label	Name	lblBonus
	Caption	Bonus
Text Box	Name	txtSales
	Text	""(blank)
Text Box	Name	txtBonus
	Text	"" (blank)
Command Button	Name	cmdCalculate
	Caption	&Calculate
Command Button	Name	cmdClear
	Caption	C&lear
Command Button	Name	cmdQuit
	Caption	&Quit

```
frmBonus - 1
```

```
Private Sub cmdCalculate_Click()
Dim s As Integer
Dim b As Double
s = txtSales.Text
b = 0.2 * s
txtBonus.Text = b
End Sub
```

```
Private Sub cmdClear_Click()
txtSales.Text = ""
txtBonus.Text = ""
txtSales.SetFocus
End Sub
```

```
Private Sub cmdQuit_Click()
End
End Sub
```

Sales

Bonus

Calculate

Clear

Quit



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Practical 10

Write a project in Visual Basic to design a suitable form to enter salary and calculate and display the DA which is 80% of Salary.

Object	Property	Value
Form	Name	frmDA
	Caption	Salary Calculations
Label	Name	lblBasic
	Caption	Basic Salary
Label	Name	lblDA
	Caption	DA
Text Box	Name	txtBasic
	Text	""(blank)
Text Box	Name	txtDA
	Text	"" (blank)
Command Button	Name	cmdCalc
	Caption	&Calculate
Command Button	Name	cmdClear
	Caption	C&lear
Command Button	Name	cmdQuit
	Caption	&Quit

```
frmDA - 1
```

```
Private Sub cmdCalc_Click()
    Dim b As Integer
    Dim da As Double
    b = txtBasic.Text
    da = 0.8 * b
    txtDA.Text = da
End Sub
```

```
Private Sub cmdClear_Click()
    txtBasic.Text = ""
    txtDA.Text = ""
    txtBasic.SetFocus
End Sub
```

```
Private Sub cmdQuit_Click()
    End
End Sub
```

Basic Salary

DA

Calculate

Clear

Quit



S.W.S.

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TYBCOM (Sem VI)- Computer Practical Sheet

1 Prepare the worksheet containing the name and taxable income in column A & B. The first row contains headings and second row to seventh row data. Enter your own data.

- i. Carry out the following operations on this worksheet save the worksheet under your name, follow by your roll no. and question number.
- ii. Obtain the income tax in column C using the following income tax slabs.

Taxable income	Rate
First 100000	NIL
Next 600000	10%
Excess	20%

iii. Obtain the surcharge in column D where surcharge is 3% of the income tax for those whose taxable income is above 150000.

iv. Obtain total tax in column E as sum of income tax and surcharge.

2 The following data is entered in the worksheet regarding the stocks during Jan. Feb and March

	A	B	C	D	E
1	ITEM	JAN	FEB	MARCH	TOTAL
2	PENCIL	4000	4200	4500	
3	PEN	3000	3000	3100	
4	NOTEBOOK	2000	1800	1800	
5	WRITING PAD	1000	1100	1200	

Carry out the following operations on this worksheet

- A) Save the worksheet under your name followed by roll no. and question number.
- B) Find the total stock of each product in the cells E2 to E5.
- C) Create 3-D bar chart for the data.
- D) Create 2-D pie chart for the month of March.
- E) Create a line diagram for Jan and Feb.
- F) Display only those item details that have total stock exceeding 9000.
- G) Display only those item details whose name begins with 'P'.

3A The following data has been entered in the worksheet :


	A	B	C	D	E	F	G	H
1	NAME	DESIGNATION	HRA	DA		DESIG	HRA	DA
2	Aman	Peon				Peon	4000	5000
3	Beena	Clerk				Clerk	8000	10000
4	Chitra	Clerk				Manager	15000	20000
5	Dany	Manager						
6	Elion	Peon						
7	Fazia	Clerk						
8	Gopal	Manager						

Write the steps to find HRA and DA in column C & D respectively using VLOOKUP function. Policy to be referred for finding the HRA and DA in the range F2:H4

Visual Basic

- 1 Write a project in Visual Basic to design a suitable form to add the numbers and display their sum.
- 2 Write a project in Visual Basic to design a suitable form which allows the user to enter Basic Salary and Calculate and display the HRA as 13% of Basic Salary upto 25000 and 20% of Basic salary otherwise.
- 3 Write a project in Visual Basic to design a suitable form to compute and display the sum of the series: $3 + 7 + 11 + 15 + \dots + 203$




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3B Roll number and marks are entered in column A & B as shown in the following worksheet. Write steps to compute grade & the award amount in columns C & D respectively using HLOOKUP functions. Policy table to be referred for finding grade & award amount is given in the range F1: J3

	A	B	C	D	E	F	G	H	I	J
1	Roll No	Marks	Grade	Award		Marks	0	50	70	90
2	231	87				Grade	D	C	B	A
3	211	56				Award	0	150	500	1000
4	345	94								
5	564	55								
6	234	77								
7	123	45								

4 The following table shows quantity cost price per unit & selling price per unit

	A	B	C	D	E	F	G
1	PRODUCT	QTY	CPRICE	SPRICE	COST	SALES	PROFIT
2	PRODUCT1	200	100	123			
3	PRODUCT2	240	75	120			
4	PRODUCT3	430	28	60			
5	PRODUCT4	120	45	70			
6	PRODUCT5	320	40	55			
7	PRODUCT6	230	50	65			

Write steps in Excel to calculate cost in column E, sales in column F, Profit in column G and total profit in G8 respectively. Write steps in Excel using Solver to find what the cost per unit should be in order to achieve the total profit of 75000.

5A The following data has been entered in the worksheet :

	A	B	C	D	E	F	G
1	ROLL NO	NAME	DIT	EXPORT	COMPUTER	AVERAGE	GRADE
2	101	A	55	43	61		
3	102	B	80	65	63		
4	103	C	40	50	45		
5	104	D	42	54	69		
6							

Write the average marks in column F. Assign the grade in column G using the following policy.

Average marks	Grade
70 and above	O
60 to 69.99	A
Below 60	B

5B The following data has been entered in the worksheet :

	A	B	C	D	E
1	Emp. no	Department	Salary	Allowance	Bonus
2	101	Export	25000		
3	102	Sales	18000		
4	103	Accounts	23000		
5	104	HR	35000		
6	105	Admin	29000		

- Compute allowance @1% of the salary for salary upto 25000 otherwise @ 2% of the salary in column D
- Compute bonus @20% of the salary for salary above 30000 otherwise @14% of the salary in column E
- To find the total bonus of all employees whose salary is below 25000 in cell E8.



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T.Y.B.Com - Sem VI - Computer Practical Exam
Sample sheet.

Q.1

Q1 Write a project in VB to compute and display the sum of the series
 $3 + 7 + 11 + 15 + \dots + 203$

Q2 Consider the following worksheet :

	A	B	C
1	NAME	TINCOME	ITAX
2	Hitesh	120000	
3	Firdosh	285000	
4	Seema	320000	
5	Malti	540000	
6	Munira	380000	

Write steps to calculate Income Tax in Column C using the following Income-Tax Rate Table.

TINCOME	RATE
First 2,50,000	Nii
Next 1,00,000	12%
Excess	20%




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T.Y.B.Com - Sem VI — Computer Systems & Application

E-COMMERCE

MULTIPLE CHOICE QUESTIONS

Select the appropriate option from the following.

1. Buying and selling products on the internet is called
1) E-market 2) E-commerce 3) E-Business 4) EDI
2. A computer to computer exchange of business transactions is called _____.
(Oct-2012)
1) EDI 2) E-commerce 3) E-Business 4) E-Market
3. EDI stands for _____. (Apr-2011; Apr-2012)
(a) Electronic Data Internet (b) Electronic Data Interface
(c) Electronic Data Interchange (d) Electronic data Intake
4. _____ is a feature of E-commerce.
(a) Ubiquity (b) Universal Standards (c) both (a) & (b) (d) None of these
5. In E-commerce _____ refers to availability of e-commerce.
(a) Ubiquity (b) Universal Standards (c) Richness (d) None of these
6. _____ refers to business selling goods to other business.
(a) B2B (b) B2C (c) C2C (d) P2P
7. Which segment of E-commerce focuses consumers dealing with each other?
(Apr-2013)
(a) B2B (b) C2B (c) C2C (d) B2C
8. _____ earn their revenue from advertisements and referrals.
(a) Portals (b) Content Providers (c) E-Tailer (d) None of these
9. _____ make money each time a transaction occurs.
(a) Transaction Brokers (b) Portals (c) Content Providers (d) None of these
10. The revenue model in E-commerce where companies earn revenue by publicizing Products/services is called _____. (Apr-2010)
(a) Sales Revenue (b) Transaction Fee Revenue
(c) Advertising Revenue (d) Affiliate Revenue
11. The model in E-commerce where companies earn revenue by referring users to other websites providing products/services is called _____. (Apr-2011)
(a) Sales Revenue (b) Transaction Fee Revenue
(c) Advertising Revenue (d) Affiliate Revenue
12. In _____ revenue model, revenue is generated from sales of goods, information or services. (Apr-2013)
(a) Sales (b) Transaction Fee (c) Advertising (d) Affiliate
13. Money received by selling goods or services to customers is
1) Sales Revenue 2) Transaction Fee Revenue
3) Advertising Revenue 4) Affiliate Revenue
14. Money received by referring customers to other websites providing products/services is
1) Sales Revenue 2) Transaction Fee Revenue
3) Advertising Revenue 4) Affiliate Revenue
15. _____ business model offer users powerful web search tools as well as content and services such as news, email, calendars, shopping, music, video and more, all in one place.
(a) Portal (b) Content provider (c) E-tailor (d) Market creator


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16. _____ business model build a digital environment in which buyers and sellers can meet.
 (a) Portal (b) Content provider (c) E-tailor (d) Market creator
17. Google is a _____ (Oct-2011)
 1) Portal 2) E-tailer 3) Transaction Broker 4) None of these
18. _____ ensures that the message was not read by others.
 (a) Authenticity (b) Integrity (c) Privacy (d) None of these
19. In E-commerce the assurance that the message is not altered is known as (Oct-2010)
 1) Authentication 2) Privacy 3) Confidentiality 4) Integrity
20. _____ dimension of E-commerce security deals with alteration done during transmission.
 (a) Authenticity (b) Confidentiality (c) Integrity (d) Privacy
21. In E-commerce the process to identify the identity of a person is known as
 1) Authentication 2) Privacy 3) Domain Name System 4) Identification
22. Encryption means _____
 (a) Converting readable text into cipher text (c) Hacking
 (b) Converting cipher text into readable text (d) none of these
23. Encryption refers to
 1) Converting plain text into binary numbers 2) Converting plain text to cipher text
 text 3) Converting cipher text to plain text 4) none of the above
24. _____ means converting readable text into cipher text.
 (a) Encryption (b) Decryption (c) Hacking (d) None of these
25. The process of converting intelligible data into unintelligible data is called
 1) Encryption 2) Decryption 3) EDI 4) E-market
26. Conversion of data into code is called (Oct-2012)
 1) Encryption 2) Decryption 3) Hacking 4) Firewall
27. What type of technology scrambles the contents of files sent via the internet?
 (Apr-2013)
 (a) Encryption (b) SSL (c) HTTPS (d) Digital Signature
28. Converting cipher text to plain text is called (Apr-2012)
 1) Encryption 2) Decryption 3) Hacking 4) Firewall
29. Decryption refers to (Oct-2011)
 1) Converting plain text into binary numbers 2) Converting plain text to cipher text
 3) Converting cipher text to plain text 4) none of the above
30. A public key differs from the private key due to _____. (Oct-2010)
 (a) It being used only for encryption (b) It being used only for decryption
 (c) It being shorter length (d) none of the above
31. Sender and Receiver have same keys in _____. (Apr-2011, Apr-2013)
 (a) Symmetric key encryption (b) asymmetric key encryption (c) DES (d) PKI
32. In E-commerce, to authenticate the sender of the message we use _____. (Apr-2010, Apr-2011)
 (a) Digital Sending (b) Digital Signature (c) Digital Protocol (d) Privacy Protocol
33. In E-commerce, digital signature is used to _____ the sender of the message (Apr-2012)
 (a) Digital sending (b) Authenticate (c) Digital Protocol (d) Privacy Protocol
34. SET stands for _____. (Oct-2012)




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- 1) Secure Electronic Transactions 2) Secrete Electronic Transactions
 3) Session Electronic Transactions 4) Secure Electronic Transports
35. SET is an open standard in E-commerce offered by: (Oct-2010)
 1) Master and Visa 2) Microsoft 3) World Bank 4) Certification Authorities
36. SET ensures _____. (Apr-2013)
 (a) Authentication (b) Non Repudiation (c) Both (i) & (ii) (d) None of these
37. SSL stands for _____. (Apr-2010)
 (a) Single Socket Layer (b) Secure Standard Layer
 (c) Simple Socket Layer (d) Secure Socket Layer
38. It is a convention that all sites that use SSL connection while making a secure connection, use instead of HTTP _____. (Apr-2010, Apr-2012)
 (a) HTTPS (b) POP (c) FTP (d) TCP/IP
39. It is a convention that all sites that use SSL connection while making a secure connection use _____ instead of HTTP. (Oct-2012)
 1) HTTPS 2) POP 3) FTP 4) TCP/IP
40. The Electronic parallel of notes and coins is _____. (Apr-2012)
 (a) Digital Cash (b) Debit Card (c) Petro Card (d) Credit Card
41. _____ payment system allows users to make micro payments and purchases on web from accumulated debit balance.
 (a) Digital Cash (b) smart card
 (c) Digital accumulating balance (d) Online Store value systems
42. In online store value systems, cards that have embedded chips that store personal information are called _____.
 (a) Credit card (b) Smart card (c) chip card (d) stored card
43. The most popular way of making payment of the net is by _____. (Oct-2010)
 (a) Digital Cash (b) Credit card (c) Direct debit (d) Online Store value systems
44. The most commonly used payment system in ecommerce is (Oct-2011, Oct-2012)
 1) Credit card 2) Petro card 3) Pay pal 4) Digital cash
45. Commercial transactions done with the help of cell phones or PDA's is called _____. (Apr-2013)
 (a) M-commerce (b) E-commerce (c) E-business (d) none of these
46. M-commerce means buying and selling of goods & services using a _____. (Apr-2012)
 (a) Laptop (b) pc (c) Mobile Phone (d) None of these
47. The full form of WAP is _____.
 (a) Wireless Application Protocol (b) Wireless Antenna Protocol
 (c) Wireless Application Photo (d) None of these
48. Criminally acquiring passwords is called _____. (Oct-2012)
 (a) Phishing (b) Hacking (c) Encryption (d) Decryption
49. _____ is the cheaper, faster and reliable commerce.
 (a) Traditional commerce (b) E-commerce (c) M-commerce (d) None of these
50. A criminally fraudulent process of attempting to acquire sensitive information such as user names and password by masking as a trustworthy entity is called as
 1) Impersonation 2) Phishing 3) hacking 4) none of the above
51. Which term describes the percentage of people who visit a website and buy something?



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- 1) Conversion rate 2) Spam 3) Click-Through 4) Affiliates
52. There are many techniques used by B2C companies to attract customers except(Oct-2011)
- 1) Viral Marketing 2) Online Ads 3) Discount price 4) Registering with search engine

TRUE OR FALSE

State whether the following are true or false

- 1) E-commerce stands for electronic commerce = TRUE
- 2) E-commerce stands for electrical commerce = FALSE
- 3) E-commerce makes market highly competitive = TRUE
- 4) E-commerce provides the capability of buying and-selling of products, services and information on the internet = TRUE
- 5) E-commerce reduces the level of customer service = FALSE
- 6) E-commerce encourages competition between small and large online retailers = TRUE
- 7) E-commerce is a broader concept than e-business = TRUE
- 8) E-commerce may be nontraditional = TRUE
- 9) In traditional commerce, all products are digital = FALSE
- 10) E-commerce and e-business are synonymous terms = FALSE
- 11) E-commerce uses smart phones for transaction = FALSE
- 12) All products can be purchased and sold through E-commerce = FALSE
- 13) E-markets are a virtual representation of the physical market = TRUE
- 14) E-market is a subset of e-commerce. (Apr-2011) = TRUE
- 15) EDI is a part of E-commerce.(Oct-2011) = TRUE
- 16) EDI is a subset of E-commerce = TRUE
- 17) EDI increases the speed of the transaction and delays the payments = FALSE
- 18) EDI requires a invoice=FALSE
- 19) A large volume of EDI transactions are exchanged using VAN = TRUE
- 20) The scope of e-commerce is local = FALSE
- 21) The scope of e-commerce is global = TRUE
- 22) In E-commerce Ubiquity refers to Universal Standards. (Apr-2010) = FALSE
- 23) Ubiquity is a feature of E-commerce. (Oct-2010) = TRUE
- 24) Non- repudiation refers to non denial of E-commerce transactions.(Oct-2011) = TRUE
- 25) B2C E-commerce involves E-tailoring = TRUE
- 26) In B2C companies buying and selling to each other on line = FALSE
- 27) B2C refers to business selling goods other business. (Apr-2010) = FALSE
- 28) B2B e-commerce refers to a business communicating with or selling to an individual rather than a company = FALSE
- 29) The volume of B2B transactions is more than B2C transactions = TRUE
- 30) The volume of C2C transactions is more than B2B transactions = FALSE
- 31) There is a lot of scope for negotiations in B2C transactions performed on internet = FALSE
- 32) Portals earn revenue from advertising and referral fees. (Oct-2010, Apr-2011) = TRUE
- 33) Banners and sponsorships are examples of subscription revenue model = FALSE
- 34) Transaction fees are commissions based on volume of transactions made, fixed or incremental = TRUE
- 35) Transaction broker gets brokerage for online transaction = TRUE
- 36) Transactions brokers make money each time a transaction occurs. (Oct-2010) = TRUE
- 37) In an affiliate model the site have to pay referred fee to other site = TRUE
- 38) E-trailers differentiate from existing stores and develop a niche strategy = TRUE
- 39) Job placement services are content providers = FALSE
- 40) E-stores is one of the models of B2C E-commerce = TRUE
- 41) Nokari.com is very good example of B2B and B2C E-commerce = TRUE
- 42) E-trailers is an online stores = TRUE
- 43) Orkut is a type of service provider = TRUE

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- 44) Non – repudiation refers to a sender’s refusal of message in E-commerce = TRUE
- 45) Authentication ensures that the message was not read by others. (Oct-2010) = FALSE
- 46) Encryption means converting cipher text into readable text = FALSE
- 47) Decryption means converting readable text into cipher text. (Apr-2010, Apr-2011) = FALSE
- 48) Encryption is done with the help of private key by sender = FALSE
- 49) Encryption is the process of converting encrypted data back into its original form = FALSE
- 50) Public key encryption guarantees the sender authentication = FALSE
- 51) In public key encryption receivers private key is used for Decryption. (Oct-2011) = TRUE
- 52) In public key encryption non-denial of the sender is assured = FALSE
- 53) In case of public encryption ,the public key will convert cipher text into original message= FALSE
- 54) Asymmetric key encryption requires that both parties share the same key = FALSE
- 55) Hash functions are used in digital signatures = TRUE
- 56) Digital signature changes for every document = TRUE
- 57) In SSL, URL will change from HTTP to HTTPS = TRUE
- 58) SSL provides sender authentication to data transfer = TRUE
- 59) Digital credit card payment systems extends the functionality of existing credit cards of use as online shopping payment = TRUE
- 60) A debit card cannot be used in E-commerce.(Oct-2011) = FALSE
- 61) Payment is done only credit cards in e-commerce= FALSE
- 62) Digital cash is not the electronic parallel of notes and coins= FALSE
- 63) Digital wallets bill users at the end of the month = FALSE
- 64) SET protocol is used in credit transactions through internet = TRUE
- 65) In SET the customer ‘s credit card number is never seen by merchant = TRUE
- 66) There are three entities in a SET transaction = FALSE
- 67) E-commerce is the most secure and private system = FALSE
- 68) Security is the major drawback of E-commerce = TRUE
- 69) On limitation of E-commerce is lack of PC penetration. (Apr-2010) = TRUE
- 70) M-commerce means buying and selling of goods and services using a mobile phone or a PDA device = TRUE
- 71) The full form of WAP is Wireless Antenna Protocol. (Apr-2011) = FALSE
- 72) WAP forum is founded by four companies = TRUE

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T.Y.B.Com - Sem VI - Computer Systems & Application

ASSIGNMENT (E - COMMERCE)

- Q.1 What is E-Commerce? What are the advantages of E-Commerce?
- Q.2 What is E-Commerce? What are the limitations of E-Commerce?
- Q.3 What are the features of E-Commerce?
- Q.4 What are the elements of E-Commerce?
- Q.5 What is the scope of E-Commerce?
- Q.6 Explain the terms E-Commerce and E-business.
- Q.7 Explain B2C & B2B E-Commerce.
- Q.8 Explain C2C & P2P E-Commerce;
- Q.9 What are different types of Revenue models in E-Commerce?
- Q.10 What are different types of B2C business models in E-Commerce?
- Q.11 Discuss the various security issues in E-Commerce.
- Q.12 Explain the terms : Encryption and Decryption.
- Q.13 Discuss Private key encryption and Public key encryption.
- Q.14 What are digital signatures? What are they used for ? Explain SSL.
- Q.15 Discuss the payment systems used in E-Commerce.
- Q.16 How an on line credit card transaction works?
- Q.17 What are the limitations of credit card payment systems? Explain SET protocol.
- Q.18 What is M-Commerce? What are its applications?



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Q1 Q.1 What is the difference between i) %c and %s ii) putchar() and puts() ?

Q.2 What is the use of main() in the C program.

Q.3 What does the i) VLOOKUP
ii) SUMIF function do ?

Q2 Q.1 What is the difference between i) break and continue ii) getch() and gets() ?

Q.2 What is an escape sequence. Name any 2 escape sequence.

Q.3 What does the i) IF
ii) LEFT function do ?

Q3 Q.1 What is the difference between i) if() and switch() ii) scanf() and getchar() ?

Q.2 Mention the different type of storage classes in C.

Q.3 What does the i) COUNTIF
ii) RIGHT function do ?

Q4 Q.1 What is the difference between i) ++y and y++ ii) getch() and getchar() ?

Q.2 What is the use of the continue statement ?

Q.3 What does the i) MID
ii) TRIM function do ?

Q5 Q.1 What is the difference between i) float and double ii) puts() and putchar() ?

Q.2 What is a unary operator ?

Q.3 What does the i) LEN
ii) TODAY function do ?



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Q 6 Q.1 What is the difference between i) %d and %ld ii) printf() and puts() ?

Q.2 What is the purpose of break statement ?

Q.3 What does the i) UPPER
ii) NOW function do ?

Q 7 Q.1 What is the difference between i) do...while and for ii) getchar() and gets() ?

Q.2 What are the basic data types in C ?

Q.3 What does the i) LOWER
ii) DATE function do ?

Q 8 Q.1 What is the difference between i) int and float ii) getchar() and putchar() ?

Q.2 How do you write comments in the C program ?

Q.3 What does the i) PROPER
ii) TIME function do ?

Q 9 Q.1 What is the difference between i) identifiers and keywords ii) scanf() and getch() ?

Q.2 What are keywords in C? Give 2 examples.

Q.3 What does the i) DAY
ii) MONTH function do ?

Q 10 Q.1 What is the difference between i) %c and %s ii) getch() and puts() ?

Q.2 What are identifiers ? State one rule to name an identifier.

Q.3 What does the i) YEAR
ii) WEEKDAY function do ?



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Practical Problems for lab session

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&

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(T.Y.B.COM.)

(SEM V)

JOURNAL PRACTICAL PROBLEMS (SQL)

PROBLEM 1: Creating and deleting database ,table and modifying structure of a table.

- 1) Create a database office.
- 2) Confirm that database office is created.
- 3) Select and open the database office to work with.
- 4) Create a table emp in a database office with the following fields.

<u>Field name</u>	<u>Data type</u>
ename	character with variable width of 15 columns
eno	integer, primary key
sal	with 5 integer and 2 decimal places
jdate	date

- 5) Confirm that table emp is created.
- 6) View the structure of the table.
- 7) Add a column dno positive integer(5) after ename.
- 8) Add a column bonus decimal(6,2) with default value 1000.
- 9) Change the size of the column sal from decimal(7,2) to decimal(8,2).
- 10) Change the name of the sal to esal.
- 11) Verify the above changes made
- 12) Remove the column bonus.
- 13) Verify that column bonus is removed.
- 14) Rename the table emp to employee.
- 14) Verify that table emp is renamed.

PROBLEM 2 : Populating a table and displaying contents of a table.

- 1) Populate table employee with the following data.

<u>eno</u>	<u>ename</u>	<u>dno</u>	<u>esal</u>	<u>jdate</u>
10	rakesh	42	25000	20-02-1998
14	amar	34	32000	12-09-2002
20	salim	42	27000	01-01-1998
27	anand	33	20000	15-08-2002
35	anthony	34	40000	15-08-1995

- 2) Display the contents of the table employee.
- 3) Display ename and esal as name and salary.
- 4) Display names and join date and salary of employees whose salary is more than Rs. 30000 as name, joindate and salary.
- 5) Change the name of employee with employee number 35 as kunal.
- 6) List records 3 to 5 from employee.
- 7) List name of employees who have joined after 2000.
- 8) Display records from employee not working in department no.34



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PROBLEM 3 : Displaying sorted and group wise data.

- 1) Display distinct department numbers from employee. 2) Display total number of employees.
- 3) Count the number of employees department number wise. 4) List the department number with only one employee working in. 5) List contents of employee in the alphabetical order of ename 6) List contents of employee in the ascending order of dno and in the descending order of eno. 7) Count the number of employees year wise of join date. 8) Delete the row of 'rakesh'. 9) Confirm that the row of 'rakesh' is deleted. 10) Delete all the rows of the table employee. 11) Confirm that all the rows of the table employee are deleted. 12) Delete the table employee. 13) Confirm that the table employee is deleted. 14) Delete the database office. 15) Confirm that the database office is deleted.

PROBLEM 4 : Summary Queries

- 1) Create a database siws with tables student and result.

<u>student</u>		<u>result</u>	
rollno	int(4)	rollno	int(4)
name	varchar(20)	m1	int(3)
gender	varchar(6)	m2	int(3)
fees	decimal(6,2)	m3	int(3)
		total	int(3)

- 2) Populate tables as follows:

<u>student</u>			
<u>rollno</u>	<u>name</u>	<u>gender</u>	<u>fees</u>
7021	sakshi	f	3394.00
7828	sriram	m	5000.00
8079	mohan	m	4500.00
8170	amita	f	4000.00
7329	bina	f	3500.00

<u>result</u>				
<u>rollno</u>	<u>m1</u>	<u>m2</u>	<u>m3</u>	<u>total</u>
7021	72	43	79	0
7828	49	30	82	0
8079	42	34	75	0
7329	60	58	69	0
8170	60	33	78	0

- 3) Show student table arranged in alphabetical order of name. 4) Sort data in student table first by gender then by roll number. 5) Count the number of male and female students.
- 6) Find average fees paid by male and female students. 7) Display name who pay fees either 4000 or 6000. 8) Display the average fees and sum of fees paid by the students.



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(T.Y.B.COM)

Excel Journal Practical

(SEM V)

Problem I

Prepare a work sheet containing Name and Marks in 7 subjects in column A to H. Type titles in A1 to H1. Enter your own data from A2 to H8.

Carry out the following operations on this work sheet.

- a) Save the work sheet under your name followed by your roll number and question number.
- b) Obtain the total marks of each student in column I.
- c) Obtain the average marks of each student in column J.

Problem II

Prepare a work sheet containing the name, age, department and bonus amount in columns A to D, The first row contains the headings and 2nd row to 10th row containing the data. Enter your own data.

Carry out the following operations on this work sheet.

- a) Save the work sheet under your name followed by your roll number and question number.
- b) Sort the data in ascending order of age.
- c) Sort the data in ascending order of department.
- d) Obtain subtotals of bonus for each department.
- e) Explain 1 and 2 row level symbol.
- f) Remove these sub totals and return the work sheet to its previous state.

Problem III

Prepare the work sheet containing the name, join date, department and salary in columns A to D , The first row contains the headings and 2nd row to 8th row containing the data. Enter your own data.

Carry out the following operations on this work sheet.

- a) Save the work sheet under your name followed by your roll number and question number.
- b) Prepare a pivot table report containing Join date in the row area and sum of salary and minimum salary in the data area.
- c) Prepare another Pivot table on the same data taking department in the row and average salary and maximum salary in the data area.



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PROBLEM 5 : Multiple and Sub queries:

- 1) Find total marks as $m1+m2+m3$.
- 2) Display the contents of the above table.
- 3) Display name, roll number and total marks.
- 4) Display marks and names of the students name starting with 's'.
- 5) Display name and roll number of students getting average marks more than or equal to 60
- 6) Write a query to display name and gender of a student who pays more than the average fees.
- 7) Write a query to display name and roll of a student getting maximum total marks.
- 8) Display roll number and marks in m1 who have scored more than average marks in m1
- 9) Display name , m1, m2, m3 and total marks of student with roll number 8079.
- 10) Display name of student getting more than or equal to 55 in all the 3 subjects
- 11) Display name of student getting less than 35 in atleast one of the subjects.

PROBLEM 6 : Transactions

- 1) Insert in transaction mode the following data in the table student and result.

student

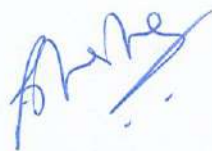
<u>rollno</u>	<u>name</u>	<u>gender</u>	<u>fees</u>
8270	piyush	m	2700.00
8290	kavita	f	5000.00

result

<u>rollno</u>	<u>m1</u>	<u>m2</u>	<u>m3</u>	<u>total</u>
8270	77	54	67	198
8290	45	87	69	201

- 2) Save changes to tables
- 3) View both the tables
- 4) Start transaction
- 5) Remove all data from result
- 6) Display contents of table result.
- 7) Revert back the data in table result.
- 8) Delete both the tables student and result
- 9) Delete the database siws.





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T.Y.B.Com Sem V
Computer Assignment Sheet
(Data communication, networking and Internet)

1. What is data communication? Explain its components.
2. What is Computer network? What are the advantages and disadvantages of computer network?
3. Explain different types of computer network with proper example.
4. Define client server model. State the advantages and disadvantages of client server model.
5. Define the term topology. Explain three topologies commonly used in networks.
6. Explain different types of wired media with proper diagram.
7. Write a short note on wireless media.
8. Write a note on hub, bridge, switch and router.
9. What is the function of the OSI model? Explain the different layers of OSI model.
10. What is TCP/IP protocol? Explain the layers of TCP/IP model.
11. What is internet? Explain different uses of internet.
12. Explain different types of accounts available to connect to the internet.
13. Explain blogs, search engine and meta search engine?
14. What is Email? State advantages and importance of email. What are the parts of email address? What precaution must one take while sending or receiving emails with attachments?
15. What is hacking? Explain different types of hackers.
16. What is an IP address? Explain with an example.
17. What is domain name system? Explain its purpose.
18. What is the full form of URL? Explain the part of URL address.
19. Define Cyber crime. Explain different types of cybercrimes.
20. Write a short note on: i) Sniffing ii) Spoofing iii) Session hijacking iv) Man in the middle attack.




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COUNT :- ~~select~~ Syntax :- ~~select~~ Count (Value 1, Value 2,)

FV :- Syntax :- FV (formula) X

LOWER :- Syntax :- Lower (str) ✓

MONTHNAME(date) :- Syntax :- MONTHNAME (2019-9-20); gives September ✓

SQRT(x) :- Syntax :- SQRT (x)
Example :- mysql > SQRT (16); gives 4



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4001

PV :- create a present value of Inventory.

UPPER :- Return the ~~ASCII~~ character of ~~upper case~~.
convert the upper case.

DAYNAME(date) :- Return the DAYNAME for the date.
syntax (Dayname date) X

ROUND(n, d) :- n ~~is~~ number, d decimal,
create a numerical data. X



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Q.1 Create a table EMP in the data base your NAME with the following columns

Columns	Column Name	Date Type and Characteristics
Employee number	ENO	smallint unsigned
Employee name	ENAME	varchar(20)
Salary	SALARY	decimal(7,2)

Populate table EMP with the following data.

ENO	ENAME	SALARY
224	RAJESH	25000
335	JAYESH	32000
225	SHABARI	27000
337	RAMU	20000
348	JOHN	40000

- Display the structure of the table EMP.
- Display the contents of the table EMP.
- List the name of employees whose salary is above Rs. 25000.
- Delete the table EMP.

Q.2 Enter the following data in a excel worksheet

	A	B	C	D
1	ENO	ENAME	DEPT	SALARY
2	555	SSS	HR	40000
3	888	YYY	ADMIN	30000
4	333	ZZZ	HR	60000
5	444	XXX	SALES	20000
6	222	WWW	HR	50000
7	999	GGG	ADMIN	80000

- Save the worksheet under your name followed by your roll number.
- Prepare a pivot table report containing DEPT in the row area and sum of salary and average of salary in the data area.
- Delete the worksheet you have created.



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MAJOR R. PARAMESHWARAN MARG, SEWRI - WADALA ESTATE,
PLOT NO. 337, WADALA, MUMBAI - 400 031.

July 22, 2018

NOTICE

FYBSC Students are hereby informed that 'Orientation Session' is organized on July 23, 2018 in Room No. 406 at 10.30 am.

**Ms. Neeta Khanolkar
Vice-Principal**

**Dr. Usha Iyer
Principal**



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Monday 23/8/18
Orientation lecture

Camlin Page
Date 2018-19.

1	Sayyed Abdul Malik	PCMB	Malik
2	Nazk Mohd Ayash	PCM	Ayash
3	Asmitash G. Gawandi	PCM	Asmitash
4	Shivanand Ram	PCM	Shivanand
5	Poornima	P.C. Micro	Poornima
6	Shah shajif	PCM	shajif
7	Bhanushali Arjun	PCM	Arjun
8	Gupta Rohit Rajesh	PCMB	Rohit
9	Thakur Arham	PCMB	Arham
10	Shaikh saklain	PCMB	Saklain
11	Vishnu vijayakumar	PCM	Vishnu
12	Kshitij - V. Parkar	PCMB	Kshitij
13	Rushikesh A. Patil	Pcm	Rushikesh
14	Akash S.K Yadau	PCM	Akash
20	Sourabh Pratap Singh	PCM	Singh
21	ARMAN . Y. TOLE	PCM	Arman
22	Ishwar . M. Sonkar	PCM	Sonkar
23	Ambikaprasad yadav	PCM	Ambika
24	Mohammad Hamed	PCMB	M. Ahmed
25	Sinhom kumbhar	PCMB	Sinhom
26	Tanish Mane	PCMB	Tanish
27	Abinav Kumbhar	PCMB	Abinav
28	Shrawbh Kevankar	PCM	Shrawbh
29	Hrithik Sonkar	PCM	Hrithik
30	Suraj Redekar	PCMB	Suraj
31	Jaiwant Gubhankumar	PCMB	Gubhankumar
32	Akash Dange	PCMB	Akash
33	Aaditya yadav	PCM	Aaditya 😊

34) ~~Harsh~~ Jadhav PCM ~~Jadhav~~



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- | | | | |
|-----|----------------------------|------|-------------------|
| 35) | Vishal Chandra Kant Sakpai | PCMB | Vishal |
| 36) | Vedant Raghunath Maske | PCM | Vedant |
| 37) | Rajesh Kisan Chavan | PCMB | Rajesh |
| 38) | Sankalp Sagar Katale | PCMB | Katale |
| 39) | Rohit Ambaji Bengde | PCMB | Rohit |
| 40) | Nitesh Sharda | PCMB | Nitesh |
| 41) | Dinesh Tayade | PCMB | Dinesh |
| 42) | Aarjan Shinde | PCM | Aarjan |
| 43) | Sanjay Mourya | PCM | Sanjay |



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PLOT NO. 337, WADALA, MUMBAI - 400 031.

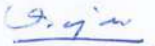
November 10, 2017


NOTICE

Students are hereby informed that 'Exam Orientation Session' is organized on November 11, 2017 in the Seminar Room. Following is the schedule of the sessions:

Schedule of Exam Oriented Sessions

Class/ Division	Timings
FYBCOM A	7.30 am to 8.20 am
FYBCOM B	8.20 am to 9.10 am
FYBCOM C	9.10 am to 9.50 am
FYBCOM D	10.20 am to 11.10 am
FYBCOM E	11.10 am to 12.00 pm
FYBCOM F	12.00 pm to 12.50 pm


CA Vaibhav Banjan
Convenor, Exam Committee


Dr. Usha Iyer
Principal

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Freshers' Orientation-B.Com. & B.Sc.

Introduction:

After the first-year admission process is completed, students are called for an orientation session just before the commencement of lectures. They are introduced to the college facilities and briefed about the subjects. Students are given a general information of the three-year B.Com. and B.Sc. Program. B.Com. and B.Sc. students are oriented separately and introduced to the code of conduct in the premises as well as to the examination pattern and library. Participants are appraised about co-curricular and extra-curricular activities. Placement and skill courses related information is also shared with students.

Objectives:

- To familiarize students with the code of conduct in college premises
- To stimulate interest in various co-curricular and extra-curricular activities
- Enable students to decide course of action and choice of career after graduation
- To lay the foundation for creating socially sensitive and employable graduates

Representative Slides Presented at the Orientation: (B.Com. and B.Sc.):

Microbiology for F.Y.B.Sc.

The unseen world (microscopic world) is unravelled to the First Year students

- At the onset, students are taught about the omnipresent nature of micro-organisms
- The significance of microbes in various environments
- Exposed to microbial varieties
- Applications of microbes in various fields



Microbiology for S.Y.B.Sc.

The second year introduces specialization in specific areas like

- Food microbiology
- Medical microbiology
- Biochemistry
- Immunology
- Industrial microbiology
- Biostatistics
- Basics of Genetics including Mendelian Genetics



Job opportunities after graduation

- Quality control / Research and development in:
 - Food industry
 - Pharmaceutical industry
 - Cosmetic industry
 - Dairy
 - Breweries
- Water, Sewage treatment plants
- Microbiologist
- Research Officer
- Microbiology Assistant Professor
- Microbiology Chief Hygienist
- Quality Control Executive (FDA)
- Microbiology Laboratory technician
- Food safety Manager
- Project coordinator
- QA auditor



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EXTRA CURRICULAR ACTIVITIES

• Following Activities are available for participation,

1. NCC
2. NSS
3. Cultural
4. Sports
5. Fine Arts
6. Literary in all major languages

Any achievements/ participation at the state level/ National level to be communicated to the Vice Principals.

- Actively participate in all co-curricular and extra-curricular activities by seeing the Notice Board regularly.
- Book Bank Schemes facility to be availed
- Effective use of Library for books, reference books and past exam question papers.
- Attend the Library Orientation.
- First Term 6th June to 25th October.
- 15th Nov college re-opens after vacation.

No scribbling on classroom walls.

Switch off lights/ fans after the lecture.

No chewing of gum in the class.

Students should be seated in their classroom before the entry of teachers.

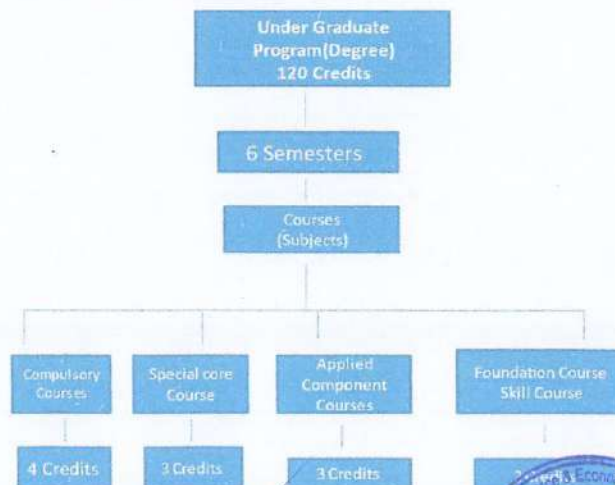
Students are required to come in decent dress.

- Keep college premises clean (including the toilets). Flush after using toilets.
- In case of inability to attend lectures keep class teachers informed in writing.
- Exam system.

Examination Orientation:

University of Mumbai
Credit, Grade & Semester System
introduced from the
Academic Year 2011-2012
Arts, COMMERCE & Science Faculty

By
University of Mumbai



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F.Y.B.Com

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management - I	03	1	Accountancy and Financial Management - II	03
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
2	Commerce - I	03	2	Commerce - II	03
3	Business Economics - I	03	3	Business Economics - II	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Courses (AECC)		2A	Ability Enhancement Compulsory Courses (AECC)	
4	Business Communication - I	03	4	Business Communication II	03
5	Environmental Studies - I	03	5	Environmental Studies - II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Mathematical and Statistical Techniques - I	03	7	Mathematical and Statistical Techniques - II	03
Total Credits			Total Credits		
20			20		

SCHEME OF EVALUATION

Semester End Assessment: It is defined as the assessment of the learners on the basis of performance in the semester end theory / written examinations

S.Y.B.Com

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
2	Elective Courses (EC)		2	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management III	03	1	Accountancy and Financial Management IV	03
2	Financial Accounting and Auditing V - Introduction to Management Accounting	03	2	Financial Accounting and Auditing VI - Auditing	03
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce III	03	3	Commerce IV	03
4	Business Economics III	03	4	Business Economics IV	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
3A	*Skill Enhancement Courses (SEC) Group A		3A	**Skill Enhancement Courses (SEC) Group A	
5	*Any one course from the following list of the courses	03	5	*Any one course from the following list of the courses	03
3B	*Skill Enhancement Courses (SEC) Group B		3B	**Skill Enhancement Courses (SEC) Group B	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Business Law I	03	7	Business Law II	03
Total Credits			Total Credits		
20			20		

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce V	03	3	Commerce VI	03
4	**Any one course from the following list of the courses	03	4	**Any one course from the following list of the courses	03
5	Business Economics V	03	5	Business Economics VI	03
2	*Project Work		2	*Project Work	
6	Project Work I	03	6	Project Work II	03
Total Credits			Total Credits		
20			20		

Note: Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 03 credits. A project work may be undertaken in any area of discipline specific courses/ discipline related elective courses

Outcome:

- Students are familiarized with the code of conduct in the college premises
- They are introduced to various co-curricular and extra-curricular activities
- The presentation helped students to choose an appropriate career after graduation

Vaibhav

CA Vaibhav Banjan
Vice-Principal
Commerce

28 August,2020

Neeta Khanolkar

Ms Neeta Khanolkar
Vice-Principal
Science

Usha Iyer

Dr. Usha Iyer
Principal

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EXAM ORIENTATION

2.2.1

FYBcom A

11/11/17

Roll No.	SIGN	Roll No.	SIGN
2012	Dhruvham		
2049	Ajay		
2010	Boopendran		
2055	<u>Oishwari</u>		
2037	Eha		
2090	<u>Dineshkumar</u>		
2009	<u>Bharati</u>		
2088	Munika		
2013	<u>Anjali</u>		
2068	Pratima		
2075	Deepa		
2080	Gr. Aishwarya.		
2060	<u>Syranica</u>		
2059	<u>Silvan</u>		
2061	<u>Chenna</u>		
2085	<u>Dhale</u>		
2020	Shijee		
2014	Afreen		
2050	Neeraj		
2002	<u>Shrekar</u>		
2125	<u>manish</u>		
2108	<u>Shajee</u>		
2031	<u>Faruk</u>		
2005	<u>Jeet</u>		
2108	<u>Shajee</u>		



Shree
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FYBCOM B

EXAM ORIENTATION

Roll No.

SIGN.

Roll No.

SIGN.

2219

Needa

2161

Aphana

2223

Safakhan

2165

Makesh

2148

Hansi

2210

Jayant

2149

Sudha

2215

Zoona

2137

Smrita

2233

Lakshman

2230

M. Vandana

2184

Ce

2138

Varshmi

2139

Amrita

2244

Noorun

2139

Amaya

2229

Parvati

2133

Prerona

2239

Geem

2181

Ru

2132

Sudar

2153

Aashish

2155

Gole M.H

2157

Vishal

2236

Prinav

2178

Shubham

2189

Fikhar

2173

Sheroni

2247

Shruad

2187

Adarsh

2146

Shwade

2154

Aakash

2192

Hadban

2137

Ajay

2190

Indalbar TH.

2182

Shreyas

2188

Brita

2128

Shruti

2142

Vaishnavi

2231

Prince

2136

Prina

2213

Majeed

2225

Parvati

2172

Shruti



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11/11/17

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Roll No.	SIGN	Roll No.	SIGN
2280	<u>Teepakik</u>		
2364	<u>Ahame</u>		
2278	<u>Shanase</u>		
2312	<u>Tebonda</u>		
2277	<u>Sagar</u>		
2253	<u>Ravi Kumar</u>		
2299	<u>[Signature]</u>		
2261	<u>Josephraj</u>		
2251	<u>Ashay</u>		
2255	<u>Shinde</u>		
2320	<u>Karthik</u>		
2365	<u>Amanur</u>		
2344	<u>Sushma</u>		
2314	<u>Sushma</u>		
2305	<u>Shrhatpe</u>		
2248	<u>Phesankar</u>		
2307	<u>[Signature]</u>		
2275	<u>Bamole</u>		
2306	<u>Pratishtha</u>		
2325	<u>[Signature]</u>		
2366	<u>Satish</u>		
2359			
2357	<u>Rohan</u>		



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EXAM ORIENTATION

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Roll No.	SIGN.	Roll No. 2401	SIGN. <u>(Signature)</u>
2415	<u>Vandana</u>		
2494	<u>Sehau</u>		
2456	Shahana		
2453	<u>V.K. Phalke</u>		
2448	<u>Veena Pawar</u>		
2395	<u>P.S. More</u>		
2477	Shana		
2446	<u>Kirti</u>		
2388	Prasad		
2432	<u>Tajinder</u>		
2450	<u>Tawar</u>		
2387	<u>G.A. Mhadane</u>		
2436	<u>Pratik</u>		
2474	<u>Pratik</u>		
2470	<u>Pratik</u>		
2391	Pratik		
2444	<u>Shelome</u>		
2399	<u>Rajeev</u>		
2433	<u>Dandekar</u>		
2430	<u>P. S. Kulkarni</u>		
2481	<u>Pratik</u>		
2421	<u>Pratik</u>		
2403	<u>Pratik</u>		
2491	<u>Prigadhas Shinde</u>		
2440	Pratik		
2417	<u>P. N. Palande</u>		
2452	<u>NIPAD</u>		
2378	<u>Pratik</u>		




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10/11/17

FY Bcom E

ROLL NO.	SIGN.	ROLL NO.	SIGN.
2557	<u>Mh</u>	2501	<u>Jai Lakshmi</u>
2579	<u>Manish</u>		
2598	<u>Kunal</u>		
2554	<u>Jshy</u>		
2520	<u>Arun</u>		
2548	<u>Pranav</u>		
2529	<u>Sham</u>		
2524	<u>Antima</u>		
2508	<u>Manish</u>		
2564	<u>Rukhsat</u>		
2578	<u>Shyali</u>		
2542	<u>Pratide</u>		
2600	<u>Poochary</u>		
2570	<u>Harish</u>		
2551	<u>Harish</u>		
2604	<u>Jyoti</u>		



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11/11/17

BOYS


FYBCOM F

GIRLS

Roll No.	SI GN.
2634	Zeshan
2637	Jishan
2641	Jay
2734	Devang
2676	Abhishek
2656	Mulraj
2717	Achag
2718	Rakesh
2735	Sunil
2729	Anagha
2699	W. Pratik
2544	HRIHVIKA
2685	V. Anil
2683	Jayesh
2738	S. Anil
2724	Pratik
2680	
2741	

Roll No.	SI GN.
2636	Surya
2750	Priya
2651	Mansi
2724	Rajesh
2788	Anil
2688	Sulakshmi
2713	Shashi
2645	Tanna
2708	Vedant
2680	Dhyanu
2707	Dyadav
2741	Pranav
2726	Nikita
2662	Anshu




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MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,
PLOT NO. 337, WADALA, MUMBAI - 400 031.



Dr. Swapnesh Rangnekar, Department of Environmental Studies delivering Orientation lecture to F.Y.B.Com. students



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Aberrations

Aberration is defined as the defects produced in an image with respect to its shape or colour of image.

When light falls on a lens, it undergoes refraction. The incident rays bend while passing through the lens and an image is produced on the other side of lens. This image is expected to be exact replica of object with respect to its size and shape. The image should be very sharp, focussed and bright.

But the actual image formed by any lens is always spread-out and may be slightly deformed. This is called as aberration. There are various reasons for aberrations to be caused.

Types of aberrations :

1. Chromatic Aberrations :

This aberration occurs if incident light is a mixture of two or more wavelengths.

2. Monochromatic Aberration :

This aberration occurs due to spherical shape of lens even if incident light is monochromatic.

Monochromatic Aberration :

This aberration occurs due to spherical shape of lens even if incident light is monochromatic.

Types of monochromatic aberrations :

1. Spherical aberration
2. Coma
3. Astigmatism

Spherical aberration:

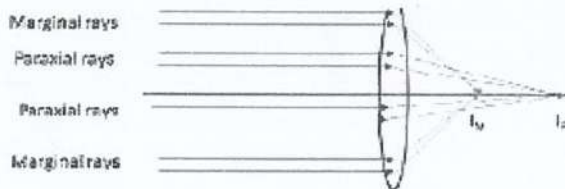
When a beam of parallel rays falls on a convex lens, each ray of light bends through a slightly different angle.

This angle depends on the position of the point where ray meets the lens.

The rays closer to optic axis are called paraxial rays. The rays away from optic axis are called marginal rays.

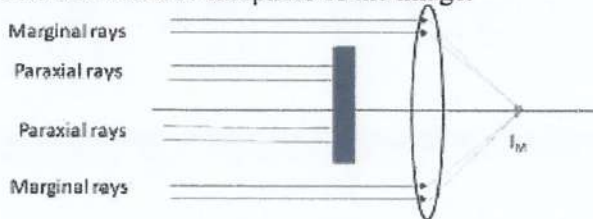
Paraxial rays bend through smaller angles and form an image at a point away from lens whereas marginal rays bend by larger angles and form an image closer to lens.

The separation between two images is called as spherical aberration.



Methods to reduce Spherical Aberration :

1. **Reducing lens aperture** : Spherical aberration can be reduced by blocking one set of rays, either paraxial rays or marginal rays. Thus only one image would be generated. This will increase sharpness of the image.



2. Using Plano-convex lens
3. Using A combination of a convex and a concave lens
4. Using a convex with very high value of refractive index
5. Using crossed lens :

A crossed lens is the one for which there is large difference between both radii of curvature. Ideally the relation between two radii should be

$$\frac{R_2}{R_1} = \frac{\mu(2\mu+1)}{\mu(2\mu-1)-4}$$

e.g.

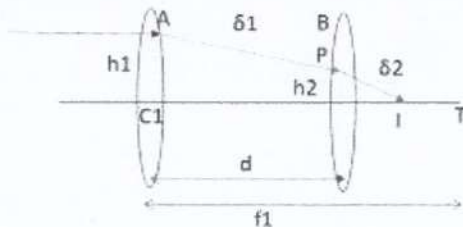
If $\mu = 1.5$,

$$\frac{R_2}{R_1} = \frac{\mu(2\mu+1)}{\mu(2\mu-1)-4} = \frac{1.5(2 \cdot 1.5 + 1)}{1.5(2 \cdot 1.5 - 1) - 4} = \frac{1.5(3+1)}{1.5(3-1) - 4} = \frac{6}{3-4} = -6 \quad \text{i.e. } R_2 \text{ should be equal to } -6 \cdot R_1$$



6. Using system of two lenses

We should select both focal lengths f_1 and f_2 and distance between two lenses d such that all rays always have same amount of bending.



i.e. $\delta_1 = \delta_2$

i.e. $\frac{h_1}{f_1} = \frac{h_2}{f_2}$ ----- (1)

Consider triangles AC_1T and BC_2T

$$\frac{AC_1}{C_1T} = \frac{PC_2}{C_2T}$$

$$\frac{h_1}{f_1} = \frac{h_2}{f_1 - d}$$
 ----- (2)

From equ 1 and 2 we get, $f_2 = f_1 - d$ i.e. $d = f_1 - f_2$



Chromatic aberration :

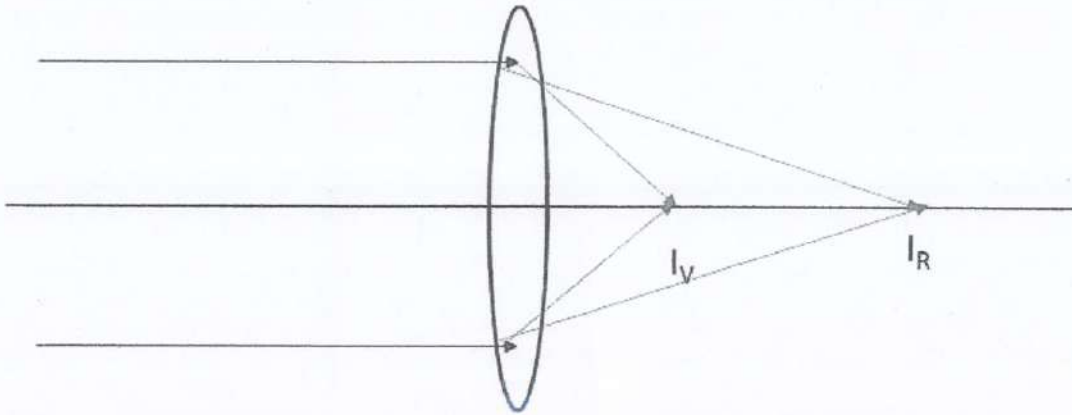
Chromatic aberration is the defect introduced in the image due to multiple wavelengths present at the source. (e.g. white light)

Focal length of a lens depends on its refractive index. R.I. is different for different wavelengths (colours).

When a white light is incident on a lens, violet ray bends maximum and red ray bends minimum.

Violet rays converge at a closer point compared to red rays.

Hence violet image is formed very close to lens and red image is formed far away from lens.



Dispersive power :

Dispersive power of a lens is the capacity of the lens to separate white light into its seven constituent colours.

White light is polychromatic light. It is actually a mixture of seven different colours **Violet , Indigo , Blue , Green , Yellow , Orange and RED**. When white light passes through a lens, colours get separated. This is called dispersion of light.

Dispersive Power is given by the formula

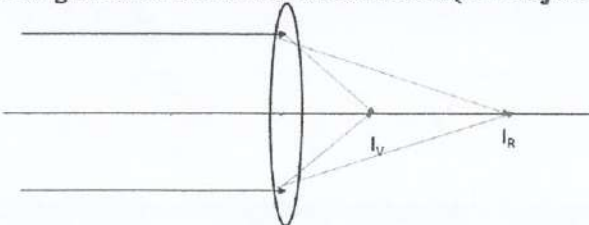
$$\omega = \frac{\mu_v - \mu_R}{\mu_{avg} - 1}$$

Longitudinal Chromatic aberration :

Longitudinal Chromatic aberration is the distance between focal points for violet rays and red rays, when white light is incident on a lens.

$$X = \Delta f = f_R - f_V$$

Longitudinal Chromatic Aberration (for object at infinite distance)



For any lens : $\frac{1}{f} = (\mu - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$ ----- (1)

Hence we can write $\left(\frac{1}{R_1} - \frac{1}{R_2} \right) = \frac{1}{f * (\mu - 1)}$ ----- (2)



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For Red rays : $\frac{1}{f_R} = (\mu_R - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$ ----- (3)

For Violet rays : $\frac{1}{f_V} = (\mu_V - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$ ----- (4)

Subtracting equ (3) from equ (4)

$$\frac{1}{f_V} - \frac{1}{f_R} = (\mu_V - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right) - (\mu_R - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$$

$$= \left(\frac{1}{R_1} - \frac{1}{R_2} \right) [\mu_V - \mu_R]$$

$$\frac{1}{f_V} - \frac{1}{f_R} = \left(\frac{1}{R_1} - \frac{1}{R_2} \right) [\mu_V - \mu_R]$$

$$\frac{f_R - f_V}{f_V * f_R} = \left(\frac{1}{R_1} - \frac{1}{R_2} \right) [\mu_V - \mu_R]$$

$$\frac{\Delta f}{f_V * f_R} = \left(\frac{1}{R_1} - \frac{1}{R_2} \right) [\mu_V - \mu_R]$$
 ----- (5)

Let $f_{avg} = \sqrt{f_V * f_R}$ and $\mu_{avg} = \sqrt{\mu_V * \mu_R}$

Hence equ (4) will become

$$\frac{\Delta f}{f_{avg}^2} = \left(\frac{1}{R_1} - \frac{1}{R_2} \right) [\mu_V - \mu_R]$$
 ----- (6)

Using equ (2) we get,

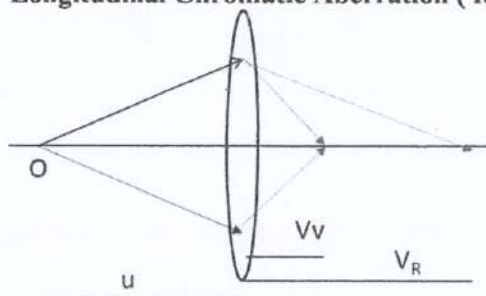
$$\frac{\Delta f}{f_{avg}^2} = \frac{1}{f_{avg} * (\mu_{avg} - 1)} [\mu_V - \mu_R]$$
 ----- (7)

$$\frac{\Delta f}{f_{avg}^2} = \frac{1}{f_{avg}} * \frac{[\mu_V - \mu_R]}{(\mu_{avg} - 1)}$$

$$= \frac{1}{f_{avg}} * \omega$$

$$\Delta f = f_{avg} * \omega$$
 ----- (8)

Longitudinal Chromatic Aberration (for object at finite distance)



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For any lens : $\frac{1}{f} = \left(\frac{1}{v} - \frac{1}{u}\right)$ ----- (1)

For Red rays : $\frac{1}{f_R} = \left(\frac{1}{v_R} - \frac{1}{u}\right)$ ----- (2)

For Violet rays : $\frac{1}{f_V} = \left(\frac{1}{v_V} - \frac{1}{u}\right)$ ----- (3)

Subtracting equ (2) from equ (3)

$$\frac{1}{f_V} - \frac{1}{f_R} = \left(\frac{1}{v_V} - \frac{1}{u}\right) - \left(\frac{1}{v_R} - \frac{1}{u}\right)$$

$$= \frac{1}{v_V} - \frac{1}{u} - \frac{1}{v_R} + \frac{1}{u} = \frac{1}{v_V} - \frac{1}{v_R}$$

$$\frac{1}{f_V} - \frac{1}{f_R} = \frac{1}{v_V} - \frac{1}{v_R} \quad \text{i.e.} \quad \frac{1}{v_V} - \frac{1}{v_R} = \frac{1}{f_V} - \frac{1}{f_R}$$

$$\frac{v_R - v_V}{v_R * v_V} = \frac{f_R - f_V}{f_R * f_V}$$

Let $f_{avg} = \sqrt{f_V * f_R}$ and $V_{avg} = \sqrt{v_V * v_R}$

Hence $\frac{\Delta V}{v_R * v_V} = \frac{\Delta f}{f_R * f_V}$

$$\frac{\Delta V}{V_{avg}^2} = \frac{\Delta f}{f_{avg}^2} = \frac{\Delta f}{f_{avg}} * \frac{1}{f_{avg}} = \frac{\omega}{f_{avg}}$$

$$\Delta V = \frac{\omega * V_{avg}^2}{f_{avg}}$$

Achromatism:

Def : Achromatism is a method to reduce chromatic aberration.

- Using two lenses of focal lengths f_1 and f_2 and having refractive indices μ_1 and μ_2 . Two lenses are kept touching each other.

For any lens $\frac{1}{f} = (\mu - 1) \left(\frac{1}{R_1} - \frac{1}{R_2}\right) = (\mu - 1)K$ ----- (1)

Differentiating w.r.t. μ we get ,

$$\frac{d}{d\mu} \left(\frac{1}{f}\right) = K$$

$$\frac{-1}{f^2} \frac{df}{d\mu} = K \quad \text{Hence} \quad -\frac{df}{f^2} = K d\mu$$
 ----- (2)

Dividing equ (2) by equ (1) $\frac{-\frac{df}{f^2}}{\frac{1}{f}} = \frac{K d\mu}{(\mu - 1)K}$

Hence $-\frac{df}{f} = \frac{d\mu}{(\mu - 1)} = \omega$

Hence $-\frac{df}{f} = \omega$ ----- (3)

For a combination of two lenses $\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 * f_2}$ ----- (4)



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Since two lenses are touching each other, $d = 0$

Hence equation (4) will change as, $\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2}$ ----- (5)

Differentiating equ.(5) we get $\frac{-dF}{F^2} = \frac{-df_1}{f_1^2} + \frac{-df_2}{f_2^2}$

Using equ. (3) we get, $\frac{-dF}{F^2} = \frac{\omega_1}{f_1} + \frac{\omega_2}{f_2}$

But if we want lens combination to generate zero chromatic aberration, $dF = F_R - F_V = 0$.

Hence $\frac{\omega_1}{f_1} + \frac{\omega_2}{f_2} = 0$ OR $\frac{\omega_1}{f_1} = -\frac{\omega_2}{f_2}$

2. Using two lenses of focal lengths f_1 and f_2 and having same refractive indices μ . Two lenses are kept at a distance D from each other.

For a combination of two lenses $\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{D}{f_1 f_2}$ ----- (1)

Differentiating equ. (1) we get,

$$\frac{-dF}{F^2} = \frac{-df_1}{f_1^2} + \frac{-df_2}{f_2^2} - D \left(-\frac{1}{f_1} \cdot \frac{df_2}{f_2^2} - \frac{1}{f_2} \cdot \frac{df_1}{f_1^2} \right)$$

But if we want lens combination to generate zero chromatic aberration, $dF = F_R - F_V = 0$.

Hence $\frac{-df_1}{f_1^2} + \frac{-df_2}{f_2^2} - D \left(-\frac{1}{f_1} \cdot \frac{df_2}{f_2^2} - \frac{1}{f_2} \cdot \frac{df_1}{f_1^2} \right) = 0$ ----- (2)

But for any lens $\omega = \frac{-df}{f}$. ----- (3)

Hence $\frac{\omega_1}{f_1} + \frac{\omega_2}{f_2} - D \left(\frac{1}{f_1} \cdot \frac{\omega_2}{f_2} + \frac{1}{f_2} \cdot \frac{\omega_1}{f_1} \right) = 0$ ----- (4)

Hence $\frac{\omega_1}{f_1} + \frac{\omega_2}{f_2} - D \left(\frac{\omega_2}{f_1 f_2} + \frac{\omega_1}{f_2 f_1} \right) = 0$

$\frac{\omega_1}{f_1} + \frac{\omega_2}{f_2} - D \left(\frac{\omega_2 + \omega_1}{f_1 f_2} \right) = 0$ ----- (5)

Since both lenses have same refractive index, they must be made from same material and hence $\omega_2 = \omega_1 = \omega$

Hence equ. (5) will change as $\frac{\omega}{f_1} + \frac{\omega}{f_2} - D \left(\frac{\omega + \omega}{f_1 f_2} \right) = 0$

$$\omega \left(\frac{1}{f_1} + \frac{1}{f_2} \right) = D \left(\frac{2\omega}{f_1 f_2} \right)$$

$$\omega \left(\frac{1}{f_1} + \frac{1}{f_2} \right) = D \left(\frac{2\omega}{f_1 f_2} \right)$$

$$\text{Hence } \omega \left(\frac{f_1 + f_2}{f_1 f_2} \right) = D \left(\frac{2\omega}{f_1 f_2} \right)$$

Hence $f_1 + f_2 = 2D$

$$D = \frac{f_1 + f_2}{2}$$

The distance between two lenses of same material should be equal to average of two focal lengths.



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Numericals:

1. Two convex lenses of focal lengths 20cm and 18 cm are placed at a distance d from each other. Find the value of d to get 1) minimum spherical aberration 2) minimum chromatic aberration.

Data : $f_1 = 20\text{cm}$, $f_2 = 18\text{cm}$

Find : d

Formulae :

For minimum spherical aberration : $d = f_1 - f_2 = 2\text{cm}$

For minimum chromatic aberration : $d = \frac{f_1 + f_2}{2} = \frac{20 + 18}{2} = 19\text{cm}$

2. For a convex lens refractive index for red ray is 1.5236 and for violet ray is 1.587. Calculate its dispersive power.

Data : $\mu_v = 1.587$, $\mu_R = 1.5236$

Find : ω

Formula : $\omega = \frac{\mu_v - \mu_R}{\mu_{avg} - 1}$ where $\mu_{avg} = \sqrt{\mu_v * \mu_R}$

$$\mu_{avg} = \sqrt{\mu_v * \mu_R} = \sqrt{(1.587 * 1.5236)} = \sqrt{(2.4179)} = 1.554$$

$$\omega = \frac{\mu_v - \mu_R}{\mu_{avg} - 1} = \frac{1.587 - 1.5236}{1.554 - 1} = \frac{0.0634}{0.554} = 0.1144$$

3. Dispersive powers of two lenses are 0.015 and 0.030 and their focal lengths are f_1 and f_2 . The lens combination has a total focal length of 50cm. The lens combination does not produce any chromatic aberration. Find f_1 and f_2 .

Data : zero chromatic aberration , $\omega_1 = 0.015$, $\omega_2 = 0.030$, $F = 50\text{cm}$

Find : f_1 and f_2

Formula:

for any lens combination, $\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 * f_2}$ ----- (1)

since lenses have different dispersive powers and produce zero chromatic aberration,

$$\frac{\omega_1}{f_1} = - \frac{\omega_2}{f_2}$$
 ----- (2) and $d = 0 \text{ cm}$ ----- (3)

$$\frac{\omega_1}{f_1} = - \frac{\omega_2}{f_2} \text{ Hence } \frac{0.015}{f_1} = - \frac{0.030}{f_2}$$

$$\text{Hence } f_1 * (- 0.030) = f_2 * 0.015 \text{ Hence } f_2 = - 2 * f_1$$
 ----- (4)

Substituting equ. 3 and 4 in equ. (1) we get $\frac{1}{50} = \frac{1}{f_1} - \frac{1}{2 * f_1}$

$$\frac{1}{50} = \frac{1 * 2}{f_1 * 2} - \frac{1}{2 * f_1} = \frac{+1}{2 * f_1}$$

$$\text{Hence } 1 * 50 = 2 * f_1$$

$$f_1 = 25 \text{ cm}$$

$$\text{hence } f_2 = - 2 * f_1 = - 50 \text{ cm}$$



AMS

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4. The average focal length of a convex lens is 27. cm . If refractive indices for violet rays is 1.6822 and that for red ray is 1.6157, calculate longitudinal chromatic aberration when object is at infinity.

Data : $f = 27\text{cm}$, $\mu_v = 1.6822$ and $\mu_R = 1.6157$

Find : Δf

Fomula : $\omega = \frac{\mu_v - \mu_R}{\mu_{avg} - 1}$, $\mu_{avg} = \sqrt{\mu_v * \mu_R}$ and $\Delta f = f_{avg} * \omega$

$$\mu_{avg} = \sqrt{\mu_v * \mu_R} = \sqrt{(1.6822 * 1.6157)} = \sqrt{(2.7179)} = 1.6486$$

$$\omega = \frac{\mu_v - \mu_R}{\mu_{avg} - 1} = \frac{1.6822 - 1.6157}{1.6486 - 1} = \frac{0.0665}{0.6486} = 0.1025$$

$$\Delta f = f_{avg} * \omega = 27 * 0.1025 = 2.7675\text{cm}$$

5. Two lenses having same refractive index and focal lengths f_1 and f_2 have total focal length 60cm. The lens combination is free of spherical aberration as well as chromatic aberration. Find f_1 and f_2 .

Data : $F = 60\text{cm}$, zero spherical aberration , zero chromatic aberration,

Find : f_1 and f_2

Fomula : For zero spherical aberration : $d = f_1 - f_2$ ----- (1)

For zero chromatic aberration : $d = \frac{f_1 + f_2}{2}$ ----- (2)

for any lens combination, $\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 * f_2}$ ----- (3)

From equ 1 and 2 we get , $f_1 - f_2 = \frac{f_1 + f_2}{2}$

Hence $2*(f_1 - f_2) = f_1 + f_2$

$2*(f_1 - f_2) = f_1 + f_2$

$2f_1 - 2f_2 = f_1 + f_2$

$f_1 = 3f_2$ ----- (4)

Substituting in equ 1 and 4 in equ (3)

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 * f_2}$$

$$\frac{1}{F} = \frac{1}{3f_2} + \frac{1}{f_2} - \frac{2f_2}{3f_2 * f_2} = \frac{1}{3f_2} + \frac{3}{3f_2} - \frac{2}{3f_2} = \frac{2}{3f_2}$$

Hence $\frac{1}{60} = \frac{2}{3f_2}$

Hence $3f_2 = 60 * 2 = 120$

Hence $f_2 = 40\text{cm}$ and $f_1 = 120\text{cm}$



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Microprocessor 8085

Instruction set

The instruction set is group of all legal 8085 instructions. The instructions available with μ P 8085 are classified into 5 major categories depending on the function they perform. These categories are :

- ❖ Data transfer instructions
- ❖ Arithmetic instructions
- ❖ Logical instructions
- ❖ Branching instructions
- ❖ Machine control instructions

Data transfer instructions:

In this group of instructions , 8 or 16 bit data is copied from one location to another location. The location where the data already exists is called as source where as the location where the data is transferred is called as destination. The source and /or destination can be a register or a memory location or an input-output device. But data transfer directly between two memory locations or between two input-output devices or between a memory location and an i/p-o/p device is not possible. Either source or destination has to be a register. **Even though these instructions are called as data transfer instructions, the source does not lose its contents but a copy of it is created at the destination.**

The original contents of source are retained but the original contents of destination are erased and the new contents are added to it.

No flags are modified in case of data transfer instructions.

1. MOV Rd , Rs

Move the number from register Rs to register Rd. A data byte from a source register Rs is copied into another destination register Rd. It is single byte instruction. It corresponds to register addressing mode. Both registers Rs and Rd can be any one of the general purpose registers A,B,C,D,E,H & L.

e.g MOV A , B
 MOV B , B
 MOV H , L etc.

2. MVI Rd, 8bit data

Move immediately the 8 bit number in the register R. An 8 bit data byte specified in the instruction is copied into the destination register Rd. Rd can be any one of the general purpose register A,B, C,D,E,H &L. It is a two byte instruction and corresponds to immediate addressing mode.

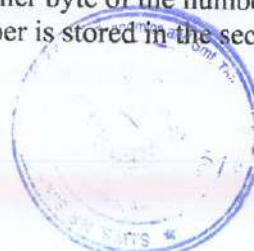
e.g. MVI A , 94H
 MVI B , 50H
 MVI H , 00H etc.

3. LXI Rp,16 bit number(data)

Load the register pair Rp immediately with the 16 bit number indicated within the instruction. Here any register pair out of HL , BC , DE or 16 bit register SP can be used. In case of HL , BC or DE, the higher byte of the number is stored in the first register where as lower byte of the number is stored in the second

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e.g. LXI H, 1500H will load 15H in register H and 00H in register L.

4. STA 16 bit number(address)

Store the contents of the accumulator in the memory location whose address is directly specified within the instruction. The 16 bit number indicated within the instruction points to a memory location. The contents of the accumulator are copied in to this location. Only accumulator can be used in this instruction. Note : Here the 16 bit number is not stored directly as in LXI instruction but some number from A moves to a memory location.

e.g. [A] = 35H [1500] = 20H
 STA 1500H \Rightarrow [A] = 35H [1500] = 35H

5. LDA 16 bit number(address)

Load the accumulator with the contents of the memory location whose address is directly specified within the instruction. The 16 bit number indicated within the instruction points to a memory location. The contents of this location are copied in to the accumulator. Only accumulator can be used in this instruction. Note : Here the 16 bit number is not stored directly as in LXI instruction but some number from a memory location moves to A.

e.g. [A] = 35H [1500] = 20H
 LDA 1500H \Rightarrow [A] = 20H [1500] = 20H

Arithmetic instructions :

This group of instructions allows the 8085 microprocessor to perform arithmetic operations on the data bytes. 8085 supports basic arithmetic operations such as

- addition
- subtraction
- increment
- decrement

Addition :

The addition instructions work on two data bytes (8 or 16) X and Y. In all the addition instructions, accumulator plays a very important role. The first number X is always fetched from the accumulator where as the second number y can be present either in any one register or in a memory location or it can be directly specified within the instruction. The result of the addition is also automatically stored in the accumulator. All the flags are modified according to the result of addition. If the result is more than 8 bit long, carry flag is SET. If the result of addition is zero, zero flag is SET. If the addition of D_3 bits generates a carry, auxiliary carry flag is SET.

1. ADD R

The contents of accumulator are added to the contents of register R and the result is stored back in the accumulator. Here R can be any one of the registers A,B,C,D,E,H & L.

[A] = 34H [B] = 2DH
 ADD B \Rightarrow 34H 0011 0100
 +
 2DH 0010 1101


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2. ADI 8 bit data

The contents of the accumulator are added to the 8 bit number specified in the instruction. The result is stored again in the accumulator. Various flags are altered as per the result.

e.g. ADI 43H

3. ADD M

The contents of accumulator are added to the contents of the memory location M and the result is stored back in the accumulator. The exact value of the address of M is obtained from the contents of the register pair HL. Various flags are altered as per the result.

Subtraction :

The subtraction instructions work on two data bytes (8 or 16) X and Y. In all the subtraction instructions, accumulator plays a very important role. The first number X is always fetched from the accumulator where as the second number y can be present either in any one register or in a memory location or it can be directly specified within the instruction. The result of the subtraction is also automatically stored in the accumulator. All the flags are modified according to the result of addition. If the result is more than 8 bit long, carry flag is SET. If the result of subtraction is zero, zero flag is SET.

The 8085 performs subtraction instruction in the following 4 steps.

1. Generates 1's complement of Y
2. Adds 1 to 1's complement of Y to generate 2's complement of Y.
3. Adds 2's complement of Y to X.
4. Complements the carry generated during addition.

1. SUB R

The contents of register R are subtracted from the contents of accumulator and the result is stored back in the accumulator. Here R can be any one of the registers A,B,C,D,E,H & L.

2. SUB M

The contents of the memory location M are subtracted from the contents of the accumulator and the result is stored back in the accumulator. The exact value of the address of M is obtained from the contents of the register pair HL. Various flags are altered as per the result.

3. SUI 8 BIT NO.

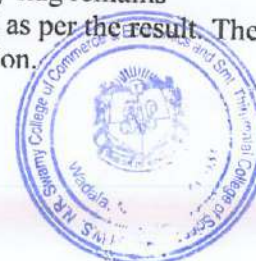
The 8 bit number specified in the instruction is subtracted from the contents of the accumulator. The result is stored again in the accumulator. Various flags are altered as per the result.

Increment operation:

Increment instructions are used to increment the contents of source location by 1. The result is stored back in the same place. Carry flag remains unaffected but all the other flags (S, Z, AC & P) are modified as per the result. The source location can be either any register or any memory location.

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1. INR R

The contents of register R are incremented by 1 and the result is stored in the same register. R can be any one register out of A, B, C, D, H or L.

e.g. Let $[B] = 27H$ and $[C] = 39H$

Hence $INR\ B \Rightarrow [B] = 28H$

Similarly $INR\ C \Rightarrow [C] = 3AH$

2. INR M

The contents of memory location M are incremented by 1 and the result is stored in the same memory location M. The exact value of the address of M is obtained from the contents of the register pair HL.

3. INX R_P

The contents of register pair R_P are incremented by 1 and the result is stored in the same register pair. R_P can be any one register pair out of BC, DE, HL or SP.

e.g. Let $[B] = 27H$ and $[C] = 39H$

Hence $INX\ B \Rightarrow [B] = 27H$ and $[C] = 3AH$.

Decrement operation:

Decrement instructions are used to decrement the contents of source location by 1. The result is stored back in the same place. Carry flag remains unaffected but all the other flags (S, Z, AC & P) are modified as per the result. The source location can be either any register or any memory location.

1. DCR R

The contents of register R are decremented by 1 and the result is stored in the same register. R can be any one register out of A, B, C, D, H or L.

e.g. Let $[B] = 27H$ and $[C] = 39H$

Hence $DCR\ B \Rightarrow [B] = 26H$

Similarly $DCR\ C \Rightarrow [C] = 38H$

2. DCR M

The contents of memory location M are decremented by 1 and the result is stored in the same memory location M. The exact value of the address of M is obtained from the contents of the register pair HL.

3. DCX R_P

The contents of register pair R_P are decremented by 1 and the result is stored in the same register pair. R_P can be any one register pair out of BC, DE, HL or SP.

e.g. Let $[B] = 27H$ and $[C] = 39H$

Hence $DCX\ B \Rightarrow [B] = 26H$ and $[C] = 38H$.

Logical instructions :

This group of instructions allows the 8085 microprocessor to perform logical operations on the data bytes. 8085 supports basic logical operations such as

- AND
- OR
- XOR

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- NOT (Complement)
- Rotate
- Compare
- Set and complement carry flag

AND instructions:

The AND instructions work on two data bytes (8 or 16) X and Y. In all the AND instructions, accumulator plays a very important role. The first number X is always fetched from the accumulator where as the second number Y can be present either in any one register or in a memory location or it can be directly specified within the instruction. The result of the AND operation is also automatically stored in the accumulator. All the flags are modified according to the result of addition. If the result is more than 8 bit long, carry flag is SET. If the result of AND is zero, zero flag is SET.

1. ANA R

The contents of accumulator are logically ANDed with the contents of register R and the result is stored back in the accumulator. Here R can be any one of the registers A,B,C,D,E,H & L.

Flags S, P & Z are modified to reflect the result of operation. CY is RESET where as AC is SET.

[A] = 34H	[B] = 2DH	
ANA B ⇒ 34H	0011 0100	
AND		
2DH	0010 1101	
	0010 0100	
		CY = 0

2. ANA M

The contents of accumulator are logically ANDed with the contents of memory location M and the result is stored back in the accumulator. The exact value of the address of M is obtained from the contents of the register pair HL. Flags S, P & Z are modified to reflect the result of operation. CY is RESET where as AC is SET.

3. ANI 8bit no.

The contents of the accumulator are logically ANDed with the 8 bit number specified in the instruction. The result is stored again in the accumulator. Flags S, P & Z are modified to reflect the result of operation. CY is RESET where as AC is SET.

OR operation :

The OR instructions work on two data bytes (8 or 16) X and Y. In all the OR instructions, accumulator plays a very important role. The first number X is always fetched from the accumulator where as the second number Y can be present either in any one register or in a memory location or it can be directly specified within the instruction. The result of the OR operation is also automatically stored in the accumulator. All the flags are modified according to the result of addition. If the result is more than 8 bit long, carry flag is SET. If the result of OR is zero, zero flag is SET.

1. ORA R

The contents of accumulator are logically ORed with the contents of register R and the result is stored back in the accumulator. Here R can be any one of the registers A,B,C,D,E,H & L.

Flags S, P & Z are modified to reflect the result of operation. AC & CY are RESET.

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[A] = 34H	[B] = 2DH	
ANA B \Rightarrow 34H	0011 0100	
OR		
2DH	0010 1101	
	0011 1101	CY = 0

2. ORA M

The contents of accumulator are logically ORed with the contents of memory location M and the result is stored back in the accumulator. The exact value of the address of M is obtained from the contents of the register pair HL. Flags S, P & Z are modified to reflect the result of operation. AC & CY are RESET.

3. ORI 8bit no.

The contents of the accumulator are logically Or-ed with the 8 bit number specified in the instruction. The result is stored again in the accumulator. Flags S, P & Z are modified to reflect the result of operation. AC & CY are RESET.

Complement:

CMA :

The contents of the accumulator are complemented. No flags are affected in this instruction.

Compare:

In these instructions, the contents of the accumulator are compared with the contents of any other register or memory location or with an 8 bit number directly specified within the instruction. The microprocessor performs comparison by subtracting the second number from the number in the accumulator. At the end of this instruction, both the numbers remain unchanged, but the result is indicated in the form of carry and zero flags. Other flags are also modified.

If [A] > second number : CY = 0 and Z=0

If [A] < second number : CY = 1 and Z=0

If [A] = second number : CY = 0 and Z=1

1. CMP R

The contents of the accumulator are compared with the contents of any other register. Here R can be any one of the registers A,B,C,D,E,H & L.

e.g. [A] = 57H and [B] = A0H
CMP B \Rightarrow CY = 1 and Z = 0

Branching instructions:

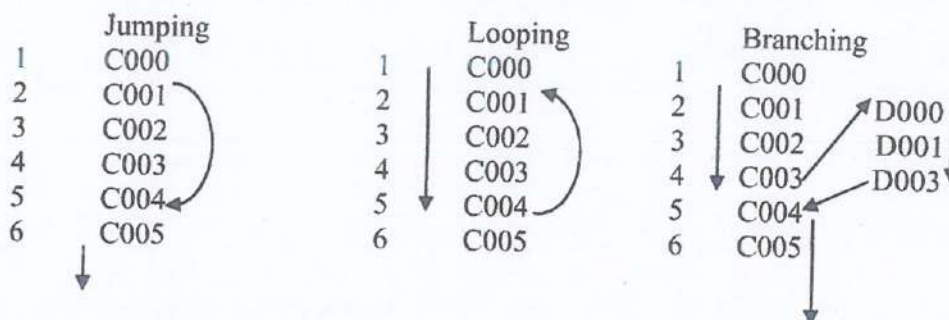
The branch instructions are the most powerful instructions because they allow the microprocessor to change the sequence of program execution. The microprocessor is a sequential device and it executes instructions in a sequential manner i.e. it goes from one memory location to the immediately next one. When any program is executed, the address of the memory location being executed is stored in the program counter. When the execution of one instruction is over, program counter increments by 1,

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from this routine. We either need to skip some instructions and jump ahead or we need to jump backward and repeat certain instructions. These two techniques are called as branching and looping. In both these techniques we don't want the program counter to advance by the default value 1, but we want to load a totally new address in the program counter. This is achieved with the help of branching instructions.



Branch instructions allow the microprocessor to go to a new location by skipping certain instructions in between. Then again from this point onwards microprocessor can continue to execute in a sequential manner. This branching away from the sequential order and directly jumping to a new location can be achieved either conditionally by checking the status of few flags or it can be done unconditionally. The address of new location can be specified within the instruction itself or can be provided by the microprocessor itself.

There are basically three types of branching instructions available with 8085 μ P. **Jump**, **Call & return** and **Restart**.

Jump :

The Jump instruction transfers the execution control to a location specified within the instruction. The jump instructions are of two type : unconditional and conditional jump instruction.

Unconditional jump : **JMP 16 bit hex address**

Jump to the memory location specified within the instruction unconditionally. i.e. without checking any flag status. The program counter gets loaded with the 16 bit memory address given in the instruction and starts executing the program from that point onwards. No flags are affected. The unconditional jump is used to set up loops in the program.

Conditional Jump instructions:

The conditional jump instruction allows the microprocessor to make decisions based on certain conditions indicated by the flags. Most of the arithmetic and logical instructions modify different flags. The conditional jump instruction checks the flag status and then decides whether the program sequence should be modified or not. These instructions use four flags : carry, sign, zero and parity flag. The program sequence can be altered either when a particular flag is SET or when the flag is RESET.

1. **JC 16 bit address :**

Jump to new location if the carry flag is SET (CY = 1)

2. **JNC 16 bit address :**

Jump to new location if the carry flag is not SET (CY = 0)

3. **JZ 16 bit address :**

Jump to new location if the zero flag is SET (Z = 1)

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4. **JNZ 16 bit address :**
Jump to new location if the zero flag is not SET ($Z = 0$)
5. **JPE 16 bit address :**
Jump to new location if the parity flag is SET ($P = 1$)
6. **JPO 16 bit address :**
Jump to new location if the parity flag is not SET ($P = 0$)
7. **JP 16 bit address :**
Jump to new location if the sign flag is SET ($S = 1$)
8. **JM 16 bit address :**
Jump to new location if the sign flag is not SET ($S = 0$)

Machine control instructions:

These instructions do not operate on any data but just controls the functioning of the microprocessor. Do not involve any data and no flags are affected.

1. HLT

The microprocessor finishes executing the current instruction and halts further execution. The contents of none of the registers are affected. An interrupt or reset is necessary to exit from halt state.

2. NOP

No operation is performed. Microprocessor remains idle for a machine cycle and then resumes program execution again. No flags are affected.

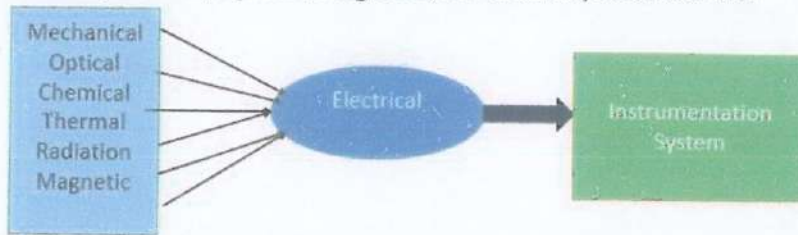


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Transducers

A Transducer is a device that converts one form of energy into another form. A transducer is an important part of any instrumentation system. Different forms of energy are electrical, thermal, optical, magnetic, mechanical, radiation etc.



Types of Transducers

Sensor :

1. It detects change in one form of parameter like temperature, velocity, pressure, light intensity, sound intensity, wavelength of light, humidity, pH value, concentration of a particular gas etc and generates a electrical signal proportional to it.
2. It is used at input of instrumentation system.
3. E.g. thermistor, LDR, solar cell, strain gauge.

Actuator :

1. It converts electrical signals into light or sound or displacement
2. It is used output of instrumentation system.
3. E.g. LED, Piezoelectric crystal

Factors that decide selection criteria of a transducer:

1. Physical size: Should be as small as possible so that it does not disturb experimentation technique.
2. Dynamic range : The should be usable over a wide range.
3. Sensitivity : should be very high. Should be capable of detecting very small changes.
4. Repeatability : Should produce same result when repeated again and again under same external conditions:
5. Linearity : The relation between input and output should be linear.
6. Stability : The output should not change due to change in external parameters. It should withstand overloads with in built safty precautions.
7. Accuracy : The output produced should be very close to the expected value.

Thermo-Electric Transducers:

Thermistor :

Thermistor is a thermal resistor. It a semiconductor device whose resistance depends on temperature. It has negative temperature coefficient of resistance. It has very high temperature sensitivity and very high repeatability. The normal value of resistances are over the range 0.5Ω to few $M\Omega$. The Thermistors are available in variety of shapes and sizes. The value of temperature coefficient depends on amount of doping and type of impurity used.

Thermal characteristics :

It is the relation between resistance of thermistor and temperature. As the temperature increases, its resistance decreases. The relation is given as, $R_t = R_0(1+\alpha t)$. It is applicable only for small range of temperature

$$\alpha = \frac{R_t - R_0}{R_0 * t}$$

Here α is the temperature coefficient of resistance.

Def : It is defined as change in resistance per unit original resistance per degree rise in temperature. Its unit is per $^{\circ}C$ or per $^{\circ}F$.

If the thermistor is to be used for larger temperature range, the relation is given as

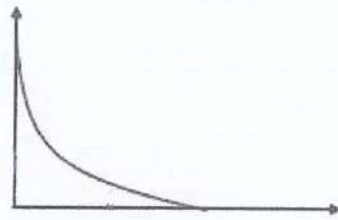
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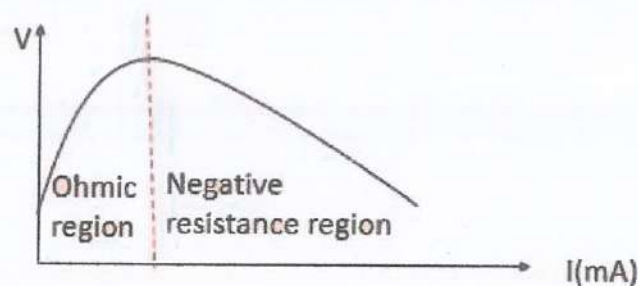


$$R_{T1} = R_{T0} \exp \left[\beta \left(\frac{1}{T_1} - \frac{1}{T_0} \right) \right] \quad \text{where } \beta \text{ is a constant depending on material.}$$



Current-voltage characteristic :

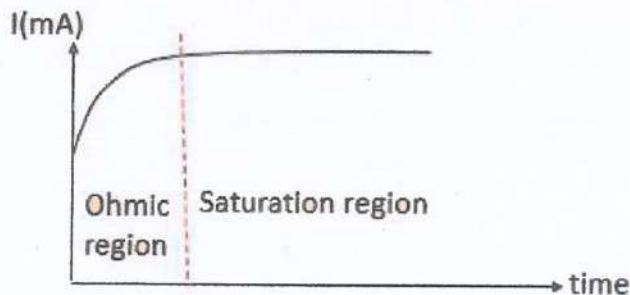
As the voltage drop across thermistor increases, current flowing through the thermistor also increases. This is ohmic behaviour of thermistor. After certain voltage, current suddenly increases even if supply voltage is kept constant. As an effect the voltage drop across thermistor reduces. This continues automatically till current reaches a peak value. This is called as negative resistance region. This happens due to self-heating.



Current-time characteristic :

This characteristic indicates delay time. It is the time the current needs to reach its peak value for a given voltage. Initially current is less. But as device gets heated up, self-heating mode is activated and current starts increasing till it reaches peak value.

For lower voltages delay time can be in minutes also where as for higher voltages it can be as fast as few milliseconds. This helps ingenerating delay time in various applications.



Thermocouple

Principal of operation : When two dissimilar metals are joined together and if the junction is heated, a voltage is developed between two free ends. This is called as Peltier and Thomson effect. The Thermocouple may be shielded or exposed depending on application.

For high temperature or chemical applications, Wires should be insulated.

Factors to be considered :

1. Temperature range
2. Temperature sensitivity
3. Linearity

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4. Homogeneity of two materials
5. Specific resistance should be comparable
6. Choice of metals

Two methods of forming a Thermocouple :

1. Welding two wires :

The joint is brittle. Can break when exposed to stress. During welding process gases may fuse with metals , affecting Characteristics.

2. Soldering two wires :

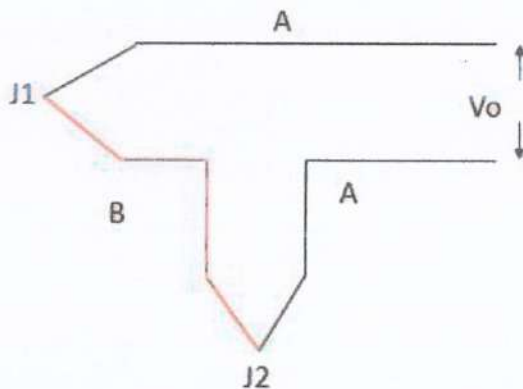
When used for higher temperatures (more than melting point of soldering material) , soldering may break. Normal temperature range : -273°C to 2500°C .

Merits :

1. very high accuracy
2. Very small response time
3. Good reproducibility
4. Very cheap
5. Bridge circuit not required
6. Very high temperature range

Demerits :

1. One junction has to be maintained at a very low temperature
2. Output signal is very low and need to be amplified
3. Non-linear



Mechanical Transducers:

These transducers respond to changes to changes in pressure or displacement.

As a result , there is a change in resistance or voltage.

Examples :

- Strain gauge
- LVDT
- Variable capacitance transducer
- Piezoelectric transducer

Strain gauge: It is a device where resistance changes as per changes in applied pressure.

Working Principal :

As per Hook's law, within elastic limits, stress is directly proportional to strain. **Stress / strain = modulus of elasticity (E)** . Stress is force per unit area. Strain is change in dimension per unit original dimension. Due to applied pressure , the length and thickness of wire changes. Hence its resistance also changes.



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Types of strain gauges :

1. Unbonded wire strain gauge :

It consists of a wire stretched between two points in an insulating medium as air. The wire is very thin of the order of μm . Wires are kept under tension to avoid sagging or vibrations. It is normally a part of bridge circuit. Bridge is balanced in no load condition. When pressure is applied, resistance changes, generating output voltage.

2. Bonded strain gauge:

Wires made from Platinum, Nickel, constantan, Nichrome. Diameter of wire is of the order of μm . The wires are bonded to carrier material like plastic or paper using an adhesive material that allows evenly spreading of pressure

3. Foil strain gauge :

Thin foils of metals are used as sensing agents. This provides large surface area of contact. These strain gauges can be easily fabricated on mass scale. The foil thickness is of the order of μm .

4. Semiconductor strain gauge

These strain gauges are in the form of semiconductor filament or wafers. Thickness of the semiconductor wafer is of the order of μm . Gold leads are used for ohmic contacts. Semiconductor wafers are bonded on insulating surface. These strain gauges have high value of gauge factor. Strain against pressure relation is non-linear for light doping and perfectly linear in case of high doping. These strain gauges have very small physical size.

Gauge Factor :

It is defined as unit change in resistance per unit change in length.

$K = \frac{\Delta R/R}{\Delta l/l} = \frac{\Delta R/R}{\sigma}$ where σ is the strain developed in the wire due to applied pressure.

Resistance of a wire is given as $R = \frac{\rho l}{A} = \frac{\rho l}{\pi r^2} = \frac{4\rho l}{\pi d^2}$

Due to applied pressure, length will change by Δl and resistance will change by ΔR

$$R_s = \frac{4\rho(1+\Delta l/l)}{\pi(d-\Delta d)^2} = \frac{4\rho l(1+\Delta l/l)}{\pi d^2(1-\Delta d/d)^2} = \frac{4\rho l(1+\Delta l/l)}{\pi d^2(1-2\Delta d/d)}$$

Poisson's ratio is given as, $\sigma = \frac{\Delta d/d}{\Delta l/l}$

Poisson's ratio is given as, $\mu = \frac{\Delta d/d}{\Delta l/l}$ hence $\Delta d/d = \mu \Delta l/l$.

Hence

$$R_s = \frac{4\rho l(1+\Delta l/l)}{\pi d^2(1-2\mu\Delta l/l)} = \frac{4\rho l}{\pi d^2(1-2\mu\Delta l/l)} + \frac{4\rho l(\Delta l/l)}{\pi d^2(1-2\mu\Delta l/l)} = R + \Delta R$$

where $\Delta R = \frac{4\rho l(\Delta l/l)}{\pi d^2(1-2\mu\Delta l/l)} = R(1+2\mu) \frac{\Delta l}{l}$

$$K = \frac{\Delta R/R}{\Delta l/l} = 1+2\mu$$

LVDT (Linear Variable Differential Transducer) :

The differential transformer is a passive transformer. The transformer consists of a single primary winding P1 and two secondary windings S1 and S2 wound on a hollow cylindrical base. Both the secondary windings have equal no. of turns and are identically placed on either side of primary winding. The primary winding is connected to an ac source.

A movable soft iron core slides within the hollow base and controls the magnetic coupling between the primary and the secondaries. The displacement to be measured is applied the arm attached to the soft iron core.

When the core is in its normal position, equal voltages are induced in the two secondary windings ($E_{S1} = E_{S2}$). Hence the final output of the LVDT is zero.



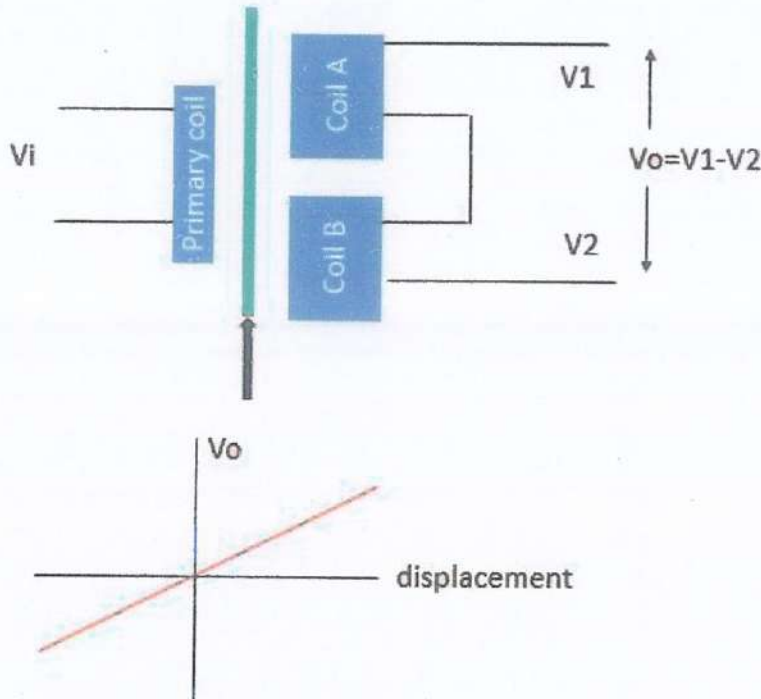
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If the core is moved to the left of the normal position, more flux links with s_1 than s_2 . Hence $ES_1 > ES_2$. The final output of LVDT will be in phase with ES_1 .

If the core is moved to the right of the normal position, more flux links with s_2 than s_1 . Hence $ES_2 > ES_1$. The final output of LVDT will be in phase with ES_2 .

Thus the final output of LVDT is proportional to the amount of movement of the core. Thus output is an indication of linear motion. The amplitude of the output indicates the distance core has moved and the polarity of the output indicates the direction in which core is moving

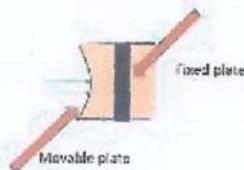


Variable capacitance transducer

A capacitive transducer works on the principle that capacitance changes with the physical position of moving element. The capacitance is given as $c = \frac{KA}{d}$, where K = the dielectric constant, A = total area of capacitor surface and d = distance between two capacitive surfaces. Capacitance increases if effective area of the plate is increased or if the material has high dielectric constant or if the spacing between two surfaces is reduced.

A capacitive pressure transducer contains a metallic diaphragm that moves to left when exposed to pressures and it moves to right when subjected to vacuum. This diaphragm is used as one plate of a variable capacitor. Its distance from the stationary plate is a function of applied pressure and thus its capacitance value is a function of applied pressure. The capacitance of such a device can be given as $c = 0.885 \frac{K(n-1)A}{t}$ Here n = number of plates and t = thickness of dielectric.

The capacitive transducer is easy to construct and inexpensive to produce.



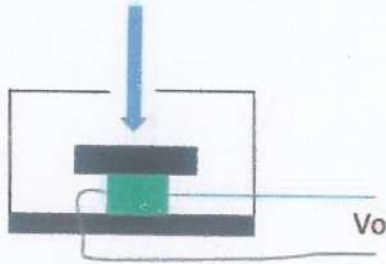
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Piezoelectric Transducer

Certain materials like Quartz, Barium Titanite have asymmetric structure. When pressure is applied to these crystals along one direction, a voltage is produced along another perpendicular direction.

The piezoelectric crystal is placed on a solid base. It is covered by another insulating material. Pressure is applied on the crystal through a small window. A small voltage is developed across another pair of sides of crystal. The output voltage is of the order of 50mV. The main disadvantage is that V_o changes with temperature.



Opto-electronic Transducers:

These transducers convert either light energy into electrical energy or electrical energy into light energy.

Optoelectronic transducers can also be classified as

1. Photoconductive transducers : These require external voltage source.
2. Photovoltaic transducers: These generate voltage

Photoconductive transducers :

When an electromagnetic radiation falls on a semiconductor material, its conductivity increases. Photoconductivity is directly proportional to the concentration of charge carriers. The energy of incident photons is given as $E = h\nu$ and Band gap energy $E_g = E_C - E_V$. If incident energy $E < E_g$, no electron can move from valence band to conduction band and hence no electron can be made free.

If incident energy $E \geq E_g$, few electrons can move from valence band to conduction band and hence some electrons can be made free. Thus conductivity of semiconductor will increase.

Critical wavelength is given as $\lambda = \frac{1.24}{E_g \text{ in eV}} \mu\text{m}$

Light Dependent Resistor (LDR)

LDR is a photoconductive device where resistance changes with intensity and wavelength of incident radiation.

Construction :

1. It is made up of thin layer of photoconductive material like CdS (Cadmium Sulphide), PbS (Lead Sulphide) or CdSe(Cadmium selenide).
2. This layer is deposited on insulating ceramic base.
3. Two terminals are taken out for connection.
4. The entire assembly is enclosed in a metal case with a glass window over photoconductive material.
5. Its resistance can be as high as few $M\Omega$ in dark . It can reduce to few Ω when exposed to bright light.

Applications :

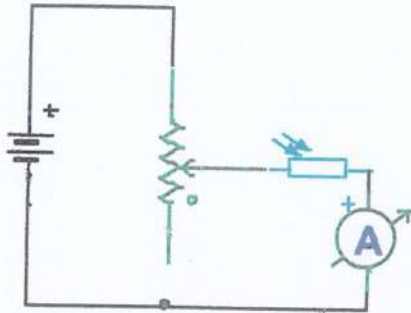
1. Light detector circuit
2. Automatic street lighting
3. Counting objects on a conveyor belt



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A typical LDR circuit can be shown as,



Light Emitting Diode(LED) :

It is basically a PN junction diode. When it is forward biased, large no of holes and electrons recombine, giving out excess of energy. In ordinary junction diode, this energy is in the form of heat. In case of LEDs, it is in the form of visible light. Intensity of emitted light is directly proportional to magnitude of current. LEDs are available in different shapes and sizes. For a LED Cathode lead is shorter than anode lead. A LED needs typically 1.6V and 20mA to produce proper illumination. LEDs are available in variety of colors such as Blue, Red, Green, Yellow, Orange and even White. LEDs can be switched ON & OFF at a very fast speed of 1ns .

LED symbol :



Applications : The typical LED applications are As a display device or indicator

1. SSD used in calculators and digital watches
2. LEDs along with photo detectors can be used for reading punched cards
3. Infrared LEDs used in remote control and optical fiber communication.

Alphanumeric Displays :

Alphanumeric displays are used to generate visual display of various alphabets and digits. These display units mainly consist of number of LEDs arranged in a format.

There are mainly two types of alphanumeric displays.

1. SSD (Seven Segment Display)
2. Dot Matrix display

SEVEN SEGMENT LED DISPLAY:

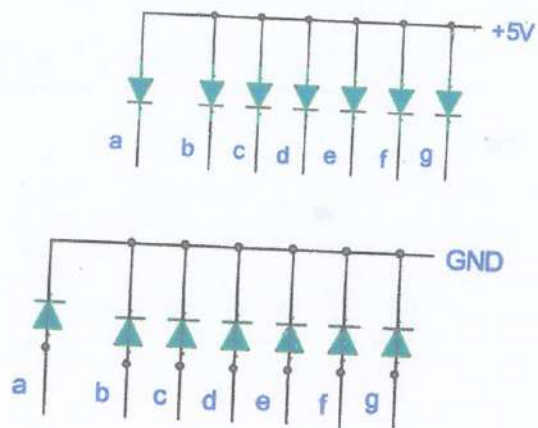
The seven segment display is an arrangement of 7 LEDs in a specific format to generate different digits and certain alphabets. The particular section of the LED becomes bright when the LED is forward biased. The seven LEDs are arranged as shown below

The different LEDs that are to be forward biased to generate digits are as given below. There are two different types of SSDs: common anode and common cathode.

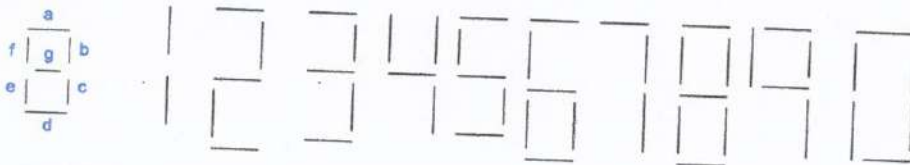


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In case of common anode type SSD, the anode terminals of all the LEDs are shorted and connected to common +5V supply. The cathode terminal of the LED which is required to be bright, is connected to ground.



In case of common cathode type SSD, the cathode terminals of all the LEDs are shorted and connected to ground. The anode terminal of the LED which is required to be bright, is connected to common +5V supply.



Truth table:

type	Selected LED to be connected to	Selected LED	output
Common anode	ground	a, b, c, d, e, f	0
		b, c	1
		a, b, d, e, g	2
		a, b, c, d, g	3
		b, c, f, g	4
		a, c, d, f, g	5
		a, c, d, e, f, g	6
		a, b, c	7
		a, b, c, d, e, f, g	8
		a, b, c, f, g	9
Common cathode	+5V	a, b, c, d, e, f	0
		b, c	1



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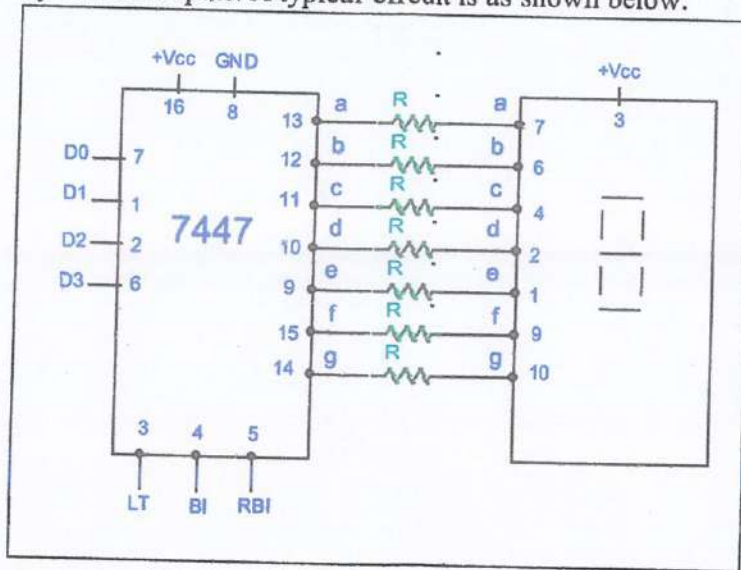
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	a, b, d, e, g	2
	a, b, c, d, g	3
	b, c, f, g	4
	a, c, d, f, g	5
	a, c, d, e, f, g	6
	a, b, c	7
	a, b, c, d, e, f, g	8
	a, b, c, f, g	9

BCD TO SSDECODER/DRIVER:

A SSD normally receives its input through a decoder/ driver chip. The input to this chip are binary or BCD inputs. A typical circuit is as shown below.



Truth table: For IC 7447

Control inputs			BCD inputs to 7447				O/p of 7447 same as Inputs to SSD							o/p of SSD
\overline{LT}	\overline{BI}	\overline{RBI}	D ₃	D ₂	D ₁	D ₀	a	b	c	d	e	f	g	
1	1	1	0	0	0	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	1	1	0	0	1	1	1	1	1
1	1	1	0	0	1	0	0	0	1	0	0	1	0	2
1	1	1	0	0	1	1	0	0	0	0	1	1	0	3
1	1	1	0	1	0	0	1	0	0	1	1	0	0	4
1	1	1	0	1	0	1	0	1	0	0	1	0	0	5
1	1	1	0	1	1	0	1	1	0	0	0	0	0	6
1	1	1	0	1	1	1	1	0	0	0	1	1	1	7
1	1	1	1	0	0	0	0	0	0	0	0	0	0	8
1	1	1	1	0	0	1	0	0	0	1	1	0	0	9
0	1	1	X	X	X	X	0	0	0	0	0	0	0	8
1	open	0	0	0	0	0	1	1	1	1	1	1	1	off
1	open	0	all other inputs 0001 to 1001				Relevant outputs as per above table							1 to 9
1	0	1	X	X	X	X	1	1	1	1	1	1	1	off



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The different control pins of IC 7447 are as given below:

1. When $\overline{LT} = \text{logic } 0$ and $\overline{BI} = \overline{RBI} = \text{logic } 1$

The figure of 8 is displayed irrespective of all the inputs. This is used for checking if all the LED segments are properly working.

2. When $\overline{RBI} = \text{logic } 0$ and $\overline{LT} = \text{logic } 1$ and $\overline{BI} = \text{open}$

The display remains ON for all input combinations from 0001 to 1001. For input 0000 the display chip is switched off.

3. When $\overline{BI} = \text{logic } 0$ and $\overline{LT} = \overline{RBI} = \text{logic } 1$

Display remains off for all input combinations from 0000 to 1001

DOT MATRIX DISPLAY :

The different alphanumeric characters can be displayed by using dot matrix LED. A dot matrix LED consists of large number of LEDs arranged in a matrix format. The common formats are 5×7 , 5×8 and 7×9 . By forward biasing any LED, any alphabet, digit or any other character can be generated.

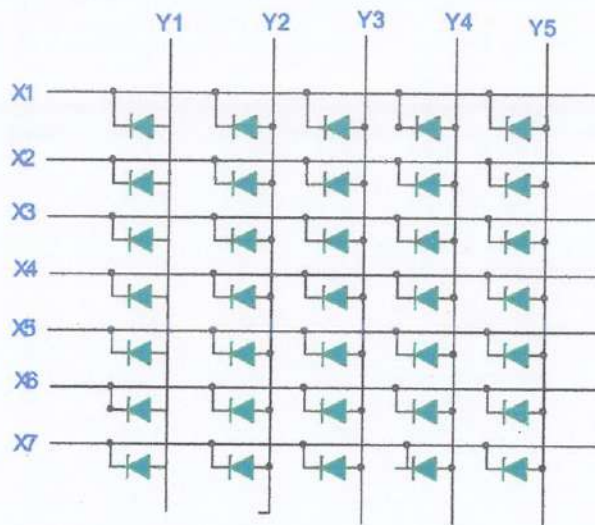


Photo diode and Phototransistor:

Photodiode:

It is a PN junction diode. It is operated in reversed biased condition. The reverse current increases as junction is exposed to light. I_R is directly proportional to intensity of light. I_R obtained in absence of light is called as dark current. Dark current (I_d) is due to thermally generated electron-hole pairs. When light falls on junction, additional electron-hole pairs are generated. Resistance of photodiode in dark is given as $R_{\text{dark}} = \frac{VR}{I_d}$

The PN junction diode is sealed in a plastic or glass case. Only a small glass window is provided such that light rays fall on junction. Remaining surface is painted to avoid extra penetration of light.

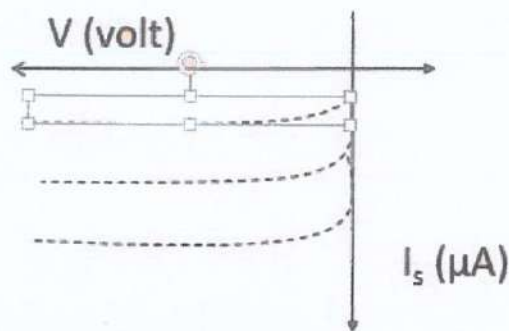
Photodiode Characteristics :

1. Current voltage characteristic : It is a relation between reverse current flowing through photodiode and reverse voltage applied across photo diode. The graphs do not pass through origin indicating that even in absence of any reverse voltage some current is present due to thermal effect.

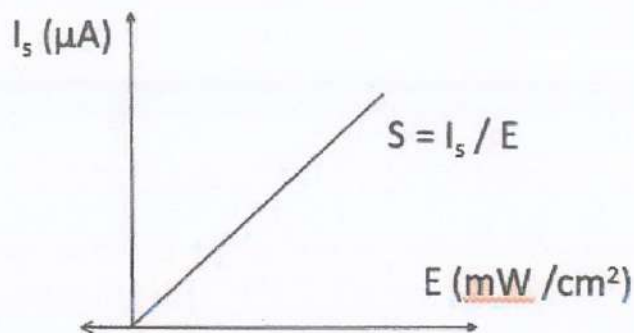


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2. Current intensity characteristic. : It shows a linear relationship between intensity of incident light and reverse current. The ratio of reverse current and light intensity is called as sensitivity of photodiode.



Phototransistor:

Phototransistor is a semiconductor device with three terminals, collector, base and emitter. It is normally operated in CE configuration. The base terminal is left open. The radiation is allowed to fall on C-B junction. When there is no radiation incident on phototransistor, there are few minority carriers due to thermal energy. When light falls on junction, additional minority carriers are generated. Reverse current in phototransistor is much higher than reverse current of photodiode.

Chemical sensors :

pH Sensor :

In chemical industry acidity or alkalinity of chemicals need to be closely monitored. The pH value of a chemical depends on the concentration of hydrogen (H^+) and hydroxyl (OH^-) ions. If concentration of hydrogen (H^+) > concentration of and hydroxyl (OH^-) ions, solution is acidic. If concentration of hydrogen (H^+) = concentration of and hydroxyl (OH^-) ions, solution is neutral. If concentration of hydrogen (H^+) < concentration of and hydroxyl (OH^-) ions, solution is alkaline. The product of concentration of hydrogen (H^+) and concentration of hydroxyl (OH^-) ions, is called as dissociation constant. It is always equal to 10^{-14} . pH value of any solution can be determined simply by measuring concentration of hydrogen ions. $pH = -\log_{10} (H^+)$

For neutral solution, pH value is 7

For acidic solution, pH value is between 0 and 7

For Alkaline solution, pH value is between 7 and 14



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Measurement of pH :

A pair of electrodes is immersed in the solution under test. The voltage developed across the electrodes is measured. The two electrodes are called reference electrode and measuring electrode. Reference electrode always generates constant potential irrespective of solution under test. Measuring electrode generates different potentials depending on pH value of solution under test.

Reference electrode :

It is made up of glass. It has two layers of glass. Inner glass tube contains solution of mercury chloride and mercury. The space between two glass tubes is filled with potassium chloride solution. There is a tiny opening at the bottom of electrode through which KCL solution very slowly mixes with solution under test.

Measuring electrode :

The structure is same as reference electrode. Here the space between two glass tubes is filled with buffer solution of constant pH value. Here bottom of electrode does not have any opening. The KCL solution gets accumulated near the tip of glass tube. Due to difference in pH value, a voltage is developed at this tip.

Measurement of voltage : The potential difference is measured by a voltmeter . The voltmeter is calibrated in terms of pH value.

Gas sensor:

Gas Sensors are required to monitor presence of hazardous gases. Gas sensing is useful for fire detection and fire prevention. Gas sensors also play important role in environmental studies and pollution control.

Gas sensing Technologies:

Methods based on variation in electrical parameters

Methods based on Variation in optical, sound parameters

Applications :

1. Mine industry
2. Automobile industry
3. Medical applications
4. Indoor air quality supervision and maintenance
5. Greenhouse monitoring

Various types of Gas sensors :

1. Calorimetric gas sensor :

Calorimetry is the measurement of the transfer of heat into or out of a system during a **chemical** reaction or physical process.

The **principle** of **calorimetry** indicates the law of conservation of energy, i.e. the total heat lost by the hot body is equal to the total heat gained by the cold body. Heat Lost = Heat Gained.

When two bodies of different temperatures (preferably a solid and a liquid) are placed in physical contact with each other, the heat is transferred from the body with higher temperature to the body with lower temperature until thermal equilibrium is attained between them. The body at higher temperature releases heat while the body at lower temperature absorbs heat.

They are widely used for detection for flammable gases.

2. Electrochemical gas sensors :



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These sensors are used to monitor presence of specific toxic gases like H_2S , CO , SO_2 , Cl_2 , NO_2 etc at ppm (part per million by volume) level.

Air supply is passed through region between two electrodes. Due to presence of certain gases which react with these electrodes, voltage is developed.

Hygrometer:

It is a device used to measure humidity . Humidity is defined as amount of water vapour in air or in any gas. Operation of electronic components , industrial equipments and high voltage devices depend on humidity levels. Sensing, measuring and controlling humidity levels is significant for such sensitive devices.

Humidity : Mass of water vapour present per unit volume of air.

Dew Point Temperature : The temperature at which water vapour content is saturated in air. i.e. humidity becomes 100%

Resistive Hygrometer :

Some hygroscopic salts show changes in their resistivity as the humidity changes. e.g. Lithium Chloride

Change in resistance is measured using bridge circuit.

As humidity increases, resistance decreases.

Advantages :

1. Low cost
2. Small size
3. Suitable for remote sensing and controlling

Disadvantages :

1. Sensitive to chemical vapours and other contaminants
2. Need constant temperature environment
3. Need more complex supporting circuitry



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Seml Unit 3: Microbial Nutrition: Cultivation, Isolation and Preservation

Reference Books – Prescott 8th edition

Talaro 7th edition

Brock 11th edition

Pelczar 5th edition

Nutritional requirements

Nutrition is the part of microbial physiology that deals with the nutrients required for growth. Different organisms need different complements of nutrients, and not all nutrients are required in the same amounts.

Elements of life

All microbial nutrients are compounds constructed from the chemical elements (**Table 1**). However, just a handful of elements dominate living systems and are essential: hydrogen (H), oxygen (O), carbon (C), nitrogen (N), phosphorus (P), sulfur (S), and selenium (Se). In addition to these, at least 50 other elements, although not required, are metabolized in some way by microorganisms (**Figure 3.1**).

Table 3.1: Elemental makeup of important cell molecules

Molecule	Elements
Proteins	C, H, O, N, S
Carbohydrates	C, H, O,
Lipids	C, H, O, P
Nucleic acids	C, H, O, N, P

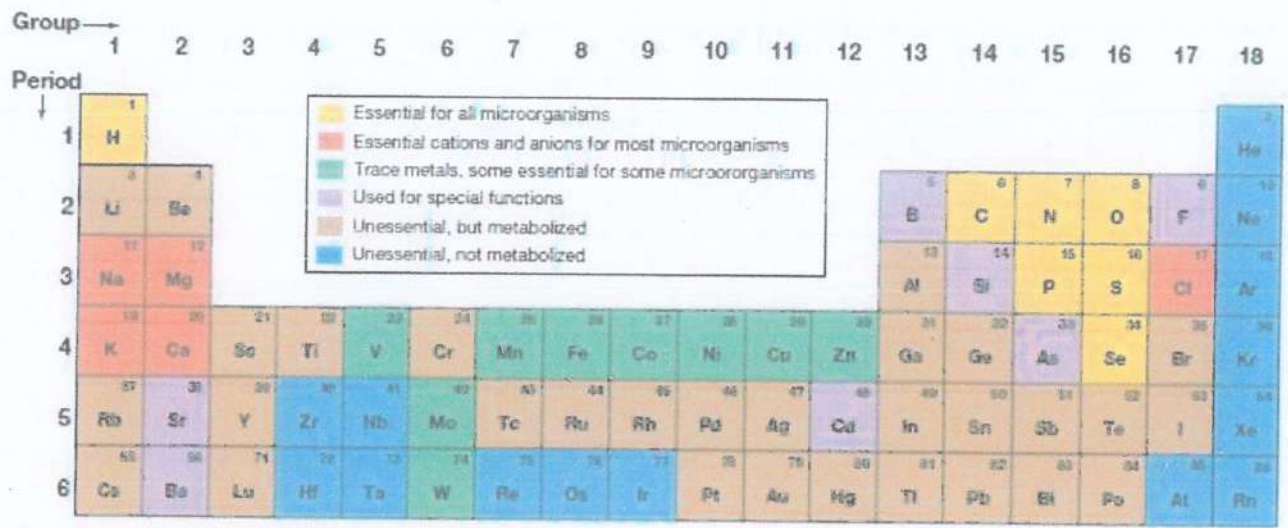
Besides water, which makes up 70–80% of the wet weight of a microbial cell (a single cell of *Escherichia coli* weighs just 10^{-12} g), cells consist primarily of macromolecules (**Table 3.2**).

Chemical analysis of cells shows that over 95% of cell dry weight is made up of a few major elements: carbon, oxygen, hydrogen, nitrogen, sulfur, phosphorus, potassium, calcium, magnesium, and iron. These are called **macroelements** or **macronutrients** because they are required in relatively large amounts. The first six (C, O, H, N, S, and P) are components of carbohydrates, lipids, proteins, and nucleic acids. The essential elements make up the building blocks (monomers) of macromolecules, the amino acids, nucleotides, fatty acids, and sugars. Proteins

Figure 3.1: Elemental and macromolecular composition of a bacterial cell

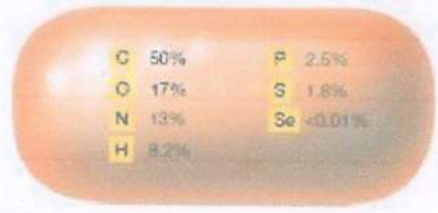



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(a)

Essential elements as a percent of cell dry weight



(b)

Macromolecular composition of a cell

Macromolecule	Percent of dry weight
Protein	55
Lipid	9.1
Polysaccharide	5.0
Lipopolysaccharide	3.4
DNA	3.1
RNA	20.5

(c)

Table 3.2: Elemental composition of *Escherichia coli*

Elements	C	O	N	H	P	S	K	Na	Ca	Mg	Fe	Mn, Zn, Cu, CO
% dry weight	50	20	14	8	3	1	1	1	0.5	0.5	0.2	0.3

dominate the macromolecular composition of a cell, making up 55% of total cell dry weight. Moreover, the diversity of proteins exceeds that of all other macromolecules combined. But in any microbial cell, carbon and nitrogen are important macronutrients. The remaining four macroelements exist in the cell as cations and play a variety of roles.

In addition to macroelements, all microorganisms require several nutrients in small amounts—amounts so small that in the lab they are often obtained as contaminants in water, glassware, and growth media. Likewise in nature, they are ubiquitous and usually present in adequate amounts to support the growth of microbes. These nutrients are called **micronutrients** or **trace elements**. The micronutrients—manganese, zinc, cobalt, molybdenum, nickel, and copper—are needed by most cells. Micronutrients are normally a part of enzymes and cofactors, and they aid in the catalysis of reactions and maintenance of protein structure. For example, zinc (Zn 2+) is present at the active site of some enzymes but can also be involved in the

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association of different subunits of a multimeric protein. Manganese (Mn 2+) aids many enzymes that catalyze the transfer of phosphate. Molybdenum (Mo 2+) is required for nitrogen fixation, and cobalt (Co 2+) is a component of vitamin B 12 . Besides the common macroelements and trace elements, some microorganisms have particular requirements that reflect their specific morphology or metabolic capabilities. For instance, diatoms, members of the eucaryotic taxon *Stramenopiles*, need silicic acid (H₄SiO₄) to construct their beautiful cell walls of silica [(SiO₂)_n]. But no matter what their nutritional requirements, microbes require a balanced mixture of nutrients. If an essential nutrient is in short supply, microbial growth will be limited regardless of the concentrations of other nutrients.

Requirements for carbon, hydrogen, oxygen and electrons

All organisms need carbon, hydrogen, oxygen, and a source of electrons. **Carbon** is needed to synthesize the organic molecules from which organisms are built.

Hydrogen and oxygen are also important elements found in many organic molecules.


Electrons are needed for two reasons. The movement of electrons through electron transport chains and during other oxidation-reduction reactions can provide energy for use in cellular work. Electrons also are needed to reduce molecules during biosynthesis (e.g., the reduction of CO₂ to form organic molecules).

The requirements for carbon, hydrogen, and oxygen usually are satisfied together because molecules serving as carbon sources often contribute hydrogen and oxygen as well. For instance, many **heterotrophs**—organisms that use reduced, preformed organic molecules as their carbon source—can also obtain hydrogen, oxygen, and electrons from the same molecules (**table 3.3**).

Table 3.3: Sources of carbon, Energy and Electrons

Carbon sources	
Autotrophs	CO ₂ sole or principal biosynthetic carbon source
Heterotrophs	Reduced, preformed, organic molecules from other organisms
Energy sources	
Phototrophs	Light
Chemotrophs	Oxidation of organic or inorganic compounds
Electron sources	
Lithotrophs	Reduced inorganic molecules
Organotrophs	Organic molecules

Because the electrons provided by these organic carbon sources can be used in electron transport as well as in other oxidation reduction reactions, many heterotrophs also use their carbon source as an energy source. Indeed, the more reduced the organic carbon source (i.e., the more electrons it carries), the higher its energy content. Thus lipids have higher energy content than carbohydrates.


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A most remarkable characteristic of heterotrophic microorganisms is their extraordinary flexibility with respect to carbon sources. Laboratory experiments indicate that all naturally occurring organic molecules can be used as a source of carbon or energy or both by at least some microorganisms. Actinomycetes, common soil bacteria, degrade amyl alcohol, paraffin, and even rubber. The bacterium *Burkholderia cepacia* can use over 100 different carbon compounds. Microbes can degrade even relatively indigestible human-made substances such as pesticides. This is usually accomplished in complex microbial communities. These molecules sometimes are degraded in the presence of a growth-promoting nutrient that is metabolized at the same time—a process called **cometabolism**. Other microorganisms can use the products of this breakdown process as nutrients. In contrast to these **bacterial omnivores**, some microbes are exceedingly fastidious and catabolize only a few carbon compounds. Cultures of methylotrophic bacteria metabolize methane, methanol, carbon monoxide, formic acid, and related one-carbon molecules. Parasitic members of the genus *Leptospira* use only long-chain fatty acids as their major source of carbon and energy.

Other microbes are **autotrophs**—organisms that use carbon dioxide (CO_2) as their sole or principal source of carbon (**table 3.3**). Although CO_2 is plentiful, its use as a carbon source presents a problem to autotrophs. CO_2 is the most oxidized form of carbon, lacks hydrogen, and is unable to donate electrons during oxidation-reduction reactions. Therefore CO_2 cannot be used as a source of hydrogen, electrons, or energy. Because CO_2 cannot supply their energy needs, autotrophs must obtain energy from other sources such as light or reduced inorganic molecules.

Requirements for Nitrogen, Phosphorous and Sulfur

To grow and reproduce, a microorganism must be able to incorporate large quantities of nitrogen, phosphorus, and sulfur. Although these elements may be acquired from the same nutrients that supply carbon, microorganisms usually employ inorganic sources as well.

A bacterial cell is about 13% nitrogen. **Nitrogen** is needed for the synthesis of amino acids, purines, pyrimidines, some carbohydrates and lipids, enzyme cofactors, and other substances. Many microorganisms can use the nitrogen in amino acids. Others can incorporate ammonia directly through the action of enzymes such as glutamate dehydrogenase or glutamine synthetase and glutamate synthase.

The bulk of nitrogen available in nature is in inorganic form as ammonia (NH_3), nitrate (NO_3), or nitrogen gas (N_2). Virtually all prokaryotes can use NH_3 as their nitrogen source, and many can also use NO_3 . Most phototrophs and many chemotrophic microorganisms reduce nitrate to ammonia and incorporate the ammonia in a process known as **assimilatory nitrate reduction**. A variety of bacteria (e.g., many cyanobacteria and the symbiotic bacterium *Rhizobium*) can assimilate atmospheric nitrogen (N_2) by reducing it to ammonia (NH_3). This is called **nitrogen fixation**. Nitrogen in organic compounds, for example, in amino acids, may also be available to microorganisms; if organic N is available and is taken up, the compound can

immediately enter the monomer pool for biosynthesis or be catabolized as an energy source.

Phosphorus is present in nucleic acids, phospholipids, nucleotides such as ATP, several cofactors, some proteins, and other cell components. Almost all microorganisms use inorganic phosphate as their phosphorus source and incorporate it directly. Low phosphate levels can limit microbial growth in aquatic environments. Some microbes, such as *Escherichia coli*, use both organic and inorganic phosphate. Some organophosphates such as hexose 6-phosphates are taken up directly by the cell. Other organophosphates are hydrolyzed in the periplasm by the enzyme alkaline phosphatase to produce inorganic phosphate, which then is transported across the plasma membrane.

Sulfur is needed for the synthesis of substances such as the amino acids cysteine and methionine, some carbohydrates, and also in several vitamins, including thiamine, biotin, and lipoic acid.. Sulfur can be supplied to cells in several forms, including sulfide (HS_2) and sulfate (SO_4). Most microorganisms use sulfate as a source of sulfur after reducing it; a few microorganisms require a prereduced form of sulfur such as cysteine.

Other macronutrients

Potassium (K) is required for the activity of several enzymes, including some involved in protein synthesis; whereas **magnesium (Mg)** complexes with ATP; functions to stabilize ribosomes, membranes, and nucleic acids and is also required for the activity of many enzymes (as cofactor). **Calcium (Ca)** is not required by all cells but can play a role in helping to stabilize microbial cell walls, and it plays a key role in the heat stability of bacterial endospores. **Sodium (Na)** is required by some, but not all, microorganisms, and its requirement is typically a reflection of the habitat. For example, seawater contains relatively high levels of Na^+ , and marine microorganisms typically require Na^+ for growth. By contrast, freshwater species are usually able to grow in the absence of Na^+ . K, Mg, Ca, and Na are all supplied to cells as salts, typically as chloride or sulfate salts.

Micronutrients: Iron and Other Trace Metals

Microorganisms require several metals for growth. Chief among these is **Iron (Fe)**, which plays a major role in cellular respiration. Iron is a key component of cytochromes and of iron-sulfur proteins involved in electron transport reactions Under anoxic conditions, iron is generally in the ferrous (Fe^{2+}) form and soluble. However, under oxic conditions, iron is typically in the ferric (Fe^{3+}) form as part of insoluble minerals. To obtain Fe^{3+} from such minerals, cells produce ironbinding molecules called **siderophores** that function to bind Fe^{3+} and transport it into the cell. However, as important as iron is for most cells, some organisms can grow in the absence of iron. For example, many lactic acid bacteria such as species of *Lactobacillus* do not contain detectable iron and grow normally in its absence. In these organisms, **manganese (Mn^{2+})** often plays a role similar to that just described for iron. Many other metals are required or otherwise metabolized by



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microorganisms (Table 3.4). Like iron, these micronutrients are called **trace elements** or **trace metals**. Micronutrients typically play a role as cofactors for enzymes.

Table 3.4: Micronutrients (trace elements) needed by microorganisms

Element	Cellular function or molecule of which a part
Boron (B)	Autoinducer for quorum sensing in bacteria; also found in some polyketide antibiotics
Chromium (Cr)	Possible but not proven component for glucose metabolism (necessary in mammals)
Cobalt (Co)	Vitamin B ₁₂ ; transcobalamin (only in propionic acid bacteria)
Copper (Cu)	in respiration; cytochrome c oxidase; in photosynthesis; plastocyanin; some superoxide dismutases
Iron (Fe) ^b	Cytochromes; catalases; peroxidases; iron-sulfur proteins; oxygenases; all nitrogenases
Manganese (Mn)	Activator of many enzymes; component of certain superoxide dismutases and of the water-splitting enzyme in oxygenic phototrophs (photosystem II)
Molybdenum (Mo)	Certain flavin-containing enzymes; some nitrogenases; nitrate reductases; sulfite oxidases; DMSO-TMAO reductases; some formate dehydrogenases
Nickel (Ni)	Most hydrogenases; coenzyme F ₄₃₀ of methanogens; carbon monoxide dehydrogenase; urease
Selenium (Se)	Formate dehydrogenase; some hydrogenases; the amino acid selenocysteine
Tungsten (W)	Some formate dehydrogenases; oxotransferases of hyperthermophiles
Vanadium (V)	Vanadium nitrogenase; bromoperoxidase
Zinc (Zn)	Carbonic anhydrase; alcohol dehydrogenase; RNA and DNA polymerases; and many DNA-binding proteins

^aNot every micronutrient listed is required by all cells; some metals listed are found in enzymes or cofactors present in only specific microorganisms.


^bNeeded in greater amounts than other trace metals.

Growth factors

Organic compounds that must be supplied in the diet for growth because they are essential cell components or precursors of such components and may not be synthesized by the organism are called **growth factors**. They are similar to micronutrients as they are required in only very small quantities. Although most microorganisms are able to biosynthesize the growth factors they need, some must obtain one or more of them from the environment and thus must be supplied with these compounds when cultured in the laboratory.

There are three major classes of growth factors: (1) amino acids, (2) purines and pyrimidines, and (3) vitamins. Amino acids are needed for protein synthesis, purines and pyrimidines for nucleic acid synthesis. **Vitamins** are small organic molecules that usually make up all or part of enzyme cofactors. They are needed in only very small amounts to sustain growth. Most vitamins function as coenzymes, which are nonprotein components of enzymes. The functions of selected vitamins and examples of microorganisms requiring them are given in **table 3.5**. Vitamin requirements vary among microorganisms, ranging from none to several. Lactic acid bacteria, which include the genera *Streptococcus*, *Lactobacillus*, and *Leuconostoc* are renowned for their many vitamin requirements, which are even more extensive than those of humans.

Table 3.5: Functions of some common vitamins in microorganisms


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Vitamin	Functions	Examples of Microorganisms Requiring Vitamin*
Biotin	Carboxylation (CO ₂ fixation) One-carbon metabolism	<i>Leuconostoc mesenteroides</i> (B) <i>Saccharomyces cerevisiae</i> (F) <i>Ochromonas malhamensis</i> (P) <i>Acanthamoeba castellanii</i> (P)
Cyanocobalamin (B ₁₂)	Molecular rearrangements One-carbon metabolism—carries methyl groups	<i>Lactobacillus</i> spp. (B) <i>Euglena gracilis</i> (P) Diatoms (P) <i>Acanthamoeba castellanii</i> (P)
Folic acid	One-carbon metabolism	<i>Enterococcus faecalis</i> (B) <i>Tetrahymena pyriformis</i> (P)
Lipoic acid	Transfer of acyl groups	<i>Lactobacillus casei</i> (B) <i>Tetrahymena</i> spp. (P)
Pantothenic acid	Precursor of coenzyme A—carries acyl groups (pyruvate oxidation, fatty acid metabolism)	<i>Proteus morgani</i> (B) <i>Hanseniaspora</i> spp. (F) <i>Pisciumctum</i> spp. (P)
Pyridoxine (B ₆)	Amino acid metabolism (e.g., transamination)	<i>Lactobacillus</i> spp. (B) <i>Tetrahymena pyriformis</i> (P)
Niacin (nicotinic acid)	Precursor of NAD and NADP—carry electrons and hydrogen atoms	<i>Brucella abortus</i> , <i>Haemophilus influenzae</i> (B) <i>Blastocladia pringsheimii</i> (F) <i>Certhidia fasciculata</i> (P)
Riboflavin (B ₂)	Precursor of FAD and FMN—carry electrons or hydrogen atoms	<i>Caulobacter vibrioides</i> (B) <i>Dicyostelium</i> spp. (P) <i>Tetrahymena pyriformis</i> (P)
Thiamine (B ₁)	Aldehyde group transfer (pyruvate decarboxylation, α-keto acid oxidation)	<i>Bacillus anthracis</i> (B) <i>Phycomyces blakesleeianus</i> (F) <i>Ochromonas malhamensis</i> (P) <i>Colpidium campyllum</i> (P)

*The representative microorganisms are members of the following groups: Bacteria (B), Fungi (F), and protists (P)

Some microorganisms are able to synthesize large quantities of vitamins needed by humans. These microbes can be used to manufacture these vitamins for human use. Several water-soluble and fat-soluble vitamins are produced partly or completely using industrial fermentations. Examples of such vitamins and the microorganisms that synthesize them are riboflavin (*Clostridium*, *Candida*), coenzyme A (*Brevibacterium*), vitamin B 12 (*Streptomyces*, *Propionibacterium*, *Pseudomonas*), vitamin C (*Glucono bacter*, *Erwinia*, *Corynebacterium*), β-carotene (*Dunaliella*), and vitamin D (*Saccharomyces*). Current research focuses on improving yields and finding microorganisms that can produce large quantities of other vitamins. Other growth factors include heme (for the synthesis of cytochromes), which is required by *Haemophilus influenzae*, and cholesterol, which is needed by some mycoplasmas.

Table 3.6: Sources of Essential nutrients

Carbon	extracellular environment
Nitrogen	Reservoir – atmospheric nitrogen, inorganic & organic nitrogenous compounds in environment
Oxygen	Atmosphere, organic compounds, inorganic salts
Hydrogen	Organic and inorganic compounds, water, naturally occurring gases—methane, hydrogen sulphide, hydrogen
Phosphorous	Phosphates and phosphoric acid from rocks and oceanic mineral


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s	deposits
Sulfur	Environment: rocks, sediments, hydrogen sulphide, S

Nutritional Types of Microorganisms

Because the need for carbon, energy, and electrons is so important, biologists use specific terms to define how these requirements are fulfilled. Microorganisms can be classified as either heterotrophs or autotrophs with respect to their preferred source of carbon (**table 3.3**).

Only two sources of energy are available to organisms: (1) light energy, and (2) the energy derived from oxidizing organic or inorganic molecules.

Phototrophs use light as their energy source;

chemotrophs obtain energy from the oxidation of chemical compounds (either organic or inorganic).

Microorganisms also have only two sources for electrons.

Lithotrophs (i.e., "rock-eaters") use reduced inorganic substances as their electron source, whereas

organotrophs extract electrons from reduced organic compounds.

Despite the great metabolic diversity seen in microorganisms, most may be placed in one of five nutritional classes based on their primary sources of carbon, energy, and electrons (**table 3.6**). The majority of microorganisms thus far studied are either photolithoautotrophic or chemoorganoheterotrophic.

Table 3.6: Major nutritional types of Microorganisms

Nutritional Type	Carbon Source	Energy Source	Electron Source	Representative Microorganisms
Photolithoautotroph	CO ₂	Light	Inorganic e ⁻ donor	Purple and green sulfur bacteria, cyanobacteria
Photoorganoheterotroph	Organic carbon	Light	Organic e ⁻ donor	Purple nonsulfur bacteria, green nonsulfur bacteria
Chemolithoautotroph	CO ₂	Inorganic chemicals	Inorganic e ⁻ donor	Sulfur-oxidizing bacteria, hydrogen-oxidizing bacteria, methanogens, nitrifying bacteria, iron-oxidizing bacteria
Chemolithoheterotroph	Organic carbon	Inorganic chemicals	Inorganic e ⁻ donor	Some sulfur-oxidizing bacteria (e.g., <i>Beggiatoa</i>)
Chemoorganoheterotroph	Organic carbon	Organic chemicals often same as C source	Organic e ⁻ donor, often same as C source	Most nonphotosynthetic microbes, including most pathogens, fungi, and many protists and archaea

Photolithoautotrophs (often called simply **photoautotrophs**) use light energy and have CO₂ as their carbon source. Photosynthetic protists and cyanobacteria employ water as the electron donor and release oxygen (**figure 3.2 a**). Other photolithoautotrophs, such as the purple and green sulfur bacteria (**figure 3.2 b**), cannot oxidize water but extract electrons from inorganic donors such as hydrogen, hydrogen sulfide, and elemental sulfur. **Chemoorganoheterotrophs** (sometimes called **chemoheterotrophs** or **chemoorganotrophs**) use organic compounds as sources of


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SYBSc Semester 4 Unit 3 Biofertilizers

1. Biofertilizers
2. Different types of biofertilizers
3. Mass production of Biofertilizers
4. Application of Biofertilizers
5. Azolla as cattle feed
6. List of Biofertilizer production units in Tamil Nadu
7. Constraints in Biofertilizer Technology
8. Biofertilizer strains developed from TNAU
9. Economics
10. Cost and availability of Biofertilizers

1. Biofertilizers

Biofertilizers are defined as preparations containing living cells or latent cells of efficient strains of microorganisms that help crop plants' uptake of nutrients by their interactions in the rhizosphere when applied through seed or soil. They accelerate certain microbial processes in the soil which augment the extent of availability of nutrients in a form easily assimilated by plants.

Very often microorganisms are not as efficient in natural surroundings as one would expect them to be and therefore artificially multiplied cultures of efficient selected microorganisms play a vital role in accelerating the microbial processes in soil.

Use of biofertilizers is one of the important components of integrated nutrient management, as they are cost effective and renewable source of plant nutrients to supplement the chemical fertilizers for sustainable agriculture. Several microorganisms and their association with crop plants are being exploited in the production of biofertilizers. They can be grouped in different ways based on their nature and function.

S. No.	Groups	Examples
N₂ fixing Biofertilizers		
1.	Free-living	<i>Azotobacter, Beijerinckia, Clostridium, Klebsiella, Anabaena, Nostoc,</i>
2.	Symbiotic	<i>Rhizobium, Frankia, Anabaena azollae</i>
3.	Associative Symbiotic	<i>Azospirillum</i>

P Solubilizing Biofertilizers		
1.	Bacteria	<i>Bacillus megaterium</i> var. <i>phosphaticum</i> , <i>Bacillus subtilis</i>

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		<i>Bacillus circulans</i> , <i>Pseudomonas striata</i>
2.	Fungi	<i>Penicillium sp</i> , <i>Aspergillus awamori</i>
P Mobilizing Biofertilizers		
1.	Arbuscular mycorrhiza	<i>Glomus sp.</i> , <i>Gigaspora sp.</i> , <i>Acaulospora sp.</i> , <i>Scutellospora sp.</i> & <i>Sclerocystis sp.</i>
2.	Ectomycorrhiza	<i>Laccaria sp.</i> , <i>Pisolithus sp.</i> , <i>Boletus sp.</i> , <i>Amanita sp.</i>
3.	Ericoid mycorrhizae	<i>Pezizella ericae</i>
4.	Orchid mycorrhiza	<i>Rhizoctonia solani</i>
Biofertilizers for Micro nutrients		
1.	Silicate and Zinc solubilizers	<i>Bacillus sp.</i>
Plant Growth Promoting Rhizobacteria		
1.	<u>Pseudomonas</u>	<u><i>Pseudomonas fluorescens</i></u>

2. Different types of biofertilizers

Rhizobium

Rhizobium is a soil habitat bacterium, which can able to colonize the legume roots and fixes the atmospheric nitrogen symbiotically. The morphology and physiology of Rhizobium will vary from free-living condition to the bacteroid of nodules. They are the most efficient biofertilizer as per the quantity of nitrogen fixed concerned. They have seven genera and highly



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specific to form nodule in legumes, referred as cross inoculation group. *Rhizobium* inoculant was first made in USA and commercialized by private enterprise in 1930s and the strange situation at that time has been chronicled by Fred (1932). Initially, due to absence of efficient bradyrhizobial strains in soil, soybean inoculation at that time resulted in bumper crops but incessant inoculation during the last four decades by US farmers has resulted in the build up of a plethora of inefficient strains in soil whose replacement by efficient strains of bradyrhizobia has become an insurmountable problem.

Azotobacter

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Of the several species of *Azotobacter*, *A. chroococcum* happens to be the dominant inhabitant in arable soils capable of fixing N₂ (2-15 mg N₂ fixed /g of carbon source) in culture media. The bacterium produces abundant slime which helps in soil aggregation. The numbers of *A. chroococcum* in Indian soils rarely exceeds 10⁵/g soil due to lack of organic matter and the presence of antagonistic microorganisms in soil.

Azospirillum



Azospirillum lipoferum and *A. brasilense* (*Spirillum lipoferum* in earlier literature) are primary inhabitants of soil, the rhizosphere and intercellular spaces of root cortex of graminaceous plants. They perform the associative symbiotic relation with the graminaceous plants. The bacteria of Genus *Azospirillum* are N₂ fixing organisms isolated from the root and above ground parts of a variety of crop plants. They are Gram negative, *Vibrio* or *Spirillum* having abundant accumulation of polybetahydroxybutyrate (70 %) in cytoplasm. Five species of *Azospirillum* have been described to date *A. brasilense*, *A. lipoferum*, *A. amazonense*, *A. halopraeferens* and *A. irakense*. The organism proliferates under both anaerobic and aerobic conditions but it is preferentially micro-aerophilic in the presence or absence of combined nitrogen in the medium. Apart from nitrogen fixation, growth promoting substance production (IAA), disease resistance and drought tolerance are some of the additional benefits due to *Azospirillum* inoculation.

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Cyanobacteria



Both free-living as well as symbiotic cyanobacteria (blue green algae) have been harnessed in rice cultivation in India. A composite culture of BGA having heterocystous *Nostoc*, *Anabaena*, *Aulosira* etc. is given as primary inoculum in trays, polythene lined pots and later mass multiplied in the field for application as soil based flakes to the rice growing field at the rate of 10 kg/ha. The final product is not free from extraneous contaminants and not very often monitored for checking the presence of desired algal flora. Once so much publicized as a biofertilizer for

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the rice crop, it has not presently attracted the attention of rice growers all over India except pockets in the Southern States, notably Tamil Nadu. The benefits due to algalization could be to the extent of 20-30 kg N/ha under ideal conditions but the labour oriented methodology for the preparation of BGA biofertilizer is in itself a limitation. Quality control measures are not usually followed except perhaps for random checking for the presence of desired species qualitatively.

Azolla

Azolla is a free-floating water fern that floats in water and fixes atmospheric nitrogen in association with nitrogen fixing blue green alga *Anabaena azollae*. *Azolla* fronds consist of sporophyte with a floating rhizome and small overlapping bi-lobed leaves and roots. Rice growing areas in South East Asia and other third World countries have recently been evincing increased interest in the use of the symbiotic N₂ fixing water fern *Azolla* either as an alternate nitrogen sources or as a supplement to commercial nitrogen fertilizers. *Azolla* is used as biofertilizer for wetland rice and it is known to contribute 40-60 kg N/ha per rice crop.

Phosphate solubilizing microorganisms(PSM)

Several soil bacteria and fungi, notably species of *Pseudomonas*, *Bacillus*, *Penicillium*, *Aspergillus* etc. secrete organic acids and lower the pH in their vicinity to bring about dissolution of bound phosphates in soil. Increased yields of wheat and



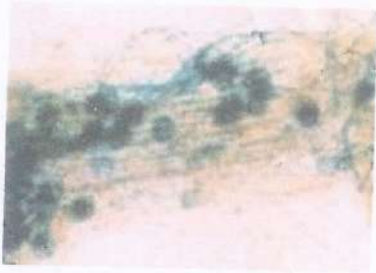
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potato were demonstrated due to inoculation of peat based cultures of *Bacillus polymyxa* and *Pseudomonas striata*. Currently, phosphate solubilizers are manufactured by agricultural universities and some private enterprises and sold to farmers through governmental agencies. These appear to be no check on either the quality of the inoculants marketed in India or the establishment of the desired organisms in the rhizosphere.

AM fungi



The transfer of nutrients mainly phosphorus and also zinc and sulphur from the soil *milleu* to the cells of the root cortex is mediated by intracellular obligate fungal endosymbionts of the genera *Glomus*, *Gigaspora*, *Acaulospora*, *Sclerocysts* and *Endogone* which possess vesicles for storage of nutrients and arbuscles for funneling these nutrients into the root system. By far, the commonest genus appears to be *Glomus*, which has several species distributed in soil.

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Availability for pure cultures of AM (Arbuscular Mycorrhiza) fungi is an impediment in large scale production despite the fact that beneficial effects of AM fungal inoculation to plants have been repeatedly shown under experimental conditions in the laboratory especially in conjunction with other nitrogen fixers.

Silicate solubilizing bacteria (SSB)

Microorganisms are capable of degrading silicates and aluminum silicates. During the metabolism of microbes several organic acids are produced and these have a dual role in silicate weathering. They supply H⁺ ions to the medium and promote hydrolysis and the organic acids like citric, oxalic acid, Keto acids and hydroxy carboic acids which from complexes with cations, promote their removal and retention in the medium in a dissolved state.

The studies conducted with a *Bacillus* sp. isolated from the soil of granite crusher yard showed that the bacterium is capable of dissolving several silicate minerals under *in vitro* condition. The examination of anthropogenic materials like cement, agro inputs like super phosphate and rock phosphate exhibited silicate solubilizing bacteria to a varying degree. The bacterial isolates made from different locations had varying degree of silicate solubilizing potential. Soil inoculation studies with selected isolate with red soil, clay soil, sand and hilly soil showed that the organisms multiplied in all types of soil and released more of silica and the available silica increased in soil and water. Rice responded well to application of organic sliceous residue like rice straw, rice husk and black ash @ 5 t/ha. Combining SSB with these residues further resulted in increased plant growth and grain

ASMB

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T.Y.B.Sc. Semester VI Unit 1: Recombinant DNA Technology

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Unit 1.1: Branches of genetics / Subdisciplines of genetics

Geneticists often divide genetics into four major subdisciplines:

1. **Transmission genetics** (sometimes called **classical genetics**) is the subdiscipline dealing with how genes and genetic traits are transmitted from generation to generation and how genes recombine (exchange between chromosomes). This area addresses the relation between chromosomes and heredity, the arrangement of genes on chromosomes, and gene mapping. Here the focus is on the individual organism—how an individual organism inherits its genetic makeup and how it passes its genes to the next generation. Analyzing the pattern of trait transmission in a human pedigree or in crosses of experimental organisms is an example of a transmission genetics study.
2. **Molecular genetics** is the subdiscipline dealing with the molecular structure and function of genes. It concerns the chemical nature of the gene itself: how genetic information is encoded, replicated, and expressed. It includes the cellular processes of replication, transcription, and translation—by which genetic information is transferred from one molecule to another—and gene regulation—the processes that control the expression of genetic information. The focus in molecular genetics is the gene—its structure, organization, and function. Analyzing the molecular events involved in the gene control of cell division, or the regulation of expression of all the genes in a genome, are examples of molecular genetics studies. Genomic analysis is part of molecular genetics.
3. **Population genetics** is the subdiscipline that studies heredity in groups of individuals for traits that are determined by one or only a few genes. It explores the genetic composition of groups of individual members of the same species (populations) and how that composition changes over time and geographic space. Because evolution is genetic change, population genetics is fundamentally the study of evolution. The focus of population genetics is the group of genes found in a population. Analyzing the frequency of a disease-causing gene in the human population is an example of a population genetics study.


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4. **Quantitative genetics** also considers the heredity of traits in groups of individuals, but the traits of concern are determined by many genes simultaneously. Analyzing the fruit weight and crop yield in agricultural plants are examples of quantitative genetics studies. Although these subdisciplines help us think about genes from different perspectives, there are no sharp boundaries between them. Increasingly, for example, population and quantitative geneticists analyze molecular data to determine gene frequencies in large groups. Historically, transmission genetics developed first, followed by population genetics and quantitative genetics, and then molecular genetics.

Genes influence all aspects of an organism's life. Understanding transmission genetics, population genetics, and quantitative genetics will help you understand population biology, ecology, evolution, and animal behavior. Similarly, understanding molecular genetics is useful when you study such topics as neurobiology, cell biology, developmental biology, animal physiology, plant physiology, immunology, and, of course, the structure and function of genomes.


Unit1.2: Model Organisms

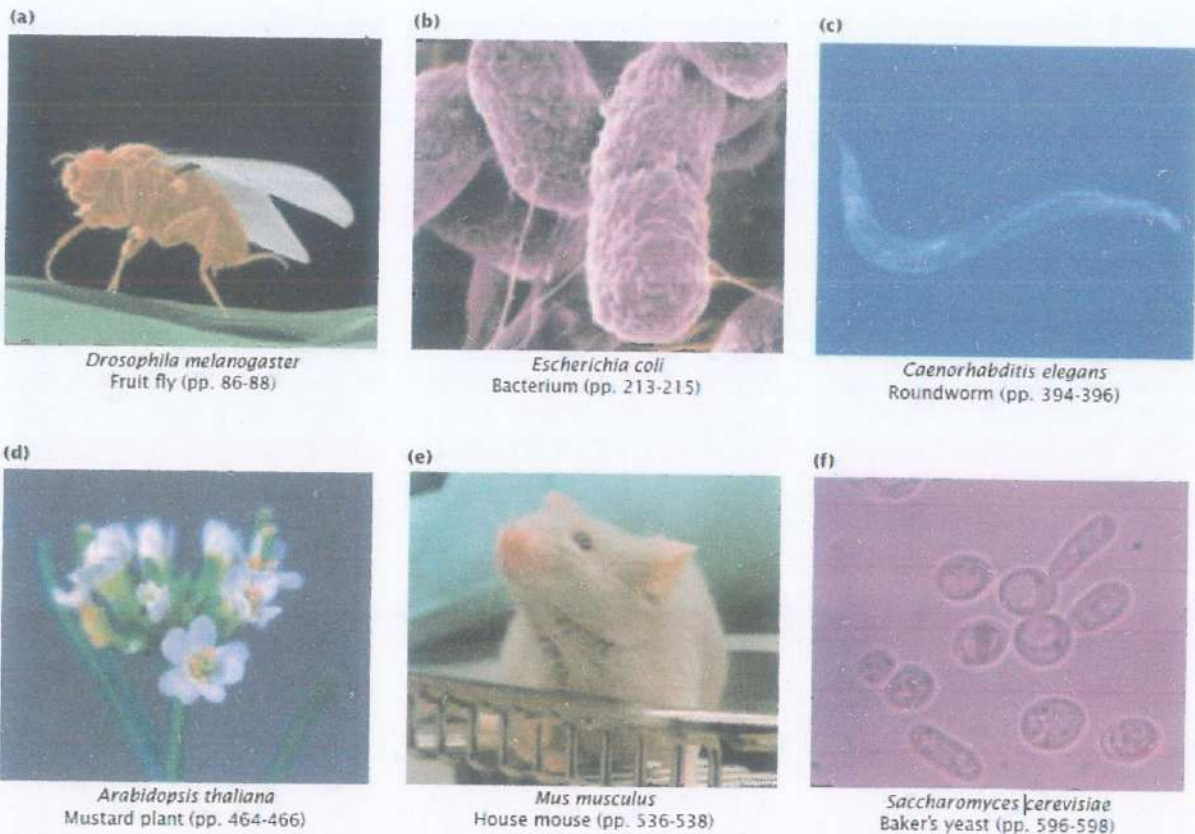
Through the years, genetic studies have been conducted on thousands of different species, including almost all major groups of bacteria, fungi, protists, plants, and animals. Nevertheless, a few species have emerged as **model genetic organisms**—organisms with characteristics that make them particularly useful for genetic analysis and about which a tremendous amount of genetic information has accumulated.

Six model organisms that have been the subject of intensive genetic study are: *Escherichia coli*, a bacterium present in the gut of humans and other mammals; *Saccharomyces cerevisiae*, baker's yeast; *Arabidopsis thaliana*, a mustard plant; *Caenorhabditis elegans*, a nematode worm; *Drosophila melanogaster*, the fruit fly; and *Mus musculus*, the house mouse (**FIGURE 1.7**). These species are the organisms of choice for many genetic researchers, and their genomes were sequenced as a part of the Human Genome Project.

Figure 1.1: Model genetic organisms




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At first glance, this group of lowly and sometimes despised creatures might seem unlikely candidates for model organisms. However, all possess life cycles and traits that make them particularly suitable for genetic study, including a short generation time, manageable numbers of progeny, adaptability to a laboratory environment, and the ability to be housed and propagated inexpensively. The life cycles, genomic characteristics, and features that make these model organisms useful for genetic studies are included in special model organism illustrations that appear throughout this book. Other species that are frequently the subject of genetic research include bread mold (*Neurospora crassa*), corn (*Zea mays*), zebra fish (*Danio rerio*), and clawed frog (*Xenopus laevis*). Although not generally considered a genetic model, humans also have been subjected to intensive genetic scrutiny.

The fruit fly *Drosophila melanogaster*

Drosophila melanogaster, the fruit fly (FIGURE 1.2), was among the first organisms used for genetic analysis and today, it is one of the most widely used and best known genetically of all eukaryotic organisms.

Figure 1.2: Model organism *Drosophila melanogaster*

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D. melanogaster first began to appear in biological laboratories about 1900. After first taking up breeding experiments with mice and rats, Thomas Hunt Morgan began using fruit flies in experimental studies of heredity at Columbia University. Morgan's laboratory, located on the top floor of Schermerhorn Hall, became known as the Fly Room (Figure 1.3).

Figure 1.3: The Fly Room



To say that the Fly Room was unimpressive is an understatement. The cramped room, only about 16 by 23 feet, was filled with eight desks, each occupied by a student and his experiments. The primitive laboratory equipment consisted of little more than milk bottles for rearing the flies and hand-held lenses for observing their traits. Later, microscopes replaced the hand-held lenses, and crude incubators were added to maintain the fly cultures, but even these additions did little to increase the physical sophistication of the laboratory. Morgan and his students were not tidy: cockroaches were abundant (living off spilled *Drosophila* food), dirty milk bottles filled the sink, ripe bananas—food for the flies—hung from the ceiling, and escaped fruit flies hovered everywhere.

In spite of its physical limitations, the Fly Room was the source of some of the most important research in the history of biology. There was daily excitement among the students, some of whom initially came to the laboratory as undergraduates. The close quarters facilitated informality and the free flow of ideas. Morgan and the Fly Room illustrate the tremendous importance of “atmosphere” in producing good science. Morgan and his students eventually used *Drosophila* to elucidate many basic principles of heredity, including sex-linked inheritance, epistasis, multiple alleles, and gene mapping.



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The Fly *Drosophila melanogaster*

ADVANTAGES

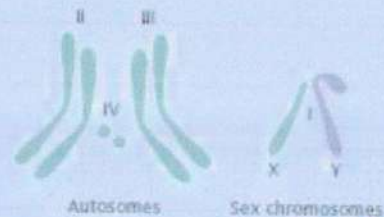
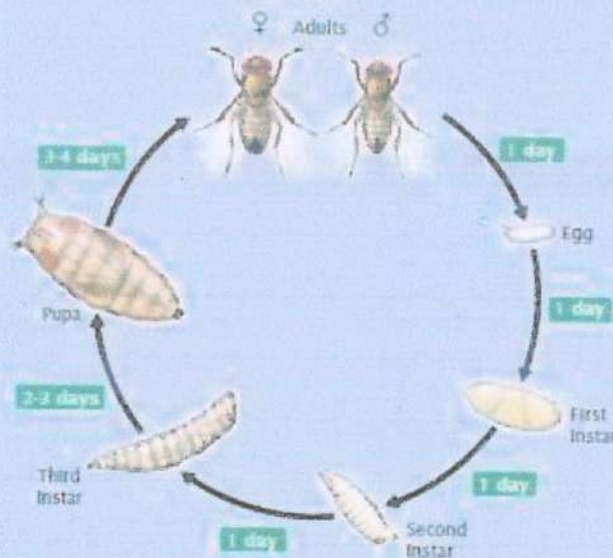
- Small size
- Short generation time of 10 days at room temperature
- Each female lays 400-500 eggs
- Easy to culture in laboratory
- Small genome
- Large chromosomes
- Many mutations available



STATS

Taxonomy: Insect
 Size: 2-3 mm in length
 Anatomy: 3 body segments, 6 legs, 1 pair of wings
 Habitat: Feeds and reproduces on fruit

Life Cycle



GENOME

Chromosomes: 3 pairs of autosomes and X and Y ($2n = 8$)
 Amount of DNA: 175 million base pairs
 Number of genes: 14,000
 Percentage of genes in common with humans: ~50%
 Average gene size: 3000 base pairs
 Genome sequenced in year: 2000

CONTRIBUTIONS TO GENETICS

- Basic principles of heredity including sex-linked inheritance, multiple alleles, epistasis, gene mapping, etc.
- Mutation research
- Chromosome variation and behavior
- Population genetics
- Genetic control of pattern formation
- Behavioral genetics

It has played an important role in studies of linkage, epistasis, chromosome genetics, development, behavior, and evolution. Because all organisms use a common genetic system, understanding a process such as replication or transcription in fruit flies helps us to understand these same processes in humans and other eukaryotes. *Drosophila* is a genus of more than 1000 described species of small flies (about 1 to 2 mm in length) that frequently feed and reproduce on fruit, although they rarely cause damage and are not considered economic pests. The best known and most widely studied of the fruit flies is *D. melanogaster*, but genetic studies have also been extended to many other species of the genus.

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Advantages of *Drosophila melanogaster* as a model genetic organism: *Drosophila's* widespread use in genetic studies is no accident. The fruit fly has a number of characteristics that make it an ideal subject for genetic investigations. It has a relatively short generation time; fruit flies will complete an entire generation in about 10 days at room temperature, and so several generations can be studied within a few weeks. Although *D. melanogaster* has a short generation time, it possesses a complex life cycle, passing through several different developmental stages, including egg, larva, pupa, and adult. A female fruit fly is capable of mating within 8 hours of emergence and typically begins to lay eggs after about 2 days. Fruit flies also produce a large number of offspring, laying as many as 400 to 500 eggs over a 10-day period. Thus, large numbers of progeny can be obtained from a single genetic cross.

Another advantage is that fruit flies are easy to culture in the laboratory. They are usually raised in small glass vials or bottles (as mentioned earlier, milk bottles were originally used) with easily prepared, paste-like food consisting of bananas or corn meal and molasses. Males and females are readily distinguished and virgin females are easily isolated, facilitating genetic crosses. The flies are small, requiring little space—several hundred can be raised in a small half-pint bottle—but they are large enough for many mutations to be observed easily with a hand lens or a dissecting microscope. Finally, *D. melanogaster* is an organism of choice for many geneticists because it has a relatively small genome consisting of 175 million base pairs of DNA, which is only about 5% of the human genome. It has four pairs of chromosomes: three pairs of autosomes and one pair of sex chromosomes. The X chromosome (designated chromosome 1) is large and acrocentric, whereas the Y chromosome is large and submetacentric, although it contains very little genetic information. Chromosomes 2 and 3 are large and metacentric; chromosome 4 is a very small acrocentric chromosome. In the salivary glands, the chromosomes are very large, making *Drosophila* an excellent subject for chromosome studies. In 2000, the complete genome of *D. melanogaster* was sequenced. *Drosophila* continues today to be one of the most versatile and powerful of all genetic model organisms.

The Bacterium *Escherichia coli*

The most widely studied prokaryotic organism and one of the best genetically characterized of all species is the bacterium *Escherichia coli* (FIGURE 1.4).

Figure 1.4: Model organism *Escherichia coli*


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Competition Act, 2002

A] Object of the Competition Act, 2002

The essence of Liberalization, privatization and globalization have opened the doors of Indian economy by removing governmental controls and allowed the natural competition from within the borders of our country as well as from the global economy. The Competition Act, 2002 replaced the outdated MRTP Act 1969 with the following objectives:

- a) **To prevent and eliminate** the forces, factors and practices, that cause adverse and negative impact on competition.
- b) **To promote and sustain** the forces of competition in the Indian economy.
- c) **To protect and promote** the interests of consumers.
- d) **To ensure freedom** of trade carried on by all other participants in Indian markets.

B] Prohibition of Anti-Competitive Agreements

Firms may enter into agreements, which may have the potential of or has adverse effect on competition within India. Such agreement can be horizontal and vertical agreements between the firms.

Horizontal agreements refer to agreements between two or more enterprise that are at the same stage of production chain. The cartel is the example of Horizontal agreement

Vertical agreements are agreements between enterprises that are at different stages or levels of production chain. Vertical agreements are pernicious (harmful), if they are between firms in a position of dominance.

Sec.3 (1) provides that any enterprise or association of enterprises or person or association of persons shall not enter into any agreement in respect of:

- a) Production,
- b) Supply,
- c) Distribution,
- d) Storage,
- e) Acquisition, or
- f) Control of goods or provision of services



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Which causes or is likely to cause an appreciable adverse effect on competition within India. Any agreement in violation of the above rule is void.

Following are the agreements are considered to be in contravention of Sec. 3 (1)

- a) Tie in Agreement: Eg. To Compulsorily buy gas burner from agency supplying gas cylinder as a condition for purchase of gas connection.
- b) Exclusive Supply Agreement: To restrict HUL products dealer from stocking any other brand goods other than HUL brand products.
- c) Exclusive Distribution Agreement: To give *Maruti* car dealer exclusive rights to sell particular area say *Andheri*.
- d) Refusal to Deal: An agreement with particular company ABC Ltd. to sell all the goods to particular person only say XYZ.

Exception: An agreement shall not be considered as anti-competitive if such agreement is entered into by way of joint ventures which increases efficiency in production, supply, distribution, storage, acquisition or control of goods or provision of services e.g. an arrangement between two or more banks for sharing their ATM networks.

C] Abuse of Dominant Position.

Sec. 4(1) defines Dominant position as a position of strength enjoyed by an enterprise or group, in the relevant market in India, which enables it to:

- a) Operate independently of competitive forces prevailing in the relevant market: or
- b) Affect its competitors or consumers or the relevant market in its favour.

Abuse of dominant position includes imposing unfair conditions or price, predatory pricing, limiting production/market, creating barriers to entry and applying dissimilar conditions to similar transactions.

Case Law: Microsoft V/s Sun Microsystems.

According to European Union's (EU) press release, the case had arisen out of complaint filed in December 1998 by Sun Microsystem, U.S. Company and a competitor to Microsoft. The allegation was that Microsoft had refused to provide interface information, which is necessary for Sun to develop products that could "talk" properly with the ubiquitous Windows PCs. As the result they are not able to compete on an equal footing in the market for Work Group Server Operating Systems.

The Competition Commission found that the Microsoft's refusal to provide interface information enabled the Window Media player get advantage over other media players to

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operate efficiently on the Windows Operating Systems and limited the other media players to compete with WMP.

III] Regulation of Combinations (Sec.6)

Combinations are not desirable if, they have appreciable adverse effect on the competition. The provisions relating to the regulation of combination are as follows:

- 1) A person or enterprise shall not enter into a combination, which causes or is likely to cause an appreciable adverse effect on competition within the relevant market in India. Such a combination is void.
- 2) Any person or enterprise, who proposes to enter into a combination, shall give notice to the Competition Commission within thirty days of approval by board of directors of the proposal relating to merger or amalgamation or execution of any agreement or other document for acquisition or acquisition of control.
- 3) The commission shall, deal with such notice in accordance with the prescribed provisions of the Competition Act.
- 4) The public financial institution, foreign institutional investors, bank or venture capital fund shall within seven days from the date of the acquisition file with the Competition Commission in the specified form about the details of acquisition or acquisition of control.

B} Competition Commission of India (CCI)

Following are the features of CCI

- a) The CCI is a body corporate having common seal and perpetual succession and thereby can enter into a contract, hold, acquire and dispose off the property.
- b) The commission shall consist of a Chairperson and minimum two and maximum six other members to be appointed by the Central Government.
- c) The chairperson and very other member shall be a person of ability, integrity and standing and who has special knowledge and professional experience of not less than fifteen years in international trade, economics, business, commerce, law, finance, accountancy, management, industry, public affairs or competition matters, competition law.
- d) The chairperson and other members of the Commission shall be appointed by the Central Government from a panel of names recommended by a Selection committee consisting of



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- i) the Chief Justice of India or his nominee...Chairperson,
- ii) the secretary in the Ministry of Corporate AffairsMember,
- iii) the secretary in the Ministry of Law & JusticeMember
- iv) two experts of repute who have special knowledge and professional experience of not less than fifteen years in international trade, economics, business, commerce, law, finance, accountancy, management, industry, public affairs or competition matters, competition law....Member

e) The maximum term of office of chairman and member is 5 years and maximum age limit for chairman is 65 years.

Powers of the CCI

1. Power to inquire into certain agreements and dominant position of enterprise.
2. Power to inquire into combinations.
3. Power to give opinion on in case of reference by statutory aughority.
4. Power to inquire into acts taking place outside India, but having an effect on competition in India.
5. Power to grant interim relief.
6. Power to award compensation

C} Statutory Authority – Sec. (w):

Statutory authority means any

- i) authority,
- ii) board,
- iii) corporation
- iv) council
- v) institute
- vi) university or
- vii) any other body corporate,

established by or under any Central, State or Provincial Act for the purpose of regulating production or supply of goods or provision of any services or markets or any matter connected therewith or incidental thereto.



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Revision test 1

- The phase difference between current and voltage for a pure resistor is _____.
(a) $\pi/2$ (b) zero (c) $\pi/6$ (d) $\pi/3$
- In _____ circuit, impedance becomes minimum at resonance.
(a) LR series (b) LCR parallel (c) CR series (d) LCR series
- The only bridge making use of only resistors is _____.
(a) De-Sauty's bridge (b) Maxwell's bridge
(c) Wheatstone bridge (d) Wien bridge
- The reactance of a coil of $L = 100\text{mH}$ connected to frequency of 1000Hz will be _____.
(a) 314Ω (b) 628Ω (c) 100Ω (d) 25Ω
- A Wien bridge circuit makes use of _____.
(a) two resistors and two capacitors (b) two resistors and four capacitors
(c) four resistors and two capacitors (d) four resistors and four capacitors
- In Maxwell's inductance bridge, if $R_1 = 500\Omega$, $R_2 = 800\Omega$ and $L_2 = 4\text{H}$, then $L_1 =$ _____.
a) 2.5H b) 4H c) 6.4H d) 1H
- The phase difference between alternating current and emf in a series LR circuit is _____.
a) $\sin^{-1}(wL/R)$ b) $\cos^{-1}(wL/R)$ c) $\tan^{-1}(wL/R)$ d) $\cot^{-1}(wL/R)$
- A balanced Maxwell's inductance bridge, $R_1 = 500\Omega$, $R_2 = 800\Omega$, $L_2 = 4\text{H}$, then $L_1 =$ _____.
a) 4H b) 8H c) 3.125H d) 2.5H
- The phase difference between alternating current and emf in a series CR circuit is given by-----
a) $\sin^{-1}(R/wC)$ B) $\tan^{-1}(wC/R)$ c) $\tan^{-1}(1/wCR)$ d) $\sin^{-1}(1/wCR)$
- If $\theta_1, \theta_2, \theta_3$ and θ_4 are the phase angles corresponding to the four arms of an ac bridge then for balanced bridge,-----
a) $\theta_1.\theta_2 = \theta_3.\theta_4$ b) $\theta_1.\theta_4 = \theta_2.\theta_3$ c) $1 + \theta_2 = \theta_3 + \theta_4$
d) $\theta_1 + \theta_4 = \theta_2 + \theta_3$
- Reactance of a capacitor of $0.1\mu\text{F}$ at frequency of alternating emf 50Hz is _____.
a) 3.18Ω b) 31.8Ω c) 318Ω
- In a pure _____ circuit, the current lags behind the applied e.m.f. by 90° .
(a) Inductive (b) Resistive (c) Capacitive (d) None of these
- In a De Sauty's bridge, when $R_1 = 1100\text{ohm}$, $R_2 = 1650\text{ohm}$ and $C_1 = 0.33\mu\text{F}$. The balance condition would be obtained when $C_2 =$ _____ μF .
(a) 0.47 (b) 0.33 (c) 0.22 (d) None of these
- The reactance of a capacitor will be _____ as the frequency of the AC source increases.
(a) decreasing (b) constant (c) increasing
- The SI unit of inductance is _____.
(a) ohm (b) farad (c) Henry (d) coulomb
- In case of LCR _____ circuit, current becomes maximum at resonance.
(a) series (b) parallel
- The phase difference is zero for a pure _____.
(a) inductor (b) capacitor (c) resistor
- NOR gate is combination of _____ gates.
(a) AND and OR (b) OR and NOT (c) NOT and NAND
(d) AND and NOT



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38. A junction diode can be used as _____.
- a) An oscillator b) An amplifier c) Voltage regulator
d) A rectifier
39. The _____ gate is known as basic building block in digital gates.
- (a) NOT (b) AND (c) NOR (d) OR
40. The output of Ex-OR gate will be _____ if input $A=1$ and $B=0$.
- (a) 1 (b) 2 (c) 0 (d) 3
41. A resistance of junction diode under forward biased condition is _____.
- (a) zero (b) very small (c) infinity
42. Half adder is constructed using _____ gate and _____ gate.
- (a) AND & NOR (b) OR & Ex-OR (c) AND & Ex-OR
43. As per the Biot-Savart's law, the _____ at a point due to a current carrying wire is directly proportional to the strength of the current element.
- (a) magnetic induction (b) induced emf
(c) electric potential (d) electrostatic energy
44. Two charges of 1 coulomb each separated by a distance of 1m in vacuum will experience a force of _____.
- (a) $9 \times 10^9 \text{N}$ (b) $0.9 \times 10^9 \text{N}$ (c) $90 \times 10^9 \text{N}$ (d) zero N
45. The magnetic field outside a long solenoid is _____.
- (a) less than magnetic field inside (b) zero
(c) more than magnetic field inside (d) infinite
46. The SI unit of electric field intensity is _____.
- (a) N/m (b) V/m (c) N-m (d) N-C
47. Magnetic field produced by Helmholtz coil is _____
- a) Non uniform axial magnetic field
b) Uniform magnetic field at the center of coil
c) Intense at the centre.
d) None of these
48. Two charges $+2\mu\text{C}$ and $+5\mu\text{C}$ are separate by a distance $d = 10 \text{ cm}$ apart. The ratio of the force acting on the respective charges is _____.
- a) 1:1 b) 5:2 c) 2:5 d) 4:25
49. Two charges of 1 coulomb each separated by a distance 1 m in vacuum exert mutually a force of
- (a) $9 \times 10^9 \text{N}$ (b) $18 \times 10^9 \text{N}$ (c) $0.9 \times 10^9 \text{N}$ (d) none of these
50. The unit of magnetic induction is _____.
- (a) weber (b) tesla (c) Newton (d) A-m



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Revision test 2

1. The reactance of a coil of inductance 10mH at frequency 500Hz will be _____.
2. The S.I. unit for reactance is _____.
3. The relation between voltage drop across a capacitor (V_c) and charge stored on capacitor (q) is _____.
4. The effective resistance of a capacitor and a resistor connected across an ac source is called as _____.
5. The reactance of a coil is _____ proportional to the frequency of ac source.
6. The reactance of a capacitor is _____ proportional to the frequency of ac source.
7. The reactance of a coil will _____ as the frequency of ac source is reduced.
8. The reactance of a capacitor will _____ as the frequency of ac source is reduced.
9. The resistance of a resistor will _____ as the frequency of ac source is increased.
10. The impedance of a resistor of $1\text{K}\Omega$ connected in series with a capacitor of $10\mu\text{F}$ and ac source of frequency 500Hz will be _____.
11. The circuit where impedance has a maximum value at a certain source frequency is _____ circuit.
12. The circuit where impedance has a minimum value at a certain source frequency is _____ circuit.
13. The circuit where current has a maximum value at a certain source frequency is _____ circuit.
14. The circuit where current has a minimum value at a certain source frequency is _____ circuit.
15. The LCR _____ circuit is called as acceptor circuit.
16. The LCR _____ circuit is called as rejector circuit.
17. In case of LCR series circuit, the peak value of current at resonance depends only on _____ and _____.
18. In case of LCR series circuit, the value of resonant frequency depends only on _____ and _____.
19. The bridge circuit with only resistors is _____.
20. The De-Sauty's bridge can be used to find unknown _____.
21. The Wheatstone bridge circuit is used to find unknown _____.
22. The Maxwell's bridge can be used to find unknown _____.
23. The Wien bridge can be used to find unknown _____.
24. The power dissipated in an ideal inductor by an ac source is _____.
25. The power dissipated in an ideal capacitor by an ac source is _____.
26. The internal resistance of an ideal voltage source is _____.
27. The internal resistance of an ideal current source is _____.
28. The symbol for ideal current source is _____.
29. The symbol for ideal voltage source is _____.
30. If two resistors of $10\text{K}\Omega$ and $5\text{K}\Omega$ are connected parallel to each other, the effective resistance will be _____.
31. The reverse voltage beyond which zener diode starts conducting is called as _____.
32. For an ideal rectifier, the ripple factor should be _____.
33. The ripple factor of bridge rectifier is _____.
34. For an ideal rectifier, the rectifier efficiency should be _____.



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35. The rectifier efficiency of bridge rectifier is _____.
36. The relation between thevenin's resistance and norton's resistance for any given circuit is _____.
37. Complete the table.
- | Gate | logic symbol | Boolean expression |
|-------|--------------|--------------------|
| AND | | |
| OR | | |
| NAND | | |
| NOT | | |
| NOR | | |
| Ex-OR | | |
38. The statement of De-Morgan's theorem is _____.
39. The filter circuits are used to reduce _____.
40. After connecting capacitor filter to the output of bridge rectifier, the ripple factor _____.

Answer in one sentence.

1. Define ideal current source.
2. Define ideal voltage source.
3. What is a rectifier circuit?
4. Which circuit is called as acceptor circuit?
5. Which circuit is called as rejecter circuit?
6. Which circuit is called as wattless circuit?
7. Define reactance and impedance.
8. Name different devices used to detect null point.
9. What is a filter circuit?
10. State Fleming's left hand rule.
11. Define ripple factor.
12. Define rectifier efficiency.
13. Define power factor.
14. Name the bridge circuit used to identify unknown capacitance.
15. Define resonant frequency.
16. Define electric intensity.
17. Define linear charge distribution.
18. Define volume charge distribution.
19. Define surface charge distribution.
20. Define reactance.
21. Define electric potential.
22. What is Lorentz force?
23. Define full adder.
24. Define half adder.
25. What is 1's complement of a binary number?
26. What is resistance of a diode under forward and reverse biased condition?



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F.Y.B.Sc. PHYSICS PAPER I UNIT II
ASSIGNMENT I

Answer the following. (8 marks each)

1. Derive the lens maker's equation to calculate focal length of a convex lens. Draw the necessary diagram.
2. Two convex lenses are placed coaxially at a distance d from each other. Draw the necessary diagram and derive the expression for equivalent focal length of the lens combination.
3. Derive the newton's lens equation for a convex lens.
4. Explain the construction of a Ramsden's eyepiece. Draw the necessary diagram. Derive the expression for equivalent focal length and positions of principle points for Ramsden eyepiece.
5. Explain the construction of a Huygen's eyepiece. Draw the necessary diagram. Derive the expression for equivalent focal length and positions of principle points for Huygen eyepiece.
6. Define Spherical aberration. Explain it with the help of a diagram. State any four methods used to reduce spherical aberration.
7. Define Chromatic aberration. Explain it with the help of a diagram. Define longitudinal chromatic aberration. Mention any two methods to reduce chromatic aberration.
8. Derive expression for longitudinal chromatic aberration when object is placed at an infinite distance from lens.



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F.Y.B.Sc. PHYSICS PAPER I UNIT II
ASSIGNMENT II

1. Derive expression for longitudinal chromatic aberration when object is placed at a finite distance from lens.
2. Two convex lenses of focal lengths f_1 and f_2 and dispersive powers ω_1 and ω_2 are placed touching each other. Derive the relation between their focal lengths and dispersive powers so that the lens system does not produce any chromatic aberration.
3. Two convex lenses of focal lengths f_1 and f_2 and having same dispersive power ω are placed at a distance D from each other. Derive the expression for distance D so that the lens system does not produce any chromatic aberration.
4. Explain the interference produced by a thin film due to reflected rays. Draw necessary diagram. state the conditions for constructive and destructive interference.
5. Explain the interference produced by a thin film due to transmitted rays. Draw necessary diagram. state the conditions for constructive and destructive interference.
6. What are Newton's rings? Explain the experimental set up used to produce Newton's rings. Draw the necessary diagram.
7. What are Newton's rings? Derive the expression for radius of Newton's rings. Draw the necessary diagram.



A handwritten signature in blue ink, appearing to be "A. R. S.", written over a diagonal line.

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F.Y.B.Sc. PHYSICS PAPER I UNIT II
ASSIGNMENT II


Answer the following. (4 marks each)

1. Explain the sign convention for a lens.
2. Name the cardinal points of a lens system and explain each point in brief.
3. Define thick lens. Write the expression for its focal length.
4. State any four differences between Ramsden eyepiece and Huygen eyepiece.
5. Define power of a lens. state the expression for power of a lens combination.
6. Derive the expression for distance between two lenses such that there is no spherical aberration.
7. What is dispersion of light. Define dispersive power. Write the expression for dispersive power of a lens.
8. What is aberration? What are different types of aberrations. Define each type.
9. What is interference? Define constructive and destructive interference. what is path difference.
10. What is a thin film? Explain different types of thin films.
11. Explain how Newton's ring apparatus can be used to determine unknown wavelength.
12. Explain how Newton's ring apparatus can be used to determine unknown radius of curvature.
13. Explain how Newton's ring apparatus can be used to determine unknown refractive index.
14. Derive expression for fringe width for fringes produced by a thin film.

Define following terms (1 mark each):

1. focal length
2. focal point
3. principle point
4. longitudinal magnification
5. lateral magnification
6. angular magnification
7. power of lens
8. refractive index
9. monochromatic aberration
10. achromatism




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Assignment IV : Lens system (Numericals)

1. In a Ramsden's eyepiece, two thin Plano convex lenses of the same material are at a distance 4 cm apart and have equal focal lengths of 2.8cm each. Calculate the equivalent focal length.
2. Two thin convex lenses of focal length 10 cm and 20 cm are placed at 5 cm apart in air. Find the equivalent focal length.
3. Calculate the focal length of a double convex lens for which radius of curvature of each surface is 30cm and refractive index of glass is 1.5
4. Two thin convex lenses are of focal lengths 45 cm and 30cm are separated by a distance of 8cm. Calculate the focal length of equivalent lens and positions of principal points.
5. Two thin convex lenses have power 6D and 3D. They are placed in air 15cm apart. Find the equivalent power.
6. Two thin convex lenses of focal lengths 20 cm and 5 cm. are kept coaxially separated by a distance of 10 cm plot the positions of cardinal points for the system.
7. Find the focal length of a thick lens having thickness 4cm and radii of curvature of two sides is 30 cm and 50cm. the refractive index of the material of lens is 1.65
8. An object is placed at a distance of 25 cm from a convex lens having focal length 10 cm. calculate image distance. Also calculate lateral magnification produced by lens.

Solution :

1. $f_1 = f_2 = 2.8\text{cm}$
 $d = 4\text{cm}$
 $F = 2.1\text{cm}$
2. $f_1 = 10\text{cm}$, $f_2 = 20\text{cm}$, $d = 5\text{cm}$ $F = 8\text{cm}$
3. $R_1 = R_2 = 30\text{cm}$, $\mu = 1.5$ $F = 30.03\text{cm}$
4. $F_1 = 45\text{cm}$, $f_2 = 30\text{cm}$, $d = 8\text{cm}$ $F = 20.16\text{cm}$ $\alpha = 5.376\text{cm}$ $\beta = - 3.584\text{cm}$
5. 6.3D
6. $F = 6.66\text{cm}$ $\alpha = 13.32\text{cm}$ $\beta = - 3.33\text{cm}$



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T.Y.B.Sc. SEM VI
ELECTRONIC INSTRUMENTATION
UNIT I : LOGIC CIRCUITS

Tristate devices:

1. What are tristate devices ? State their uses. Explain with functional block diagram working of bidirectional buffer (74LS245)
2. What are tristate devices ? State their uses. Explain with functional block diagram working of unidirectional buffer (74LS244)
3. What is Buffer ? Explain with the help of logic diagram bidirectional buffer (74LS245). State its use in microprocessor based system.

Ans : Buffer is a logic circuit that amplifies current or power. It has one input line and one output line. The buffer is used to increase the driving capability of a logic circuit.

In microprocessor system peripherals are connected in parallel between the address bus and data bus. But due to the tristate interfacing devices , peripherals do not load the system buses. The microprocessor can communicate with on device at a time by enabling tristate line of the interfacing device.

4. Explain the working of 3:8 decoder IC 74LS138. State its uses.
5. What is an encoder ? Draw logic symbol of 8 to 3 priority encoder 74LS148 and give its function table. Also state its uses.
6. What is a D flip-flop ? Explain 74LS373 D latch with its logic diagram and function table.
7. What are tristate devices ? State their uses. Explain tristate inverters with active high and active low enable lines with their logic symbols and truth tables.

Multiplexers and De-multiplexers:

1. What is a multiplexer? Draw the block diagram of a 8 to 1 multiplexer and explain its working.
2. What is a multiplexer? Draw block diagram of 8 to 1 multiplexer IC 74151 . eirte its truth table and explain its working.
3. What is a demultiplexer? Draw the block diagram of a 1 to n demultiplexer and explain its working.
4. What is a demultiplexer? Explain how a demultiplexer can be converted into a decoder.

Memory:

1. What is memory ? State different types of semiconductor memory. Explain in brief static and dynamic RAM.
2. Describe general categories of memory. State their uses. Distinguish between EPROM and EEPROM.
3. What is ROM ? State uses of ROM . Explain in brief different types of ROM.
4. What is memory? Describe classification of memory. State their uses.

UNIT II : MICROPROCESSOR 8085 (HARDWARE AND SIMPLE INSTRUCTIONS)

Hardware:

1. Give the detailed description and use of address bus, data bus and control bus with reference to 8085 microprocessor.



2. What is bus ? explain the function of address bus , data bus and control bus in 8085 microprocessor.
3. State the function and uses of general purpose registers, program counter and arithmetic-logic unit.
4. Write a short note on memory mapping for interfacing memory chip to 8085 microprocessor.
5. What is memory mapping? Interface 4K x 8 RAM to 8085 microprocessor. Give the memory map with starting address C000H.
6. Draw a neat labeled block diagram of 16 X 4 memory chip and explain in brief its write operation.
7. Interface a 4k x 8 RAM to 8085 microprocessor with starting address C000H. indicate clearly the address range for the chip.
8. Give the general format of the flag register of 8085 microprocessor and explain the function of each flag.
9. List five functional categories of 8085 instruction set. Describe any two instructions from arithmetic group with suitable example.
10. What are different functions of accumulator ?
11. Why are program counter and stack pointer 16 bit registers?
12. The memory address of first location of 4K byte memory is 4000H. find the address of the last location.
13. Give the general format of flag register of 8085 microprocessor and explain the function of each flag.
14. How many memory locations can be addressed by a microprocessor with 16 address lines? How many address lines are necessary on the chip of 2K bytes of memory? If this chip is mapped with the starting address 2000H , specify the address of the last location on the chip.
- 15.

Instructions:

1. List different instructions that clear the accumulator.
2. What are different addressing modes used in 8085 microprocessor ? explain each mode with example.
3. How do you classify instructions in 8085 microprocessor ? Explain with suitable example any two instructions from data transfer group.
- 4.

Problems:

1. Find the error in each case and rewrite correct instruction.
MVI B,C
INX L
JNC 8 BIT DATA
2. Write the no. of bytes required for each of the following
ADD C SUI 20H STA C500H
3. The initial contents of various registers are A =72H , B = C3H H= 00H and L=00H
Memory location C300H contains 92H. Specify the contents of these registers and memory location immediately after execution of each instruction.
LXI H C300H
MOV B,M



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CMA
MOV M, A
RST 1

4. State the instructions that perform following operation.
- Load HL pair with DE50H
 - Clear the accumulator.
 - Increment the contents of memory by 1.
 - Logically Or the contents of register B with accumulator.
 - Complement the Accumulator.
 - No operation.
5. State the type of addressing mode for the following.
- | | | |
|----------|----------------|-----------|
| MOV B, A | ADI 8 BIT DATA | LDA F000H |
| STAX H | RAL | CMP M |
6. The accumulator contains the data A2H, register B contains 51H and register C contains 68H. What will be the contents of these registers immediately after the execution of each instruction independently.
- | | | |
|-------|----------|-------|
| SUB B | MOV B, C | INX B |
| RAR | XRI FOH | CMA |
7. Write instruction to load accumulator with data B2H and transfer this data to memory location C250H.
8. Assume that accumulator contains 52H and carry flag is SET. Give the accumulator contents and status of carry flag after executing RAL instruction twice.
9. State the function performed by each of the following instructions.
- | | | | |
|-----------|-----|-------------|----------|
| STA C085H | RRC | LXI H E500H | JC D008H |
|-----------|-----|-------------|----------|
10. State the function performed by each of the following instructions.
- | | | | |
|----------|---------|-----|----------|
| MOV B, C | ADI 52H | RAL | JZ C100H |
| OUT 01H | PCHL | | |
11. The data in the accumulator, register C and register D of 8085 microprocessor is 00H, 0FH and 49H resp. What will be the contents of these registers after executing each instruction in the following program.
- MVI A, 68H
SUB C
MOV D, C
ORA D
RST 1
12. State how many times the following loop will be executed?
- | | |
|--------|--------------|
| | LXI B, 0005H |
| AGAIN: | DCX B |
| | JNZ : AGAIN |
13. Give the contents of accumulator after executing each of the following instruction in the program.
- MVI A, 95H
ANI 0FH
CMA



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14. Initially the accumulator contains 82H and carry flag is RESET. After executing following instructions in sequence, give the contents of accumulator and carry flag.
 ORI 07H
 RAL
 MVI A, 00H
15. State the functions performed by each of the following instructions.
 STA D300H DCR M RRC
 JNC C130H IN 03H HLT
16. Write the 8085 instructions to
1. Initialize memory pointer to C250H.
 2. Load F0H in accumulator.
 3. Increment contents of register B.
 4. Logically AND the contents of register C with contents of accumulator.
 5. Add the contents of register C to contents of accumulator.
 6. Find 2's complement of accumulator contents.
17. The accumulator contains the data B4H, register C contains 52H and register D contains 0FH. What will be the contents of these registers after execution of each of the following instruction independently.
1. ADD C
 2. MOV C, D
 3. INR D
 4. XRA C
 5. RAL
 6. SUB D
18. State the functions performed by each of the following instructions.
 MVI A, 00H STA 3200H JNZ C050H
 NOP LXI H, C200H ADD B
19. The data in the accumulator, register D and register E is 34H, A2H and F0H resp. What will be the contents of these registers after execution of each of the following instruction in the given program.
 ADD D
 MOV E, A
 RAR
 CMA
 SUB A
 RST 1
20. Specify the content of accumulator and carry flag when the following instructions are executed in sequence.
 MVI A, 80h
 ORA A
 RAL
21. Explain with suitable example, following instructions.
 ADD M RAL LDA ADDRESS



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22. What will be the contents of the accumulator , register B and register C after executing each instruction in the following program? Initially the contents of these registers are 00H.

```
MVI A, 52H
MOV B,A
MVI C, 7AH
ADD C
NOP
INX B
```

23. Assume that the content of the accumulator is 55H and the carry flag (CY) is SET. Give the contents of both after executing RAR instruction twice.

24. Specify the contents of accumulator , CY and AC flags after executing following instructions in sequence.

```
MVI A, 9CH
ADI 64H
RST 1
```

25.

UNIT III : MICROPROCESSOR 8085 (MEMORY RELATED INSTRUCTIONS AND PROGRAMMING , INTERFACING DEVICES)

Instructions:

8255 peripheral interface :

1. State the different modes of operation of PPI 8255 and explain in brief simple input-output mode.
2. Draw the functional block diagram of 8255 and state its features.
3. Draw block diagram of 8255 PPI and explain its working in brief.
4. Write the control word to program 8255A as follows
Port A : output port mode 0
Port B : input port mode 0
Port C upper : output port mode 0
Port C lower : input port mode 0
Write a program to input 8 bit data from port B and display the complement of it at port A. Port addresses are port A : 80H port B : 81H port C : 82H
control register : 83H
5. The control word of 8255 PPI in I/O mode is 83H. Identify the mode of operation and I/O status of all ports. Write a program to input 8 bit data from port B. Mask the upper 4 bits of data (accumulator contents) and then display it at port A.
6. Write the control word to program 8255A as follows
Port A output port (mode 0)
Port B input port (mode 0)
Port C output port (mode 0)
Write a program to input 8 bit data , rotate accumulator contents to right four times and then display it at any output port.
Given : port A : E000H
port B : E001H



port C : E002H
CWR : E003H

7. Write the three essential steps to communicate with peripherals through 8255PPI. Draw the block diagram of 8255A chip select logic and tabulate its I/P port addresses.
- 8.

PROGRAMS : (Draw flow chart)

1. Write an assembly language program to subtract 70H from C8H and store the result in memory location C900H.
2. Write an assembly language program to find the largest number in a given array of 5 elements. The array is stored in the memory from C300H onwards. Store the result at the end of the array.
3. Write an assembly language program to multiply to 8 bit hexadecimal numbers. Use register C to store any carry generated. Store the result at two consecutive memory locations CE00H and CE01H.
4. Write an assembly language program to add 52H to 4AH and store the result in memory location C500H.
5. Write an assembly language program to transfer the contents of memory block of size 10 with the starting address C200H to the memory block starting with D200H.
6. Write an assembly language program to complement the data stored in memory location C800H and place result in C400H.
7. Write an assembly language program to add two hexadecimal numbers. Take care of carry if generated and store the result at memory locations C200H and C201H.
8. The block of data is stored in the memory locations from C200H to C20FH. Transfer the data to the memory with starting address C550H.
9. Write an assembly language program to subtract two 8 bit hexadecimal numbers. Take care of borrow if generated. Show the result at memory locations C400H and C401H.
10. Write an assembly language program to add B218H to 4369H using DAD instruction. Store the result in memory locations C500H and C501H. Specify the answer you would expect after execution of program.
11. Write an assembly language program to find largest number from an array of TEN numbers stored in the memory with the starting address C800H.
12. Write an assembly language program to add a series of numbers. The numbers are stored in memory locations from C300H to C309H. the result is to be stored in locations C30AH and C30BH.
13. Write an assembly language program to find 2's complement of 17H and store the result at memory location C100H.
14. Write an assembly language program to add 32G0H and 7B09H using DAD instruction.

UNIT IV : C++ PROGRAMMING

1. List five major hardware components of computer system. Explain any two of them in brief.
2. Distinguish between procedural and object oriented programming.
3. Describe different parts of a complete C++ program.
4. Explain the general format of a switch statement with illustrative examples.



5. Explain the general format of a switch statement and explain the sequence in which switch statement is executed. Distinguish between if_else_if and switch statements.
6. Give the general format of if-else-if control statement. Write a program to explain the use of same.
7. Give the general format of if statement. Explain with suitable examples.
8. Give the general format of if_else statement. Explain with suitable examples.
9. Give the general format of for loop. Explain in brief execution of the for statement.
10. What is an identifier ? how is a user defined identifier different from standard identifier ?
11. State the functions of following in C++ program:

```
Cin object    #include directive    setw( )    '\t'    self(ios::showpoint)
//
```
12. What are different loop statements in C++? Give their syntax.
13. Explain with suitable example, use of break and continue statements in a loop structure.
14. Distinguish between while and do-while loop structures with suitable examples.
15. What are different statements in C++ to break the loop structure. Explain any one with suitable example.
16. Write a short note on function prototype.
17. Explain with suitable example continue statement.
18. Explain in brief the function of preprocessor, compiler and linker. Illustrate the process of translating source code into executable code.
19. Explain the function of following in C++ program.

```
Cin    sqrt    //
```
20. Explain the terms function header , function definition and function call.
21. Explain with suitable examples exit statement.
22. Give the difference between if statement and if_else statement. Explain with suitable example.
23. What is the use of #define statement in C++ ?

Programs:

1. Write a C++ program to display the name of the day in a week , depending on the number entered by the user. Use if-else-if.
2. Write a C++ program to display the name of the day in a week , depending on the number entered by the user. Use if-else.
3. Write a C++ program to display the name of the day in a week , depending on the number entered by the user. Use switch statement.
4. Write a C++ program to find area and perimeter of rectangle and display the result on screen.
5. Write a C++ program to add integer numbers from 1 to 10 using any one loop structure.
6. Write a C++ program which uses function prototype named area() in addition to its main function. The main function declares variable radius within its body and calls the function area () to calculate area of a circle and displays the result in the following format with two digit precision. Area od circle = _____ sq. meter
7. Write a C++ program using function prototype named energy () in addition to main function. The main function declares the variables mass height and velocity within its



body. Call the function energy () and display the result in the following format.
Energy = _____ cgs units. [given : energy = mgh + $\frac{1}{2} mv^2$ where g = 980 cgs units]

8. Write a C++ program to perform the following tasks:-
 1. declare two variables X and Y as floats.
 2. Assign a value 5.20 to X and 3.25 to Y.
 3. Assign the sum of X and Y to Z.
 4. Display the value of Z with proper prompt.
9. Write a function named ConvMiles. The function should have a float parameter named distance and should convert given distance in miles to meters, when ConvMiles is called. it should also display the output in the format _____ miles = _____ meters. (given 1 mile = 1609 meters)
10. Write a program in C++ to find the largest value of any three numbers using if_else structure.
11. Write a program in C++ to find sum of given three numbers using function named sum (). When the function is called in the main function , it should return the sum of three numbers.
12. Write a C++ program to display the name of the day in a week depending upon the number entered through keyboard. (use switch statement)
13. Write a C++ program to display the name of the day in a week depending upon the number entered through keyboard. (use if statement)
14. Write a C++ program to display the name of the day in a week depending upon the number entered through keyboard. (use if_else statement)
15. Write C++ program to enter two positive integers and display the larger of the two.
16. Write C++ program to display the perimeter of a square and a rectangle depending on the integer 1 or 2 entered during program execution.
17. Write C++ program to display "Do you wish ti do community service ?" at least once. The display should be seen as many times as the user wants.
18. Write C++ program to list 100 to 50 in descending order , one below the other. Write using 1) while loop 2) for loop
19. Write C++ program to convert a temperature in $^{\circ}K$ to a temperature in $^{\circ}C$. K value is input through keyboard. The program should display C upto 2 decimal places.
20. Write C++ program to print the sum of integers from 5 to 50.
- 21.

Problems:

1. Predict the output of the following program.

```
#include <iostream.h>
Void main ( )
{
long x , y , z ;
x = y = z = 6 ;
x +=3 ;
y %=3 ;
z *=3 ;
```



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```
cout<< x <, " " << y <<" " << z <<endl ;
}
```

2. Find the error if any in the following statements and rewrite corrected statement.

```
cout<<"age="age;
cin>>X;>>Y;
if(X>9||y<5)cout<<"invalid inputs\n";
else
cout<<"valid inputs\n";
```

3. Indicate which of the following is a function header, function prototype and function call.

```
float volume ( int , int , float)
float area ( int x , int y= 12)
area ( 32 )
```

4. Convert the following program segment from while to do-while format.

```
a. int i=1, sum;
b. while( i < 50)
c. {
d. Sum+=I;
e. I++;
f. }
g. Cout<<"sum="<<sum<<endl;
```

5. Predict the output of the following program

```
# include < iostream.h>
# define WHO " Alexander"
# define DID " invented"
# define WHAT " telephone"
Void main ( )
{
const int when = 1876;
cout<<"In";
cout<<when;
cout<<" " <<WHO << DID <<WHAT<<endl ;
}
```

6. Predict the output of the following program if user enters i=100

```
int n ;
cin >> n ;
for( i=1; i*i<=n; i++ )
cout<<i-1<<endl;
```

7. Predict the output of the following program

```
# include < iostream.h>
Int main ( );
```



```

{
int i, j, total=0;
cout<<"total = ";
for ( i=5, j=1; j<=5; i--, j++)
{
total += i *j;
cout<<"["<<i<<"*"<<j<<"]+";
}
cout<<"=" <<total<<endl;
return 0;
}

```

8. State the value of a , b ,c after executing following C++ statements
- ```

int a =5;
int b =60;
int c =0;
a *=5;
b %=6;
c = 3* pow (2 , 3);

```
9. Convert the following program into while loop.
- ```

long f=1;
int n , i = 2;
cin>> n;
do
{
f *= i;
i ++;
}
while ( i <= n );
cout<< f << endl;

```
10. Define a function named min () that returns the minimum of three integers.
11. Write the output of the following code.
- ```

for (int m = 50; ; m -=5)
{
cout << m<<" ";
if (m <= 25)
break;
}

```
12. Write the combined assignment statement for
1. Multiply the variable **product** by 12 and then store in **product** .
  2. Divide the variable **week** by 7 and then store in remainder .
  3. Store the sum of the variable **arcadet** and 40 .



13. Write the output after executing following code sement.
- ```
int x , y;
x = 2 ;
y = x ++ ;
cout<< x << y ;
```
14. Write the following statements in C++.
1. An `if_else` statement that assigns 5 to x when y is equal to 100 otherwise it should assign 20 to x.
 2. An `if_else` statement that displays "Albert Einstein " if A is positive otherwise displays "Fermi Dirac".
15. Write the output of the following code in C++
- ```
int m=1;
while (m<5)
{
m++;
cout<<m<<endl;
}
```
16. Write the output of the following code in C++
- ```
for( int num =5; num <=10 ; num+=5)
{
cout<<"room number ="<<num<<endl;
cout<<"laboratory –senior"<<endl;
}
```
17. Write the output of the following program assuming the user enters a = 5 and b =3 .
- ```
int a , b , alpha , beta ;
if (a>b)
alpha = ++a *b;
else
alpha = a*b ;
beta = pow (alpha , 2) ;
cout << " alpha = " <<alpha <<endl;
cout<< "beta =" <<beta;
```
- 18.



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Guidance Lecture : Nov 20, 2018

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| 27 | Sanikumar Chaudhary  | (B) | 2134 | <u>Sanj</u>      |
| 28 | Alkhan Basha         | (F) | 2734 | <u>Alkhan</u>    |
| 29 | Khan Altafur Behman  | (B) | 2209 | <u>Altafur</u>   |
| 30 | Amin Hakim Khan      | (B) | 2213 | <u>Amin</u>      |
| 31 | Toshi Saraswati      | (B) | 2181 | <u>Saraswati</u> |
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| 35 | Khan Sheru           | [C] | 2268 | <del>_____</del> |
| 36 | Khan Imtiaz Mahid    | [B] | 2219 | <u>Imtiaz</u>    |
| 37 | Brajmal S. Malika    | (E) | 2577 | <u>Brajmal</u>   |
| 38 | J. Manisha           | (B) | 2171 | <u>Manisha</u>   |
| 39 | Jai. P. Jain         | (B) | 2169 | <u>Jai</u>       |
| 40 | Sanesh R. Gupta      | (B) | 2139 | <u>Sanesh</u>    |
| 41 | Vinit Kagle          | (B) | 2192 | <u>Vinit</u>     |
| 42 | Yash Gurav           | (B) | 2151 | <u>Yash</u>      |
| 43 | Bhuvanesh            | (F) | 2740 | <u>Bhuvanesh</u> |
| 44 | Rohit Gungar         | (F) | 2736 | <u>Rohit</u>     |
| 45 | Robin Thomas         | (F) | 2728 | <u>Robin</u>     |
| 46 | Francis Kumar        | (F) | 2734 | <u>Francis</u>   |
| 47 | Rohit Goshi          | (F) | 2701 | <u>Rohit</u>     |
| 48 | Siddique Ameer Ahmed | (E) | 2521 | <u>Siddique</u>  |

1 1 ... d GURUJI B/2140 Principal



|    |                             |     |      |                  |
|----|-----------------------------|-----|------|------------------|
| 49 | Archana chuniyana           | (A) | 2108 | Archana          |
| 50 | Miya Estiyak Ali Abbas Azi  | (C) | 2317 | Miya             |
| 51 | Ashish S. Maurya            | (C) | 2308 | Ashish           |
| 52 | Prakash Gujja               | (B) | 2137 | Prakash          |
| 53 | Dhananjay Jaiswar           | (B) | 2174 | Dhananjay        |
| 54 | Sunil Salendraprakash Singh | (E) | 200  | Sunil            |
| 55 | Rohan Gupta                 | (B) | 2147 | Rohan            |
| 56 | Akash Gujja                 | (B) | 2136 | Akash            |
| 57 | Kishor R. Gowda             | (B) | 2135 | Kishor           |
| 58 | Amaan Khan                  | (B) | 2211 | Amaan            |
| 59 | Prasad Mantry               | (C) | 304  | Prasad           |
| 60 | BHAVYA NAGDA                | (F) | 2716 | Bhavya           |
| 61 | Roshan Gondalgi             | (B) | 2133 | Roshan           |
| 62 | Arif Abdul Raquum           | (C) | 2319 | Arif             |
| 62 | Mo Shadik Shuiki            | (E) | 2508 | Mo               |
| 63 | Aman Pardeshi               | (F) | 2662 | Aman             |
| 64 | MOHD FAYSAL KHAN            | (F) | 2620 | Mohd Faisal Khan |

Arasad  
19/11/18



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Smt. Thevatara College of Science,  
Wadala, Mumbai - 400 031

FYBCOM : B.Ecos Guidance lecture  
November 16, 2018 8 am onwards

| <u>S.No</u> | <u>Name of Student</u> | <u>Div/ Roll No</u> | <u>Sign</u>      |
|-------------|------------------------|---------------------|------------------|
| 1.          | Khan Zeinab            | A . 2100            | <u>Zeinab</u>    |
| 2.          | BORKAR SABA            | A 2046              | <u>Saba</u>      |
| 3.          | Priyanka Patel         | A 2077              | <u>Priyanka</u>  |
| 4.          | Bera. Rinika           | A 2096              | <u>Rinika</u>    |
| 5)          | Arifa Khatun           | D 2454              | <u>Arifa</u>     |
| 6)          | Anjali Bhaskar         | A 2010              | <u>Anjali</u>    |
| 7)          | Hemsharda Hinge        | B 2155              | <u>Hemsharda</u> |
| 8)          | Aarti Sangle           | C 2357              | <u>Aarti</u>     |
| 9)          | Deekshata Kulye        | C 2280              | <u>Deekshata</u> |
| 10)         | Sanjana Madkalya       | F 2648              | <u>Sanjana</u>   |
| 11          | Gausiya Pitti          | F 2649              | <u>Gausiya</u>   |
| 12)         | Amisha Shrivastav      | E 2520              | <u>Amisha</u>    |
| 13.         | Nisha Jadhav           | B 2162              | <u>Nisha</u>     |
| 14.         | Vaishali Bantu         | B 2228              | <u>Vaishali</u>  |
| 15          | Suman Gupta            | A 2117              | <u>Suman</u>     |
| 16.         | Vidya Binal            | A 2042              | <u>Vidya</u>     |
| 17.         | Avantika Bidu          | A 2039              | <u>A.S. Bidu</u> |
| 18.         | Nandini Shore          | A 2035              | <u>Nandini</u>   |
| 19          | Anushka V. Kadam       | B 2183              | <u>Anushka</u>   |
| 20.         | Manisha Ranji. K       | B 2201              | <u>Manisha</u>   |
| 21          | Rajesh A. Parada       | C 2345              | <u>Rajesh</u>    |
| 22          | Spanshal Sanjay Raut   | D 2402              | <u>Spanshal</u>  |
| 23          | Khan Mohseer           | B 2224              | <u>Mohsan</u>    |



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 Wadala, Mumbai - 400 031



|    |                          |     |      |              |
|----|--------------------------|-----|------|--------------|
| 24 | Savinaya Shetty          | D   | 2468 | Savin        |
| 25 | Hansha Rongi             | D   | 2426 | Hansha       |
| 26 | Solaniki Gaurav          | (E) | 2536 | Gaurav       |
| 27 | Aymen Khan               | B   | 2215 | Aymen        |
| 28 | Neha Mestry              | F   | 2676 | Neha         |
| 29 | Simran Misra             | F   | 2675 | Simran       |
| 30 | Shweta P Rai             | F   | 2707 | Shweta       |
| 31 | Niraj Kumar maurya (C)   | (C) | 2310 | Niraj        |
| 32 | Jyoti Gupta              | (B) | 2142 | Jyoti        |
| 33 | Sachna Jaiswar           | (B) | 2248 | Sachna       |
| 34 | Siddique Ameer Ahmed (E) | (E) | 2521 | Ameer        |
| 35 | fai P Jain               | (B) | 2169 | fai          |
| 36 | Pranjal S. Sureshkar     | (E) | 2577 | Pranjal      |
| 37 | Mono CRASAI KHAN         | (E) | 2620 | Mono         |
| 38 | Pranjal Sutar            | (F) | 2692 | Pranjal      |
| 39 | SHAIKH AYUB              | (D) | 2456 | Ayub         |
| 40 | Singh Ashish             | (C) | 2414 | Ashish       |
| 41 | Jannat Rajnar            | (D) | 2413 | Jannat       |
| 42 | Aman Pardeeshi           | (F) | 2667 | Aman         |
| 43 | Asif Abdul Qayyum        | (C) | 2319 | Asif         |
| 44 | Akber Basha              | (F) | 2734 | Akber        |
| 45 | Mo. Shadik Shaikh        | (E) | 2508 | Mo. Shadik   |
| 46 | Mohd. Shadab Ansari      | (A) | 2017 | Mohd. Shadab |
| 47 | P. Gauri Prakash         | (C) | 2328 | P. Gauri     |
| 48 | BHAVYA NAGDA             | (F) | 2716 | Bhavya       |
| 49 | Dhruv Rajani             | (A) | 2101 | Dhruv        |

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|    |                     |     |      |                        |
|----|---------------------|-----|------|------------------------|
| 50 | Varma Pooja         | (E) | 2563 | <del>V Pooja</del>     |
| 51 | Karishma Yadav      | (E) | 2584 | <del>Karishma</del>    |
| 52 | Anjali Bali         | (F) | 2753 | <del>Anjali</del>      |
| 53 | Vanita sudula       | (F) | 2631 | <del>Vanita</del>      |
| 54 | Bhagyashree Bhosale | (F) | 2723 | <del>Bhagyashree</del> |
| 55 | Anjali Jaiswal      | (B) | 2172 | <del>Anjali</del>      |
| 56 | Francis Kumari      | (F) | 2732 | <del>Francis</del>     |
| 57 | Rohit G             | (F) | 2736 | <del>Rohit</del>       |
| 58 | Robin Thomas        | (F) | 2728 | <del>Robin T</del>     |
| 59 | Rohit Goshi         | (F) | 2701 | <del>Rohit</del>       |
| 60 | Khan Intiyaz Akhlaq | (B) | 2219 | <del>Khan</del>        |
| 61 | Khan Sheru Aslam    | (C) | 2269 | <del>Khan</del>        |
| 62 | Pratibha Chauhan    | (C) | 2364 | <del>Pratibha</del>    |
| 63 | Pooja               | (C) | 2296 | <del>Pooja</del>       |

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16/11/18



*[Signature]*  
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Commerce & Economics &  
Smt. Theripalai College of S.A.  
Mumbai 400002

## F.Y. B. Eds : Guidance Lecture

November 14, 2018 : 8am onwards :

| S.No | Name of Student            | Div/<br>Roll No | Signature |
|------|----------------------------|-----------------|-----------|
| (1)  | Mirza Saba Shatgade Atom   | C 2313          |           |
| (2)  | Dakshata. Shontaram. Kulye | C 2280          |           |
| (3)  | Sonali kishor clondhe      | C 2292          | Sonali    |
| (4)  | Poiti L. br Pal            | C 2343          | Poiti     |
| (5)  | Anjali Bhaskar             | A (2010)        |           |
| (6)  | Shubhi Yadav               | E (2591)        |           |
| (7)  | Avantika Bidu              | A (2039)        | A.S. Bidu |
| (8)  | Gausip                     | F (2649)        |           |
| (9)  | Shaikh Nazmeen             | E (2605)        |           |
| (10) | Singh Jyoti                | E (2527)        | Jyoti     |
| (11) | Shrivastav Amisha          | E (2520)        | Amisha    |
| (12) | Manisha Kanawijya          | B (2201)        |           |
| (13) | Khan. Emroz                | B (2217)        |           |
| (14) | Khan ALTAFUR REHMAN        | B (2209)        |           |
| (15) | P. Gaurav Prakash          | C (2328)        |           |
| (16) | N. Akbar Basha             | F (2734)        |           |
| (17) | Rashant Singh Karki        | F (2715)        |           |
| (18) | Jai . p. Jain              | B (2169)        | Jai       |
| (19) | Amir Kamim Khan            | B (2213)        |           |
| (20) | Pratibha Chauhan           | C 2364          |           |
| (21) | Pooja                      | C 2296          |           |
| (22) | KHAN IMTIYAZ AKHLAQ.       | B 2219          |           |



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| S.No | Name of Student                   | Roll No | Sign                  |
|------|-----------------------------------|---------|-----------------------|
| 20   | Pravin S. Warlikar                | E/2577  | <u>Warlikar</u>       |
| 21   | Siddique Ameer Ahmed              | 2521/E  | <u>Ameer</u>          |
| 22   | Samush Rajbhar                    | 2413/D  | <u>Samush</u>         |
| 23   | Rutik shinde.                     | 2516/E  | <u>Rutik</u>          |
| 24   | Solanki Gaurav                    | 2536/E  | <u>Gaurav Solanki</u> |
| 25   | Neha yadav                        | 2587/E  | <u>Neha</u>           |
| 26   | Dhanashri chaudhari               | F/2659  | <u>chaudhari</u>      |
| 27   | Balkrishna varande                | E/2561  | <u>Varande</u>        |
| 28   | Sureya Subapathra                 | E/2542  | <u>Sureya</u>         |
| 29   | Jasatha Krishnan                  | F/2564  | <u>Jasatha</u>        |
| 30   | Ashish Thorate                    | F/2550  | <u>Ashish</u>         |
| 31   | Naidu Ajithkumar                  | 2332/C  | <u>Ajith</u>          |
| 32   | Zaher Pathan                      | 2348/C  | <u>Zaher</u>          |
| 33   | Yadav Kanchan                     | 257/E   | <u>Kanchan</u>        |
| 34   | Khan Gulafsha                     | 2603/E  | <u>Gulafsha</u>       |
| 35   | Renuka Dulgach                    | 2250/B  | <u>Dulgach</u>        |
| 36   | Mhaci Intekhab Mhaci Kabir Ansari | 2016/A  | <u>Intekhab</u>       |
| 37   | Mohd. Arbaz A. Ansari             | 2016/A  | <u>Arbaz</u>          |
| 38   | MiYA ESTIYAK ALI AOBAS ALI        | C/2377  | <u>Estiyak</u>        |
| 39   | Aman Pardeshi                     | F/2667  | <u>Aman</u>           |
| 40   | Neha Mehty                        | F/2676  | <u>Neha</u>           |
| 41   | Simran Anishra                    | F/2675  | <u>Simran</u>         |
| 42   | Rahul Kameesya                    | F/2709  | <u>Rahul</u>          |
| 43   | Wasim khem                        | F/2710  | <u>Wasim</u>          |
| 44   | Francis Kymav                     | F/2732  | <u>Francis</u>        |
| 45   | Gudiyar Gurta                     | B/2140  | <u>Gudiyar</u>        |



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# FYBCOM: B. Economics - Sem I

Guidance Lecture: November 22, 2018

| S.No. | Name of Student        | Div/Roll No | Sign                  |
|-------|------------------------|-------------|-----------------------|
| 1     | Gudliya Gupta          | 2140 / B    | <u>Gudliya</u>        |
| 2     | Suman Gupta            | 2117 / A    | <u>Suman</u>          |
| 3     | Ladli Dubey            | 2084 / A    | <u>Ladli</u>          |
| 4     | Arifa Khatun           | 2454 (D)    | <u>Arifa</u>          |
| 5     | Anjali Bhaskar         | 2010 / A    | <u>Al</u>             |
| 6     | Anjali Bali            | 2753 / F    | <u>Anjali</u>         |
| 7     | Kanchan Yadav          | 2579 / E    | <u>Kanchan</u>        |
| 8     | Nidhi Rao              | 2418 / B    | <u>Nidhi</u>          |
| 9     | Pooja Bhadwalkar       | 2594 / E    | <u>Pooja</u>          |
| 10    | Jadhav Anhita Gangaram | 2160 / B    | <u>Anhita</u>         |
| 11    | Amisha Shrivastav      | 2520 / E    | <u>Amisha</u>         |
| 12    | Jyoti R. Singh         | 2527 / E    | <u>Jyoti</u>          |
| 13    | Patil Manjiri          | 2389 / D    | <u>Manjiri</u>        |
| 14    | Priyanka Patel         | 2077 / A    | <u>Priyanka</u>       |
| 15    | Jai P. Jain            | 2169 / B    | <u>Jai</u>            |
| 16    | Pravina S. Morlikar    | 2577 / E    | <u>Morlikar</u>       |
| 17    | P. Gauri Prakash       | 2328 / C    | <u>P. Gauri</u>       |
| 18    | Siddique Ameer Ahmed   | E 2521      | <u>Ameer</u>          |
| 19    | Rajesh A. Panada       | C 2345      | <u>Rajesh</u>         |
| 20    | Arif Abdul Qayyum      | 2319 (C)    | <u>Arif</u>           |
| 21    | Mohd Raisul Khan       | (E) 2620    | <u>M. Raisul Khan</u> |
| 22    | M. Shadiq Shauikh      | (E) 2508    | <u>M. Shadiq</u>      |
| 23    | Karthik Raja           | (F) 2692    | <u>Karthik</u>        |
| 24    | Kartik Raja            | (E) 2549    | <u>Kartik</u>         |
| 25    | Spanshal Sujay Raut    | 2422 (D)    | <u>Spanshal</u>       |
| 26    | Khan Mohseeb           | 2224 [B]    | <u>Mohseeb</u>        |



|     |                     |      |     |          |
|-----|---------------------|------|-----|----------|
| 27. | Akheri Basha        | 2734 | (F) | Akheri   |
| 28  | Aman Pardeishi      | 2557 | (F) | Aman     |
| 29. | Sarvesh chachle     | 2047 | (A) | Sarvesh  |
| 30  | Dhruv Rajani        | 2101 | (A) | Rajani   |
| 31  | Khan Gulabsha       | 2663 | (E) | Gulabsha |
| 32  | Ajmer Banu Atiullah | 2013 | (A) | Ajmer    |

Fact-based  
22/11/18



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Wadala, Mumbai - 400 031

SYBCAM : B. Economics  
Guidance Lecture

October 17, 2018

| S.NO | Name of student      | Roll No | Signature      |
|------|----------------------|---------|----------------|
| 1.   | mohd Asman           | 3222    | Asman          |
| 2.   | Kaase. Gaunau        | 3184    | Kaase          |
| 3.   | Yash. B. Gurav       | 3141    | Yash           |
| 4.   | AMAR SINGH. B. NADAV | 3470    | Respected      |
| 5.   | Archana. Abok. Gupta | 3126    | Archana        |
| 6.   | Pooja Gupta          | 3130    | Pooja          |
| 7.   | Ansari Afzal         | 3129    | Afzal          |
| 8.   | Aakash Jain          | 3152    | Aakash         |
| 9.   | Abhishek D. Jagtap   | 3151    | Abhishek       |
| 10.  | Lena B. Pawar        | 3301    | Bwar           |
| 11.  | Vaishali K. Phulke   | 3304    | VKPhulke       |
| 12.  | Maleesh Kuruba       | 3210    | Maleesh        |
| 13.  | Aj. Pratiksha Jadhav | 3148    | Jadhav         |
| 14.  | Pratiksha Kondavle   | 3201    | Pratiksha      |
| 15.  | Reshma Jaiswal       | 3157    | Jaiswal        |
| 16.  | Tanya Indalkar       | 3145    | Indalkar, T.A. |
| 17.  | Rutika Kamble        | 3176    | RKamble        |
| 18.  | Nilame Kate          | 3239    | Nakate         |
| 19.  | Aparna Mahadik       | 3214    | Aparna         |
| 20.  | Ashwini Ioni         | 3203    | Ashwini        |
| 21.  | Goswami Devang       | 3084    | Devang         |
| 22.  | Moshahid Raza        | 3014    | Raza           |
| 23.  | Afreen Ansari        | 3011    | Afreen         |



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|               |                            |             |                 |                  |
|---------------|----------------------------|-------------|-----------------|------------------|
|               | 11/10/18                   | A - Malikar | 3219            | (K)K807          |
| 25            | Prachi D. Daval            |             | 3051            | P.D.Daval        |
| 26            | Pooja Muzanjan             |             | 3241            | Pooja            |
| 27            | Shahista Inamdar           |             | 8098            | Shahista         |
| 28            | Shabaz Qureshi             |             | 3362            | Shabaz           |
| 29            | Sonali P. Khatpe           |             | 3198            | S.Khatpe         |
| <del>30</del> | <del>Prajapati Kajal</del> |             | <del>3313</del> | <del>Kajal</del> |

Abasad  
17/10/18

*(Signature)*

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Wadala, Mumbai - 400 031





24/09/2018

FYBCOM : B. Economics Sem II ATKT

Sept-October 2018 : Guidance Lecture

S.No. Name of Student Roll No Signature

- |    |                     |      |         |
|----|---------------------|------|---------|
| 1. | GOSWAMI DEVANG .R.  | 2734 | Devang  |
| 2. | Bhosle Yash .Sunil  | 2040 | Yash    |
| 3. | Khan Afia Parvin.A. | 2205 | Afia    |
| 4. | Shandhi Pandey      | 2421 | Shandhi |

~~Shandhi~~

Aarti Prasad  
24/09/18

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# FC-I Evidence Lecture 20 Sep '18

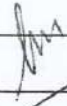
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| DATE     | _____ |

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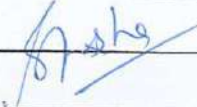
Roll No.

Signature.

|    |                      |                      |
|----|----------------------|----------------------|
| 1  | 632                  | Aarti                |
| 2  | 2528                 | <del>Foraino</del>   |
| 34 | 2546                 | <del>Deumar</del>    |
| 4  | 2630                 | <del>Aty</del>       |
|    | 2486                 | <del>Stawcelit</del> |
| 6) | 2281                 | Kamal Velavan        |
|    | 2179                 | <del>Paal</del>      |
| 7  | 3294                 | K. S. Patil          |
|    | 2064                 | V. Pholke            |
|    | 2066                 | Bhivasei             |
|    | 2040                 | Afzal                |
|    | <del>3279</del> 2384 | <del>Demel</del>     |
|    | 2318                 | Brijesh              |
|    | 611                  | Bhargat              |
|    | 2338                 | <del>Prabodib</del>  |
|    | 2216                 | Ajadhar              |
|    | 2313                 | S. K. Murab          |
|    | 2035                 | <del>Bugade</del>    |


  
 20.09.2018



  
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Guidance/  
Remedial Lectures  
2017-18



  
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STBCOM: Sem III. ATKT Guidance Lecture

| S.No | Name of student   | Roll no | Signature |
|------|-------------------|---------|-----------|
| 1    | Avinash. N. Verma | 3384    |           |
| 2    | Kalpesh Jain      | 3186    |           |
| 3    | Shreyas Adhikari  | 3415    |           |
| 4    | Sameekha Sawankar | 3280    |           |
| 5    | Patel Jassan      | 3424    |           |
| 6    | Rafiq Shaikh      | 3297    |           |
| 7    | Swapnil Shinde    | 3300    |           |
| 8    | Saif Areshi       | 3266    |           |
| 9    | Vikrant Pandey    | 3388    |           |
| 10   | Hosmani Jyoti     | 3402    |           |
| 11   | Twinkle Tailor    | 3337    |           |
| 12   | Suman Yadav       | 3444    |           |
| 13   | Harshada Yadav    | 3448    |           |
| 14   | Shaikh Naqis      | 3295    |           |
| 15   | Shailish Tiwari   | 3381    |           |
|      | Aarti Vishwakarma | 3427    |           |
|      | Sapna Tambur      | 3342    |           |
|      | Siddiqui Nasima   | 3469    |           |
|      | Mitisha Patel     | 3425    |           |
|      | Pooja Yadav       | 3396    |           |
|      | Sama Vishwakarma  | 3388    |           |
|      | Savita Singh      | 3328    |           |
|      | Upendra R. Singh  | 3329    |           |
|      | Rinki Saw         | 3282    |           |
|      | Raj. Manisha      | 3268    |           |
|      | Walunj Rohini     | 3471    |           |



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Smt. Thimmalai College of Science  
Wadala, Mumbai - 400 031

|                      |      |          |
|----------------------|------|----------|
| Shital Gurav         | 3418 | Shital   |
| Mansi Tege           | 3466 | Mansi    |
| Gayatri Simran       | 3454 | Gayatri  |
| Rashni, N. Aalad (A) | 3002 | Rashni   |
| Ayashi Rai           | 3450 | Ayashi   |
| M. RAHUL             | 3441 | M. Rahul |
| Rohan Wadekar        | 3291 | Rohan    |
| Rikesh Gupta         | 3090 | Rikesh   |
| Anuj K. Gupta        | 3084 | Anuj     |
| Shaikh Uzma          | 3293 | Shaikh   |
| Shreya Abdul Samad   | 3093 | Shreya   |
| Harsh Ghatge         | 3409 | Harsh    |
| Shrutika Garkwad     | 3071 | Shrutika |
| Ashini Varma         | 3385 | Ashini   |
| Deepak Shirde        | 3456 | Deepak   |
| Swaraj Shinde        | 3320 | Swaraj   |
| Rohit Sharma         | 3317 | Rohit    |
| Amit Pandey          | 3452 | Amit     |
| Vijay Dhanekar       | 3394 | Vijay    |
| Varsha Vaidya        | 3463 | Varsha   |

~~Aarti Prasad~~  
19/03/18



Guidance/  
Remedial Lectures:

2016 - 17



*[Handwritten Signature]*

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Vadala, Mumbai - 400 031

15 Feb 2017

16 March 2017

TYBcom

Exam oriented Lecture

PAGE No.   
 DATE

| Roll no. | Class          | Sign.                |
|----------|----------------|----------------------|
| 4283     | T.Y. Bcom (C)  | <del>Salvatore</del> |
| 4279     | T.Y. Bcom (C)  | <del>AD</del>        |
| 4322     | T.Y. Bcom 'C'  | Sana                 |
| 4398     | T.Y. Bcom (D)  | <del>Pranav</del>    |
| 4431     | T.Y. Bcom (D)  | Vimala               |
| 4316     | T.Y. B.com (C) | Vinayak              |
| 7 4306   | T.Y. B.com (C) | Sana                 |
| 8 4293   | T.Y. B.com (C) | <del>Pranav</del>    |
| 9 4273   | T.Y. B.com (C) | <del>N. Pravin</del> |
| 10 4303  | T.Y. B.com (C) | <del>V. Suresh</del> |
| 11 4267  | T.Y. Bcom (C)  | <del>Shrawan</del>   |

Shrawan

16/3/17



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| Roll No | Signature                         |
|---------|-----------------------------------|
| 2301    | B. Anam                           |
| 2337    | Sharifun                          |
| 2370    | Musad                             |
| 2261    | A.A.K.                            |
| 2267    | Aki                               |
| 2281    | Pankaj                            |
| 2313    | Ayesha                            |
| 2335    | Angel                             |
| 2336    | Shivabha                          |
| 2283    | Feroz                             |
| 2305    | Niyati                            |
| 2345    | Mohit                             |
| 2344    | Shiv                              |
| 2339    | M. Ghosh                          |
| 2329    | <del>Ajith</del>                  |
| 2311    | Jaydeep                           |
| 2309    | Pratik                            |
| 2327    | Amrith                            |
| 2330    | Shivam                            |
| 2360    | Shivam                            |
| 2269    | Changam                           |
| 2289    | Ritesh                            |
| 2306    | Govind                            |
| 2279    | Pratik                            |
| 2342    | Lurkhar                           |
| 2264    | Shradha                           |
| 2256    | Jyoti                             |
| 2278    | Akhale                            |
| 2289    | Konark                            |
| 2252    | Jayapriya                         |
| 2313    | S. Maria Louisa<br>madhumah Mohre |



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| Sl. No. | Roll No. | Signature            | Roll |
|---------|----------|----------------------|------|
|         |          |                      | 2287 |
| 33      | 2260     | <u>P. Kalsekar</u>   | 2352 |
| 34      | 2331     | <u>Rupesh</u>        | 2330 |
| 35      | 2341     | <u>Tahir Khan</u>    | 2279 |
| 6       | 2287     | <u>Shauvan</u>       | 2360 |
| 7       | 2252     | <u>Soumya</u>        | 2306 |
| 8       | 2294     | <u>Prerna</u>        | 2311 |
| 1       | 2278     | <u>Ashwini Khade</u> | 2281 |
| 10      | 2315     | <u>Rajni A.</u>      | 235  |
| 1       | 2335     | <u>Rajni</u>         | 233  |
| 2       | 2281     | <u>Shikha</u>        | 23   |
| 3       | 2336     | <u>Shubha</u>        | 2    |
| 4       | 2266     | <u>Kanaka</u>        | 2    |
| 5       | 2311     | <u>Jaydeep</u>       | 2    |
| 5       | 2360     | <u>ATEAS</u>         | 15   |
| 7       | 2306     | <u>Govind</u>        | 16   |
| 2       | 2284     | <u>Pharavtha</u>     | 17   |
| 3       | 2365     | <u>Danija</u>        | 18   |
|         |          |                      | 20   |
|         |          |                      | 21   |
|         |          |                      | 22   |
|         |          |                      | 23   |
|         |          |                      | 24   |
|         |          |                      | 25   |
|         |          |                      | 26   |
|         |          |                      | 27   |

Shreela

Prerna



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Roll No.

Signature

2287

Shrainai

2352

Zulekha

2330

~~Shrainai~~

2279

Shubh

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JAFAR

2306

Govind

2311

Jaydeep

2284

Charmistha

2365

Daniya

2336

Shradha

2335

Angel

2266

Kanade

2281

Vaishali

2278

Asha

2315

Pooja

2252

Jeyapriya

2294

Prem

2341

Tufail Khan

2325

madhumati

2346

Mesha

2261

A.A.K.

2291

M

2305

Niyati

2283

Feroz

2267

Ankita



Anil Chander  
PRINCIPAL

Roll No.

Signature

2477

Anmol

9476

Chitra

2396

Subhasini

2418

Pooja

2471

Siraj

2412

Amrutha

2409

Jyankar

2482

Shweta

2456

Adrin

2448

Kavita

2495

Mubesh

2480

P.D. Patil

2376

Saifal

2452

Meharaj

2468

FAIZAN

2420

Chitra

2414

Q. Pancho

2402

R.R. NARKAR

2410

Aarti

2496

Mohini

2395

Shweta

2457

Ashin

2484

E. Siddhi

2451

K. R. J.

2408

Jane

2490

S. Patil

2416

Pandya

2474

S.

2429

Pratik

2458

Janvi

2424

Pratik P.

2400

Pratik



[Signature]  
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Remedial Lecture

28 Feb 2017

FY - E

Roll No

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(10) 2612

(11) 2598

~~Nargmeen~~

~~Tyoti~~

Lalita

~~Kushboo~~

~~Deelan~~

~~Tanaka~~

Rupesh

~~Arav~~

~~Adi~~

Rajesh Pandey

~~Siddharth~~

Shardul



S.M.T.S.  
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Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 034

2017

Remedial Lecture

FY B Com - F

Roll No.

Signature

|      |                        |
|------|------------------------|
| 2717 | Yashvi                 |
| 2680 | <del>Ashwini</del>     |
| 2689 | <del>Rajni</del>       |
| 2725 | Jandhyg                |
| 2661 | <del>Shivani</del>     |
| 2674 | Suma.v.                |
| 2714 | <del>Nis</del>         |
| 2722 | <del>Nikhat</del>      |
| 2677 | Reena.v.               |
| 2741 | Nandana Gupta          |
| 2647 | <del>Sambade</del>     |
| 2675 | Dipkita                |
| 2750 | Shobha                 |
| 2671 | <del>Devi</del>        |
| 2645 | <del>Shinkle</del>     |
| 2698 | <del>Pariya</del>      |
| 2710 | Ommesam.               |
| 2687 | Ravikur                |
| 2679 | <del>Bhandekar</del>   |
| 2653 | <del>T. D. Desai</del> |
| 2637 | <del>Ronika</del>      |
| 2734 | <del>Shandhan</del>    |

*Shendesh*

*Shinde*



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# Remedial Lecture

28 Feb 2019

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|    |      |                    |
|----|------|--------------------|
|    | 2710 | Ommeiram.          |
|    | 2650 | <u>Arunal</u>      |
|    | 2671 | <u>Aarti.</u>      |
|    | 2673 | <u>Kiran</u>       |
|    | 2740 | <u>Pratiksha.</u>  |
|    | 2742 | Nandana Gupta.     |
|    | 2697 | SHAIKH SAMI        |
|    | 2647 | <u>Banbade</u>     |
|    | 2675 | <u>NP Kifer</u>    |
|    | 2726 | <u>Bhanugade</u>   |
|    | 2695 | <u>Ramal</u>       |
| 2  | 2683 | <u>S. yadav.</u>   |
| 3  | 2637 | <u>Ranassirshi</u> |
| 14 | 2687 | <u>Banikar</u>     |
| 15 | 2679 | <u>Baniker</u>     |
| 16 | 2628 | <u>Dighe</u>       |
| 17 | 2725 | <u>Sandhye</u>     |
| 18 | 2674 | <u>Sama.v.</u>     |
| 19 | 2722 | <u>Nikhat</u>      |
| 20 | 2696 | <u>Navaneeta</u>   |
| 21 | 2677 | <u>Reena v</u>     |
| 22 | 2714 | <u>Pratiksha</u>   |

Shandeh



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Smt. Thirumala College of Science,  
Wadala, Mumbai - 400 031

12:15pm

## FYBCOM: BEcos: Remedial Lecture

| S.No. | Name of student             | Enroll<br>Roll No. |     |
|-------|-----------------------------|--------------------|-----|
| 1     | Ayub Khan                   |                    |     |
| 2     | Ripanshuk Kadam (E)         | 2731               | [E] |
| 3     | Ravi Kumar P. Yadav         | 2620               |     |
| 4     | Shailash Dinesh Tiwari      | 2687               |     |
| 5     | Rohan. Wadekar              | 2660               |     |
| 6     | Sunit . S. Vaylekar         | 2679               |     |
| 7     | Pravin Patro                | 2665               |     |
| 8     | Arinash. N. Varma (F)       | 2613               |     |
| 9     | vicky palaniappan Ratna (F) | 2667               |     |
| 10    | Ramringsingh Solunke (F)    | 2670               |     |
| 11    | Vora Mahesh (F)             | 2637               |     |
| 12    | Rohit Yadav (F)             | 2719               |     |
| 13    | Anuj Yadav (F)              | 2691               |     |
| 14    | P. Sri Sairam (E)           | 2685               |     |
| 15    | Shaikh Nilfer (E)           | 25014              |     |
| 16    | Ashwarya Shinde (E)         | 2593               |     |
| 17    | Rafiya Shaikh (E)           | 2560               |     |
| 18    | Vijay (E)                   | 2595               |     |
| 19    | Neelam Jaishwar             | 2619               |     |
| 20    | Lalita Yadav                | 2604 (E)           |     |
| 21    | Pravin. R. Patro            | 2603 (E)           |     |
|       |                             | 2613 (E)           |     |
| 22    | Pravin Patro                | 2613               |     |
| 23    | Pooj Shivkumarsinghal       | 2575               |     |
| 24    | Khushboo Seney              | 2503 (E)           |     |
| 25    | Komal shetwal               | 2695               |     |
| 26    | Kajol. P. Kadam             |                    |     |



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| S.No. | Name of Student            | Roll No         | Signature         | S.N |
|-------|----------------------------|-----------------|-------------------|-----|
|       |                            |                 |                   | 52  |
|       | <del>Pravin Patro</del>    | <del>2613</del> | <del>Pravin</del> | 53  |
| 27    | Neha Ram Rautkhande (E)    | 2529 (E)        | Neha              | 54  |
| 28    | Gayatri Narendra Samal (E) | 2538 (E)        | Gayatri Samal     | 55  |
| 29    | Nikita Vishwakarma         | 2675 (F)        | Nikita            | 56  |
| 30    | Dipti Shringare            | 2569 (E)        | Dipti             | 57  |
| 31    | Rupal Shinde               | 2563 (E)        | Rupal             | 58  |
| 32    | Sushama Tambade            | 2647 (F)        | Sushama           | 59  |
| 33    | Seema Verma                | 2669 (F)        | Seema             |     |
| 34    | Mohini Suryavanshi         | 2643 (F)        | Mohini            |     |
| 35    | Shobha Sonavadekar         | 2758 (F)        | Shobha            |     |
| 36    | Wandana Rajesh Chitambar   | 2741            | Wandana           |     |
| 37    | Prerna Ganesh Swamy        | 2510 (E)        | Prerna            |     |
|       | <del>Pravin Patro</del>    | <del>2613</del> | <del>Pravin</del> |     |
| 38    | Tambati Sapna              | 2648 (F)        | Tambati           |     |
| 39    | Ashmita Thapa              | 2736 (F)        | Ashmita           |     |
| 40    | Shaikh Shehnoor            | 2708 (F)        | Shaikh            |     |
| 41    | SHAIKH SANA                | 2697 (F)        | Sana              |     |
| 42    | Shaikh Huzama              | 2577 (E)        | Huzama            |     |
| 43    | Nazmeen Rehman Shaikh      | 2591 (E)        | Nazmeen           |     |
| 44    | Kiran Vishwakarma          | 2673 (F)        | Kiran             |     |
| 45    | Singh Kiran                | 2627 (F)        | Kiran             |     |
| 46    | Pooja Rana                 | 2524 (E)        | Pooja             |     |
| 47    | Aarti Vishwakarma          | 2671 (F)        | Aarti             |     |
| 48    | Shabana Shaikh             | 2703 (F)        | Shabana           |     |
| 49    | Shaikh Sameer              | 2600 (E)        | Shaikh Sameer     |     |
| 50    | Shinde Deepak              | 2561 (E)        | Deepak            |     |
| 51    | PAUNAK. L. MERAL           | 2623 (E)        | Paunak            |     |



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| S.No. | Name of Student            | Div/<br>Roll no.     | Sign      |
|-------|----------------------------|----------------------|-----------|
| 52    | Prajapati Pooja.C.         | 2507 (E)             | Pooja     |
| 53    | Raj. Manisha.              | 2513 (E)             | Raj       |
| 54    | Mullesh Norma (F)          | 2424                 | Mullesh   |
| 55    | Manesh Thavittabaina (F)   | 2653                 | Manesh    |
| 56    | SHARMA AJAY RAJU           | <del>2550</del> 2550 | Ajay      |
| 57    | ROTE RUPESH LAXMAN         | 2533                 | Rote      |
| 58    | Advait Makund Puranik      | 2511                 | Advait    |
| 59    | Sagar. Shriya              | 2573                 | Sagar     |
| 60    | Pratibha Suryakant Bagal   | 2614                 | Pratibha  |
| 61    | shubhangi Rajubhau shitale | 2567                 | Shubhangi |
| 62    | Ummeiram Shaikh            | 2710 (F)             | Ummeiram  |
| 63    | Vishwakarma Rachna         | 2576                 | Rachna    |
|       | Pravin Patro               | 2613                 | Pravin    |
| 64    | Anjali. snah.              | 2740                 | Anjali    |
| 65    | Saniya Shaikh              | 2698                 | Saniya    |
| 66    | Kunjan Waghe               | 2521                 | Kunjan    |
| 66    | Shanti Ram                 |                      | Shanti    |
| 66    | kunjan Waghela             | 2566                 | Kunjan    |
| 67    | Brijal Savla               | 2566                 | Brijal    |
| 68    | Jay. Fulwaria              | 2566                 | Jay       |
| 69    | Suganya Lingadurai         | 2841                 | Suganya   |
| 70    | siddiqui Nasima Shamsu     | 2640                 | Nasima    |
| 71    | Diksha Tiwari              | 2714                 | Diksha    |
| 72    | Reena Vishwakarma          | 2733                 | Reena     |
| 73    | Siddiqui Nikhat            | 2677                 | Nikhat    |
| 74    | Yelamkanti Navaneeta (F)   | 2722                 | Navaneeta |
| 75    | Savita Singh (F)           | 2696                 | Savita    |
| 76    | Pooja Yadav (F)            | 2631                 | Pooja     |

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BCOM: B.Economics: Sem I 2016-17 03/03  
 medial Lecture 9-10 am : Divs E & F.

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| Name of Student       | Div/<br>Roll No | Sign               |
|-----------------------|-----------------|--------------------|
| Jay. H. Fulwaria      | E / 2841        | <u>Jay</u>         |
| Rohiya Shaikh         | E / 2895        | <u>Rohiya</u>      |
| Aishwarya Shinde      | E / 2560        | <u>Aishwarya</u>   |
| Vishwakarma Aarti     | F / 2671        | <u>Aarti</u>       |
| Hiral Tank            | F / 2650        | <u>Hiral</u>       |
| Ummeiram Shaikh       | F / 2710        | <u>Ummeiram</u>    |
| Deepmala Rajbhar      | E / 2515        | <u>Deepmala</u>    |
| Shaikh Zainabbi.      | F / 2712        | <u>Shaikh</u>      |
| Shaikh Saniya         | F / 2698        | <u>Saniya</u>      |
| Anjali Shah           | F / 2740        | <u>Anjali</u>      |
| Shobana Shaikh        | F / 2703        | <u>Shobana</u>     |
| Shaikh Saeedunnisc    | E / 2598        | <u>Saeedunnisc</u> |
| Sanjana V. Shelar     | E / 2555        | <u>Sanjana</u>     |
| Azub Khan             | F / 2731        | <u>Azub Khan</u>   |
| Sunil P. varlekar     | F / 2665        | <u>Sunil</u>       |
| Tiwari Shailesh       | F / 2660        | <u>Shailesh</u>    |
| AVINASH .N. VARMA     | F / 2667        | <u>AVINASH</u>     |
| ROHAN . WADEKAR       | F / 2679        | <u>ROHAN</u>       |
| Ravi Kumar . R. Yadav | F / 2687        | <u>Ravi Kumar</u>  |
| upendra . R. Singh    | F / 2634        | <u>upendra</u>     |
| Vijay Dhanoo          | E / 2618        | <u>Vijay</u>       |
| Swapnil Shinde        | E / 2565        | <u>Swapnil</u>     |
| Randular Yadav        | F / 2690        | <u>Randular</u>    |
| Deepak Shinde         | E / 2561        | <u>Deepak</u>      |
| Ashmit Puranik        | E / 2511        | <u>Ashmit</u>      |
| Sagar. Shivan         | E / 2573        | <u>Sagar</u>       |
| Prigal Savla          | E / 2544        | <u>Prigal</u>      |



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Shinde  
Randular  
Deepak  
Ashmit  
Sagar  
Prigal



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**N.R. SWAMY COLLEGE OF COMMERCE AND ECONOMICS**

**&**

**SMT. THIRUMALAI COLLEGE OF SCIENCE**

**WADALA MUMBAI-400031**

**Department of Microbiology**

**Remedial lectures**

**Class – F.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER I**

**THEORY**

Paper I

Date- 30.09.2019

Syllabus- Unit I, II, III

- Structure of mitochondria, chloroplasts
- Biosafety in microbiology
- Properties and functions of Lipids and Nucleic acids

Duration -- two hours

Attendance -- enclosed

**SEMESTER II**

Date- 11.03.2020

Syllabus- Unit I, II, III

- Identification, general properties, structure and reproduction of rickettsia and Archaea
- Study of algae
- Measuring cell constituents

Duration -- two hours

Attendance -- enclosed

Prof. Rekha Bhatia  
Teacher In charge

Prof. Neeta Khanolkar  
HOD



1 of 13

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**Class – F.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER I**

**THEORY**

Paper II

Date- 28.09.2019

Syllabus- Unit I, II, III

- Function of parts of the Microscope, Staining procedures
- Radiations used to control microorganisms
- Nutritional types of bacteria, culture media

Duration – two hours

Attendance – enclosed

**SEMESTER II**

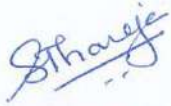
Date- 07.03.2020

Syllabus- Unit I, II, III

- Microbial interaction
- Infection and disease
- Advanced Microscopy- Confocal Microscope, CSLM, Atomic force microscope

Duration – two hours

Attendance – enclosed



Prof. Sabina Thareja  
Teacher In charge-



Prof. Neeta Khanolkar  
HOD



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Wadala, Mumbai-400 031.



**Class – F.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER I**

**PRACTICAL**

**Paper I & II**

**Date- 21.09.2019**

**Syllabus-**

- Handling of Microscope
- Staining techniques
- Preparation of media

**Duration – one hour per day**

**Attendance – enclosed**

**SEMESTER II**

**Date- 04.02.2020**

**Syllabus-**

- Viable count, Hemocytometer, Breeds count- calculations
- Study of virulence factors

**Duration – two hours**

**Attendance – enclosed**

*Deepali Kheddekar*

**Prof. Deepali Kheddekar**  
**Teacher In charge-**

*Neeta Khanolkar*

**Prof. Neeta Khanolkar**  
**HOD**



*[Signature]*  
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**S.I.W.S. N.R. Swamy College of  
Commerce & Economics  
Thirumalai College of Science  
Wadala, Mumbai-400 031.**

**Class – S.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER III**

THEORY

Paper I

Date- 23.09.2019

Syllabus- Unit I, II, III

- Estimation of proteins and nucleic acids
- Numerical taxonomy
- DNA methylation

Duration – two hours

Attendance – enclosed

**SEMESTER IV**

Date- 15.02.2020

Syllabus- Unit I, II, III

- Mechanism of organic reactions
- Effect of inhibitors on enzymes
- Analytical centrifugation

Duration – two hours

Attendance – enclosed

*Ajitha Nair*

Prof. Ajitha Nair  
Teacher In charge-

*Neeta Khanolkar*

Prof. Neeta Khanolkar  
HOD

*S. N. Nair*

**PRINCIPAL**

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Wadala, Mumbai-400 031.



**Class – S.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER III**

THEORY

Paper II

Date- 20.09.2019

Syllabus- Unit I, II, III

- Air samplers
- Indicator organisms
- Soil bioremediation

Duration – two hours

Attendance – enclosed

**SEMESTER IV**

Date- 14.02.2020

Syllabus- Unit I, II, III

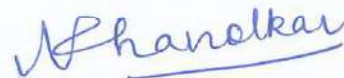
- Nonspecific innate resistance
- Epidemiology
- Microbiological quality of milk

Duration – two hours

Attendance – enclosed




Prof. Neeta Khanolkar  
Teacher In charge-



Prof. Neeta Khanolkar  
HOD



  
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Commerce & Economics  
Thirumalai College of Science  
Wadala, Mumbai-400 031.



**Class – S.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER III**

THEORY

Paper III

Date- 21.09.2019

Syllabus- Unit I, II, III

- Bacterial growth curve
- Infections of respiratory system
- Epidemiology and public health awareness

Duration – two hours

Attendance – enclosed

**SEMESTER IV**

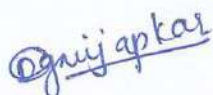
Date- 14.02.2020

Syllabus- Unit I, II, III

- Biofilms and biosensors
- Biostatistics
- Biopesticides

Duration – two hours

Attendance – enclosed



Prof. Deepali Kheddekar  
Teacher In charge-



Prof. Neeta Khanolkar  
HOD



  
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Thirumalai College of Science  
Wadala, Mumbai-400 031.

**Class – S.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER III**

PRACTICAL

Paper I, II & III

Date- 28.08.2019

Syllabus-

- Estimation of nucleic acids
- BOD & COD

Duration – one hour per day

Attendance – enclosed

**SEMESTER IV**

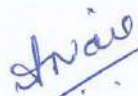
Date- 05.02.2020

Syllabus-

- Enzyme assays
- Writing an abstract

Duration – two hours

Attendance – enclosed



Prof. Ajitha Nair  
Teacher In charge-



Prof. Neeta Khanolkar  
HOD



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Wadala, Mumbai-400 031.

**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

THEORY

Paper I

Date- 19.09.2019

Syllabus- Unit I, II, III & IV

- Termination of replication of eukaryotic DNA
- Translation in prokaryotes
- Base excision repair system
- Transformation & prime cells

Duration – two hours

Attendance – enclosed

**SEMESTER VI**

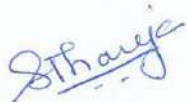
Date- 26.02.2020

Syllabus- Unit I, II, III & IV

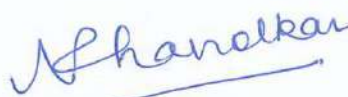
- Transposable elements
- Bioinformatics
- Lac operon
- Visualization and enumeration of viral particles

Duration – two hours

Attendance – enclosed



Prof. Sabina Thareja  
Teacher In charge-



Prof. Neeta Khanolkar  
HOD



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**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

THEORY

Paper II

Date- 17.09.2019

Syllabus- Unit I, II, III & IV

- Anti-phagocytic factors
- EPEC
- Immunoglobulins
- MHC

Duration – two hours

Attendance – enclosed

**SEMESTER VI**

Date- 25.02.2020

Syllabus- Unit I, II, III & IV

- Meningococcal meningitidis
- Mechanisms of drug resistance
- Humoral response
- Complement system

Duration – two hours

Attendance – enclosed

*Rekha*

Prof. Rekha Bhatia  
Teacher In charge-

*Neeta Khanolkar*

Prof. Neeta Khanolkar  
HOD



*Principal*

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Commerce & Economics  
Thirumalai College of Science  
Wadala, Mumbai-400 031.

**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

**THEORY**

**Paper III**

**Date- 18.09.2019**

**Syllabus- Unit I, II, III & IV**

- Proteoliposomes
- ETC
- HMP , Anaplerotic reactions
- Fermentations

**Duration – two hours**

**Attendance – enclosed**

**SEMESTER VI**

**Date- 25.02.2020**

**Syllabus- Unit I, II, III & IV**

- Anabolism of palmitic acid
- Fermentation of single amino acids
- Repression and induction
- Reductive TCA

**Duration – two hours**

**Attendance – enclosed**

*Ajitha Nair*

**Prof. Ajitha Nair  
Teacher In charge-**

*Neeta Khanolkar*

**Prof. Neeta Khanolkar  
HOD**



*[Signature]*

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Wadala, Mumbai-400 031.**

**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

THEORY

Paper IV

Date- 19.09.2019

Syllabus- Unit I, II, III & IV

- Inoculum development
- Strain improvement
- Design of fermenter
- Wine manufacture

Duration – two hours

Attendance – enclosed

*N. Khanolkar*

Prof. Neeta Khanolkar  
Teacher In charge-

*N. Khanolkar*

Prof. Neeta Khanolkar  
HOD

*[Signature]*

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**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

THEORY

Paper AC-

Date- 18.09.2019

Syllabus- Unit I, II, III & IV

- Nutritional disorders
- Aquaculture
- Emerging preservation technology

Duration – two hours

Attendance – enclosed

**SEMESTER VI**

Date- 24.02.2020

Syllabus- Unit I, II, III & IV

- Transgenic animals
- Contemporary foods
- HACCP & packaging

Duration – two hours

Attendance – enclosed



Prof. Deepali Kheddekar

Teacher In charge-



Prof. Neeta Khanolkar

HOD



  
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**Class – T.Y.B.Sc.**

**Year- 2019-20**

**SEMESTER V**

PRACTICAL

Paper – I, II, III & IV

Date- 11.09.2019 & 13.09.2019

Syllabus- Unit I, II, III & IV

- Replica plate technique
- Identification of pathogens

Duration – two hours

Attendance – enclosed

**SEMESTER VI**

Date- 12.02.2020 & 13.02.2020

Syllabus- Unit I, II, III & IV

- Bioassay of penicillin & vitamin B12
- MBC

Duration – two hours

Attendance – enclosed



Prof. Rekha Bhatia &

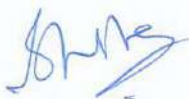
Prof. Sabina Thareja

Teacher In charge-





Prof. Neeta Khanolkar



HOD

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S.I.W.S. N.R. Swamy College of  
Commerce & Economics  
Thirumalai College of Science  
Wadala, Mumbai-400 031.





Attendance Sheet

Subject: Microbiology

ass: F.Y.B.Sc.

Group: PCMB

name of The Professor :

Rekha Chhatia & Sabina Thareja

| roll No | 28/9/19             | 29/9/19            | 30/9                | 1/10                | 4-10                | 5-10                | 7-10                | Total |
|---------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------|
| 7101    | <del>Nirmata</del>  | <del>Nirmata</del> | <del>Nirmata</del>  | <del>Nirmata</del>  | A                   | <del>Nirmata</del>  |                     |       |
| 7102    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |
| 7103    | <del>Amrita</del>   | A                  | A                   | <del>Amrita</del>   | <del>Amrita</del>   | <del>Amrita</del>   |                     |       |
| 7104    | <del>Poorna</del>   | <del>Poorna</del>  | <del>Poorna</del>   | <del>Poorna</del>   | A                   | <del>Poorna</del>   |                     |       |
| 7105    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |
| 7106    | <del>Duyy</del>     | A                  | <del>Duyy</del>     | <del>Duyy</del>     | A                   | <del>Duyy</del>     | <del>Duyy</del>     |       |
| 7107    | AB                  | Sabha              | Sabha               | Sabha               | A                   | Sabha               |                     |       |
| 7108    | AB                  | <del>Seema</del>   | A                   | <del>Seema</del>    | <del>Seema</del>    | <del>Seema</del>    | <del>Seema</del>    |       |
| 7109    | <del>Swade</del>    | <del>Swade</del>   | <del>Swade</del>    | <del>Swade</del>    | A                   | <del>Swade</del>    |                     |       |
| 7110    | AB                  | A                  | A                   | <del>Prasanna</del> | A                   | A                   |                     |       |
| 7111    | AB                  | A                  | <del>Kiran</del>    | <del>Kiran</del>    | A                   | A                   |                     |       |
| 7112    | AB                  | A                  | <del>Shma</del>     | A                   | A                   | A                   |                     |       |
| 7113    | <del>Jadhav</del>   | A                  | A                   | <del>Jadhav</del>   | A                   | A                   |                     |       |
| 7114    | <del>Kankar</del>   | A                  | A                   | A                   | <del>Kankar</del>   | A                   |                     |       |
| 7115    | Seema.              | Seema.             | Seema.              | Seema.              | Seema.              | A                   | Seema.              |       |
| 7116    | AB                  | S.kamble           | S.kamble            | S.kamble            | A                   | S.kamble            |                     |       |
| 7117    | <del>K.S.R</del>    | <del>K.S.R</del>   | <del>K.S.R</del>    | <del>K.S.R</del>    | A                   | <del>K.S.R</del>    | <del>K.S.R</del>    |       |
| 7118    | <del>Pkrode</del>   | <del>Pkrode</del>  | <del>Pkrode</del>   | A                   | A                   | A                   |                     |       |
| 7119    | <del>Pdhe</del>     | <del>Pdhe</del>    | <del>Pdhe</del>     | <del>Pdhe</del>     | A                   | A                   |                     |       |
| 7120    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |
| 7121    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |
| 7122    | <del>Krishal</del>  | <del>Krishal</del> | A                   | A                   | A                   | <del>Krishal</del>  |                     |       |
| 7123    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |
| 7124    | <del>Nis</del>      | <del>Nis</del>     | <del>Nis</del>      | A                   | A                   | A                   |                     |       |
| 7125    | <del>Vaishali</del> | A                  | <del>Vaishali</del> | <del>Vaishali</del> | <del>Vaishali</del> | <del>Vaishali</del> | <del>Vaishali</del> |       |
| 7126    | <del>Shinde</del>   | <del>Shinde</del>  | <del>Shinde</del>   | <del>Shinde</del>   | <del>Shinde</del>   | <del>Shinde</del>   | <del>Shinde</del>   |       |
| 7127    | AB                  | A                  | A                   | A                   | A                   | A                   |                     |       |



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Wadala, Mumbai-400 031.

SS : F.Y.B.Sc.

Name of The Professor :

| Roll No | 26-9-19           | Respected<br>28-9-19 | Remedial<br>30-9-19 | 1-10<br>Pranaya   | 4-10<br>A | 5-10<br>Pranaya | 7-10<br>Pranaya | Total |
|---------|-------------------|----------------------|---------------------|-------------------|-----------|-----------------|-----------------|-------|
| 128     | Pranaya           | A                    | Pranaya             | Pranaya           | A         | Pranaya         | Pranaya         |       |
| 129     | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7130    | AB                | Muhak                | Muhak               | Muhak             | Muhak     | Muhak           |                 |       |
| 7131    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7132    | Disha             | Disha                | Disha               | Disha             | Disha     | Disha           | Disha           |       |
| 7133    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7134    | Shubh             | Shubh                | Shubh               | Shubh             | Shubh     | Shubh           | Shubh           |       |
| 7135    | AB                | Aishwarya            | Aishwarya           | Aishwarya         | Aishwarya | A               |                 |       |
| 7136    | Pranay            | A                    | Pranay              | Pranay            | Pranay    | Pranay          | Pranay          |       |
| 7137    | AB                | A                    | Prinay              | Prinay            | A         | Prinay          |                 |       |
| 7138    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7139    | Aravind           | A                    | Aravind             | Aravind           | A         | A               |                 |       |
| 7140    | AB                | A                    | A                   | ms                | A         | A               |                 |       |
| 7141    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7142    | <del>Pranay</del> | <del>Pranay</del>    | <del>Pranay</del>   | <del>Pranay</del> | A         | A               |                 |       |
| 7143    | Rishi             | A                    | Rishi               | Rishi             | A         | A               |                 |       |
| 7144    | Aditya            | Aditya               | Aditya              | Aditya            | Aditya    | Aditya          | Aditya          |       |
| 7145    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7146    | Yash              | Yash                 | Yash                | Yash              | A         | A               | Yash            |       |
| 7147    | AB                | Arif                 | Arif                | Arif              | A         | A               |                 |       |
| 7148    | Renuka            | A                    | Renuka              | Renuka            | A         | A               |                 |       |
| 7149    | Romane            | A                    | Romane              | Romane            | Romane    | Romane          | Romane          |       |
| 7150    | S. Ravi           | S. Ravi              | S. Ravi             | S. Ravi           | S. Ravi   | S. Ravi         | S. Ravi         |       |
| 7151    | AB                | A                    | ARAJ                | ARAJ              | ARAJ      | ARAJ            | ARAJ            |       |
| 7152    | AB                | A                    | A                   | A                 | A         | A               |                 |       |
| 7153    | <del>AB</del>     | <del>AB</del>        | A                   | A                 | A         | A               |                 |       |
| 7154    | AB                | A                    | A                   | Vasika            | A         | A               |                 |       |



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&  
Smt. Thirumalai College Of Science  
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Attendance Sheet

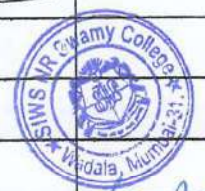
Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor :

| Roll No | 26/9/19       | Remedial<br>28/9/19 | Remedial<br>30-7-19 | F-10          | 4-10          | 5-10-19       | 7-10      | Total |
|---------|---------------|---------------------|---------------------|---------------|---------------|---------------|-----------|-------|
| 7155    | AB            | A                   | A                   | A             | A             | A             |           |       |
| 7156    | <del>AB</del> | <del>AB</del>       | <del>AB</del>       | <del>AB</del> | A             | A             |           |       |
| 7157    | <del>AB</del> | <del>AB</del>       | <del>AB</del>       | <del>AB</del> | A             | A             |           |       |
| 7158    | AB            | A                   | Alcosh.             | Alcosh.       | A             | A             |           |       |
| 7159    | Paiyanka      | Paiyanka            | Paiyanka            | Paiyanka      | A             | A             |           |       |
| 7160    | AB            | A                   | Kstate              | Kstate        | Kstate        | Kstate        |           |       |
| 7161    | AB            | A                   | A                   | A             | A             | A             |           |       |
| 7162    | AB            | A                   | A                   | A             | A             | A             |           |       |
| 7163    | A. Khista     | A. Khista           | A. Khista           | A. Khista     | A. Khista     | A. Khista     | A. Khista |       |
| 7164    | AB            | A                   | Col.                | Col.          | A             | A             |           |       |
| 7165    | <del>AB</del> | <del>AB</del>       | <del>AB</del>       | <del>AB</del> | A             | A             |           |       |
| 7166    | AB            | A                   | Sumit.              | Sumit.        | A             | A             |           |       |
| 7167    | AB            | A                   | A                   | A             | A             | P. Anandare   |           |       |
| 7168    | Sumesh        | A                   | Sumesh              | Sumesh        | A             | A             |           |       |
| 7169    | AB            | A                   | Yash                | Yash          | A             | A             |           |       |
| 7170    | <del>AB</del> | A                   | A                   | <del>AB</del> | A             | <del>AB</del> |           |       |
| 7171    | AB            | A                   | A                   | A             | A             | A             |           |       |
| 7172    | AB            | A                   | A                   | A             | A             | A             |           |       |
| 7173    | AB            | A                   | A                   | Akhomay       | A             | A             |           |       |
| 7174    | Anil          | Anil                | Anil                | Anil          | Anil          | Anil          |           |       |
| 7175    | <del>AB</del> | A                   | <del>AB</del>       | A             | A             | <del>AB</del> |           |       |
| 7176    | Hanshit       | A                   | Hanshit             | Hanshit       | Hanshit       | Hanshit       | Hanshit   |       |
| 7177    | AB            | Manta               | A                   | Manta         | Manta         | Manta         |           |       |
| 7178    | AB            | Omestri             | Omestri             | Omestri       | A             | Omestri       |           |       |
| 7179    | Ginisto       | A                   | Ginisto             | Ginisto       | A             | A             |           |       |
| 7180    | <del>AB</del> | <del>AB</del>       | <del>AB</del>       | <del>AB</del> | <del>AB</del> | <del>AB</del> |           |       |
| 7181    | <del>AB</del> | <del>AB</del>       | <del>AB</del>       | <del>AB</del> | A             | A             |           |       |



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Wadala, Mumbai-400 031.

Class : F.Y.B.Sc.

Group : PCMB

Subject: Microbiology

Name of The Professor :

| Roll No | 26/9/19  | Remedial<br>28/9/19 | Remedial<br>30-9-19 | 1-10     | 4-10 | 5-10     | 7-10 | Total |
|---------|----------|---------------------|---------------------|----------|------|----------|------|-------|
| 7182    | Vanshika | Vanshika            | Vanshika            | Vanshika | A    | Vanshika |      |       |
| 7183    | Srigwan  | A                   | Srigwan             | Srigwan  | A    | Srigwan  |      |       |
| 7184    | Pana     | A                   | Pana                | Pana     | A    | Pana     |      |       |
| 7185    | Pamble   | A                   | Pamble              | Pamble   | A    | Pamble   |      |       |
| 7186    | Pawal    | A                   | Pawal               | Pawal    | A    | Pawal    |      |       |
| 7187    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 188     | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7189    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7190    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7191    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7192    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7193    | AB       | A                   | A                   | A        | A    | A        |      |       |
| 7194    | Nanta    | A                   | A                   | A        | A    | A        |      |       |
| 7195    |          |                     |                     |          |      |          |      |       |
| 7196    |          |                     |                     |          |      |          |      |       |
| 7197    |          |                     |                     |          |      |          |      |       |
| 7198    |          |                     |                     |          |      |          |      |       |
| 7199    |          |                     |                     |          |      |          |      |       |
| 7200    |          |                     |                     |          |      |          |      |       |

ST

Remedial lecture  
M.B - Paper II

Remedial lecture  
M.B - Paper I

RB

RB

RB

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Syllabus over

Syllabus over

forms



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Smt. Thirumalai College of Science  
Wadala, Mumbai - 400 031.

ass : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

ame of The Professor : Neeta Khanolkar, Relcha Bhalia, Sabina Thareja,  
Ajitha Nair, Deepali Khedekar, Hitesh Gurew.

| Roll No | 21/9/19       |  |  |  |  |  | Total |
|---------|---------------|--|--|--|--|--|-------|
| 7101    |               |  |  |  |  |  |       |
| 7102    |               |  |  |  |  |  |       |
| 7103    |               |  |  |  |  |  |       |
| 7104    |               |  |  |  |  |  |       |
| 7105    |               |  |  |  |  |  |       |
| 7106    |               |  |  |  |  |  |       |
| 7107    | <u>Labels</u> |  |  |  |  |  |       |
| 7108    |               |  |  |  |  |  |       |
| 7109    |               |  |  |  |  |  |       |
| 7110    |               |  |  |  |  |  |       |
| 7111    |               |  |  |  |  |  |       |
| 7112    |               |  |  |  |  |  |       |
| 7113    |               |  |  |  |  |  |       |
| 7114    |               |  |  |  |  |  |       |
| 7115    |               |  |  |  |  |  |       |
| 7116    |               |  |  |  |  |  |       |
| 7117    |               |  |  |  |  |  |       |
| 7118    |               |  |  |  |  |  |       |
| 7119    |               |  |  |  |  |  |       |
| 7120    |               |  |  |  |  |  |       |
| 7121    | <u>AD</u>     |  |  |  |  |  |       |
| 7122    |               |  |  |  |  |  |       |
| 7123    |               |  |  |  |  |  |       |
| 7124    |               |  |  |  |  |  |       |
| 7125    |               |  |  |  |  |  |       |
| 7126    |               |  |  |  |  |  |       |
| 7127    |               |  |  |  |  |  |       |



Principle  
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Wadala, Mumbai-400 031.

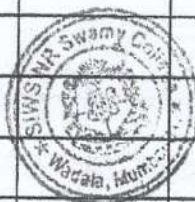
Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor : \_\_\_\_\_

| Roll No | 21/9/19 |  |  |  |  |  | Total |
|---------|---------|--|--|--|--|--|-------|
| 7128    |         |  |  |  |  |  |       |
| 7129    |         |  |  |  |  |  |       |
| 7130    |         |  |  |  |  |  |       |
| 7131    |         |  |  |  |  |  |       |
| 7132    |         |  |  |  |  |  |       |
| 7133    |         |  |  |  |  |  |       |
| 7134    |         |  |  |  |  |  |       |
| 7135    |         |  |  |  |  |  |       |
| 7136    |         |  |  |  |  |  |       |
| 7137    | Prigal  |  |  |  |  |  |       |
| 7138    |         |  |  |  |  |  |       |
| 7139    | Aparab  |  |  |  |  |  |       |
| 7140    |         |  |  |  |  |  |       |
| 7141    |         |  |  |  |  |  |       |
| 7142    |         |  |  |  |  |  |       |
| 7143    |         |  |  |  |  |  |       |
| 7144    |         |  |  |  |  |  |       |
| 7145    |         |  |  |  |  |  |       |
| 7146    |         |  |  |  |  |  |       |
| 7147    |         |  |  |  |  |  |       |
| 7148    |         |  |  |  |  |  |       |
| 7149    |         |  |  |  |  |  |       |
| 7150    |         |  |  |  |  |  |       |
| 7151    |         |  |  |  |  |  |       |
| 7152    |         |  |  |  |  |  |       |
| 7153    |         |  |  |  |  |  |       |
| 7154    |         |  |  |  |  |  |       |



*Prigal*

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&  
Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.  
Attendance Sheet**

Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor : \_\_\_\_\_

| Roll No |                |  |  |  |  |  |  | Total |
|---------|----------------|--|--|--|--|--|--|-------|
| 7155    |                |  |  |  |  |  |  |       |
| 7156    |                |  |  |  |  |  |  |       |
| 7157    |                |  |  |  |  |  |  |       |
| 7158    |                |  |  |  |  |  |  |       |
| 7159    |                |  |  |  |  |  |  |       |
| 7160    |                |  |  |  |  |  |  |       |
| 7161    |                |  |  |  |  |  |  |       |
| 7162    |                |  |  |  |  |  |  |       |
| 7163    |                |  |  |  |  |  |  |       |
| 7164    |                |  |  |  |  |  |  |       |
| 7165    |                |  |  |  |  |  |  |       |
| 7166    |                |  |  |  |  |  |  |       |
| 7167    |                |  |  |  |  |  |  |       |
| 7168    |                |  |  |  |  |  |  |       |
| 7169    |                |  |  |  |  |  |  |       |
| 7170    |                |  |  |  |  |  |  |       |
| 7171    |                |  |  |  |  |  |  |       |
| 7172    |                |  |  |  |  |  |  |       |
| 7173    |                |  |  |  |  |  |  |       |
| 7174    |                |  |  |  |  |  |  |       |
| 7175    | <i>Diya</i>    |  |  |  |  |  |  |       |
| 7176    | <i>Karshit</i> |  |  |  |  |  |  |       |
| 7177    | <i>Nibek</i>   |  |  |  |  |  |  |       |
| 7178    | <i>Dinesh</i>  |  |  |  |  |  |  |       |
| 7179    | <i>Gimishu</i> |  |  |  |  |  |  |       |
| 7180    | <i>Govind</i>  |  |  |  |  |  |  |       |
| 7181    | <i>Rishi</i>   |  |  |  |  |  |  |       |



*[Handwritten Signature]*

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Commerce & Economics  
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Wadala, Mumbai - 400 031.

Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor : \_\_\_\_\_

24-9-19

| Roll No |          |  |  |  |  |  |  |  | Total |
|---------|----------|--|--|--|--|--|--|--|-------|
| 7182    | Vasika   |  |  |  |  |  |  |  |       |
| 7183    | Shravan  |  |  |  |  |  |  |  |       |
| 7184    | H. Datta |  |  |  |  |  |  |  |       |
| 7185    | Ramesh   |  |  |  |  |  |  |  |       |
| 7186    | Pradeep  |  |  |  |  |  |  |  |       |
| 7187    |          |  |  |  |  |  |  |  |       |
| 7188    |          |  |  |  |  |  |  |  |       |
| 7189    |          |  |  |  |  |  |  |  |       |
| 7190    |          |  |  |  |  |  |  |  |       |
| 7191    |          |  |  |  |  |  |  |  |       |
| 7192    |          |  |  |  |  |  |  |  |       |
| 7193    |          |  |  |  |  |  |  |  |       |
| 7194    |          |  |  |  |  |  |  |  |       |
| 7195    |          |  |  |  |  |  |  |  |       |
| 7196    |          |  |  |  |  |  |  |  |       |
| 7197    |          |  |  |  |  |  |  |  |       |
| 7198    |          |  |  |  |  |  |  |  |       |
| 7199    |          |  |  |  |  |  |  |  |       |
| 7200    |          |  |  |  |  |  |  |  |       |

Mamta Vishwakarma - Mamta

of above student

(17) Due to late admissions remedial practicals conducted on Dated 29/9/19

Rashmi  
29-9-19

Shreyas  
29/9/19



Johns  
 PRINCIPAL  
 S.I.W.S.N.R. Swamy College of  
 Commerce & Economics And  
 Smt. Thirumalai College of Science  
 Wadala, Mumbai - 400 031.



Class : F.Y.B.Sc.

Group : PCMB

Subject : Microbiology

Name of The Professor : \_\_\_\_\_

Remedial  
21/2/2020

| Roll No | 27/1/2020           | 28/1/20             |  | Total             |
|---------|---------------------|---------------------|--|-------------------|
| 7101    | <del>Amrutesh</del> | <del>Amrutesh</del> |  |                   |
| 7102    | AB                  | AB                  |  |                   |
| 7103    | Amrutesh            | Amrutesh            |  |                   |
| 7104    | Bekkar              | Bekkar              |  | Bekkar            |
| 7105    | <del>Shubham</del>  |                     |  |                   |
| 7106    | Dupre               | AB                  |  | Dupre             |
| 7107    | Lalsh               | Lalsh               |  | Lalsh             |
| 7108    | <del>PAAR</del>     | AB                  |  | <del>PAAR</del>   |
| 7109    | Sawade              | Sawade              |  | Sawade            |
| 7110    | Quarshi             | Quarshi             |  |                   |
| 7111    | <del>Kumar</del>    |                     |  |                   |
| 7112    | AB                  | AB                  |  |                   |
| 7113    | Jadhav              | Jadhav              |  |                   |
| 7114    | <del>Karkat</del>   | <del>Karkat</del>   |  |                   |
| 7115    | Seema               | Seema               |  | Seema             |
| 7116    | AB                  | AB                  |  |                   |
| 7117    | K.S.K               | K.S.K               |  | K.S.K             |
| 7118    | AB                  | AB                  |  |                   |
| 7119    | <del>Bheri</del>    | AB                  |  | <del>Bheri</del>  |
| 7120    | <del>H</del>        | <del>H</del>        |  |                   |
| 7121    | AB                  | AB                  |  |                   |
| 7122    | Kushaba             | AB                  |  | Kushaba           |
| 7123    | <del>Stiker</del>   | AB                  |  | <del>Muda</del>   |
| 7124    | <del>MS</del>       | AB                  |  |                   |
| 7125    | Vaishali            | Vaishali            |  | Vaishali          |
| 7126    | <del>Stodha</del>   | <del>Stodha</del>   |  | <del>Stodha</del> |
| 7127    | <del>Sharma</del>   | <del>Sharma</del>   |  | Sharma            |

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Wadala, Mumbai - 400 031.

Attendance Sheet

Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor : \_\_\_\_\_

Remedial  
4/2/2020

| Roll No | 27/1/20            | 28/1/20            |                  |                    |  | Total |
|---------|--------------------|--------------------|------------------|--------------------|--|-------|
| 7128    | <del>Manoj</del>   | <del>Manoj</del>   |                  |                    |  |       |
| 7129    | AB                 | AB                 |                  |                    |  |       |
| 7130    | Muhah              | Muhah              |                  | Muhah              |  |       |
| 7131    | AB                 | AB                 |                  |                    |  |       |
| 7132    | <del>Shirone</del> | <del>Shirone</del> |                  | <del>Shirone</del> |  |       |
| 7133    | AB                 | AB                 |                  |                    |  |       |
| 7134    | AB                 | <del>Shirone</del> |                  | <del>Shirone</del> |  |       |
| 7135    | Aishwarya          | Aishwarya          |                  |                    |  |       |
| 7136    | AB                 | P.                 |                  | <del>AB</del>      |  |       |
| 7137    | AB                 | AB                 | Syllabus over    |                    |  |       |
| 7138    | AB                 | AB                 |                  |                    |  |       |
| 7139    | Arunab             | Arunab             |                  | Arunab             |  |       |
| 7140    | AB                 | AB                 |                  | msc                |  |       |
| 7141    | AB                 | AB                 |                  |                    |  |       |
| 7142    | <del>Manoj</del>   | <del>Manoj</del>   |                  | <del>Manoj</del>   |  |       |
| 7143    | Rishi              | AB                 |                  | Rishi              |  |       |
| 7144    | Aditya             | Aditya             |                  | Aditya             |  |       |
| 7145    | AB                 | AB                 |                  |                    |  |       |
| 7146    | <del>Manoj</del>   | <del>Manoj</del>   |                  | <del>Manoj</del>   |  |       |
| 7147    | AB                 | AB                 |                  |                    |  |       |
| 7148    | <del>Ramath</del>  | <del>Ramath</del>  |                  |                    |  |       |
| 7149    | <del>Ramane</del>  | <del>Ramane</del>  |                  | <del>Ramane</del>  |  |       |
| 7150    | <del>S. Kar</del>  | <del>S. Kar</del>  |                  | <del>S. Kar</del>  |  |       |
| 7151    | <del>Rishi</del>   | AB                 | <del>Rishi</del> | <del>Rishi</del>   |  |       |
| 7152    | AB                 | AB                 |                  |                    |  |       |
| 7153    | P.                 | P.                 |                  |                    |  |       |
| 7154    | AB                 | AB                 |                  |                    |  |       |



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Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.

Attendance Sheet

Subject: Microbiology

Class : F.Y.B.Sc.

Group: PCMB

Name of The Professor : \_\_\_\_\_

| Roll No | 27/1/2020      | 28/1/20        | Remedial<br>4/2/2020 | Total |
|---------|----------------|----------------|----------------------|-------|
| 7155    | AB             | AB             |                      |       |
| 7156    | AB             | P.             |                      |       |
| 7157    | AB             | AB             |                      |       |
| 7158    | AB             | P.             |                      |       |
| 7159    | Rajyanka       | Rajyanka       |                      |       |
| 7160    | AB             | AB             | AB                   |       |
| 7161    | AB             | AB             |                      |       |
| 7162    | AB             | AB             |                      |       |
| 7163    | A. Shrivastava | A. Shrivastava | A. Shrivastava       |       |
| 7164    | AB             | AB             | AB                   |       |
| 7165    | AB             | AB             |                      |       |
| 7166    | Sumit          | P              | Sumit                |       |
| 7167    | AB             | AB             |                      |       |
| 7168    | AB             | Sumesh P.      | Sumesh               |       |
| 7169    | AB             | AB             | AB                   |       |
| 7170    | AB             | AB             |                      |       |
| 7171    | AB             | AB             |                      |       |
| 7172    | AB             | AB             |                      |       |
| 7173    | AB             | AB             |                      |       |
| 7174    | AB             | AB             | AB                   |       |
| 7175    | AB             | AB             | AB                   |       |
| 7176    | AB             | AB             | AB                   |       |
| 7177    | AB             | AB             | AB                   |       |
| 7178    | AB             | AB             | AB                   |       |
| 7179    | AB             | AB             | AB                   |       |
| 7180    | AB             | AB             | AB                   |       |
| 7181    | AB             | AB             | AB                   |       |



*[Signature]*  
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S.I.W.S. N.R. Swamy College of  
Commerce & Economics  
Thirumalai College of Science  
Wadala, Mumbai-400031.

of The Professor :

| Sl. No. | 27/11/2020         | 28/11/20           | 4/12/2020          | Total |
|---------|--------------------|--------------------|--------------------|-------|
| 1       | <del>Vandana</del> | <del>Vandana</del> | <del>Vandana</del> |       |
| 2       | <del>Shigvan</del> | <del>Shigvan</del> | <del>Shigvan</del> |       |
| 3       | <del>HP</del>      | P                  | <del>HP</del>      |       |
| 4       | <del>Pramble</del> | P                  | <del>Pramble</del> |       |
| 5       | <del>HP</del>      | P                  | <del>HP</del>      |       |
| 6       | <del>HP</del>      | P                  | <del>HP</del>      |       |
| 7       |                    |                    |                    |       |
| 8       |                    |                    |                    |       |
| 9       |                    |                    |                    |       |
| 10      |                    |                    |                    |       |
| 11      |                    |                    |                    |       |
| 12      |                    |                    |                    |       |
| 13      |                    |                    |                    |       |
| 14      |                    |                    |                    |       |
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| 16      |                    |                    |                    |       |
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| 18      |                    |                    |                    |       |
| 19      |                    |                    |                    |       |
| 20      |                    |                    |                    |       |
| 21      |                    |                    |                    |       |
| 22      |                    |                    |                    |       |
| 23      |                    |                    |                    |       |
| 24      |                    |                    |                    |       |
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| 26      |                    |                    |                    |       |
| 27      |                    |                    |                    |       |
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Remedial

Syllabus Over

Remedial Practical

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*J. M. S.*  
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2019-20  
Remedial Practical

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Wadala, Mumbai - 400 031.  
Attendance Sheet

Sem. III

Class : S.Y.Bsc.

Subject: Microbiology

Remedial  
28/8/19

| Roll No | 08/08/19              | 09/08/19              | 10/08/19              | 21/8/19               | 22/8/19               | 23/8/19               | 24/8/19       | Total                 |
|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------|-----------------------|
| 8101    | Mishi                 | Mishi                 | Mishi                 | Mishi                 | Mishi                 | Mishi                 | Mishi         | Mishi                 |
| 8102    | Amin                  | Amin                  | Amin                  | Amin                  | Amin                  | Amin                  | Amin          | Amin                  |
| 8103    | Ansari-I              | Ansari-I              | Ansari-I              | Ansari-2              | Ansari-1              | Ansari-1              | Ansari-I      | Ansari-1              |
| 8104    | <del>Muskarthas</del> | <del>Muskarthas</del> | <del>Muskarthas</del> | <del>Muskarthas</del> | <del>Muskarthas</del> | <del>Muskarthas</del> | AB            | <del>Muskarthas</del> |
| 8105    | <del>Po</del>         | <del>Po</del>         | <del>Po</del>         | <del>Po</del>         | <del>Po</del>         | <del>Po</del>         | <del>Po</del> | <del>Po</del>         |
| 106     | Bhik                  | Bhik                  | Bhik                  | Bhik                  | Bhik                  | Bhik                  | Bhik          | Bhik                  |
| 8107    | Simran                | Simran                | Simran                | AB                    | AB                    | Simran                | Simran        | AB                    |
| 8108    | Audhara               | Audhara               | AB                    | AB                    | AB                    | AB                    | AB            | Audhara               |
| 8109    | Rajesh                | Rajesh                | Rajesh                | Rajesh                | Rajesh                | Rajesh                | Rajesh        | Rajesh                |
| 8110    | Ch. Navya             | Ch. Navya             | Ch. Navya             | Ch. Navya             | Ch. Navya             | Ch. Navya             | Ch. Navya     | Ch. Navya             |
| 8111    | Ash                   | Ash                   | Ash                   | Ash                   | Ash                   | Ash                   | Ash           | Ash                   |
| 8112    | Divide                | Divide                | AB                    | Divide                | Divide                | Divide                | Divide        | AB                    |
| 8113    | B.                    | B.                    | B.                    | B.                    | B.                    | B.                    | AB            | B.                    |
| 8114    | Amita                 | Amita                 | Amita                 | Amita                 | Amita                 | Amita                 | Amita         | Amita                 |
| 8115    | Neha                  | Neha                  | Neha                  | Neha                  | Neha                  | Neha                  | Neha          | Neha                  |
| 8116    | <del>AB</del>         | <del>AB</del>         | AB                    | <del>AB</del>         | AB                    | <del>AB</del>         | <del>AB</del> | <del>AB</del>         |
| 8117    | Sapna                 | Sapna                 | Sapna                 | Sapna                 | Sapna                 | Sapna                 | Sapna         | Sapna                 |
| 8118    | Muradha               | Muradha               | Muradha               | Muradha               | Muradha               | Muradha               | Muradha       | Muradha               |
| 8119    | Hbadhaw               | Hbadhaw               | Hbadhaw               | Hbadhaw               | Hbadhaw               | Hbadhaw               | Hbadhaw       | AB                    |
| 8120    | Rushari               | Rushari               | Rushari               | Rushari               | Rushari               | Rushari               | Rushari       | Rushari               |
| 8121    | R                     | R                     | R                     | R                     | R                     | R                     | R             | R                     |
| 8122    | Shrikant              | Shrikant              | Shrikant              | Shrikant              | Shrikant              | Shrikant              | Shrikant      | Shrikant              |
| 8123    | Dandini               | Dandini               | Dandini               | Dandini               | Dandini               | Dandini               | Dandini       | Dandini               |
| 8124    | Kanji's               | Kanji's               | Kanji's               | Kanji's               | AB                    | Kanji's               | Kanji's       | Kanji's               |
| 8125    | Patale                | Patale                | Patale                | AB                    | Patale                | Patale                | AB            | AB                    |



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Wadala, Mumbai - 400 031.

Class : S.Y.Bsc.

Attendance Sheet

Subject: Microbiology

*Remedial*

| Roll No | 8/8/19      | 9/8/19      | 10/8/19     | 21/8/19     | 22/8/19     | 23/8/19     | 24/8/19     | Total       |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 8126    | Mylkange    | Mylkange    | Mylkange    | Mylkange    | Mylkange    | Mylkange    | Mylkange    | AB          |
| 8127    | Mcha        | Mcha        | Mcha        | Mcha        | Mcha        | Mcha        | Mcha        | AB          |
| 8128    | dmnd        | dmnd        | dmnd        | dmnd        | dmnd        | Mcha        | AB          | Mcha        |
| 8129    | M-Anansi    | M-Anansi    | M-Anansi    | M-Anansi    | M-Anansi    | M-Anansi    | dmnd        | AB          |
| 8130    | (PM)        | (PM)        | (PM)        | (PM)        | (PM)        | (PM)        | M-Anansi    | AB          |
| 131     | Shyika      | Shyika      | AB          | Shyika      | Shyika      | Shyika      | AB          | Shyika      |
| 8132    | Abadhha     | AB          | AB          | AB          | AB          | Abadhha     | Abadhha     | AB          |
| 8133    | Padke       | Padke       | AB          | AB          | AB          | Abadhha     | Abadhha     | AB          |
| 8134    | dmnd        | dmnd        | AB          | AB          | dmnd        | dmnd        | AB          | AB          |
| 8135    | Juresh      | Juresh      | Juresh      | Juresh      | AB          | Juresh      | AB          | AB          |
| 8136    | Atkar       | Atkar       | Atkar       | AB          | Atkar       | Juresh      | AB          | Juresh      |
| 8137    | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       |
| 8138    | Vishal      | Vishal      | Vishal      | Vishal      | Vishal      | AB          | AB          | AB          |
| 8139    | Mohsine     | Mohsine     | Vishal      | Vishal      | Vishal      | Vishal      | Vishal      | Vishal      |
| 8140    | Mohsine     | Mohsine     | Mohsine     | Mohsine     | Mohsine     | Mohsine     | AB          | Mohsine     |
| 8141    | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       | Atkar       |
| 8142    | NASH        | NASH        | NASH        | AB          | NASH        | NASH        | NASH        | NASH        |
| 8143    | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde | NASH        | NASH        | NASH        | NASH        |
| 8144    | S.B. Shirke | S.B. Shirke | S.B. Shirke | S.B. Shirke | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde |
| 8145    | Shinde      | Shinde      | Shinde      | AB          | Shinde      | Shinde      | S.B. Shirke | S.B. Shirke |
| 8146    | Harshad     | Harshad     | Harshad     | Harshad     | Harshad     | Harshad     | AB          | AB          |
| 8147    | M.Tarji     | M.Tarji     | M.Tarji     | M.Tarji     | M.Tarji     | Harshad     | Harshad     | AB          |
| 8148    | Alhan       | Alhan       | Alhan       | Alhan       | Alhan       | M.Tarji     | M.Tarji     | AB          |
| 8149    | Alhan       | Alhan       | Alhan       | AB          | Alhan       | Alhan       | Alhan       | Alhan       |
|         | Salgaonkar  | Salgaonkar  | Salgaonkar  | AB          | Salgaonkar  | Salgaonkar  | Salgaonkar  | AB          |
|         | AB          | Shy         | Shy         | AB          | AB          | Shy         | Shy         | AB          |



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2019-20

Remedial Lectures

Sem III

S.I.W.S. N.R. Swamy College Of Commerce & Economics

&

Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.

Attendance Sheet

Class :

S.Y.Bsc.

Subject:

Microbiology

Remedial

Remedial Remedial

| Roll No | 20/9/19    | 21/9/19 | 22/9/19    | 23/9/19    | 24/9/19    | 25/9/19    | Total |
|---------|------------|---------|------------|------------|------------|------------|-------|
| 8101    | Mishi      | Mishi   | AB         | Mishi      | Mishi      | Mishi      |       |
| 8102    | AB         | Amaris  | Amaris     | Amaris     | Amaris     | Amaris     |       |
| 8103    | AB         | Amaris  | AB         | Amaris     | Amaris     | Amaris     |       |
| 8104    | AB         | Muskan  | Muskan     | Muskan     | Muskan     | Muskan     |       |
| 8105    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8106    | AB         | Rohit   | AB         | Rohit      | Rohit      | Rohit      |       |
| 8107    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8108    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8109    | Pajesh     | Pajesh  | Pajesh     | AB         | Pajesh     | Pajesh     |       |
| 8110    | AB         | AB      | ch. Nanya  | ch. Nanya  | AB         | AB         |       |
| 8111    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8112    | Shude      | Shude   | AB         | Shude      | Shude      | Shude      |       |
| 8113    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8114    | Neha       | AB      | Neha       | AB         | AB         | AB         | 10    |
| 8115    | Sapna      | Sapna   | AB         | Sapna      | Sapna      | Sapna      |       |
| 8116    | Shreelaksh | AB      | Shreelaksh | Shreelaksh | Shreelaksh | Shreelaksh |       |
| 8117    | Padhav     | Padhav  | Padhav     | Padhav     | Padhav     | Padhav     |       |
| 8118    | Hoodhan    | Hoodhan | AB         | Hoodhan    | Hoodhan    | Hoodhan    |       |
| 8119    | CR         | AB      | CR         | AB         | CR         | CR         |       |
| 8120    | Smikant    | Smikant | AB         | Smikant    | Smikant    | Smikant    |       |
| 8121    | AB         | AB      | AB         | AB         | AB         | AB         |       |
| 8122    | Kangis     | Kangis  | Kangis     | Kangis     | Kangis     | Kangis     |       |
| 8123    | Katale     | AB      | Katale     | AB         | AB         | AB         |       |
| 8124    | Mishra     | Mishra  | AB         | Mishra     | Mishra     | Mishra     |       |
| 8125    | AB         | AB      | AB         | AB         | AB         | AB         |       |



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Class :

S.Y.Bsc.

Subject:

Microbiology

Attendance Sheet

| Roll No | 20/9/19     | 21/9/19     | 22/9/19     | 23/9/19     | 24/9/19     | 25/9/19     | 26/9/19     | Total |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|
| 8126    | ambur       | ambur       | ambur       | ambur       | ambur       | ambur       | ambur       |       |
| 8127    | M. Anansi   | M. Anansi   | M. Anansi   | M. Anansi   | AB          | AB          | AB          |       |
| 8128    | PM          | AB          | AB          | AB          | PM          | PM          | PM          |       |
| 8129    | Amita       | Amita       | Amita       | Amita       | Amita       | Amita       | Amita       |       |
| 8130    | Sanjika     | AB          | Sanjika     | AB          | AB          | AB          | AB          |       |
| 8131    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8132    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8133    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8134    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8135    | Churesh     | Churesh     | AB          | Churesh     | Churesh     | Churesh     | Churesh     |       |
| 8136    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8137    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8138    | Mohsina     | Mohsina     | Mohsina     | Mohsina     | Mohsina     | Mohsina     | Mohsina     |       |
| 8139    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8140    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8141    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8142    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8143    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8144    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8145    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8146    | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde | G.R. Shinde |       |
| 8147    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |
| 8148    | Harshad     | Harshad     | AB          | Harshad     | Harshad     | AB          | AB          |       |
| 8149    | AB          | AB          | AB          | AB          | MKTavgi     | MKTavgi     | MKTavgi     |       |
| 8150    | Alhan       | Alhan       | Alhan       | AB          | Alhan       | Alhan       | Alhan       |       |
| 8151    | AB          | AB          | AB          | AB          | AB          | AB          | AB          |       |

20/9/19  
Remedial

Ext. Remedial

AB X2 Remedial

AB X2

AB X2

AB X2



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2019-20  
Remedial lecture

S.I.W.S. N.R. Swamy College Of Commerce & Economics Sem IV

Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.

Attendance Sheet

Class : S.Y.Bsc.

Subject: Microbiology

| Roll No | 13/2/2020     | 14/2/2020  | 15/2/2020  | 16/2/2020  | 17/2/2020  | 18/2/2020 | Total         |
|---------|---------------|------------|------------|------------|------------|-----------|---------------|
| 8101    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8102    | Amrith        | Amrith     | Amrith     | Amrith     | Amrith     | Amrith    | Amrith        |
| 8103    | AB            | Ansuji     | Ansuji     | Ansuji     | Ansuji     | Ansuji    | Ansuji        |
| 8104    | Muskantha     | Muskantha  | Muskantha  | Muskantha  | Muskantha  | Muskantha | AB            |
| 8105    | <del>AB</del> | AB         | AB         | AB         | AB         | AB        | <del>AB</del> |
| 8106    | Pratibha      | Pratibha   | Pratibha   | Pratibha   | Pratibha   | Pratibha  | Pratibha      |
| 8107    | Suman         | AB         | AB         | AB         | AB         | AB        | AB            |
| 8108    | AB            | Shardhani  | Shardhani  | Shardhani  | AB         | AB        | AB            |
| 8109    | Rajesh        | Rajesh     | Rajesh     | Rajesh     | Rajesh     | AB        | Rajesh        |
| 8110    | Ch.Navya      | Ch.Navya   | Ch.Navya   | Ch.Navya   | Ch.Navya   | Ch.Navya  | Ch.Navya      |
| 8111    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8112    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8113    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8114    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8115    | Sapna         | Sapna      | Sapna      | Sapna      | Sapna      | Sapna     | AB            |
| 8116    | Shruddha      | Shruddha   | Shruddha   | Shruddha   | Shruddha   | Shruddha  | Shruddha      |
| 8117    | AB            | AB         | AB         | AB         | Padhee     | Padhee    | Padhee        |
| 8118    | Hrishikesh    | Hrishikesh | Hrishikesh | Hrishikesh | Hrishikesh | AB        | AB            |
| 8119    | Gulshan       | AB         | AB         | AB         | AB         | AB        | AB            |
| 8120    | AB            | AB         | AB         | AB         | Shrikant   | Shrikant  | AB            |
| 8121    | Nandini       | AB         | AB         | AB         | Nandini    | Nandini   | AB            |
| 8122    | Kanika        | Kanika     | Kanika     | Kanika     | Kanika     | Kanika    | Kanika        |
| 8123    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |
| 8124    | Mithun        | AB         | AB         | AB         | AB         | AB        | AB            |
| 8125    | AB            | AB         | AB         | AB         | AB         | AB        | AB            |



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|      | 13/2/20            | 14/2/20            | 14/2/20            | 14/2/20            | 15/2/20            | 18/2/20            | 27/2/20            |
|------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 8126 | <u>Amrita</u>      | <u>Amrita</u>      | <u>Amrita</u>      | <u>Amrita</u>      | <u>Amrita</u>      | AB                 | AB                 |
| 8127 | <u>M. Anand</u>    | <u>M. Anand</u>    | <u>M. Anand</u>    | <u>M. Anand</u>    | <u>M. Anand</u>    | <u>M. Anand</u>    | AB                 |
| 8128 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8129 | <u>Amrita</u>      | <u>Amrita</u>      | <u>Amrita</u>      | <u>Amrita</u>      | AB                 | <u>Amrita</u>      | AB                 |
| 8130 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8131 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8132 | AB                 | AB                 | AB                 | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | AB                 |
| 8133 | AB                 | AB                 | AB                 | <u>Shruti</u>      | <u>Shruti</u>      | AB                 | AB                 |
| 8134 | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | AB                 | AB                 |
| 8135 | AB                 | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | AB                 | AB                 |
| 8136 | <u>Shruti</u>      | <u>Shruti</u>      | <u>Shruti</u>      | AB                 | <u>Shruti</u>      | <u>Shruti</u>      | AB                 |
| 8137 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8138 | <u>Mohsina</u>     | <u>Mohsina</u>     | <u>Mohsina</u>     | <u>Mohsina</u>     | <u>Mohsina</u>     | <u>Mohsina</u>     | <u>Mohsina</u>     |
| 8139 | AB                 | <u>AB</u>          | AB                 | AB                 | <u>AB</u>          | <u>AB</u>          | AB                 |
| 8140 | AB                 | AB                 | AB                 | AB                 | <u>AB</u>          | <u>AB</u>          | <u>AB</u>          |
| 8141 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8142 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8143 | <del>AB</del>      | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8144 | <u>AB</u>          | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8145 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8146 | <u>G.R. Shinde</u> | AB                 | <u>G.R. Shinde</u> | <u>G.R. Shinde</u> | <u>G.R. Shinde</u> | AB                 | <u>G.R. Shinde</u> |
| 8147 | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> | <u>S.B. Shirke</u> |
| 8148 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 |
| 8149 | AB                 | AB                 | AB                 | <u>M. Tannaji</u>  | <u>M. Tannaji</u>  | AB                 | <u>M. Tannaji</u>  |
| 8150 | <u>Alham</u>       | <u>Alham</u>       | <u>Alham</u>       | <u>Alham</u>       | AB                 | <u>Alham</u>       | <u>Alham</u>       |
| 8151 | AB                 | AB                 | AB                 | AB                 | AB                 | AB                 | <u>Alham</u>       |



ON  
Extra  
Remedial  
Lecture  
MB-III

1/2  
14/2/2020  
Remedial  
Lecture  
MB-II

9/2  
12  
Remedial  
Lecture  
MB-II

9/2  
13  
Extra  
Lecture

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2019-20

Remedial Practical

Sem IV

S.I.W.S. N.R. Swamy College Of Commerce & Economics

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Smt. Thirumalai College Of Science

Wadala, Mumbai - 400 031.

Attendance Sheet

Class : S.Y.Bsc.

Subject: Microbiology

Remedial Extra 5/2/2020 2020 Practical exam instructions 6/2/2020

| Roll No | 3/1/2020             | 1/2/2020             | 5/2/2020             | 6/2/2020             | Total |
|---------|----------------------|----------------------|----------------------|----------------------|-------|
| 8101    | Mishi                | Mishi                | Mishi                | Mishi                |       |
| 8102    | Amrind               | Amrind               | Amrind               | Amrind               |       |
| 8103    | Anasai z             | Anasai z             | Anasai z             | Anasai z             |       |
| 8104    | <del>Muspartha</del> | <del>Muspartha</del> | <del>Muspartha</del> | <del>Muspartha</del> |       |
| 8105    | <del>P</del>         | <del>P</del>         | <del>P</del>         | <del>P</del>         |       |
| 8106    | Abid                 | Abid                 | Abid                 | Abid                 |       |
| 8107    | Simran               | Simran               | Simran               | Simran               |       |
| 8108    | Gaudhari             | Gaudhari             | AB                   | Gaudhari             |       |
| 8109    | Rajesh               | Rajesh               | Rajesh               | Rajesh               |       |
| 8110    | Ch.Nays              | Ch.Nays              | AB                   | AB                   |       |
| 8111    | AB                   | AB                   | AB                   | AB                   |       |
| 8112    | AB                   | AB                   | AB                   | AB                   |       |
| 8113    | B-                   | B-                   | AB                   | B-                   |       |
| 8114    | Neha                 | Neha                 | AB                   | Neha                 |       |
| 115     | Sapna                | Sapna                | Sapna                | Sapna                |       |
| 8116    | Shreedhar            | Shreedhar            | Shreedhar            | Shreedhar            |       |
| 8117    | Padhar               | Padhar               | Padhar               | Padhar               |       |
| 8118    | Hbhadhar             | Hbhadhar             | AB                   | Hbhadhar             |       |
| 8119    | Gulshan              | Gulshan              | Gulshan              | Gulshan              |       |
| 8120    | AB                   | Shrithant            | Shrithant            | Shrithant            |       |
| 8121    | Nandini              | Nandini              | Nandini              | Nandini              |       |
| 8122    | Kangis               | Kangis               | Kangis               | Kangis               |       |
| 8123    | Katale               | Katale               | Katale               | Katale               |       |
| 8124    | MKangis              | MKangis              | AB                   | MKangis              |       |
| 8125    | Mehar                | Mehar                | Mehar                | Mehar                |       |



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Remedial  
5/2/2020

|      |                     |                    |             |             |
|------|---------------------|--------------------|-------------|-------------|
| 8126 | 31/1/2020<br>Amrita | 1/2/2020<br>Amrita | Amrita      | Amrita      |
| 8127 | M. Stans            | M. Stans           | M. Stans    | M. Stans    |
| 8128 | PM                  | PM                 | PM          | PM          |
| 8129 | Amrita              | Amrita             | Amrita      | Amrita      |
| 8130 | Amfike              | Amfike             | AB          | Amfike      |
| 8131 | AB                  | AB                 | AB          | AB          |
| 8132 | Shinde              | Shinde             | Shinde      | AB          |
| 8133 | Salke               | Salke              | Salke       | Salke       |
| 8134 | AB                  | AB                 | AB          |             |
| 8135 | Jurish              | Jurish             | Jurish      | Jurish      |
| 8136 | Vishal              | Vishal             | Vishal      | Vishal      |
| 8137 | Salgaonkar          | Salgaonkar         | Salgaonkar  | Salgaonkar  |
| 8138 | Mohsina             | Mohsina            | AB          | Mohsina     |
| 8139 | AB                  | AB                 | AB          | AB          |
| 8140 | Mohsina             | Mohsina            | Mohsina     | Mohsina     |
| 8141 | Kolav               | Kolav              | Kolav       | Kolav       |
| 8142 | NASH                | AB                 | NASH        | NASH        |
| 8143 | AB                  | AB                 | AB          | AB          |
| 8144 | AB                  | AB                 | AB          | AB          |
| 8145 | AB                  | AB                 | AB          | AB          |
| 8146 | S.B. Shirke         | S.B. Shirke        | S.B. Shirke | S.B. Shirke |
| 8147 | G.R. Shinde         | G.R. Shinde        | G.R. Shinde | G.R. Shinde |
| 8148 | Stans               | Stans              | Stans       | AB          |
| 8149 | M. Tamaji           | M. Tamaji          | AB          | M. Tamaji   |
| 8150 | Alham               | Alham              | Alham       | Alham       |
| 8151 | Varghese            | AB                 | Varghese    | Varghese    |

Remedial  
Practical



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is: T.Y.B.Sc. Remedial Remedial Remedial Remedial Remedial Remedial  
Subject: Microbiology Remedial  
13/9/19 17/9/19 18/9/19 19/9/19 19/9/19 20/9/19

| I No | 13/9/19           | 17/9/19           | 18/9/19           | 19/9/19           | 19/9/19           | 19/9/19           | 20/9/19           | Total             |
|------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 01   | Ajeer             | Ajeer             | Ajeer             | Ajeer             | AB                | AB                | AB                | Ajeer             |
| 02   | Jashna            | Jashna            | Jashna            | Jashna            | AB                | Jashna            | Jashna            | AB                |
| 103  | yogesh            | yogesh            | yogesh            | yogesh            | yogesh            | yogesh            | yogesh            | AB                |
| 104  | Niket             | Niket             | Niket             | Niket             | Niket             | Niket             | Niket             | Niket             |
| 5    | Aliche            | Aliche            | AB                | AB                | Aliche            | Aliche            | Aliche            | Aliche            |
| 106  | Uma               | Uma               | Uma               | Uma               | AB                | AB                | AB                | Uma               |
| 107  | Fatima            | Fatima            | Fatima            | Fatima            | Fatima            | Fatima            | Fatima            | Fatima            |
| 108  | AB                | AB                | R. Kambli         | R. Kambli         | R. Kambli         | R. Kambli         | R. Kambli         | R. Kambli         |
| 109  | Anam              | Anam              | Anam              | Anam              | AB                | Anam              | Anam              | Anam              |
| 9110 | Chaiti            | Chaiti            | Chaiti            | Chaiti            | Chaiti            | Chaiti            | Chaiti            | AB                |
| 9111 | Smritye           | Smritye           | Smritye           | Smritye           | Smritye           | Smritye           | Smritye           | Smritye           |
| 9112 | AB                | AB                | Ajmal             | Ajmal             | AB                | Ajmal             | Ajmal             | AB                |
| 5-3  | Pawan             | Pawan             | Pawan             | Pawan             | Pawan             | Pawan             | Pawan             | Pawan             |
| 9114 | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  | <del>Subha</del>  |
| 9115 | AB                | AB                | Subha S           | Subha S           | AB                | Subha S           | Subha S           | Subha S           |
| 9116 | AB                | AB                | Supriya           | Supriya           | Supriya           | Supriya           | Supriya           | Supriya           |
| 9117 | AB                | AB                | Anjali            | Anjali            | AB                | AB                | AB                | Anjali            |
| 9118 | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> | <del>Kinjal</del> |
| 9119 | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> | <del>Shafiq</del> |
| 9120 | Ayangan           | Ayangan           | Ayangan           | Ayangan           | Ayangan           | Ayangan           | Ayangan           | Ayangan           |

AB Remedial lecture MB-II  
 ch Remedial lecture MB-III  
 Remedial lecture AC  
 Remedial lecture MB-I  
 NK Remedial lecture MB-IV  
 ch S. L. Prasad PRINCIPAL  
 S.I.W.S. N.R. Swamy College of Commerce & Economics  
 Thirumalai College of Science  
 Wadala, Mumbai-400 031.

Attendance Sheet

Class:

T.Y.B.Sc.

Subject: Microbiology

Remedial

| Roll No | 24/2/2020  | 24/2/2020  | 24/2/2020  | 25/2/2020  | 25/2/2020  | 26-2-20    | 25/2/20    | Total      |
|---------|------------|------------|------------|------------|------------|------------|------------|------------|
| 9101    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9102    | Anjali     | Anjali     | Anjali     | Anjali     | Anjali     | AB         | AB         | AB         |
| 9103    | Jashna     | Jashna     | Jashna     | Jashna     | Jashna     | Jashna     | Jashna     | Jashna     |
| 9104    | Yogesh     | Yogesh     | Yogesh     | AB         | AB         | Yogesh     | AB         | Yogesh     |
| 9105    | Nilesh     | Nilesh     | Nilesh     | Nilesh     | Nilesh     | Nilesh     | Nilesh     | Nilesh     |
| 9106    | Alieha     | Alieha     | Alieha     | AB         | AB         | Alieha     | AB         | Alieha     |
| 9107    | Uma        | Uma        | Uma        | Uma        | Uma        | AB         | AB         | AB         |
| 9108    | Fatima     | Fatima     | Fatima     | AB         | AB         | AB         | AB         | AB         |
| 9109    | R.e.Kambli | R.e.Kambli | R.e.Kambli | R.e.Kambli | R.e.Kambli | R.e.Kambli | R.e.Kambli | R.e.Kambli |
| 9110    | Anam       | Anam       | Anam       | Anam       | Anam       | AB         | AB         | AB         |
| 9111    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9112    | Smruti     | Smruti     | Smruti     | Smruti     | Smruti     | Smruti     | Smruti     | Smruti     |
| 9113    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9114    | AB         | AB         | AB         | Pizwan     | Pizwan     | Pizwan     | Pizwan     | Pizwan     |
| 9115    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9116    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9117    | Supriya    | Supriya    | Supriya    | Supriya    | Supriya    | Supriya    | Supriya    | AB         |
| 9118    | Bingh      | Bingh      | Bingh      | Bingh      | Bingh      | Bingh      | Bingh      | AB         |
| 9119    | AB         | AB         | AB         | AB         | AB         | AB         | AB         | AB         |
| 9120    | Ayangan    | Ayangan    | Ayangan    | Ayangan    | Ayangan    | Ayangan    | Ayangan    | Ayangan    |

Remedial lecture AC

Remedial lecture MB-III

Remedial lecture MB-II

Remedial lecture MB-I

2019-20  
Remedial Practical  
Sem V

S.I.W.S. N.R. Swamy College Of Commerce & Economics

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Wadala, Mumbai - 400 031.

Attendance Sheet

Class:

T.Y.B.Sc.

Subject:

Microbiology

| Roll No | 29-8-19                 | 30-8-19                 | 11-9-19      | 12-9-19 | 13-9-19      | Total        |
|---------|-------------------------|-------------------------|--------------|---------|--------------|--------------|
| 9101    | <del>A</del>            | <del>A</del>            | A            |         | A            | <del>A</del> |
| 9102    | Jashna                  | Jashna                  | A            |         | Jashna       |              |
| 9103    | Yogesh                  | Yogesh                  | Yogesh       |         | A            |              |
| 9104    | A                       | A                       | A            |         | Nikhat       | <del>A</del> |
| 9105    | A                       | Ashika                  | Ashika       |         | A            |              |
| 9106    | Uma                     | Uma                     | Uma          |         | Uma          |              |
| 9107    | N. Fatima               | N. Fatima               | N. Fatima    |         | A            |              |
| 9108    | <del>R. e. Kambli</del> | <del>R. e. Kambli</del> | R. e. Kambli | holiday | R. e. Kambli |              |
| 9109    | A                       | A                       | A            |         | A            | <del>A</del> |
| 9110    | A                       | A                       | A            |         | A            | <del>A</del> |
| 9111    | Amrutesh                | Amrutesh                | Amrutesh     |         | Amrutesh     |              |
| 9112    | Aparna                  | Aparna                  | A            |         | Aparna       | Aparna       |
| 9113    | Priya                   | Priya                   | A            |         | A            |              |
| 9114    | <del>A</del>            | <del>A</del>            | <del>A</del> |         | <del>A</del> |              |
| 9115    | Subhas                  | Subhas                  | Subhas       |         | Subhas       |              |
| 9116    | Supriya                 | Supriya                 | Supriya      |         | Supriya      | Supriya      |
| 9117    | A                       | A                       | A            |         | Anjali       |              |
| 9118    | King                    | King                    | King         |         | King         |              |
| 9119    | <del>A</del>            | <del>A</del>            | <del>A</del> |         | <del>A</del> | <del>A</del> |
| 9120    | Avanika                 | Avanika                 | Avanika      |         | Avanika      | Avanika      |

RB

RB

Remedial Practical

Remedial Practical



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2019-20  
Remedial Practice  
Sem VI

S.I.W.S. N.R. Swamy College Of Commerce & Economics  
&  
Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.  
Attendance Sheet

Class: T.Y.B.Sc.

Subject: Remedial Microbiology

| Roll No | 04/02/20    | 05/02/20    | 06/02/20    | 11/2/20     | 12/2/20  | 13/2/20  | Total   |
|---------|-------------|-------------|-------------|-------------|----------|----------|---------|
| 9101    | SAB         | Deer        | Deer        | Deer        | Deer     | AB       | Deer    |
| 9102    | Anjali      | A           | A           | A           | AB       | AB       | AB      |
| 9103    | Jasna       | Jasna       | Jasna       | A           | Jasna    | AB       | Jasna   |
| 9104    | Yogesh      | Yogesh      | Yogesh      | Yogesh      | Yogesh   | Yogesh   | Yogesh  |
| 9105    | Niket       | AB          | Niket       | Niket       | Niket    | AB       | Niket   |
| 9106    | Alicha      | AB          | Alicha      | Alicha      | Alicha   | Alicha   | Alicha  |
| 9107    | Uma         | Uma         | Uma         | Uma         | Uma      | Uma      | Uma     |
| 9108    | Fatima      | Fatima      | Fatima      | Fatima      | Fatima   | Fatima   | Fatima  |
| 9109    | R.e. Kambli | R.e. Kambli | R.e. Kambli | R.e. Kambli | AB       | AB       | A       |
| 9110    | Anara       | Anara       | Anara       | Anara       | Anara    | Anara    | Anara   |
| 9111    | AB          | AB          | AB          | Anshika     | Anshika  | Anshika  | Anshika |
| 9112    | AB          | Amrutesh    | Amrutesh    | Amrutesh    | Amrutesh | Amrutesh | A       |
| 9113    | AB          | Ajanta      | Ajanta      | Ajanta      | AB       | AB       | Ajanta  |
| 9114    | Pizwan      | Pizwan      | Pizwan      | Pizwan      | AB       | Pizwan   | Pizwan  |
| 9115    |             |             |             |             |          |          |         |
| 9116    | Subha.S     | Subha.S     | Subha.S     | Subha.S     | Subha.S  | Subha.S  | A       |
| 9117    | Supriya     | Supriya     | Supriya     | Supriya     | Supriya  | Supriya  | P       |
| 9118    | Kingh       | Kingh       | Kingh       | Kingh       | Kingh    | Kingh    | P       |
| 9119    |             | AB          | AB          | AB          | AB       | AB       |         |
| 9120    |             | AB          | AB          | AB          | AB       | AB       |         |



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Remedial Practice



Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor :

Remedial  
Remedial

| Roll No | 6/3/20   | 7/3/20   | 7/3/20   | 11/3/20  | 12/3/20  | 13/3/20  | Total |
|---------|----------|----------|----------|----------|----------|----------|-------|
| 7101    | Narmada  | Narmada  | Narmada  | Narmada  | Narmada  | Narmada  |       |
| 7102    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7103    | Imrjee   | AB       | AB       | AB       | AB       | AB       |       |
| 7104    | Petkar   | AB       | AB       | AB       | AB       | AB       |       |
| 7105    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7106    | Dhurya   | Dhurya   | Dhurya   | Dhurya   | Dhurya   | Dhurya   |       |
| 7107    | Sakshi   | Sakshi   | Sakshi   | Sakshi   | Sakshi   | Sakshi   |       |
| 7108    | FAYRU    | AB       | AB       | FAYRU    | FAYRU    | AB       |       |
| 7109    | Sawade   | Sawade   | Sawade   | Sawade   | Sawade   | Sawade   |       |
| 7110    | Gaithiri | AB       | AB       | Gaithiri | Gaithiri | Gaithiri |       |
| 7111    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7112    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7113    | Jadhav   | AB       | AB       | AB       | AB       | AB       |       |
| 7114    | AB       | Kulkarni | Kulkarni | AE       | AB       | Kulkarni |       |
| 7115    | Seema    | Seema    | Seema    | Seema    | Seema    | Seema    |       |
| 7116    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7117    | K.S.R    | K.S.R    | AB       | AB       | AB       | AB       |       |
| 7118    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7119    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7120    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7121    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7122    | Krishna  | Krishna  | Krishna  | Krishna  | Krishna  | Krishna  |       |
| 7123    | Mudra    | AB       | AB       | Mudra    | Mudra    | AB       |       |
| 7124    | AB       | AB       | AB       | AB       | AB       | AB       |       |
| 7125    | Vaishali | Vaishali | Vaishali | Vaishali | Vaishali | Vaishali |       |
| 7126    | Sondhe   | Sondhe   | AB       | Sondhe   | Sondhe   | AB       |       |
| 7127    | AB       | AB       | AB       | AB       | AB       | AB       |       |



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Smt. Thirumalai College Of Science  
Wadala, Mumbai - 400 031.  
Attendance Sheet

Class : F.Y.B.Sc.

Group: PCMB

Subject: Microbiology

Name of The Professor :

Remedial Remedial

| Roll No |                  |                 |  |               |                |                  | Total |
|---------|------------------|-----------------|--|---------------|----------------|------------------|-------|
| 7128    | <u>F.rajane</u>  | <u>F.rajane</u> |  |               |                |                  |       |
| 7129    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7130    | <u>Nubahn</u>    | <u>Nubahn</u>   |  | AB            | AB             | AB               |       |
| 7131    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7132    | <u>Jyoti</u>     | <u>Jyoti</u>    |  |               |                |                  |       |
| 7133    | AB               | AB              |  | AB            | AB             | AB               |       |
| 134     | <u>Shubho</u>    | AB              |  | AB            | AB             | AB               |       |
| 7135    | <u>Aishwarya</u> | AB              |  | AB            | AB             | <u>Aishwarya</u> |       |
| 7136    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7137    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7138    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7139    | <u>Akshay</u>    | AB              |  | AB            | AB             | <u>Akshay</u>    |       |
| 7140    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7141    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7142    | <del>AB</del>    | AB              |  | <del>AB</del> | <del>AB</del>  | <del>AB</del>    |       |
| 7143    | AB               | <u>R.Patil</u>  |  | AB            | <u>R.Patil</u> | AB               |       |
| 7144    | <u>Aditya</u>    | <u>Aditya</u>   |  |               |                |                  |       |
| 7145    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7146    | <u>Jyoti</u>     | <u>Jyoti</u>    |  | AB            | AB             | <u>Jyoti</u>     |       |
| 7147    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7148    | AB               | AB              |  | <u>Rohini</u> | <u>Rohini</u>  | <u>Rohini</u>    |       |
| 7149    | <u>Zomane</u>    | <u>Zomane</u>   |  |               |                |                  |       |
| 7150    | <u>S.Rane</u>    | <u>S.Rane</u>   |  | <u>S.Rane</u> | <u>S.Rane</u>  | <u>S.Rane</u>    |       |
| 7151    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7152    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7153    | AB               | AB              |  | AB            | AB             | AB               |       |
| 7154    | AB               | AB              |  | AB            | AB             | AB               |       |



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Class : F.Y.B.Sc.

Group: PCMB

Name of The Professor :

Remedial

13/20

8-3-20

R

| Roll No | 6/3/20        |           |        |               |  |
|---------|---------------|-----------|--------|---------------|--|
| 7155    | AB            | AB        |        | AB            |  |
| 7156    | <del>AB</del> | AB        |        | AB            |  |
| 7157    | AB            | AB        |        | AB            |  |
| 7158    | AB            | AB        |        | AB            |  |
| 7159    | Priyanka.     | AB        |        | AB            |  |
| 7160    | <del>AB</del> | AB        |        | <del>AB</del> |  |
| 7161    | AB            | AB        |        | AB            |  |
| 7162    | AB            | AB        |        | AB            |  |
| 7163    | A. Kishor     | A. Kishor |        | A. Kishor     |  |
| 7164    | AB            | AB        |        | AB            |  |
| 7165    | AB            | AB        |        | AB            |  |
| 7166    | AB            | AB        |        | AB            |  |
| 7167    | AB            | AB        |        | AB            |  |
| 7168    | K             | Suresh    | Suresh | Suresh        |  |
| 7169    | K             | AB        |        | AB            |  |
| 7170    | <del>AB</del> | AB        |        | <del>AB</del> |  |
| 7171    |               | AB        |        | AB            |  |
| 7172    |               | AB        |        | AB            |  |
| 7173    |               | AB        |        | AB            |  |
| 7174    | Anil          | Anil      |        | AB            |  |
| 7175    |               | AB        |        | AB            |  |
| 7176    | Kanishk       | Kanishk   |        | AB            |  |
| 7177    | Manish        | Manish    | Manish | Manish        |  |
| 7178    | Omestri       | Omestri   |        | AB            |  |
| 7179    |               | AB        |        | AB            |  |
| 7180    | <del>AB</del> | AB        |        | <del>AB</del> |  |
| 7181    |               | AB        |        | AB            |  |

Class: F.Y.B.Sc.

Group: PCMB

Name of The Professor :

| Roll No | 11/10 | 11/10 | 11/10 | 11/10 | 11/10 | 11/10 | Total |
|---------|-------|-------|-------|-------|-------|-------|-------|
| 7182    | AB    | AB    | AB    | AB    | AB    | AB    | AB    |
| 7183    | AB    | AB    | AB    | AB    | AB    | AB    | AB    |
| 7184    | AB    | AB    | AB    | AB    | AB    | AB    | AB    |
| 7185    | AB    | AB    | AB    | AB    | AB    | AB    | AB    |
| 7186    | AB    | AB    | AB    | AB    | AB    | AB    | AB    |
| 7187    |       |       |       |       |       |       |       |
| 7188    |       |       |       |       |       |       |       |
| 7189    |       |       |       |       |       |       |       |
| 7190    |       |       |       |       |       |       |       |
| 7191    |       |       |       |       |       |       |       |
| 7192    |       |       |       |       |       |       |       |
| 7193    |       |       |       |       |       |       |       |
| 7194    |       |       |       |       |       |       |       |
| 7195    |       |       |       |       |       |       |       |
| 7196    |       |       |       |       |       |       |       |
| 7197    |       |       |       |       |       |       |       |
| 7198    |       |       |       |       |       |       |       |
| 7199    |       |       |       |       |       |       |       |
| 7200    |       |       |       |       |       |       |       |



*[Signature]*

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*[Signature]*  
Remedial  
lecture  
MB - II.

*[Signature]*  
Remedial lecture  
MB - Paper I

*[Signature]*  
Syllabus complete

*[Signature]*  
Syllabus completion



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N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS &  
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Plot No. 337, Sewree-Wadala Estate,  
Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

**Department of Computer science**  
**Academic year 2020-21**  
**Remedial Lecture Timetable**

Date: 25/2/2021

| Subject Name                     | Date      |
|----------------------------------|-----------|
| Information and network security | 27/2/2021 |

  
Co-ordinator

  
Vice Principal

  
Principal



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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

Department of Computer science  
Academic year 2020-21  
Remedial Lecture Attendance

Subject: Information and Network Security

SEM: V

Time: 1 PM to 1. 50 PM

Date: 27/2/2021

| Sr. No | Name                    | Signature |
|--------|-------------------------|-----------|
| 1      | Rajbhar Deepak Chhangur |           |

Co-ordinator

Vice Principal

Principal



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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

Department of Computer science  
Academic year 2019-20  
Remedial Lecture Attendance

Subject: Artificial Intelligence

SEM: V

Time: 1 PM – 1.50 PM

Date: 26/2/2020

| Sr. No | Name              | Signature  |
|--------|-------------------|------------|
| 1      | Shakar Dhangar    | }          |
| 2      | Shakar Dhangar    |            |
| 3      | Shubham Dhumal    | S.D.       |
| 4      | Ankit Jaiswar     | Ankit      |
| 5      | Vikas Karotiya    | Vikas      |
| 6      | Prathamesh kedare | Prathamesh |

Co-ordinator

Vice Principal

Principal



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Smt. Thirumalai College of Science,  
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SMT. THIRUMALAI COLLEGE OF SCIENCE  
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(Affiliated to the University of Mumbai)

Department of Computer science  
Academic year 2019-20  
Remedial Lecture Attendance

Subject: Game programming

SEM: V


Time: 1 PM – 1.50 PM

Date: 25/2/2020

| Sr. No | Name                 | Signature   |
|--------|----------------------|-------------|
| 1      | Saqlain Ansari       | Ansan       |
| 2      | Rajbhar Sandeep      | SRajbhar    |
| 3      | Saikh Israr          | Sheikh I    |
| 4      | Moh. Mahafzur Ansari | M.D. Ansari |
| 5      | Harshad Bahirat      | Harsh       |

  
Co-ordinator

  
Vice Principal

  
Principal



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Smt. Thirumalai College of Science,  
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S.I.W.S.  
N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS &  
SMT. THIRUMALAI COLLEGE OF SCIENCE  
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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

**Department of Computer science**  
**Academic year 2019-20**  
**Remedial Lecture Attendance**

**Subject:** Information and Network security


**SEM:** V

**Time:** 1 PM – 1.50 PM

**Date:** 27/2/2020

| Sr. No | Name                 | Signature    |
|--------|----------------------|--------------|
| 1      | Shakar Dhangar       | S. Dhangar   |
| 2      | Manoj Narge          | Manoj        |
| 3      | Saikh Israr          | Shaikh I.    |
| 4      | Moh. Mahafzur Ansari | M. D. Ansari |
| 5      | Harshad Bahirat      | Harshad      |
| 6      | Shubham Dhumal       | S. D.        |
| 7      | Siddhesh Wagh        | Wagh Sidhesh |

  
Co-ordinator

  
Vice Principal

  
Principal



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Department of Computer science  
Academic year 2019-20  
Remedial Lecture Attendance

Subject: Linux server Administrator

SEM: V

Time: 1 PM – 1.50 PM

Date: 28/2/2020

| Sr. No | Name        | Signature |
|--------|-------------|-----------|
| 1      | Saikh Israr |           |

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**Department of Computer science**  
**Academic year 2019-20**  
**Remedial Lecture Timetable**

Date: 20/2/2020

| Subject Name                           | Date      | Time           |
|----------------------------------------|-----------|----------------|
| Web services                           | 24/2/2020 | 1 PM – 1.50 PM |
| Game Programming                       | 25/2/2020 | 1 PM – 1.50 PM |
| Artificial Intelligence                | 26/2/2020 | 1 PM – 1.50 PM |
| Information and network security       | 27/2/2020 | 1 PM – 1.50 PM |
| Software Testing and Quality Assurance | 28/2/2020 | 1 PM – 1.50 PM |

  
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Department of Computer science  
Academic year 2019-20  
Remedial Lecture Attendance

Subject: Web services


SEM: V

Time: 1 PM – 1.50 PM

Date: 24/2/2020

| Sr. No | Name            | Signature     |
|--------|-----------------|---------------|
| 1      | Mayur Arse      | Mayur         |
| 2      | Harshad Bahirat | Harshad       |
| 3      | Jayant Chavan   | JChavan       |
| 4      | Subodh Jadhav   | Subodh Jadhav |
| 5      | Ankit Jaiswar   | Ankit         |

  
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Department of Computer science  
Academic year 2018-19  
Remedial Lecture Attendance

Subject: Artificial Intelligence

SEM: V

Time: 1 PM – 1.50 PM

Date: 25/2/2019

| Sr. No | Name                | Signature |
|--------|---------------------|-----------|
| 1      | Velumuthu Murgesh   | Velumuthu |
| 2      | Nirmal Perumal      | Nirmal    |
| 3      | Sylvester Gnana     | Sylvester |
| 4      | Vikram Mathiyalagan | Vikram    |
| 5      | Nilesh Chaurasiya   | Nilesh    |
| 6      | Amresh Chauhan      | Amresh    |
| 7      | Subhash Padayachi   | Subhash   |
| 8      | Hasan Shamsul       | Hasan     |

S.B.  
Co-ordinator

Amul  
Vice Principal

Asa  
Principal



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Department of Computer science  
Academic year 2018-19  
Remedial Lecture Attendance

Subject: Game Programming

SEM: V

Time: 1 PM – 1.50 PM

Date: 27/2/2019

| Sr. No | Name              | Signature |
|--------|-------------------|-----------|
| 1      | Amresh Chauhan    |           |
| 2      | Nirmal Perumal    |           |
| 3      | Arun Thevar       |           |
| 4      | Shivanand Mehtari |           |

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**Department of Computer science**  
**Academic year 2018-19**  
**Remedial Lecture Attendance**

**Subject:** Information and network security


**SEM:** V

**Time:** 1 PM – 1.50 PM

**Date:** 22/2/2019

| Sr. No | Name              | Signature |
|--------|-------------------|-----------|
| 1      | Palani Manikandan | Palani    |
| 2      | Nirmal Perumal    | Nerumal   |
| 3      | Sylvester Gnana   | Sylvester |
| 4      | Nilesh Chaurasiya | Nilesh    |
| 5      | Ashok Karingu     | Ashok     |
| 6      | Madan Kumar       | Mkumar    |

  
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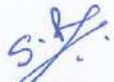


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**Department of Computer science**  
**Academic year 2018-19**  
**Remedial Lecture Timetable**

Date: 22/2/2019

| Subject Name                           | Date      | Time            |
|----------------------------------------|-----------|-----------------|
| Artificial Intelligence                | 25/2/2019 | 1 PM to 1.50 PM |
| Game Programming                       | 27/2/2019 | 1 PM to 1.50 PM |
| Information and network security       | 22/2/2019 | 1 PM to 1.50 PM |
| Software Testing and Quality Assurance | 26/2/2019 | 1 PM to 1.50 PM |
| Web services                           | 23/2/2019 | 1 PM to 1.50 PM |

  
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Department of Computer science  
Academic year 2018-19  
Remedial Lecture Attendance

Subject: Software Testing and Quality Assurance


SEM: V

Time: 1 PM – 1.50 PM

Date: 26/2/2019

| Sr. No | Name                | Signature  |
|--------|---------------------|------------|
| 1      | Velumuthu Murgesh   | velumuthu  |
| 2      | Nirmal Perumal      | NPerumal   |
| 3      | Abhaykumar Dubey    | DubeyAbhay |
| 4      | Vikram Mathiyalagan | Vikram     |
| 5      | Moh Zaki Khan       | mohzaki    |
| 6      | Shivanand Mehtari   | Sim        |

  
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Department of Computer science  
Academic year 2018-19  
Remedial Lecture Attendance

Subject: Web services

SEM: V

Time: 1 PM – 1.50 PM

Date: 23/2/2019

| Sr. No | Name                | Signature  |
|--------|---------------------|------------|
| 1      | Palani Manikandan   | Palani     |
| 2      | Nirmal Perumal      | NPerumal   |
| 3      | Sylvester Gnana     | Sgnana     |
| 4      | Vikram Mathiyalagan | Vikram     |
| 5      | Nilesh Chaurasiya   | fn21       |
| 6      | Abhaykumar Dubey    | DubeyAbhay |
| 7      | Shivanand Mehtari   | S.M.       |

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Department of Computer science  
Academic year 2017-18  
Remedial Lecture Attendance

Subject: .NET technologies


SEM: V

Time: 1 PM – 1.50 PM

Date: 24/2/2018

| Sr. No | Name             | Signature  |
|--------|------------------|------------|
| 1      | Krishna Shivaraj | Krishna    |
| 2      | Shyam Shankaran  | Sshankaran |
| 3      | Suman Raj        | SumanRaj   |
| 4      | Saravanan Nadar  | Saravanan  |
| 5      | Jha Vipul        | Vipul      |

  
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Vice Principal

  
Principal



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Academic year 2017-18  
Remedial Lecture Attendance

Subject: Advance Java Programming -I

SEM: V

Time: 1 PM – 1.50 PM

Date: 27/2/2018

| Sr. No | Name            | Signature |
|--------|-----------------|-----------|
| 1      | Shailesh Gupta  | AB        |
| 2      | Shyam Shankaran | Sshankar  |
| 3      | Bangari Navin   | AB        |
| 4      | Saravanan Nadar | S nadar   |
| 5      | Anu P           | peveanu   |

S.P.  
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Amul  
Vice Principal

Amul  
Principal



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Department of Computer science  
Academic year 2017-18  
Remedial Lecture Attendance

Subject: Data Communication and Networking

SEM: V

Time: 1 PM – 1.50 PM

Date: 26/2/2018

| Sr. No | Name            | Signature |
|--------|-----------------|-----------|
| 1      | Ravi Kumar      |           |
| 2      | Shyam Shankaran | ABSENT    |
| 3      | Bangari Navin   | ABSENT    |
| 4      | Saravanan Nadar |           |
| 5      | Anu P           |           |

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Department of Computer science  
Academic year 2017-18  
Remedial Lecture Attendance

Subject: Mobile application Development


SEM: V

Time: 1 PM – 1.50 PM

Date: 23/2/2018

| Sr. No | Name             | Signature |
|--------|------------------|-----------|
| 1      | Krishna Shivaraj | Krishna   |
| 2      | Suman Raj        | Suman Raj |
| 3      | Bangari Navin    | — AB —    |
| 4      | Arunkumar Sahu   | — AB —    |

  
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**Department of Computer science**  
**Academic year 2017-18**  
**Remedial Lecture Timetable**

Date: 21/2/2018

| Subject Name                      | Date      | Time           |
|-----------------------------------|-----------|----------------|
| Mobile application Development    | 23/2/2018 | 1 PM – 1.50 PM |
| .NET technologies                 | 24/2/2018 | 1 PM – 1.50 PM |
| Data Communication and Networking | 26/2/2018 | 1 PM – 1.50 PM |
| Advance Java Programming –I       | 27/2/2018 | 1 PM – 1.50 PM |

  
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Department of Computer science  
Academic year 2016-17  
Remedial Lecture Attendance

Subject: Advance Java -I


SEM: V

Time: 1 PM to 1.50 PM

Date: 20/2/2017

| Sr. No | Name                | Signature |
|--------|---------------------|-----------|
| 1      | Balganeshan Vadival | ABSENT    |
| 2      | Adam Mayur          | ABSENT    |
| 3      | Gupta Ashish        | Ashish    |
| 4      | Yenna Karan         | Kyanna    |

  
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Department of Computer science  
Academic year 2016-17  
Remedial Lecture Attendance

Subject: Data Communication, networking and security

SEM: V

Time: 1 PM to 1.50 PM

Date: 21/2/2017

| Sr. No | Name         | Signature |
|--------|--------------|-----------|
| 1      | Gupta Ashish | Ashish    |
| 2      | Yenna Karan  | Kyanna    |

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Amuel  
Vice Principal

Amel  
Principal



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Department of Computer science  
Academic year 2016-17  
Remedial Lecture Attendance

Subject: Database Management

SEM: V

Time: 1 PM to 1.50 PM

Date: 21/2/2017

| Sr. No | Name              | Signature |
|--------|-------------------|-----------|
| 1      | Shaikh Abdul      | AB        |
| 2      | Vind Hemant Kumar | AB        |
| 3      | Pooja Maurya      | Pooja     |

S.B.D.  
Co-ordinator

Amey  
Vice Principal

Shake  
Principal



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Department of Computer science  
Academic year 2016-17  
Remedial Lecture Attendance

Subject: Operating System


SEM: V

Time: 1 PM to 1.50 PM

Date: 23/2/2017

| Sr. No | Name                 | Signature  |
|--------|----------------------|------------|
| 1      | Balganeshan Vadival  | - Absent - |
| 2      | Adam Mayur           | Adam Mayur |
| 3      | Shivai shinde        | SS         |
| 4      | Kanagapriya Mohanraj | - Absent - |

  
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**Department of Computer science**  
**Academic year 2016-17**  
**Remedial Lecture Timetable**

Date: 18/2/2017

| Subject Name                                | Date      | Time           |
|---------------------------------------------|-----------|----------------|
| Advance Java -I                             | 20/2/2017 | 1 PM – 1.50 PM |
| Data Communication, networking and security | 21/2/2017 | 1 PM – 1.50 PM |
| Database Management                         | 22/2/2017 | 1 PM – 1.50 PM |
| Operating System                            | 23/2/2017 | 1 PM – 1.50 PM |

  
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**M.Sc.IT**  
**Academic year 2019-20**  
**Remedial Lecture Timetable**

Date: 23/5/2020

| Subject Name              | Date      | Time         |
|---------------------------|-----------|--------------|
| Embedded System           | 27/5/2021 | 9 AM – 10 AM |
| Ethical Hacking           | 28/5/2021 | 9 AM – 10 AM |
| Virtualization            | 29/5/2021 | 9 AM – 10 AM |
| Artificial Neural network | 30/5/2021 | 9 AM – 10 AM |

  
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**Academic year 2019-20**  
**Remedial Lecture Attendance**

**Subject:** Embedded System

**SEM:** III

**Time:** 9 AM – 10 AM

**Date:** 27/4/2020

| Sr. No | Name             | Signature |
|--------|------------------|-----------|
| 1      | Kannan Balraman  | AB        |
| 2      | Siddhesh Bhosale | Bhosale   |
| 3      | Prathamesh Kadam | Kadew     |

*M. Saswaha*  
Co-ordinator

*Amud*  
Vice Principal

*Amud*  
Principal



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**Academic year 2019-20**  
**Remedial Lecture Attendance**

**Subject:** Ethical Hacking

**SEM:** III

**Time:** 9 AM – 10 AM

**Date:** 28/4/2020

| Sr. No | Name            | Signature |
|--------|-----------------|-----------|
| 1      | Subhash Salokhe |           |

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**M.Sc.IT**

**Academic year 2019-20**

**Remedial Lecture Attendance**

**Subject:** Virtualization

**SEM:** III

**Time:** 9 AM – 10 AM

**Date:** 29/4/2020

| Sr. No | Name       | Signature |
|--------|------------|-----------|
| 1      | Afroz khan |           |

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**M.Sc.IT**  
**Academic year 2018-19**  
**Remedial Lecture Attendance**

**Subject:** Embedded System

**SEM:** III

**Time:** 9 AM to 10 AM

**Date:** 5/4/2019

| Sr. No | Name                              | Signature         |
|--------|-----------------------------------|-------------------|
| 1      | Bhosle Siddesh Sunil Lalita       | <del>ABSENT</del> |
| 2      | Khan Mohammad Aasif Asfak Parveen | Md Aasif          |

*M. K. Sawade*

**Co-ordinator**

*Amal*

**Vice Principal**

*Amal*

**Principal**



**PRINCIPAL**  
S.I.W.S. N.R. Swamy College of  
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Wadala, Mumbai - 400 031



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SMT. THIRUMALAI COLLEGE OF SCIENCE  
Plot No. 337, Sewree-Wadala Estate,  
Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2018-19**  
**Remedial Lecture Attendance**

**Subject:** Ethical Hacking

**SEM:** III

**Time:** 9 AM to 10 AM

**Date:** 7/4/2019

| Sr. No | Name                           | Signature |
|--------|--------------------------------|-----------|
| 1      | Shetigar Ajay Narayan Parvathi |           |

**Co-ordinator**

**Vice Principal**

**Principal**



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2018-19**  
**Remedial Lecture Timetable**

Date: 2/4/2019

| Subject Name    | Date     | Time         |
|-----------------|----------|--------------|
| Embedded System | 5/4/2019 | 9 AM – 10 AM |
| Virtualization  | 6/4/2019 | 9 AM – 10 AM |
| Ethical Hacking | 7/4/2019 | 9 AM – 10 AM |

*Dr. Manojkumar*

Co-ordinator

*Anand*

Vice Principal

*Dr. N. S. Joshi*

Principal



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2018-19**  
**Remedial Lecture Attendance**

**Subject:** Virtualization

**SEM:** III

**Time:** 9 AM to 10 AM

**Date:** 6/4/2019

| Sr. No | Name                           | Signature |
|--------|--------------------------------|-----------|
| 1      | Shetigar Ajay Narayan Parvathi |           |

**Co-ordinator**

**Vice Principal**

**Principal**



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2017-18**  
**Remedial Lecture Attendance**

**Subject:** Embedded System

**SEM:** III

**Time:** 9 AM to 10 AM

**Date:** 5/4/2018

| Sr. No | Name         | Signature |
|--------|--------------|-----------|
| 1      | Firoz Khan   |           |
| 2      | Krishna Kota |           |

**Co-ordinator**

**Vice Principal**

**Principal**



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2017-18**  
**Remedial Lecture Attendance**

Subject: Ethical Hacking

SEM: III

Time: 9 AM to 10 AM

Date: 7/4/2018

| Sr. No | Name         | Signature |
|--------|--------------|-----------|
| 1      | Krishna Kota |           |

Co-ordinator

Vice Principal

Principal



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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2017-18**  
**Remedial Lecture Timetable**

**Date: 2/4/2018**

| Subject Name    | Date     | Time         |
|-----------------|----------|--------------|
| Embedded System | 5/4/2018 | 9 AM – 10 AM |
| Virtualization  | 6/4/2018 | 9 AM – 10 AM |
| Ethical Hacking | 7/4/2018 | 9 AM – 10 AM |

*M. K. Sawade*  
**Co-ordinator**

*Amul*  
**Vice Principal**

*[Signature]*  
**Principal**



PRINCIPAL  
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Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2017-18**  
**Remedial Lecture Attendance**

**Subject:** Virtualization

**SEM:** III

**Time:** 9 AM to 10 AM

**Date:** 6/4/2018

| Sr. No | Name         | Signature |
|--------|--------------|-----------|
| 1      | Krishna Kota |           |

Co-ordinator

Vice Principal

Principal



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Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031





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SMT. THIRUMALAI COLLEGE OF SCIENCE  
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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031  
(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2016-17**  
**Remedial Lecture Attendance**

**Subject:** Embedded System

**SEM:** III

**Time:** 11 AM to 12 PM

**Date:** 5/4/2017

| Sr. No | Name           | Signature |
|--------|----------------|-----------|
| 1      | Panilda Celine |           |
| 2      | Manoj Kamti    |           |
| 3      | Ganesan Mukesh |           |

**Co-ordinator**

**Vice Principal**

**Principal**



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2016-17**  
**Remedial Lecture Attendance**

**Subject:** Ethical Hacking

**SEM:** III

**Time:** 11 AM to 12 PM

**Date:** 6/4/2017

| Sr. No | Name               | Signature             |
|--------|--------------------|-----------------------|
| 1      | Panilda Celine     | <i>Panilda Celine</i> |
| 2      | Pillai Nityaganesh | <i>Absent</i>         |
| 3      | Ganesan Mukesh     | <i>G. mukesh</i>      |

*Prakashwaha*  
Co-ordinator

*Amuel*  
Vice Principal

*[Signature]*  
Principal



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2016-17**  
**Remedial Lecture Attendance**

**Subject:** Information Security Management

**SEM:** III

**Time:** 11 AM to 12 PM

**Date:** 7/4/2017

| Sr. No | Name           | Signature |
|--------|----------------|-----------|
| 1      | Archana Sayane |           |
| 2      | Namrata Nikam  |           |

**Co-ordinator**

**Vice Principal**

**Principal**



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2016-17**  
**Remedial Lecture Timetable**

Date: 31/3/2017

| Subject Name                    | Date     | Time          |
|---------------------------------|----------|---------------|
| Embedded System                 | 5/4/2017 | 11 AM – 12 PM |
| Ethical Hacking                 | 6/4/2017 | 11 AM – 12 PM |
| Information Security Management | 7/4/2017 | 11 AM – 12 PM |
| Virtualization                  | 8/4/2017 | 11 AM – 12 PM |

*H. K. Sawade*  
Co-ordinator

*Amud*  
Vice Principal

*S. H. K.*  
Principal



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(Affiliated to the University of Mumbai)

**M.Sc.IT**  
**Academic year 2016-17**  
**Remedial Lecture Attendance**

**Subject:** Virtualization

**SEM:** III

**Time:** 11 AM to 12 PM

**Date:** 8/4/2017

| Sr. No | Name               | Signature |
|--------|--------------------|-----------|
| 1      | Pillai Nityaganesh | ABSENT    |
| 2      | Namrata Nikam      | Namrata   |

*N. Harawaha*  
Co-ordinator

*Anand*  
Vice Principal

*[Signature]*  
Principal



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**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS**  
**AND**  
**SMT. THIRUMALAI COLLEGE OF SCIENCE**  
**WADALA MUMBAI-400031**

Date: 24<sup>th</sup> December, 2021

The advanced learners in the T.Y.B.Sc. Class help the slow learners by reiterating and discussing the topic queries under the supervision of the teacher in charge.

Objective:

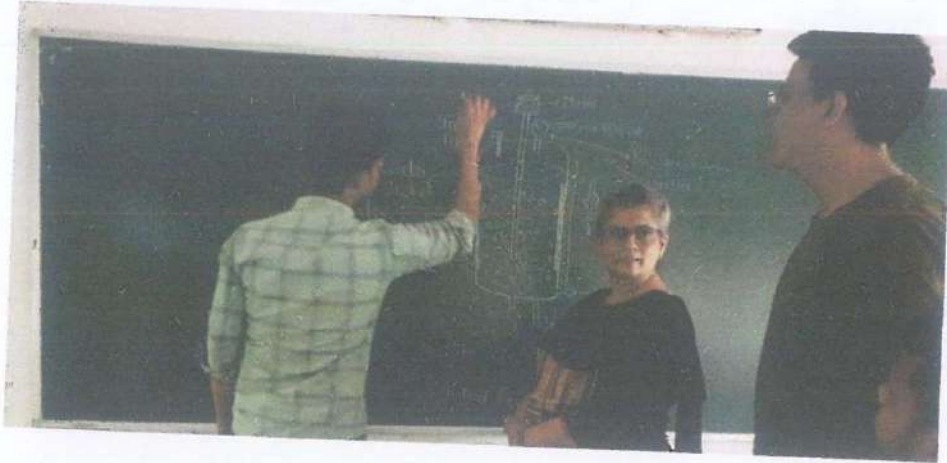
1. This helps in building stronger bond between the classmates and as well as students from different classes.
2. Resolves the topic difficulties.
3. Helps in discussing question and answers.

T.Y.B.Sc. (Physics) Applied Component- Practical



*[Signature]*  
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Wadala, Mumbai - 400 031.

T.Y.B.Sc. Microbiology Paper 4- Theory



*Khanolkar*

Ms. Neeta Khanolkar  
Vice Principal ( Science )

*Usha Iyer*

Dr. Usha Iyer  
Principal



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Smt. Thirumalai College of Science  
Wadala, Mumbai - 400 031.

**S.Y.B.COM / S.Y.B.SC. SEMESTER III –  
F.C. III (ACADEMIC YEAR 2018 – 2019)**

**EXPLAIN THE FOLLOWING CONCEPTS:**

- 1) Civil right.
- 2) Listening
- 3) Pitch variation
- 4) Age of renaissances (1450-1600)
- 5) Natural disaster
- 6) Urban revolution
- 7) Vulnerable group
- 8) Para language
- 9) Schedule caste
- 10) Scientific method
- 11) Child labour
- 12) Women trafficking
- 13) Juvenile justice
- 14) Informal communication
- 15) Statement of purpose
- 16) Linguistic and religions minorities
- 17) Disaster
- 18) Manmade disaster
- 19) Response
- 20) Political rights
- 21) Mitigation
- 22) Schedule tribe
- 23) Preparedness
- 24) National disaster management act
- 25) Paleolithic age
- 26) Scientific temper
- 27) Content listening
- 28) Myths
- 29) Economic and social rights
- 30) Fundamental duty of Indian citizens



*Johns*  
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 Wadala, Mumbai - 400 031.



- 31) Verbal/ oral communication
- 32) Appreciation listening
- 33) Reflective listening
- 34) Land Alienation
- 35) Evaluation listening
- 36) Nonverbal communication
- 37) Public speaking
- 38) Barriers in communication
- 39) Neolithic age
- 40) Recovery
- 41) Science
- 42) Self-awareness
- 43) Formal communication
- 44) Resume
- 45) National commission for minorities (MCM)
- 46) Leadership
- 47) Technology
- 48) Different style of leadership
- 49) Team building
- 50) Presentation



*[Handwritten signature]*

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Wadala, Mumbai - 400 031



# S.I.W.S.

N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS  
AND

SMT. THIRUMALAI COLLEGE OF SCIENCE  
UNIVERSITY OF MUMBAI  
Linguistic Minority Institution

अशौस २०१०/प्र.क्र. १०० / २०१० / का. ५ दिनांक ३०.१.२०१२  
Major R. Parmeshwaran Marg, Sewree, Wadala Estate, Plot No. 337,  
Wadala, Mumbai - 400 031. • Phone : 2418 0390 Fax : 2411 8657  
Website : www.siwscollege.edu.in • Email Id : siws1@vsnl.net

NAAC RE-ACCREDITED : B

Ref. No. SIWSNRSC /

Date: 26/7/16

To,  
The Principal  
K.G. Joshi college of Arts  
& N.G. Bedekar College of Commerce,  
Thane

Dear Madam/Sir,

We are pleased to inform you that the following students would be representing our college for the inter collegiate competition for paper presentation on 26<sup>th</sup> July, 2016 organized by The Department of Economics of your college. We have emailed the power point presentation on the 16<sup>th</sup> July, 2016.

| <u>Name of the Students</u> | <u>Class</u> |
|-----------------------------|--------------|
| Rohit Shetty                | S.Y, B.Com   |
| Sheetal Rai                 | S.Y. B.Com   |
| Abhishek Pujari             | S.Y. B.Com   |
| Hammadakram TM              | S.Y. B.Com   |


Thank You

Yours sincerely

  
PRINCIPAL

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S.I.W.S. COLLEGE



  
PRINCIPAL  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



# K. G. JOSHI COLLEGE OF ARTS & N. G. BEDEKAR COLLEGE OF COMMERCE ( INCLUDING JANGRA COLLEGE )

CREEK LAND, CHENDAN BUNDER ROAD, THANE - 400 501.

E-mail : [kgjoshibedekar@gmail.com](mailto:kgjoshibedekar@gmail.com) / [kgjoshibedekar\\_college@yahoo.co.in](mailto:kgjoshibedekar_college@yahoo.co.in)

From: Dr. (Mrs.) S. A. Singh  
B.A. Ph. D.

Ref No. : JGCE/2014/

DATE : / / 2014

Dear Sir / Madam,

Department of Economics of our college is organizing Intercollegiate Competition of paper presentation for all students on 25<sup>th</sup> July, 2014. We request you to send your students for the same.

Topics for the Paper Presentations are as follows:

1. Inflation and Economic Growth in India.
2. Role of State in Economic Growth.
3. Performance of commercial banks in India.
4. Demand Forecasting.
5. Economics of trade.
6. Changing Trends in Tax and Non-tax revenues in India.
7. Public Finance vs Private finance.
8. Trends in fiscal deficit and measures in India.
9. Recent changes in Money market in India.
10. Recent changes in Capital market in India.
11. Demographic Changes in India.

### RULES AND REGULATIONS

- 1) Each college should send one / two teams of two to four Students for Paper presentation.
- 2) Each participant should pay Rs 50/- as a registration fee on the day of the competition on registration counter.
- 3) The time allowed to each team will be of 7 minutes.
- 4) Send your entries and power point presentations on or before 18<sup>th</sup> July, 2014 to [kgjoshibedekar@gmail.com](mailto:kgjoshibedekar@gmail.com).
- 5) No changes will be allowed in the power point presentation once submitted.
- 6) Each participant will be given a participation certificate.
- 7) The decision of the judges will be final.

Reporting time: 11:00am.

Venue : Katoyan auditorium, Commerce Bldg., 3rd floor, Joshi-Bedekar College, Thane (W).

Contact details :

- Dr. Deepak Sable- 9819525943  
 Mrs. Nirata Padak- 9920049000  
 Mr. Prakash Jangra- 9977149417  
 Mr. Sagar Thakkar- 9221005397



*S.A.S.*  
 PRINCIPAL  
 S.I.W.S. N.R. Swamy College of  
 Commerce & Economics and  
 Smt. Thirumalai College of Science,  
 Wadala, Mumbai - 400 031



K. G. JOSHI COLLEGE OF ARTS & N. G. BEDEKAR COLLEGE OF COMMERCE

(INCORPORATED UNDER THE COMPANIES ACT, 1956)

GREEN LANE, CHENNAI BUNGLOW ROAD, THANE - 400 001

E-mail: [principal@joshi-n-g-bekkar.com](mailto:principal@joshi-n-g-bekkar.com), [joshi-n-g-bekkar@rediffmail.com](mailto:joshi-n-g-bekkar@rediffmail.com)

---

From: Dr. (Mrs.) S. A. Singh  
M.A. 403

Ref No: JGD/1741

Date: 16/06/2016

**Dear Sir/Madam,**

**Department of Economics of our college is organizing Intercollegiate Competition of paper presentation for all students on 29<sup>th</sup> July, 2016. We request you to send your students for the same.**

**Topics for the Paper Presentation are as follows:**

1. Inflation and Economic Growth in India.
2. Role of State in Economic Growth.
3. Performance of commercial banks in India.
4. Demand Forecasting.
5. Structure of trade.
6. Changes Trends in Tax and Non-tax revenue in India.
7. Public Finance vs. Private Finance.
8. Trade in Rural district and movement in India.
9. Recent changes in Money market in India.
10. Recent changes in Capital market in India.
11. Demographic Changes in India.

**RULES AND REGULATIONS**

- 1) Each college should nominate two teams of two to four students for paper presentation.
- 2) Each participant should pay Rs. 25/- as a registration fee on the day of the competition at respective college.
- 3) The time allotted to each team will be of 9 minutes.
- 4) Send your entries and power point presentation on or before 10<sup>th</sup> July, 2016 to [principal@joshi-n-g-bekkar.com](mailto:principal@joshi-n-g-bekkar.com).
- 5) Final topics will be awarded in the power point presentation only selected.
- 6) Each participant will be given a participation certificate.
- 7) The results of the topics will be final.

**Reporting time: 11:00am.**  
Venue: Kavyasri auditorium, Commerce Bldg., 383 Green Lane, Bedekar E/Drp, Thane (W).

**Contact details:**  
Dr. Deepak Singh: 9820229342  
Ms. Neeta Kulkarni: 9820229342  
Ms. Pratiksha Jangale: 9820229342  
Ms. Sagar Thakur: 9820229342

*(Signature)*  
Principal



*(Signature)*

**PRINCIPAL**  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



Vidya Prasarak Mandal's  
**K.G. Joshi College of Arts &  
N.G. Bedekar College of Commerce, Thane**

Re-Accredited "A" Grade by NAAC  
Best College Award (University of Mumbai)  
Community College (University of Mumbai)

'Jnanadweep', Chendani Bunder Road, Thane (W) 400 601. Tel.: 2533 2412, 2539 2072

# Certificate

*This is to certify that*


Mr./Ms. Rai Sheetal of

SIWS N.R. Swamy College of Commerce & Economics has participated/presented  
a paper and awarded ~~First/Second/Third/Consolation~~ <sup>✓</sup> Prize in the Power Point Presentation

Competition/~~Workshop/Seminar/Conference~~ organized by Department of


Economics

held on 26<sup>th</sup> July 2016

  
Head of Department / Chairperson



  
Co-ordinator, IQAC

  
PRINCIPAL  
SIWS N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031

  
Dr. (Mrs.) Shakuntala A. Singh  
Principal



Vidya Prasarak Mandal's  
**K.G. Joshi College of Arts &  
N.G. Bedekar College of Commerce, Thane**

Re-Accredited "A" Grade by NAAC  
Best College Award (University of Mumbai)  
Community College (University of Mumbai)

'Jnanadweep', Chendani Bunder Road, Thane (W) 400 601. Tel.: 2533 2412; 2539 2072

# Certificate

*This is to certify that*

Mr./Ms. Shetty Rohit of

SIWS N.R. Swamy College of Commerce & Economics has participated/presented  
a paper and awarded ~~First/Second/Third/Consolation~~ Prize in the Power Point Presentation

Competition/~~Workshop/Seminar/Conference~~ organized by Department of

Economics held on 26<sup>th</sup> July 2016

Head of Department / Chairperson



Co-ordinator IQAC

PRINCIPAL

Dr. (Mrs.) Shakuntala A. Singh  
Principal

S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumala College of Science  
Wadala, Mumbai - 400 031



Vidya Prasarak Mandal's  
**K.G. Joshi College of Arts &  
N.G. Bedekar College of Commerce, Thane**

Re-Accredited "A" Grade by NAAC  
Best College Award (University of Mumbai)  
Community College (University of Mumbai)

'Jnanadweep', Chendani Bunder Road, Thane (W) 400 601. Tel.: 2533 2412, 2539 2072

# Certificate

*This is to certify that*

Mr./Ms. Im Hammadakram of

SIWS N.R. Swamy college of Commerce & Economics has participated/presented  
a paper and awarded ~~First/Second/Third/Consolation~~ Prize in the Power Point Presentation

Competition/~~Workshop/Seminar/Conference~~ organized by Department of

Economics

held on 26<sup>th</sup> July 2016

Head of Department / Chairperson



Co-ordinator, IQAC

PRINCIPAL

S.I.W.S. N.R. Swamy College of  
Commerce & Economics and

Dr. (Mrs.) Shakuntala A. Singh  
Principal

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Minoor R. Shroff (*Chairman – Emeritus*)  
H. P. Ranina (*Chairman*)  
Deepak S. Parekh  
Bansi S. Mehta  
Y. H. Malegam  
Shreyas K. Doshi  
Nirmal Bhogilal  
Dileep Choksi  
V.S. Palekar  
S. S. Bhandare (*Managing Trustee*)

# The A. D. Shroff Memorial Trust

[Registered under Bombay Public Trusts Act, 1967,  
on 30.03.1967, vide Registration No. E-3480 (Bom.)]

*This is to certify that*

Ms. Vandana Nishad

*a student of*

S.T.W.S. NR Swamy College of Commerce & Economics

is awarded the CONSOLATION prize in

***The 54<sup>th</sup> A.D. Shroff Memorial Inter-Collegiate Elocution Contest***

*held on 20<sup>th</sup> January, 2019 in Mumbai*

*with the objective of encouraging college students to think and speak on economic subjects.*

  
Chairman

***The A. D. Shroff Memorial Trust***

Peninsula House, 235, Dr. D.N. Road, Mumbai 400 001. Telefax: 022-2261 4253. Email: ffe@vsnl.net  
Website : [www.forumindia.org](http://www.forumindia.org) | Twitter : @FFEconnect | YouTube : Forum of Free Enterprise





# CERTIFICATE OF ACHIEVEMENT

THIS IS TO CERTIFY THAT

Mr./Ms. Samprita Mogaveera

Of South Indians' Welfare Society College COLLEGE  
HAS EXCELLENTLY PERFORMED AND WON THE  
'DEMOCRACY & ME CONTEST' HELD ON  
10<sup>th</sup> JANUARY, 2019

10<sup>th</sup> JANUARY, 2019

DATE



*Rajesh*

MIR RAHUL RAMI SH SHELWALE  
MEMBER OF FACULTY



**S.I.W.S.**

**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS  
AND**

**SMT. THIRUMALAI COLLEGE OF SCIENCE**

Plot No.337, Sewri-Wadala Estate, Major R. Parameshwaran Marg,  
Wadala(W), Mumbai - 400 031

(Affiliated to the University of Mumbai)

NAAC Reaccredited: B

## **PLANNING FORUM**



**Participants attempting the quiz: 'What's the Economic Word'?**  
**(August 18, 2017)**

  
**Convener**



  
**Principal**

**PRINCIPAL**  
**S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031**

NAME: Edward Alexander  
 CLASS: EUBcom DIV-D  
 ROLL NO :

PLANNING FORUM.

|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1  | B | O | N | D | E | V | A | L | U | A  | T  | I  | O  | N  | A  | C  | Y  | C  | L  | E  |
| 2  | O | A | I | D | U | T | I | L | I | T  | Y  | N  | P  | P  | A  | T  | E  | N  | T  | M  |
| 3  | O | D | L | D | E | M | A | T | A | I  | D  | S  | R  | F  | E  | G  | D  | P  | G  | O  |
| 4  | M | V | B | A | N | K | P | X | L | N  | V  | E  | N  | T  | A  | C  | H  | U  | A  | N  |
| 5  | W | A | G | E | N | Z | X | I | A | O  | E  | X  | C  | I  | S  | E  | A  | H  | T  | E  |
| 6  | Z | L | T | A | Q | C | I | M | N | U  | E  | L  | A  | S  | T  | I  | C  | I  | T  | Y  |
| 7  | G | O | O | D | U | O | E | C | D | G  | E  | S  | P  | U  | S  | A  | F  | A  | L  | N  |
| 8  | S | R | L | E | O | D | Q | O | G | O  | X  | I  | I  | T  | E  | O  | L  | M  | S  | H  |
| 9  | U | E | L | B | T | B | U | S | F | T  | C  | L  | T  | S  | R  | M  | O  | A  | A  | H  |
| 10 | P | M | I | T | A | A | I | T | I | P  | H  | E  | A  | P  | V  | A  | W  | R  | V  | R  |
| 11 | P | O | N | N | S | R | L | W | N | I  | A  | V  | L  | R  | I  | I  | D  | K  | I  | E  |
| 12 | L | D | F | X | T | T | I | A | A | C  | N  | Y  | L  | O  | C  | N  | S  | E  | N  | V  |
| 13 | Y | E | L | E | N | E | B | N | N | R  | G  | E  | M  | T  | E  | V  | C  | T  | G  | E  |
| 14 | X | L | A | O | E | R | R | T | C | E  | E  | L  | A  | E  | X  | E  | K  | O  | S  | N  |
| 15 | G | A | T | S | A | S | I | E | E | D  | Q  | A  | T  | C  | N  | S  | T  | U  | M  | U  |
| 16 | R | O | I | L | Y | N | U | X | S | I  | U  | B  | S  | T  | A  | T  | I  | C  | S  | E  |
| 17 | O | C | O | N | S | U | M | E | R | T  | I  | O  | A  | I  | V  | G  | S  | M  | O  | G  |
| 18 | W | O | N | T | H | R | I | F | T | W  | T  | U  | L  | O  | A  | X  | O  | D  | E  | B  |
| 19 | T | R | L | I | Q | U | I | D | I | T  | Y  | R  | E  | N  | T  | A  | I  | L  | W  | U  |
| 20 | H | E | D | G | I | N | G | S | T | O  | C  | K  | X  | S  | U  | B  | S  | I  | D  | Y  |



PRINCIPAL  
 S.I.W.S. N.R. Swamy College of  
 Commerce & Economics and  
 Smt. Thirumathi College of Science,  
 Wadeta, Mumbai - 400 031

NAME: Prachi Pahl  
 CLASS: F.Y.B. Com - D  
 ROLL NO :

PLANNING FORUM

|    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1  | B | O | N | D | E | V | A | L | U | A  | T  | I  | O  | N  | A  | C  | Y  | C  | L  | E  |
| 2  | O | A | I | D | U | T | I | L | I | T  | Y  | N  | P  | P  | A  | T  | E  | N  | T  | M  |
| 3  | O | D | L | D | E | M | A | T | A | I  | D  | S  | R  | F  | E  | G  | D  | P  | G  | O  |
| 4  | M | V | B | A | N | K | P | X | L | N  | V  | E  | N  | T  | A  | C  | H  | U  | A  | N  |
| 5  | W | A | G | E | N | Z | X | I | A | O  | E  | X  | C  | I  | S  | E  | A  | H  | T  | E  |
| 6  | Z | L | T | A | Q | C | I | M | N | U  | E  | L  | A  | S  | T  | I  | C  | I  | T  | Y  |
| 7  | G | O | O | D | U | O | E | C | D | G  | E  | S  | P  | U  | S  | A  | F  | A  | L  | N  |
| 8  | S | R | L | E | O | D | Q | O | G | O  | X  | I  | I  | T  | E  | O  | L  | M  | S  | H  |
| 9  | U | E | L | B | T | B | U | S | F | T  | C  | L  | T  | S  | R  | M  | O  | A  | A  | H  |
| 10 | P | M | I | T | A | A | I | T | I | P  | H  | E  | A  | P  | V  | A  | W  | R  | V  | R  |
| 11 | P | O | N | N | S | R | L | W | N | I  | A  | V  | L  | R  | I  | I  | D  | K  | I  | E  |
| 12 | L | D | F | X | T | T | I | A | A | C  | N  | Y  | L  | O  | C  | N  | S  | E  | N  | V  |
| 13 | Y | E | L | E | N | E | B | N | N | R  | G  | E  | M  | T  | E  | V  | C  | T  | G  | E  |
| 14 | X | L | A | O | E | R | R | T | C | E  | E  | L  | A  | E  | X  | E  | K  | O  | S  | N  |
| 15 | G | A | T | S | A | S | I | E | E | D  | Q  | A  | T  | C  | N  | S  | T  | U  | M  | U  |
| 16 | R | O | I | L | Y | N | U | X | S | I  | U  | B  | S  | T  | A  | T  | I  | C  | S  | E  |
| 17 | O | C | O | N | S | U | M | E | R | T  | I  | O  | A  | I  | V  | G  | S  | M  | O  | G  |
| 18 | W | O | N | T | H | R | I | F | T | W  | T  | U  | L  | O  | A  | X  | O  | D  | E  | B  |
| 19 | T | R | L | I | Q | U | I | D | I | T  | Y  | R  | E  | N  | T  | A  | I  | L  | W  | U  |
| 20 | H | E | D | G | I | N | G | S | T | O  | C  | K  | X  | S  | U  | B  | S  | I  | D  | Y  |



*Prachi Pahl*  
 PRINCIPAL  
 S.I.W.S. N.R. Swamy College of  
 Commerce & Economics and  
 Smt. Thirumalai College of Science,  
 Wadala, Mumbai - 400 031

NAME: Guni prakash Nadar

PLANNING FORUM

CLASS/ : SYBCOM

ROLL NO :

|    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1  | B | O | N | D | E | V | A | L | U | A  | T  | I  | O  | N  | A  | C  | Y  | C  | L  | E  |
| 2  | O | A | I | D | U | T | I | L | I | T  | Y  | N  | P  | P  | A  | T  | E  | N  | T  | M  |
| 3  | O | D | L | D | E | M | A | T | A | I  | D  | S  | R  | F  | E  | G  | D  | P  | G  | O  |
| 4  | M | V | B | A | N | K | P | X | L | N  | V  | E  | N  | T  | A  | C  | H  | U  | A  | N  |
| 5  | W | A | G | E | N | Z | X | I | A | O  | E  | X  | C  | I  | S  | E  | A  | H  | T  | E  |
| 6  | Z | L | T | A | Q | C | I | M | N | U  | E  | L  | A  | S  | T  | I  | C  | I  | T  | Y  |
| 7  | G | O | O | D | U | O | E | C | D | G  | E  | S  | P  | U  | S  | A  | F  | A  | L  | N  |
| 8  | S | R | L | E | O | D | Q | O | G | O  | X  | I  | I  | T  | E  | O  | L  | M  | S  | H  |
| 9  | U | E | L | B | T | B | U | S | F | T  | C  | L  | T  | S  | R  | M  | O  | A  | A  | H  |
| 10 | P | M | I | T | A | A | I | T | I | P  | H  | E  | A  | P  | V  | A  | W  | R  | V  | R  |
| 11 | P | O | N | N | S | R | L | W | N | I  | A  | V  | L  | R  | I  | I  | D  | K  | I  | E  |
| 12 | L | D | F | X | T | T | I | A | A | C  | N  | Y  | L  | O  | C  | N  | S  | E  | N  | V  |
| 13 | Y | E | L | E | N | E | B | N | N | R  | G  | E  | M  | T  | E  | V  | C  | T  | G  | E  |
| 14 | X | L | A | O | E | R | R | T | C | E  | E  | L  | A  | E  | X  | E  | K  | O  | S  | N  |
| 15 | G | A | T | S | A | S | I | E | E | D  | Q  | A  | T  | C  | N  | S  | T  | U  | M  | U  |
| 16 | R | O | I | L | Y | N | U | X | S | I  | U  | B  | S  | T  | A  | T  | I  | C  | S  | E  |
| 17 | O | C | O | N | S | U | M | E | R | T  | I  | O  | A  | I  | V  | G  | S  | M  | O  | G  |
| 18 | W | O | N | T | H | R | I | F | T | W  | T  | U  | L  | O  | A  | X  | O  | D  | E  | B  |
| 19 | T | R | L | I | Q | U | I | D | I | T  | Y  | R  | E  | N  | T  | A  | I  | L  | W  | U  |
| 20 | H | E | D | G | I | N | G | S | T | O  | C  | K  | X  | S  | U  | B  | S  | I  | D  | Y  |



*Anne*  
**PRINCIPAL**  
 S.I.W.S. N.R. Swamy College of  
 Commerce & Economics and  
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 Wadala, Mumbai - 400 031



**S.I.W.S.**

**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS  
AND SMT. THIRUMALAI COLLEGE OF SCIENCE**  
337, Major R. Parameshwaran Marg, Sewri-Wadala Estate,  
Wadala, Mumbai – 400031.

16 November, 2017

## **Department of Business Economics**

**Academic Year 2017-18**

### **Report**

The department of Business Economics conducted a quiz competition on the topic of public Finance for T.Y.B. Com students of the college in October, 2017. 63 students participated in the same.

The prize winners were as follows:

**First Prize:** Ramya Shetty  
Namrata Mishra  
Prajakta Kadam  
Devika Kadam

**Second Prize:** Shivani Gurav  
Ashwini Karshingkar  
Ruban Nadar  
Sachin Moolya

**Prof-in-charge  
Dr Sanghamitra Mishra**



**Principal**

**PRINCIPAL**  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031

Divs A & B : October 13, 2017  
Attendance

| Roll No  | Sign              | Roll No | Sign              | Roll No | Sign              |
|----------|-------------------|---------|-------------------|---------|-------------------|
| 1. 4195  | SWETA             | 4140    | Ranjana           | 4085    | G. V. ...         |
| 2. 4212  | <del>SP</del>     | 4199    | <del>Arjun</del>  | 4086    | Atul              |
| 3. 4005  | <del>Pratik</del> | 4151    | <del>Pratik</del> | 4098    | Kundale           |
| 4. 4056  | <del>Pratik</del> | 4152    | <del>Pratik</del> | 4209    | Shreelax          |
| 5. 4169  | <del>Pratik</del> | 4059    | <del>Pratik</del> | 4144    | <del>Pratik</del> |
| 6. 4150  | <del>Pratik</del> | 4052    | Arshwini          | 4197    | M. Salunke        |
| 7. 4182  | Bholar            | 4075    | Dalvi             | 4168    | <del>Pratik</del> |
| 8. 4185  | K. K. ...         | 4049    | P. B. Gharat      |         |                   |
| 9. 4186  | Pratik            | 4183    | <del>Pratik</del> |         |                   |
| 10. 4009 | <del>Pratik</del> | 4138    | Narmada           |         |                   |
| 11. 4176 | Shabnam           | 4078    | Jyoti             |         |                   |
| 12. 4177 | Shamika           | 4079    | Akamble           |         |                   |
| 13. 4174 | Farida            | 4033    | K. K. ...         |         |                   |
| 14. 4210 | Ravathi           | 4071    | J. J. ...         |         |                   |
| 15. 4175 | <del>Pratik</del> | 4070    | <del>Pratik</del> |         |                   |
| 16. 4222 | Reena             | 4065    | <del>Pratik</del> |         |                   |
| 17. 4119 | <del>Pratik</del> | 4016    | Shubh             |         |                   |
| 18. 4154 | P. B. Patil       | 4036    | Aishwari          |         |                   |
| 19. 4157 | <del>Pratik</del> | 4035    | <del>Pratik</del> |         |                   |
| 20. 4126 | M. K. ...         | 4030    | <del>Pratik</del> |         |                   |
| 21. 4163 | <del>Pratik</del> | 4058    | Vikas             |         |                   |
| 22. 4171 | <del>Pratik</del> | 4057    | <del>Pratik</del> |         |                   |
| 23. 4208 | <del>Pratik</del> | 4051    | Ankit Gupta       |         |                   |
| 24. 4207 | <del>Pratik</del> | 4135    | Subhash           |         |                   |
| 25. 4115 | <del>Pratik</del> | 4064    | Pratik            |         |                   |
| 26. 4142 | <del>Pratik</del> | 4081    | Pratik            |         |                   |
| 27. 4186 | A. A. Shinde      | 4081    | Pratik            |         |                   |
| 28. 4011 | Kaika             | 4177    | <del>Pratik</del> |         |                   |

Total Divs A & B  
63  
Participants

Aarti Prasad  
13/10/2017

Principal

62  
Participants  
Total



PRINCIPAL  
Smt. Thirumalai College of Science & Commerce  
Wadala, Mumbai - 400 031

# S.I.W.S.

N.R. Swamy College of Commerce & Economics  
&

Smt. Thirumalai College of Science

Wadala, Mumbai - 400 031.

NAAC ACCREDITATION : B



## Certificate of Merit

Mr./Ms. Ruban Nadar  
of T.Y.B.COM. during the year 2017-18  
for winning the SECOND PRIZE in the  
Economics Quiz Competition organized  
by Department of Economics.

24.03.18  
Date

Aarti Prasad  
Chairperson



[Signature]  
PRINCIPAL  
Smt. Thirumalai College of Science  
Wadala, Mumbai - 400 031.





# S.I.W.S.

**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS &  
SMT. THIRUMALAI COLLEGE OF SCIENCE**

MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400 031.



Organizing Committee of Youth Festival Zone 1 Elimination Round organized by Department of Environmental Studies in college



Ms. Sneha Rajbhar of F.Y.B.Com. won second prize in Environmental Study Quiz organized by Department of Geography, University of Mumbai in association with Indian National Cartographic Association (INCA) Mumbai Chapter sponsored by Lions Club of Bombay, held on 14<sup>th</sup> and 15<sup>th</sup> February, 2020



PRINCIPAL *[Signature]*  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031.



# S.I.W.S.

**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS &  
SMT. THIRUMALAI COLLEGE OF SCIENCE**

MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400 031.



Ms. Tabassum Khan of F.Y.B.Com. won 3<sup>rd</sup> prize in map filling competition organized by S.P. Dnyanasadhana College, Thane and Indian National Cartographic Association on 8<sup>th</sup> February, 2019



**PRINCIPAL**  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



# S.I.W.S.

**N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS &  
SMT. THIRUMALAI COLLEGE OF SCIENCE**

MAJOR R. PARAMESHWARAN MARG, SEWREE – WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI – 400 031.



Ms. Nidhi Rao of F. Y. B. Com. won participation certificate in map filling competition organized by S.P. Dnyanasadhana College, Thane and Indian National Cartographic Association on 8<sup>th</sup> February, 2019



*J. N. S.*  
**PRINCIPAL**  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



# S.I.W.S.

N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS  
AND SMT. THIRUMALAI COLLEGE OF SCIENCE  
Plot No. 337, Sewri - Wadala Estate, Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031

## Department of Physics

Youtube links: ( for theory as well as practical )

1. Use of Vernier Callipers : <https://www.youtube.com/watch?v=FG2jucZ5NVk>
2. Use of Vernier Callipers :  
<http://amrita.olabs.edu.in/?sub=1&brch=5&sim=16&cnt=4>
3. Use of Screw Guage : [https://www.youtube.com/watch?v=7g\\_JE9dxEuw](https://www.youtube.com/watch?v=7g_JE9dxEuw)
4. Use of Screw Guage : <https://www.youtube.com/watch?v=11EM0nZUdqE>
5. Use of spectrometer :  
<https://vlab.amrita.edu/?sub=1&brch=281&sim=1508&cnt=4>
6. HOW TO USE CRO : <https://www.youtube.com/watch?v=Lanpw4Ry8xc>
7. WORKING OF CRO : <https://www.youtube.com/watch?v=U1amW7S1fcI>
8. Use of Breadboard : <https://www.youtube.com/watch?v=fCoqizjnLKI>
9. Use of Breadboard : <https://www.youtube.com/watch?v=W6mixXsn-Vc>
10. WORKING OF IC 555 MULTIVIBRATORS:  
<https://www.youtube.com/watch?v=8Z7kTCSZG5E>
11. Laser Diffraction Grating Experiment :  
<https://www.youtube.com/watch?v=pmmjgbwgon8>
12. Working of astable multivibrator using op-amp :  
<https://www.youtube.com/watch?v=jVQ9Jg46W74>
13. Use of 8085 kit : <https://www.youtube.com/watch?v=uvupli4nik8&t=23s>
14. Use of 8085 kit : [https://www.youtube.com/watch?v=xJSa\\_o3cosA](https://www.youtube.com/watch?v=xJSa_o3cosA)
15. [https://youtu.be/ukGLH\\_NrFH8](https://youtu.be/ukGLH_NrFH8)
16. <https://youtu.be/YEERJJQCoTw>
17. <https://youtu.be/Aoi4j8es4gQ>
18. <https://youtu.be/O6g-7rUgrdg>

Anagha Bapat

Anagha Bapat  
Department of Physics  
Date: 24<sup>th</sup> December 2021



Dr. Usha Iyer

Dr. Usha Iyer  
Principal

PRINCIPAL  
S.I.W.S. N.R. Swamy College of  
Commerce & Economics &  
Smt. Thirumalai College of Science  
Wadala, Mumbai 400 031



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AND**

**SMT. THIRUMALAI COLLEGE OF SCIENCE**

Plot No. 337, Sewri -Wadala Estate,  
Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031

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**CHEMISTRY DEPARTMENT**

**You tube Links**

**THEORY**

**1. MOLECULAR ORBITAL THEORY**

<https://youtu.be/H3QPImW9dpE>

**2. MOLECULAR SYMMETRY**

<https://youtu.be/iVrz8IYSa3E?t=7>

<https://www.youtube.com/watch?v=SiBsE2cfBJ8>

<https://youtu.be/wtD8JVRCxwE>

**3. MOT for Heteronuclear diatomic molecules**

<https://www.youtube.com/watch?v=iYvT3PNsO>

**4. Hybridization of Carbon**

**sp<sup>3</sup> Hybridization**

[https://youtu.be/J9oNPj\\_GAws](https://youtu.be/J9oNPj_GAws)

**sp<sup>2</sup> Hybridization**

<https://youtu.be/dX6uNLCYhhQ>

**sp Hybridization**

<https://youtu.be/i9pFxmUViTs>

**Complete**

[https://youtu.be/8VBs\\_xf7yLs](https://youtu.be/8VBs_xf7yLs)

<https://youtu.be/K914ZDuSgiU>



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Smt. Thirumalai College of Science  
Wadala, Mumbai-400 031

## 5. Hybridization of Nitrogen

### sp<sup>3</sup> Hybridization

[https://youtu.be/dI9M\\_sw28HE](https://youtu.be/dI9M_sw28HE)

<https://youtu.be/Wj6h2h-5E8>

<https://youtu.be/NpbHqSl6g-E>

## 6. Hybridization of Oxygen

### sp<sup>3</sup> Hybridization

<https://youtu.be/0c1hJs5cdT4>

<https://youtu.be/IMiibdPyNwI>

### sp<sup>2</sup> Hybridization

<https://youtu.be/LxDXnFy75I8>

<https://youtu.be/ldzypUy-4E>

## 7. Sigma & Pi Bonds

<https://youtu.be/jPUB8AHWK-s>

<https://youtu.be/pT8nrBrTOM4>

## 8. General Introduction to Drugs is as below:

<https://youtu.be/LTT5CDuPTk4>



  
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St. Thane College of Science  
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## PRACTICAL

### 1. Estimation of Chemical Oxygen Demand of Water: Reflux Condensor

<https://youtu.be/SzYqPdUkFO>

### 2. Flame Photometry : How to use a Flame Photometer

<https://youtu.be/tzloYQxLAKQ>

### 3. Calibration of a Turbidity meter

<https://youtu.be/PCsWGxsZWoQ>

### 4. How to use a Spectrophotometer

<https://youtu.be/EvDwmgSbnnk>

### 5. Nickel DMG

<https://youtu.be/11rmnlepvMk?list=PLuu-p4jamfgiO7YXbrrOj1XHQK3rEnwA3>

### 6. Complexometric estimation of Barium

<https://youtu.be/42WPj0REtNs?t=4>

### 7. Chemistry Apparatus

<https://youtu.be/chODOKSPJS4>

[https://youtu.be/3Fo09\\_v0Zz8](https://youtu.be/3Fo09_v0Zz8)

### 8. Lab Safety

[https://youtu.be/nTEw9UJ7\\_R8](https://youtu.be/nTEw9UJ7_R8)

<https://youtu.be/BRDApYgvDqQ>

<https://youtu.be/gi3DeFY0cfw>

<https://youtu.be/nsGp4ztkjtk>

### 9. Hazards Signs

<https://youtu.be/KX9qzn8lkI4>

<https://youtu.be/7nUdB3YcgSM>

<https://youtu.be/lwAfLQdsbSk>


### 10. Titrations/Complexometric

<https://youtu.be/wRAo-M8xBHM>

<https://youtu.be/sFpFCPTDv2w>

<https://youtu.be/ljNNZvxOw0g>



  
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## 11. Preparations

### 1) Cyclohexanone Oxime

<https://youtu.be/NeMOZIGRYt0>

<https://youtu.be/74KuIYqfXTY>

### 2) Glucosazone of Glucose

<https://youtu.be/P7s675HVEWg>

<https://youtu.be/QWv4uYM00iE>

### 3) Tribromoaniline from Aniline

<https://youtu.be/iaOluWpua9w>

<https://youtu.be/hZiWD2nLanI>

### 4) Phthalic anhydride

<https://youtu.be/I9-TmMoO-yw>

### 5) Acetanilide from Aniline

<https://youtu.be/dQX77yEkZqk>

### 6) Bromination of Acetanilide

[https://youtu.be/1pgAFSB\\_E2I](https://youtu.be/1pgAFSB_E2I)

### 7) Iodoform Preparation

<https://youtu.be/RDfE1V7kb84>

Dr. Sunita D. Shirvalkar  
Head, Department of Chemistry  
Date: 21/10/2021



Dr. Usha Iyer  
Principal  
PRINCIPAL  
S.J.W.S. N.R. Swamy College of  
Commerce & Economics and  
Smt. Thirumala College of Science  
Wadala, Mumbai-400 031





# S.I.W.S.

N.R. SWAMY COLLEGE OF COMMERCE & ECONOMICS  
AND SMT. THIRUMALAI COLLEGE OF SCIENCE  
Plot No. 337, Sewri - Wadala Estate, Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031

## Department of Microbiology

### Microbiology Theory & Practical YouTube links

|                                           |                                                                                                                                                                                                                       |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cell organelle                            | <a href="https://www.youtube.com/watch?v=tO-W8mvBa78">https://www.youtube.com/watch?v=tO-W8mvBa78</a>                                                                                                                 |
| nucleus                                   | <a href="https://www.youtube.com/watch?v=8yLNC2BPnyM">https://www.youtube.com/watch?v=8yLNC2BPnyM</a>                                                                                                                 |
| chloroplast                               | <a href="https://www.youtube.com/watch?v=eOPEn2qYff4">https://www.youtube.com/watch?v=eOPEn2qYff4</a>                                                                                                                 |
| <b>F.Y.BSc Theory</b>                     |                                                                                                                                                                                                                       |
| Spore Staining                            | <a href="https://youtu.be/4tyIE4f-kM0">https://youtu.be/4tyIE4f-kM0</a>                                                                                                                                               |
| Effect of UV rays                         | <a href="https://youtu.be/z4qrnMlhbpE">https://youtu.be/z4qrnMlhbpE</a>                                                                                                                                               |
| Metachromatic granule staining            | <a href="https://youtu.be/YE9iGvG7UWo">https://youtu.be/YE9iGvG7UWo</a>                                                                                                                                               |
| <b>F.Y.BSc Practicals</b>                 |                                                                                                                                                                                                                       |
| Gold nanoparticles                        | <a href="https://youtu.be/urmi99jQSZY">https://youtu.be/urmi99jQSZY</a>                                                                                                                                               |
| Simple galvanic replacement method        | <a href="https://youtu.be/KdYWfaUS4uA">https://youtu.be/KdYWfaUS4uA</a>                                                                                                                                               |
| Quorum sensing                            | <a href="https://youtu.be/mQ43fuJJW7M">https://youtu.be/mQ43fuJJW7M</a>                                                                                                                                               |
| <b>S.Y.BSc Theory</b>                     |                                                                                                                                                                                                                       |
| COD -                                     | <a href="https://www.youtube.com/watch?v=-oz7MPvzId4">https://www.youtube.com/watch?v=-oz7MPvzId4</a>                                                                                                                 |
| Identification of bacteria                | <a href="https://www.youtube.com/watch?v=yJY5vkcwvKM">https://www.youtube.com/watch?v=yJY5vkcwvKM</a>                                                                                                                 |
| Differential Blood staining --            | <a href="https://www.youtube.com/watch?v=Y27TvaJMKRE">https://www.youtube.com/watch?v=Y27TvaJMKRE</a>                                                                                                                 |
| <b>S.Y.BSc Practicals</b>                 |                                                                                                                                                                                                                       |
| Bioprocess Technology 1                   | <a href="https://www.youtube.com/watch?v=39LNa3KLrLw&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa">https://www.youtube.com/watch?v=39LNa3KLrLw&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa</a>                         |
| Bioprocess Technology 2                   | <a href="https://www.youtube.com/watch?v=hosgQawR9hU&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa&amp;index=2">https://www.youtube.com/watch?v=hosgQawR9hU&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa&amp;index=2</a> |
| Bioreactor                                | <a href="https://www.youtube.com/watch?v=AXBK99GUNJg&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa&amp;index=3">https://www.youtube.com/watch?v=AXBK99GUNJg&amp;list=PLXBkrgHI6u72Wpcyn7NVsHuNzw7sGyVoa&amp;index=3</a> |
| <b>T.Y.BSc Theory</b>                     |                                                                                                                                                                                                                       |
| Fermentation of alcohol                   | <a href="https://youtu.be/yTnQrh36S58">https://youtu.be/yTnQrh36S58</a>                                                                                                                                               |
| Primary screening of antibiotic producers | <a href="https://youtu.be/Wf4BBYmQD_g">https://youtu.be/Wf4BBYmQD_g</a>                                                                                                                                               |
| Isolation of genomic DNA                  | <a href="https://youtu.be/tcPgdR9_t64">https://youtu.be/tcPgdR9_t64</a>                                                                                                                                               |
| <b>T.Y.BSc Practicals</b>                 |                                                                                                                                                                                                                       |

Neeta Khanolkar  
Department of Microbiology  
Date: 24<sup>th</sup> December 2021

Dr. Usha Iyer  
Principal

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PLOT NO. 337, SEWRI-WADALA ESTATE,  
MAJOR R. PARMESHWARAN MARG, WADALA,  
MUMBAI 400031**

## Department of Commerce

### Youtube links

1. **Concept of Strategic Management :**  
<https://www.youtube.com/watch?v=HQ6348u6o08>
2. **Fundamentals of Financial Management :**  
[https://www.youtube.com/watch?v=CCQwz\\_Gwo6o](https://www.youtube.com/watch?v=CCQwz_Gwo6o)
3. **Export Marketing Documentation :**  
<https://www.youtube.com/watch?v=Ib09sII9CMI>
4. **Human Resource Management :**  
<https://www.youtube.com/watch?v=A2HFusWQIeE>
5. **E-Commerce :** <https://www.youtube.com/watch?v=spbTx7mCIBU>
6. **Kind of Markets :** [https://www.youtube.com/watch?v=vz\\_smaQUkIo](https://www.youtube.com/watch?v=vz_smaQUkIo)
7. **EOU :** <https://www.youtube.com/watch?v=jDd8vkxHIFc>
8. **Types of Organisation :**  
[https://www.youtube.com/watch?v=R\\_p9wnBV9v0](https://www.youtube.com/watch?v=R_p9wnBV9v0)
9. **Management Accounting :**  
<https://www.youtube.com/watch?v=9XTrTqOBtN0>
10. **Mathematics and Statistics :**  
<https://www.youtube.com/watch?v=d40UyLW8ook>

**CA Vaibhav Banjan  
Vice Principal - Commerce  
December 24, 2021**

**Dr. Usha Iyer  
Principal**

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MAJOR R. PARAMESHWARAN MARG, SEWRI - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400 031.

## Department of Commerce

### Brainstorming Session & Group Discussion for SYBCom Students in the subject of Advertising conducted on January 9, 2018

To begin with, a brief introduction about brainstorming & group discussion was given to the students backed with certain live illustrations in the field of advertising. Students were divided into groups and given 15 minutes to prepare on the topic. Students presented relevant points with apt live examples. Towards the end of the session feedback was also given to the students, which indeed helped them to understand the topics in a rather innovative manner. 18 students enthusiastically participated in Brainstorming Session & Group Discussion on the topics mentioned below:

#### List of Topics:

1. Importance of selection of an appropriate Brand Ambassador
2. Reasons for success of brands
3. Reasons for brand failure
4. Do Jingles, logos and Slogans help in creating brand awareness and brand recall?
5. Which media is more impactful in creating awareness? Traditional or Modern media.
6. "Creativity plays a major role in Advertising".. Do you agree?
7. "Advertising is an art, science & profession". Your views....



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NAME OF THE LECTURER Ayengare Subhashini

DATE : FROM Jan 1, 2018

| ROLL NO. | 6/1    | 9/1    | 11/1  | 30/1  | DATE & LECTURER |
|----------|--------|--------|-------|-------|-----------------|
| 446      | Sowmi  | Sowmi  | Sowmi | Sowmi | Sowmi           |
| 447      | Shah   | Shah   |       | Shah  | Shah            |
| 448      |        |        |       |       |                 |
| 449      |        |        |       |       |                 |
| 450      | Nasim  | Nasim  | Nasim | Nasim | Nasim           |
| 451      | Pooja  |        |       |       | Pooja           |
| 452      | Needa  | Needa  |       |       | Needa           |
| 453      | Shah   | Shah   | Shah  | Shah  | Shah            |
| 454      |        |        |       |       |                 |
| 455      | Daph   | Daph   |       |       |                 |
| 456      |        |        |       |       |                 |
| 457      |        |        |       |       | Abhishek        |
| 458      | Tarzan | Tarzan |       |       |                 |
| 459      |        |        |       |       |                 |
| 460      | Arshad | Arshad |       |       |                 |
| 461      | Ayub   | Ayub   |       |       | Ayub            |
| 462      |        |        |       |       |                 |
| 463      |        |        |       |       |                 |
| 464      | Kaif   | Kaif   |       |       |                 |
| 465      |        |        |       |       |                 |
| 466      |        |        |       |       |                 |
| 467      |        |        |       |       |                 |
| 468      |        |        |       |       |                 |
| 469      |        |        |       |       |                 |
| 470      |        |        |       |       | Arshad          |
| 471      |        |        |       |       |                 |
| 472      |        |        |       |       |                 |
| 473      | Arman  | Arman  | Arman |       | Arman           |
| 474      |        |        |       |       |                 |
| 475      |        |        |       |       |                 |
| 476      | Arshad | Arshad |       |       |                 |
| 477      |        |        |       |       |                 |
| 478      | Armani | Armani |       |       | Armani          |
| 479      |        |        |       |       |                 |
| 480      |        |        |       |       | Abhishek        |

*[Handwritten Signature]*

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# TYBSc Physics classroom



*[Signature]*  
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Wadala, Mumbai-400 031.

# Study Material shared in classwork

The screenshot shows a Google Classroom interface. At the top, there are browser tabs for 'Search results', 'Courses', and 'Electronic instrumentation'. The address bar shows 'classroom.google.com'. The course title is '2021-22 TYBSC (Physics)'. The navigation menu includes 'Stream', 'Classwork', 'People', and 'Marks'. The main content area is titled 'Electronic instrumentation' and contains two posts:

- Post 1: ANAGHA BAPAT posted a new material: C++ Programming. Posted 9 Jan. Material: Introduction to C++.pdf PDF.
- Post 2: ANAGHA BAPAT posted a new material: Electronic Instrumentation : Unit I : Digital circuits. Posted 24 Nov 2021. Material: Various digital circuits.pdf PDF.

The bottom of the screenshot shows a Windows taskbar with various application icons and a system tray with the time '09:56' and date '07-01-2022'.



*[Signature]*  
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Wadgaon, Mumbai-400 031.

## Chapter based tests conducted through Google forms

The screenshot shows a Google Classroom interface. At the top, there are browser tabs for 'Search results - bapatinagha...', '2021-22 FYBSC (Physics) Science', and 'F.Y.B.Sc(Physics) 2021-22 Science'. The address bar shows 'classroom.google.com'. The page title is 'F.Y.B.Sc(Physics) 2021-22' with a sub-header 'Science'. Navigation tabs include 'Stream', 'Classwork', 'People', and 'Marks'. The 'Stream' tab is active, displaying a list of messages:

- ANAGHA BAPAT** (14 Oct 2021): Link for second test <https://forms.gle/1WV9vMCPm5y8b6V6>
- ABIEDALI SIDDIQUI** (19 Oct 2021): MAM OUR VIDEO CALL OPTION IS NOT SHOWING
- ANAGHA BAPAT** (9 Oct 2021): Marks for test conducted on 7th Oct 2021

Below the messages, there is a post titled 'Practice test 1 lens system...' with a PDF icon. The bottom of the screen shows a Windows taskbar with various application icons and a system tray with the date '07-01-2022' and time '09:57'.



*gunde*  
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Thirumalai College of Science  
Wadala, Mumbai-400 031.

## Submission of assignments & practical work by students

Search results: Classroom@Bharati x Temperature to voltage conversion x Physics (2021-22)@Bharati x +

classroom.google.com/u/1/a/MYXMT6-NQ/P/NR0/0/NDQAZM6YMDUENYw/submissions/by-status/and-sort-name/all

2021-22 TYBSC (Physics)  
Science

Instructions Student work

Ungraded

All students

Sort by status

Handed in

| Student Name                 | Status    | Assignment Title        |
|------------------------------|-----------|-------------------------|
| AARTI SONAWANE               | Handed in | Aarti Sonawane_9014_    |
| ABHIJEET DANDINOR            | Handed in | temperature to voltag   |
| AKSHAY MARATHE               | Handed in | temp to voltage conv    |
| ANIKET TRIPATHI              | Handed in | 9015-temperature to v   |
| FATIMA KHAN                  | Handed in | thermistor to voltage   |
| AARTI SONAWANE               | Handed in | Aarti Sonawane_9014_    |
| ABHIJEET DANDINOR            | Handed in | temperature to voltag   |
| AKSHAY MARATHE               | Handed in | temp to voltage conv    |
| ANIKET TRIPATHI              | Handed in | 9015-temperature to v   |
| FATIMA KHAN                  | Handed in | thermistor to voltage   |
| GHRITI SHARMA                | Handed in | Ghriti sharma.pdf       |
| HIDESH RAMNAR ESHVERMA VERMA | Handed in | 9018 Hideshi verma .pdf |
| KATHA UPADHYAY               | Handed in | KATHA UPADHYAY.T        |
| NAWAZ KHAN                   | Handed in | Khan Nawaz, Tempera     |
| FRAVINRAJ NEDUNCHEZHIAN      | Handed in | Temp to Voltage conv    |
| GHRITI SHARMA                | Handed in | Ghriti sharma.pdf       |
| SANIYA ANSARI                | Handed in | SANIYA ANSARI           |
| SHRADHA                      | Handed in | SHRADHA                 |
| SHUBHAM MANE                 | Handed in | SHUBHAM MANE            |
| TUSHAR RATHOD                | Handed in | TUSHAR RATHOD           |
| VAJIDALI student             | Handed in | VAJIDALI student        |

09:58  
07-01-2022



*[Signature]*  
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 Commerce & Economics  
 Thirumalai College of Science  
 Wadala, Mumbai-400 011.





# S.I.W.S.

**N.R. SWAMY COLLEGE OF COMMERCE &  
ECONOMICS &**

**SMT. THIRUMALAI COLLEGE OF SCIENCE**

MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400-031.

25/01/2019

## Department of Information Technology and Computer Science

### **A Report on "Robotics and Internet of things" Seminar**

A seminar was conducted for the students of Information Technology and Computer Science Department on 25<sup>th</sup> January, 2019 from 10:30 am to 12:00 p.m.; more than 120 students attended the session. Mr. Chirag Panchal of CMP Infotech Pvt. Ltd, a Microsoft certified trainer and also working as authorized education partner briefed the students about Microsoft Certification and provided information on Robotics and Internet of things. The students gained information on the role of Robots and Internet of things in the real world; the different gadgets in market as robots; essentially in doing various task in corporate.

Co-ordinator

Vice-Principal



Principal

S.I.W.S. N.R. Swamy College of  
Commerce & Economics &  
Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031



Date: 25/01/2019

Microsoft Certification Seminar 00  
Signature Sheet IOT & Robotics

| Sr.No. | Roll.No. | Class    | Signature |
|--------|----------|----------|-----------|
| 1      | 17067    | F.Y.I.T. | A Tole    |
| 2      | 17072    | F.Y.I.T. | Md Basir  |
| 3      | 17026    | F.Y.I.T. | Atiq      |
| 4      | 17070    | FYIT     | Amal      |
| 5      | 17071    | FYIT     | Amal      |
| 6      | 17074    | FYIT     | PRIYA     |
| 7      | 17057    | FYIT     | Amal      |
| 8      | 17063    | F.Y.I.T  | Amal      |
| 9      | 17034    | FYIT     | Amal      |
| 10     | 17036    | F.Y.I.T  | Ashwini   |
| 11     | 17046    | FYIT     | Amal      |
| 12     | 17035    | FYIT     | Amal      |
| 13     | 17007    | FYIT     | Amal      |
| 14     | 17045    | FYIT     | Amal      |
| 15     | 17004    | FYBSC IT | Amal      |
| 16     | 19046    | TYIT     | Bhavna    |
| 17     | 19016    | TYIT     | Dontoshi  |
| 18     | 17033    | FYIT     | Amal      |
| 19     | 17073    | FYIT     | Ryanchar  |
| 20     | 17017    | FYIT     | Akoncha   |
| 21     | 17040    | FYIT     | Amal      |
| 22     | 17062    | FYIT     | Vaishali  |
| 23     | 17010    | FYIT     | Vaishali  |
| 24     | 39037    | SYCS     | Amal      |
| 25     | 39006    | SYCS     | Amal      |
| 26     | 39027    | SYCS     | Akshata   |
| 27     | 17005    | FYIT     | Amal      |
| 28     | 18016    | SYIT     | B. Ms     |
| 29     | 18044    | SYIT     | Amal      |
| 30     | 18024    | SYIT     | Amal      |
| 31     | 18037    | SYIT     | Ryanchar  |
| 32     | 18015    | SYIT     | Amal      |
| 33     | 18041    | SYIT     | Amal      |
| 34     | 18046    | SYIT     | S.R.S     |
| 35     | 18047    | SYIT     | Amal      |
| 36     | 18009    | SYIT     | V.G       |
| 37     | 18028    | SYIT     | V.S.M     |
| 38     | 18033    | SYIT     | S.P       |
| 39     | 18031    | SYIT     | S.P       |
| 40     | 19019    | TYIT     | Amal      |

Amal

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Commerce & Economics  
Thirumal College of Science  
Wadga, Mumbai-400 031.



## Signature Sheet

| Sr.No. | Roll.No. | Class      | Signature   |
|--------|----------|------------|-------------|
| 41     | 18051    | SY.IT      | Venitho     |
| 42     | 18055    | SYIT       | Pajas       |
| 43     | 19048    | TYIT       | M. S. D. S. |
| 44     | 39018    | SY.CS      | Sanjay      |
| 45     | 17028    | F.Y.IT     | Ashwin      |
| 46     | 17047    | F.Y.I.T    | SB          |
| 47     | 17016    | F.Y.I.T    | Sahil       |
| 48     | 17041    | F.Y.I.T    | Ramesh      |
| 49     | 18056    | S.Y(CIT)   | Ryaden      |
| 50     | 18010    | SYBS(-IT)  | Sanjay      |
| 51     | 17054    | F.Y.I.T    | [Signature] |
| 52     | 39025    | S.Y.BSc.CS | [Signature] |
| 53     | 39004    | SY.CS      | [Signature] |
| 54     | 39028    | SY.CS      | Shruti      |
| 55     | 39023    | SY.CS      | [Signature] |
| 56     | 39029    | SY.CS      | [Signature] |
| 57     | 39035    | SYCS       | Prerach     |
| 58     | 17056    | F.Y.IT     | [Signature] |
| 59     | 17060    | F.Y.IT     | [Signature] |
| 60     | 17049    | F.Y.IT     | [Signature] |
| 61     | 18042    | SYIT       | [Signature] |
| 62     | 18017    | SYIT       | [Signature] |
| 63     | 39001    | SYCS       | [Signature] |
| 64     | 39016    | SYCS       | [Signature] |
| 65     | 39037    | SYCS       | [Signature] |
| 66     | 39009    | SYCS       | SAGAR       |
| 67     | 18054    | SYIT       | [Signature] |
| 68     | 39026    | SYCS       | S.P.        |
| 69     | 39002    | SYCS       | [Signature] |
| 70     | 18048    | SYIT       | [Signature] |
| 71     | 18018    | SYIT       | Deep        |
| 72     | 18049    | SYIT       | [Signature] |
| 73     | 18029    | SYIT       | mahesh      |
| 74     | 18026    | SYIT       | Ramesh      |
| 75     | 18008    | SYIT       | [Signature] |
| 76     | 18004    | SYIT       | [Signature] |
| 77     | 18035    | SYIT       | [Signature] |
| 78     | 18025    | SYIT       | [Signature] |
| 79     | 18029    | SYIT       | [Signature] |
| 80     | 18013    | SYIT       | [Signature] |



## Signature Sheet

| Sr.No. | Roll.No. | Class         | Signature            |
|--------|----------|---------------|----------------------|
| 81     | 17053    | FY BSC IT     | <u>Bhujik</u>        |
| 82     | 17012    | FY BSC IT     | <u>h. Duggan</u>     |
| 83     | 17006    | FY BSC IT     | <u>Hathik</u>        |
| 84     | 18052    | SY BSC IT     | <u>Ch.</u>           |
| 85     | 38053    | FY BSC CS     | <u>Reyik</u>         |
| 86     | 18023    | SY BSC IT     | <u>M. Mahesh</u>     |
| 87     | 18043    | SY BSC IT     | <u>AMRAN</u>         |
| 88     | 18014    | SY BSC IT     | <u>Amritha</u>       |
| 89     | 18003    | SY BSC IT     | <u>Reetika</u>       |
| 90     | 18038    | SY BSC IT     | <u>Rupali</u>        |
| 91     | 17065    | F.Y. BSC (IT) | <u>Siddharth P</u>   |
| 92     | 17064    | F.Y. BSC (IT) | <u>Dhanraj</u>       |
| 93     | 17021    | F.Y. BSC IT   | <u>Sak</u>           |
| 94     | 17015    | F.Y. BSC (IT) | <u>Omik</u>          |
| 95     | 38087    | F.Y. BSC (CS) | <u>Siddh</u>         |
| 96     | 17009    | F.Y. BSC (IT) | <u>Hardeen</u>       |
| 97     | 17002    | F.Y. BSC (IT) | <u>Shivam</u>        |
| 98     | 17020    | F.Y. BSC (IT) | <u>Omik</u>          |
| 99     | 17018    | F.Y. BSC (IT) | <u>K.R.</u>          |
| 100    | 19036    | T.Y. BSC (IT) | <u>Jani</u>          |
| 101    | 19001    | T.Y. BSC (IT) | <u>Adam</u>          |
| 102    | 19055    | T.Y. BSC (IT) | <u>Boysin</u>        |
| 103    | 19002    | T.Y. BSC (IT) | <u>Adagatta</u>      |
| 104    | 19007    | T.Y. BSC (IT) | <u>S</u>             |
| 105    | 19025    | T.Y. BSC (IT) | <u>Milika</u>        |
| 106    | 19027    | T.Y. BSC (IT) | <u>Sejal</u>         |
| 107    | 19052    | T.Y. BSC (IT) | <u>Ravi</u>          |
| 108    | 19049    | T.Y. BSC (IT) | <u>Dejita</u>        |
| 109    | 19006    | T.Y. BSC (IT) | <u>Hemanth</u>       |
| 110    | 19012    | T.Y. BSC (IT) | <u>ABD</u> A. Prings |
| 111    | 17003    | F.Y. BSC (IT) | <u>Sank</u>          |
| 112    | 18001    | SY BSC IT     | <u>DS</u>            |
| 113    | 18002    | SY BSC IT     | <u>DS</u>            |
| 114    | 17037    | FY BSC IT     | <u>Siddh</u>         |
| 115    | 18039    | SY BSC IT     | <u>S. Abineth</u>    |
| 116    | 18036    | SY BSC IT     | <u>Rakesh</u>        |
| 117    | 17069    | F.Y. BSC (IT) | <u>Ashad</u>         |
| 118    | 17008    | F.Y. BSC (IT) | <u>Pranav</u>        |
| 119    | 17051    | F.Y. BSC (IT) | <u>ANU</u>           |
| 120    | 18027    | SY BSC (IT)   | <u>Chineta</u>       |



# S.I.W.S.

**N.R. SWAMY COLLEGE OF COMMERCE &  
ECONOMICS &  
SMT. THIRUMALAI COLLEGE OF SCIENCE**

MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400 031.

02/03/2019

## Department of Information Technology and Computer Science

### **A Report on "IT World is changing...Are you?" Seminar**

A seminar was conducted for the students of Information Technology and Computer Science Department on 28<sup>th</sup> February, 2019 from 10:30 am to 12.00 p.m.; more than 80 students attended the session. The Resource Person Mr. Jay Prakash and Mrs. Mrunal Mhasurkar from Seed Infotech Ltd., the topic of Seminar was "IT World is changing...Are you?". The students gained information on the How IT World is frequently updating on the daily basis.



**Co-ordinator**

**Vice-Principal**

**Principal**



**PRINCIPAL**  
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ECONOMICS &

SMT. THIRUMALAI COLLEGE OF SCIENCE

MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE.

PLOT NO. 337, WADALA, MUMBAI - 400 031

|                             |                                     |                                 |
|-----------------------------|-------------------------------------|---------------------------------|
| Date:                       | 28-Feb-2019                         |                                 |
| Time:                       | 10:00 am                            |                                 |
| Duration:                   | 1.5 hrs                             |                                 |
| Topic:                      | IT World is<br>Changing... Are You? |                                 |
| Number of Students Attended | 80                                  |                                 |
| Conducted by                | Name of the Person                  | JAY PRAKASH<br>Mrunal Mhasurkar |
|                             | Name of the Organisation            | Seed Infotech LTD               |
|                             | Signature                           |                                 |



Principal

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Smt. Thirumalai College of Science,  
Wadala, Mumbai - 400 031

Signature Sheet

Seminar Topic: IT World is Changing are you...?

| Sr. No. | Roll.No. | Class  | Signature      |
|---------|----------|--------|----------------|
| 1       | 18051    | S.Y.IT | No. Venithi    |
| 2       | 18049    | S.Y.IT | <del>...</del> |
| 3       | 18055    | SYIT.  | Pooja          |
| 4       | 18048    | SYIT   | <del>...</del> |
| 5       | 18036    | SYIT   | Rakul          |
| 6       | 18027    | S.Y.IT | Prerna         |
| 7       | 18002    | SYIT   | Jaspreet       |
| 8       | 18013    | SYIT   | Shreya         |
| 9       | 18016    | S.Y.IT | B. Jha         |
| 10      | 18001    | SYIT   | <del>...</del> |
| 11      | 18035    | SYIT   | <del>...</del> |
| 12      | 18006    | SYIT   | (Meha)         |
| 13      | 18025    | SYIT   | <del>...</del> |
| 14      | 38050    | FYCS   | <del>...</del> |
| 15      | 38052    | FYCS   | Abhinav        |
| 16      | 38002    | FYCS   | Prachi         |
| 17      | 38032    | FYCS   | Sneha          |
| 18      | 38035    | FYCS   | <del>...</del> |
| 19      | 38007    | FYCS   | Sneha          |
| 20      | 38027    | FYCS   | <del>...</del> |
| 21      | 38033    | FYCS   | Kamini         |
| 22      | 38037    | FYCS   | <del>...</del> |
| 23      | 38036    | FYCS   | Meha           |
| 24      | 38046    | FYCS   | <del>...</del> |
| 25      | 38049    | FYCS   | <del>...</del> |
| 26      | 38026    | FYCS   | M. Rajawar     |
| 27      | 38051    | FYCS   | K. Ravintran   |
| 28      | 38030    | FYCS   | K. Kalyan      |
| 29      | 38042    | FYCS   | S. D. Singh    |
| 30      | 38010    | FYCS   | <del>...</del> |
| 31      | 38016    | FYCS   | <del>...</del> |
| 32      | 38047    | FYCS   | <del>...</del> |
| 33      | 38039    | FYCS   | <del>...</del> |
| 34      | 18011    | SYIT.  | <del>...</del> |
| 35      | 18012    | SYIT.  | <del>...</del> |
| 36      | 18015    | SYIT   | Sujana         |
| 37      | 18022    | SYIT   | Jasmeen        |
| 38      | 18052    | SYIT   | <del>...</del> |
| 39      | 38019    | FYCS   | M. H. H. H.    |
| 40      | 18023    | S.Y.IT | Mahesh         |



*(Handwritten signature)*

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Signature Sheet

Seminar Topic: IT World is Changing are you...?

| Sr. No. | Roll.No. | Class       | Signature         |
|---------|----------|-------------|-------------------|
| 41      | 18037    | SY BSc IT   | Ribber            |
| 42      | 18028    | SY BSc IT   | V.S. Mhatre       |
| 43      | 18044    | SY BSc IT   | Mas               |
| 44      | 18024    | SY BSc (IT) | <del>Pranav</del> |
| 45      | 18033    | SY BSc IT   | Jakshi            |
| 46      | 18047    | SY BSc IT   | As                |
| 47      | 18046    | SY BSc IT   | S.P.S.            |
| 48      | 18009    | SY BSc IT   | V.G.              |
| 49      | 39034    | SY BSc (CS) | <del>Pranav</del> |
| 50      | 38012    | FY BSc (CS) | Kan               |
| 51      | 38020    | FY BSc (CS) | Pranav            |
| 52      | 38041    | FY BSc (CS) | <del>Pranav</del> |
| 53      | 39032    | SY BSc (CS) | Smila             |
| 54      | 39027    | SY BSc (CS) | Ashok             |
| 55      | 39039    | SY BSc (CS) | <del>Pranav</del> |
| 56      | 39035    | SY BSc (CS) | <del>Pranav</del> |
| 57      | 39004    | SY BSc (CS) | P.                |
| 58      | 39023    | SY BSc (CS) | <del>Pranav</del> |
| 59      | 39029    | SY BSc (CS) | <del>Pranav</del> |
| 60      | 39015    | SY BSc (CS) | <del>Pranav</del> |
| 61      | 39025    | SY BSc (CS) | <del>Pranav</del> |
| 62      | 39008    | SY BSc (CS) | <del>Pranav</del> |
| 63      | 39001    | SY BSc (CS) | <del>Pranav</del> |
| 64      | 39006    | SY BSc (CS) | <del>Pranav</del> |
| 65      | 39037    | SY BSc (CS) | <del>Pranav</del> |
| 66      | 39009    | SY BSc (CS) | <del>Pranav</del> |
| 67      | 39018    | SY BSc (CS) | <del>Pranav</del> |
| 68      | 39016    | SY BSc (CS) | <del>Pranav</del> |
| 69      | 39011    | SY BSc (CS) | Ranav             |
| 70      | 39042    | SY BSc (CS) | <del>Pranav</del> |
| 71      | 39019    | SY BSc (CS) | <del>Pranav</del> |
| 72      | 39046    | SY BSc (CS) | Kanav             |
| 73      | 39005    | SY BSc (CS) | <del>Pranav</del> |
| 74      | 39038    | SY BSc (CS) | Umesh             |
| 75      | 39044    | SY BSc (CS) | <del>Pranav</del> |
| 76      | 39013    | SY BSc (CS) | <del>Pranav</del> |
| 77      | 39014    | SY BSc (CS) | <del>Pranav</del> |
| 78      | 39002    | SY BSc (CS) | <del>Pranav</del> |
| 79      | 18014    | SY BSc (CS) | Amr               |
| 80      | 18039    | SY BSc (CS) | S. Anesh          |

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PLOT NO. 337, WADALA, MUMBAI - 400 031.

18/02/2019

## Department of Information Technology and Computer Science

### A Report on "Social Media Awareness" Seminar

A seminar was conducted for the students of Information Technology and Computer Science Department on 18<sup>th</sup> February, 2019 from 10:30 am to 11:30 p.m.; more than 96 students attended the session. The Resource Person Mr. Yohhan Abraham and Shakti Shekhar and team from Unidawn Pvt. Ltd., the topic of Seminar was "Social Media Awareness". The students gained information about advantage and disadvantage of Social media in the real world.

Co-ordinator

Vice-Principal



Principal

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MAJOR R. PARAMESHWARAN MARG, SEWREE - WADALA ESTATE,  
PLOT NO. 337, WADALA, MUMBAI - 400 031.

|                             |                          |                                  |
|-----------------------------|--------------------------|----------------------------------|
| Date:                       | 18 TH FEB 2019           |                                  |
| Time:                       | 10:00 am                 |                                  |
| Duration:                   | 25 min                   |                                  |
| Topic:                      | SOCIAL MEDIA AWARENESS   |                                  |
| Number of Students Attended | 96                       |                                  |
| Conducted by                | Name of the Person       | JOHANN ABRAHAM<br>SHAKTI SHEKHAR |
|                             | Name of the Organisation | UNIDAWN P.T. LTD                 |
|                             | Signature                |                                  |



  
Principal

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South Indians' Welfare Society (SIWS)  
Wadala Campus

SEMINAR ON SOCIAL MEDIA AWARENESS AND SOCIAL IDENTITY NETWORKING

SEMINAR PROPOSAL


**UNIDAWN PVT. LTD.**

**Course Overview**

Respected Mam,  
Hope you are doing well.  
My name is Shakti Shekhar; Co-Founder, CTO at Unidawn Pvt Ltd.  
My associate Huma Ansari has co-ordinated and discussed with, Prof. Rani Mario (Hod of CS/IT Dept) and fixed a seminar for Monday 10:00 am in your college.  
Unidawn is trying to create awareness about Social Media Networking among students all over Mumbai. Our primary goal is to eliminate negative aspects in the current Social networking space.

This seminar will introduce the students to Unidawn Pvt Ltd as well as to its Interface, Social Networking Advantages, System Device Requirement, Software Specification and how this technology is used. Through this seminar, students will be knowledgeable on this technology and the new network of Social identity Networking.



  
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### **A Description of the Target Audience and Who Should Attend**

The target audience of this seminar is BSc IT and BSc CS students of South Indians' Welfare Society, Wadala Campus. They already had a background knowledge about hardware and software so that they can understand the contents of my seminar easily (Every staff, faculty who wishes to attend the same are respectfully Invited)  
The seminar is about Unidawn Pvt Ltd which is a very common because of the word "Social Media" and they are quite knowledgeable on this so they will be able to relate to the topic.  
This will help them discover a new technology that will bring them to the new Generation discovered world of Social Identity Network technology.

### **List of pre-requisites**

- Students who had a background knowledge about latest trends in technology.
- Students taking up subjects related to programming and software
- Students with information technology subjects
- BSc IT students and BSc CS students

### **Course Learning Objectives**

1. By attending this seminar, you will be able to discover the latest trends in social media technology.
2. By attending this seminar, you will be able to know the advantages and disadvantages of the Social Network.
3. By attending this seminar, you will be able to know what the hardware and software requirements are for the application.
4. By attending this seminar, you will be able to discover the applications of m.Unidawn.com
5. By attending this seminar, you will encourage others to surf from Unidawn.

### **Course Content video of 9min & 15 min PPT**

- Unidawn USP
- Unidawn Working
- Whats Different
- Data Protection
- Content Security



*N. S. N. S.*  
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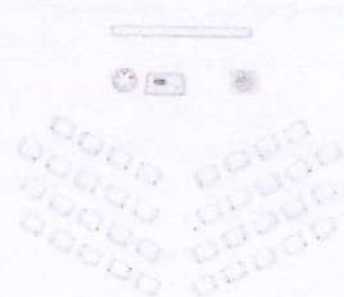
### Estimated Course Length

YOHHAN (15mins, including videos)

- |                                 |         |
|---------------------------------|---------|
| • Video                         | -2mins. |
| • <i>Interaction and speech</i> | -3mins. |
| • Video                         | -2mins. |
| • <i>Interaction and speech</i> | -3mins. |
| • Video                         | -2mins. |
| • <i>Interaction and speech</i> | -2mins. |
| • Video                         | -2mins. |
| • <i>PowerPoint Slides</i>      | -15mins |
| • Conclusion                    | -2min   |

### Audio-Visual Equipment & Room Set-Up Requirements

- PowerPoint Presentation
- Laptop/Netbook
- LCD Projector
- Screen
- Speaker



Thank you for completing your proposal in accordance with the information provided in the Seminar Proposal Guidelines. For more information, feedback on your topic idea, or to e-mail a proposal, contact:

YOHHAN ABRAHAM, SHAKTI SHEKHAR

Undiawn Pvt Ltd

Contact # 09196333659

E-mail: shakti.shekhar@unidawn.com



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## BIOGRAPHY

Unidawn is based on a unique concept at its core, named; Social Identity Networking. Social Identity Networking will help Unidawn tackle current Global Social Problems and Issues on other Social Media Platforms. It also Emphasizes on the user/identity and builds an environment around them so that they are Protected, Rewarded and Respected for Their Primary activities; Data Generation, Sharing & Networking.

Throughout Human History, we have accomplished many Incredible Things. Starting from the Invention of Fire, Wheel, to Sending Men to the moon, and Mega Constructions.

Communication, Networking and Knowledge Sharing has always been a Human need, without it, Evolution would not have been Possible. We focus on these core elements, and we Promise to Do our Best to Help Connect, Unite & Empower Humanity to Thrive and Evolve Responsibly.

"Unidawn is a Multi-Cultural non-conventional company. Hence we are focused on working towards achieving our larger goal, therefore you can expect us to make "intellectual bets in other unique areas that might seem very different or even strange when compared to our current businesses." From the start, we've always strived to do more, and to do important and meaningful things with Unidawn.

*[Handwritten Signature]*

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Wadala, Mumbai - 400 031



Respected Mam,

On behalf of the entire Unidawn Team,

we would like to Thank you for helping us conduct a seminar in your college on the subject 'Social Media Awareness'

We would like to thank you all the students for taking time to attend our seminar at SIWS College,

We are very excited about the large number of visitors to our Website.

It was a fine opportunity to present our latest product.

We thank you for your interest and assistance in Unidawn

If you have any questions please feel free to contact us at: [contact@unidawn.com](mailto:contact@unidawn.com)

Thanks Regards,  
Unidawn



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Wadala, Mumbai - 400 031



## Seminar Attendance

Date: 18/02/2019

Topic: Social Media Awareness

| Sl. No. | Roll No | Full Name                       | Sign   |
|---------|---------|---------------------------------|--------|
|         | 18031   | YOGITA VISHNU PARKAR.           |        |
|         | 18044   | Shalini Manika                  |        |
|         | 18024   | Mahimai Many                    |        |
|         | 18041   | Aurati Sanas                    | A.S    |
|         | 18046   | Shradha Shelar                  | S.R.S  |
|         | 18047   | Manshika Shetty                 |        |
|         | 18033   | Sakshi Pawar                    | S.P    |
|         | 18028   | Vedika Inhatre                  | V.S.I  |
|         | 19002   | Komal Addagatta                 |        |
|         | 19001   | Ahanashree Adam                 |        |
|         | 18015   | Sejana V. Jagi                  |        |
|         | 19016   | Smriti Gupta                    |        |
|         | 18037   | Raibhar Jyoti                   |        |
|         | 19029   | Herna m. Meawada                |        |
|         | 19027   | Sejal P. Kusakiya               |        |
|         | 19008   | Tamvi Chauhan                   |        |
|         | 19025   | Mihika Kakate                   | mihika |
|         | 19007   | Sajal Bera                      | S.     |
|         | 38012   | Tenika Henry Charles            |        |
|         | 38041   | Jathikulkarni Ramesh            |        |
|         | 38020   | Rutuja Sanjay Nalawade.         |        |
|         | 38027   | Sakani Ravi Mohit               |        |
|         | 38032   | Shaikh Jameel Shakil            |        |
|         | 38002   | Bilki Pradip Adak               |        |
| 25      | 38038   | Sumeet Shrawan                  | S.S    |
| 20      | 38052   | Subair Chaudhary                |        |
|         | 38018   | Musab Momin                     |        |
|         | 38050   | Ankur Vishwakarma               |        |
|         | 38046   | Mahimulata Mahindass            |        |
|         | 38042   | <del>Sakani</del> BINSON SELVIN | S. Bin |
|         | 38010   | Rehitha Grand                   |        |
|         | 38030   | Jemut Shah                      |        |
| 33      | 38035   | Singh Mahendra                  |        |
| 31      |         | VERITA S. DAVE                  |        |
|         | 19030   | Sumit Nayak                     |        |
|         | 18007   | Rish Arora                      |        |

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## Seminar Attendance

Date: 18/02/2019Seminar Topic: Social Media Awareness

| Sr No | Roll No | Full Name               | Sign       |
|-------|---------|-------------------------|------------|
| 1     | 18052   | VISHWAKARMA OMPRAKASH   |            |
| 2     | 18051   | VENITH RAHUL            | Venith     |
| 3     | 18055   | Kaishna Rajan           |            |
| 4     | 18036   | Rakish Prajapati        | Rakish     |
| 5     | 18030   | Gaurav Randal           |            |
| 6     | 18001   | Danish Ansari           |            |
| 7     | 18049   | Suresh Ganapathy        |            |
| 8     | 18018   | Deepshree Kashi         | Deep       |
| 9     | 18021   | Khan Kashif             | Kashif     |
| 10    | 18048   | Swagat Rambhadr         |            |
| 11    | 38037   | Prateek Singh           | Prateek    |
| 12    | 18039   | S. Abinash              | S. Abinash |
| 13    | 18023   | M. Mahesh               | Mahesh     |
| 14    | 18027   | Sainath Mane            | Sainath    |
| 15    | 18004   | BITAJE NIKHIL BHARAT    |            |
| 16    | 18042   | Samer Sadra             | Samer      |
| 17    | 18030   | Prakash Patil           | Patil      |
| 18    | 18008   | Millesh D. Gavandi      | Millesh    |
| 19    | 18026   | Rohit A. Mane           | Rohit      |
| 20    | 18043   | Shaikh Inoran           | Inoran     |
| 21    | 18019   | AKIB KHAN               | AKIB       |
| 22    | 18020   | Inzomanul Khan          |            |
| 23    | 18014   | Amit Laiswar            |            |
| 24    | 18003   | Ansari Sadiq            | Sadiq      |
| 25    | 38031   | Shaikh Ahmed Altaf      | Ahmed      |
| 26    | 18025   | PRATHMAGI MANE          | Mane       |
| 27    | 18038   | Rupesh S. Rapelli       | Rapelli    |
| 28    | 38054   | Salman Ibrahim Khan     | Salman     |
| 29    | 38029   | Sayed Shabuddin Alaudin | Shabuddin  |
| 30    | 38019   | Muthu Selvam Ramaraj    |            |
| 31    | 38048   | Gopal Gangappa Bhandari |            |
| 32    | 38007   | Shubham Subhash         | Shubham    |
| 33    | 38015   | Ravang Mahodik          |            |



## Seminar Attendance

Date: 18/02/2019Seminar Topic: Social Media Awareness

| Sr. No | Roll No | Full Name                       | Sign               |
|--------|---------|---------------------------------|--------------------|
|        | 18010   | Sandesh Gowda                   | Sandesh            |
|        | 18013   | Gupta Subhash chandra Ramshay   | Gupta              |
|        | 18040   | kamlesh Deo Pendurkar           | Kamlesh            |
|        | 19052   | Ravi Yadav                      | Ravi               |
|        | 19051   | Dheeraj Yadav                   | <del>Dheeraj</del> |
|        | 19015   | Gupta Brijmohan                 | Gupta              |
|        | 19006   | Hemant                          | Hemant             |
|        | 19049   | Dipika Verma                    | DRV                |
|        | 19036   | Nadar kaviarasikavitha          | kavi               |
|        | 19019   | Tegyalaxmi Ammasi               | Tyga               |
|        | 19038   | Suganya Thavasikani             | Suganya            |
|        | 19032   | Mutharesan Ponsony              | Mutha              |
|        | 19056   | Pruthvi Thirumala               | Pruthvi            |
|        | 19014   | Jason Gomes                     | Jason              |
|        | 38047   | Surya Santos                    | Surya              |
|        | 38016   | MANDI KALAZSELVAN               | Mandi              |
|        | 38039   | Esaki durai                     | Esaki              |
|        | 38051   | Ravindran Arunthathiyar         | R. Ravindran       |
|        | 38049   | Muthukrishnan                   | Muthu              |
|        | 38026   | RAJANUNJANI MUTHIAH             | M. Rajanun         |
|        | 38043   | Shridhar M. Gounder             | Shridhar           |
|        | 38003   | Ansari Altab hassain Kutubuddin | Altas              |
|        | 40040   | Sumit gupta                     | Sumit              |
|        | 40011   | Nirmala dev                     | Nirmala            |
|        | 18006   | Jayesh S. Chilukuri             | Jayesh             |
|        | 19054   | Shaikh Aman                     | Shaikh             |
|        | 19023   | KHAN NAWAZ                      | Nawaz              |

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Date : 19/7/20

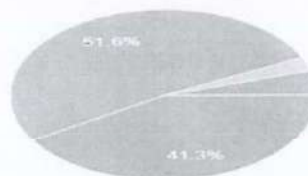
**DEPARTMENT OF COMPUTER SCIENCE**  
**"REVOLUTION IN COMPUTING TRENDS"**  
**INTERNATIONAL WEBINAR SERIES REPORT**

### NAME & BRIEF ABOUT COURSE

The Department of Computer Science in collaboration with Novac Technology, organized Three Days International Webinar Series on "Revolution in Computing Trends" from July 16<sup>th</sup> to July 18<sup>th</sup>, 2020.

It had an overwhelming response with 960 participants which included 41.3% Faculty, 51.6% Students and 2.6% Professionals and 4.6% others diversified all over the world including Sydney, U.S.A, Bangalore, Hyderabad, West Bengal, Punjab, Mumbai. 258 participants were from S.I.W.S. College.

Designation  
Rec. responses



● Faculty  
● Student  
● Professional  
● Other

### OBJECTIVE

To introduce the current trends and technologies used in software industries

### DURATION & DATE

Date : 16<sup>th</sup> to July 18<sup>th</sup>, 2020.

Time : 11 a.m. to 1 p.m.

No of Participants : 960 ( 258 participants were from S.I.W.S. College)

### OUTCOME

Participants were able to enhance their skills about the current trends and technologies

Page 1 of 4



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Feedback/Takeaways shared by some of the participants about the sessions :

Very impressive session

The programme was very successful

Very informative

Webinar was fantastic and I have grasp too much of Knowledge and It was really interesting

Informative session

Arrange more series of webinars

Good Webinar series

Nice Presentation Sir

Useful for upcoming graduates.

Nice organization of the webinar

It was a great opportunity to participate in International Webinar Series on Computing Trends. Thanks to all. I Hope to participate in more such webinars.

Time

looking for more upcoming webinars

Will always be willing to attend such webinars in future too

It was very good presentation also simple and lucid to understand. Thank you for your effort in sharing this knowledge.

Nice sessions

Very experts & excellent resource person given the practical knowledge

Very knowledgeable

Very informative and valuable session

everything was so planned and well, keep it up

The session helped a lot. Now it is easier to understand & handle Data in better and effective way. Looking forward for similar programmes in future. Thanks to organising team.

Very informative & valuable knowledge about us.

The webinar is informative and very clear...

Very nice webinar

Thankyou for the organisers



Co-ordinator



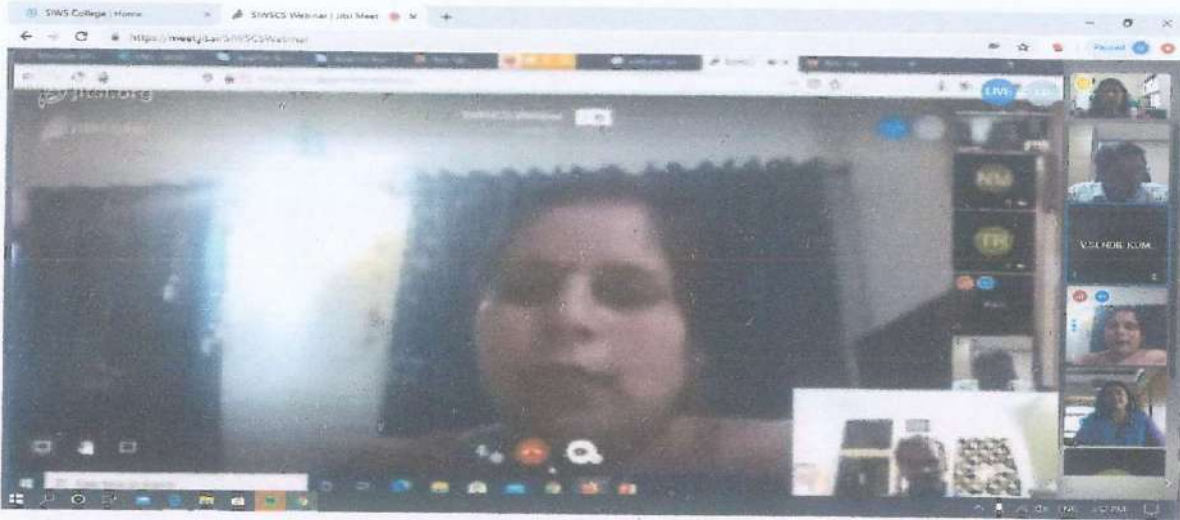
Vice Principal



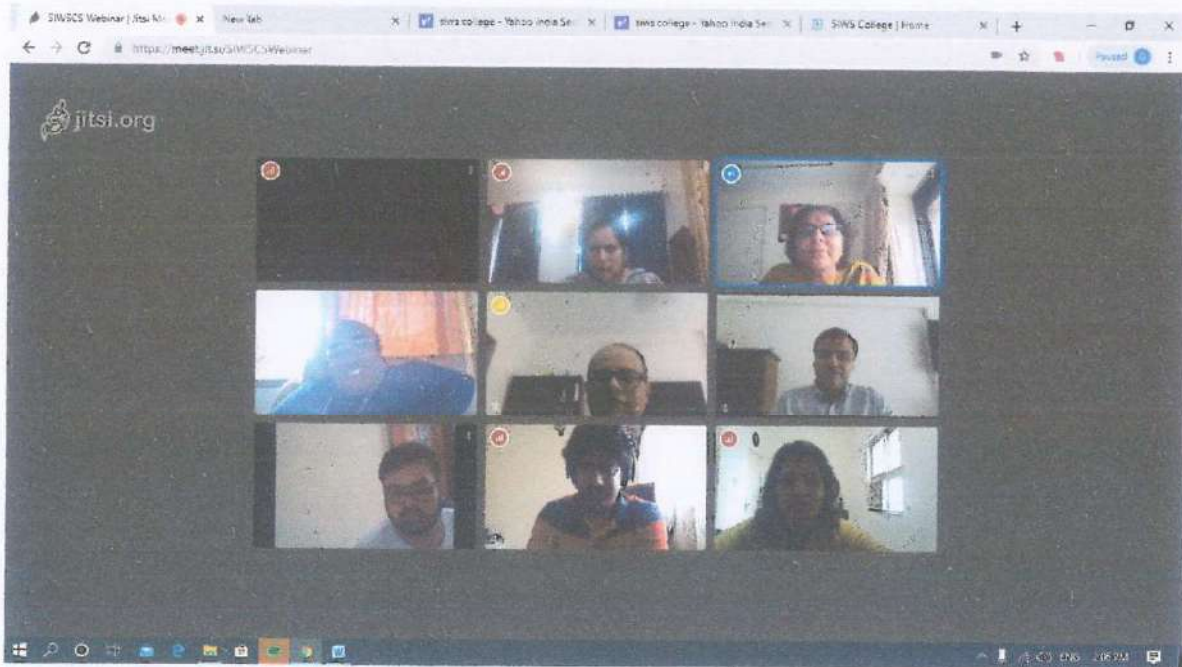
Principal

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# CLIPS




Introduction to the Webinar by Prof. Mona Bharaj



Introduction to the Chief Guests



  
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Commencement of Webinar



Introduction of Chief Guest : Nidhi Mehrotra ,Data Engineer ,U.S.A.




Commencement of Data Integration

  
**Co-ordinator**  
 Page 4 of 4



  
**Vice Principal**

  
**Principal**  
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Department of  
Computer Science In Collaboration With



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### THREE DAYS INTERNATIONAL LEVEL ONLINE WEBINAR SERIES ON REVOLUTION IN COMPUTING TRENDS



Day 1 - 16<sup>th</sup> July, 2020  
2:00 p.m. to 4:00 p.m.

"Digital Trends and IS Security"

Resource Persons:

**N.S. Nanda Kishore**  
Chief Executive Officer  
Novac Technology Solutions

**V. Suresh Kumar**  
Chief Infrastructure Officer  
Novac Technology Solutions

**T.S. Rao**  
Chief Software Quality Officer  
Novac Technology Solutions



Day 2 - 17<sup>th</sup> July, 2020  
2:00 p.m. to 4:00 p.m.

"Emergence of Cognitive Enterprise"

Resource Persons

**Subramaniam Meenakshisundaram**  
Leads Engineering Team with CTO Office  
Leader for Technical Specialists in IBM  
India

**Shankar Sundarrajan**  
Leads Enterprise Strategy  
Practice for Financial Services



Day 3 - 18<sup>th</sup> July, 2020  
8:00 a.m. to 10:00 a.m.

"Data Integration"

Resource Person

**Nidhi Mehrotra**  
Data Engineer

Graduate Management  
Admissions Council  
Reston, Virginia  
U.S.A.

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NOW**

## Platform

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<http://www.siwscollege.edu.in/webinar2020.php>

E-Certificates will be provided to all Registered participants who attend the entire webinar and fill the feedback form after every session.



**Dr. Usha Iyer**  
Principal

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Convenor  
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Prof. Mona Bharaj  
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Date: 13/7/2020

## DEPARTMENT OF COMPUTER SCIENCE

### NOTICE

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Co-ordinator

Vice Principal

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**DEPARTMENT OF COMPUTER SCIENCE**  
**"REVOLUTION IN COMPUTING TRENDS"**  
**INTERNATIONAL WEBINAR SERIES**  
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| 171 | AHMED RAZA                           | S.I.W.S COLLEGE |
| 172 | ABHISHEK PANDEY                      | S.I.W.S COLLEGE |
| 173 | AKHTAR ANSARI                        | S.I.W.S COLLEGE |



  
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| 174 | PRAVEEN YADAV             | S.I.W.S COLLEGE |
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| 176 | SARVADNYA GANGAN          | S.I.W.S COLLEGE |
| 177 | HRUTHIK JAYWANT BHOIR     | S.I.W.S COLLEGE |
| 178 | AVINASH JAGTAP            | S.I.W.S COLLEGE |
| 179 | DURGESH GANESH SHETE      | S.I.W.S COLLEGE |
| 180 | SHIVDARSHINI SURESH KUMAR | S.I.W.S COLLEGE |
| 181 | SHAIKH JUWAIIRIYYAH ILYAS | S.I.W.S COLLEGE |
| 182 | SHINY JENIFER             | S.I.W.S COLLEGE |
| 183 | SUNIL GANESH PASAL        | S.I.W.S COLLEGE |
| 184 | MOHD UZAIFA               | S.I.W.S COLLEGE |
| 185 | PRINCE PAL                | S.I.W.S COLLEGE |
| 186 | VEDIKA VITTHAL BHOSALE    | S.I.W.S COLLEGE |
| 187 | SHAIKH SAIDANI            | S.I.W.S COLLEGE |
| 188 | PANCHI ZAIBA ANWAR KOUSAR | S.I.W.S COLLEGE |
| 189 | UJWAL CHOURASIYA          | S.I.W.S COLLEGE |
| 190 | SUCHITA REVANKAR          | S.I.W.S COLLEGE |
| 191 | SABURI GANESH PATEKAR     | S.I.W.S COLLEGE |
| 192 | ROHITH GOUND              | S.I.W.S COLLEGE |
| 193 | GAUTAM NAIDU              | S.I.W.S COLLEGE |
| 194 | JAMEEL SHAIKH             | S.I.W.S COLLEGE |
| 195 | GAURI PRAKASH GAWDE       | S.I.W.S COLLEGE |
| 196 | AMIT AMBEDKAR             | S.I.W.S COLLEGE |
| 197 | SUPRIYA PALNITKAR         | S.I.W.S COLLEGE |
| 198 | SWETA KAMLAKAR HATISKAR   | S.I.W.S COLLEGE |
| 199 | GOUNDER SHRIDHAR MANI     | S.I.W.S COLLEGE |
| 200 | MAHIMYRUBAN MAHIMDASS     | S.I.W.S COLLEGE |
| 201 | JENITA HENRY CHARLES      | S.I.W.S COLLEGE |
| 202 | MANOJKALAISELVAN          | S.I.W.S COLLEGE |
| 203 | YOGESH PATIL              | S.I.W.S COLLEGE |
| 204 | JOTHILAKSHMI RAMESH       | S.I.W.S COLLEGE |
| 205 | MANISH BRIJESH GIRI       | S.I.W.S COLLEGE |
| 206 | PURVA RAMESH SHETTY       | S.I.W.S COLLEGE |
| 207 | KAUSHAL KISHOR PATIL      | S.I.W.S COLLEGE |
| 208 | DHIVYA MURUGESAN DEVENDRA | S.I.W.S COLLEGE |
| 209 | TEJAS RAMESH SANE         | S.I.W.S COLLEGE |
| 210 | SAKSHI DATTU KHARATMAL    | S.I.W.S COLLEGE |
| 211 | VAISHNAVI GHAGARE         | S.I.W.S COLLEGE |
| 212 | AFTAB MAHEMUD SHAIKH      | S.I.W.S COLLEGE |
| 213 | DARSHAN LAXMAN DAIT       | S.I.W.S COLLEGE |
| 214 | PRADNYA DNYANDEV SARLEKAR | S.I.W.S COLLEGE |
| 215 | CHANDANI PATWA            | S.I.W.S COLLEGE |
| 216 | PRAVINVENKAT              | S.I.W.S COLLEGE |
| 217 | KAJAL RAJENDRA KANNOJIYA  | S.I.W.S COLLEGE |
| 218 | SPARSHAL RAUT             | S.I.W.S COLLEGE |
| 219 | AKBAR BASHA.N             | S.I.W.S COLLEGE |
| 220 | VASUNDHARA SHARMA         | S.I.W.S COLLEGE |
| 221 | DHANGAR SHOBHA            | S.I.W.S COLLEGE |



*Anns*

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| 224 | SHIVON PILLAI              | S.I.W.S COLLEGE |
| 225 | MANSI MATAPRASAD KANNOJIA  | S.I.W.S COLLEGE |
| 226 | AARTI SHINDE               | S.I.W.S COLLEGE |
| 227 | SANIYA KAMAR KHAN          | S.I.W.S COLLEGE |
| 228 | SHALMA KULAM GOUSE         | S.I.W.S COLLEGE |
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| 231 | SAIF MUNSHI                | S.I.W.S COLLEGE |
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| 233 | VAISHNAVI ACHARY NAGARAJAN | S.I.W.S COLLEGE |
| 234 | MEENAKSHI ASHOK MUTHALA    | S.I.W.S COLLEGE |
| 235 | NEHA MOMIN                 | S.I.W.S COLLEGE |
| 236 | ARUL KUMAR PANDIAN         | S.I.W.S COLLEGE |
| 237 | HEENA ZUBERI               | S.I.W.S COLLEGE |
| 238 | KETAN MADAN SAKPAL         | S.I.W.S COLLEGE |
| 239 | YASHIKA MANOJ PANDEY       | S.I.W.S COLLEGE |
| 240 | GANGURDE KRUTIKA ANIL      | S.I.W.S COLLEGE |
| 241 | PINKY KANOJIYA             | S.I.W.S COLLEGE |
| 242 | MOHD SOHAIL ISAC QURESHI   | S.I.W.S COLLEGE |
| 243 | POTE SAKSHI SHANKAR        | S.I.W.S COLLEGE |
| 244 | RUBINA MALLICK             | S.I.W.S COLLEGE |
| 245 | MOHNISH SAMALA             | S.I.W.S COLLEGE |
| 246 | IRSHAD IDRISI              | S.I.W.S COLLEGE |
| 247 | MARIAMMA DANNY             | S.I.W.S COLLEGE |
| 248 | SHWETA RAMESH GUPTA        | S.I.W.S COLLEGE |
| 249 | DEEPAK GHOSH               | S.I.W.S COLLEGE |
| 250 | NADAR GURU PRAKASH PONRAJ  | S.I.W.S COLLEGE |
| 251 | MALIK SHABNAM              | S.I.W.S COLLEGE |
| 252 | SHAFI ALLABAKSH SHAIKH     | S.I.W.S COLLEGE |
| 253 | MANE PRIYA SUNIL           | S.I.W.S COLLEGE |
| 254 | GAUREE JAISWAR             | S.I.W.S COLLEGE |
| 255 | ROHIT ABASO MANE           | S.I.W.S COLLEGE |
| 256 | KURMIT KAWARPAL VALMIKI    | S.I.W.S COLLEGE |
| 257 | PRAGATI DATTATRAY BAYE     | S.I.W.S COLLEGE |
| 258 | SHEKHAR HEROOR             | S.I.W.S COLLEGE |

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Coordinator

*Amul*

Vice Principal

*Shree*

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Major R. Parameshwaran Marg, Wadala, Mumbai - 400 031

Date : 22/3/21

**DEPARTMENT OF COMPUTER SCIENCE**  
**“GOAL SETTING AND MIND MANAGEMENT”**  
**WEBINAR REPORT**

### NAME & BRIEF ABOUT COURSE

The Department of Computer Science organized a Webinar on “Goal Setting and Mind Management” on March 22<sup>nd</sup>, 2021 conducted by our chief guest Dr. Shobha Mathew. “STAY POSITIVE THINK POSITIVE. You are the creator of your own destiny.” was the motto of the webinar generating positive vibes and a motivating booster to all the participants.

It had an enthusiastic response with 188 participants all over including Faculty, Students and Professionals. 33 participants were from S.I.W.S College. The Overall Impact for all the days as rated by majority of the participants for the webinar was **Excellent**.

### OBJECTIVE

To shape the confidence of students and to bring positive thinking during this pandemic situation.

### DURATION & DATE

Date : 22<sup>nd</sup> March, 2021  
Time : 10 a.m. to 11 a.m.  
No of Participants : 188 (33 participants were from S.I.W.S College)

### RESOURCE PERSON

Dr. Shobha Mathew  
Assistant Professor & Trainer,  
K.J. Somaiya College, Mumbai

### OUTCOME

‘Change your thoughts and you change your world.’ So overall, we learnt about how we can move from negative thinking to positive thinking and follow our positive thoughts with positive action.

Participants were able to build the confidence and able to understand the importance of mind management during pandemic situation.

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**Feedback/Takeaways shared by some of the participants about the webinar:**

Please share your takeaways from the session

188 responses

confident till you don't achieve your goals.

Its very helpfull for our knowledge...

Nice and Helpful Workshop

Session was pretty effective as it inspired us to work harder.....the speaker was also very attentive as well as high on pitch that truly motivated me throughout the session..... all around it was a pretty good experience.

IT WAS REALLY HELPFULL TO ME. AND IT BOOST MY MENTALITY AND MOTIVATION TO DO SOMETHING NEW AND LEARN MORE NEW THINGS. I LIKE TO THANK ALL OF THE TEACHERS WHO ORGANISED THIS EXTREMELY HELPFULL WEBINAR FOR ALL OF US. IT WILL REALLY HELP US TO STAY MOVTIVATED AND DO HARD WORK UNTIL YOU ACHIEVE YOUR AIM/GOAL.

Yes

We should always be positive and believe in our self and always ignore the bad comments and never give up even if we face any failure in life

This session is very useful for me because this is high time to set a goal of my life i'm very thankful to all that they provide this facility to all student

Set your goal and make it true.

It's was very informative and inspirational

wondeful speaker

Very Motivational session

Positive Thinking and goal setting

It's very helpful to us..



**Co-ordinator**



**Vice Principal**



**Principal**



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Dr. Usha Iyer welcoming our Chief Guest, Dr. Shobha Mathew



Staff of Computer Science Department



*Usha Iyer*

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Date : 22/3/2021

## DEPARTMENT OF COMPUTER SCIENCE

### "GOAL SETTING AND MIND MANAGEMENT"

#### PARTICIPATION LIST

| Sr.No | Name                           | College          |
|-------|--------------------------------|------------------|
| 1     | DUVVA RITESH LAXMAN            | S.I.W.S. COLLEGE |
| 2     | SAKIB JUNED SHIKALGAR          | S.I.W.S. COLLEGE |
| 3     | MOURYA SANDESH RAMJIYAVAN      | S.I.W.S. COLLEGE |
| 4     | TEJAS PRADIP PAWAR             | S.I.W.S. COLLEGE |
| 5     | HARSHAD BALASAHEB BABAR        | S.I.W.S. COLLEGE |
| 6     | BILAL SALIM SHAIKH             | S.I.W.S. COLLEGE |
| 7     | ACHARY MUNNA SANTOSH KUMAR     | S.I.W.S. COLLEGE |
| 8     | HARSHA RAJESH RANGI            | S.I.W.S. COLLEGE |
| 9     | ROHAN FERNANDO                 | S.I.W.S. COLLEGE |
| 10    | SNEHA RAJA                     | S.I.W.S. COLLEGE |
| 11    | SHAIKH MOHAMMAD OWAIS          | S.I.W.S. COLLEGE |
| 12    | BORKAR FAIZAN                  | S.I.W.S. COLLEGE |
| 13    | SHAKTI VISHU SONAR             | S.I.W.S. COLLEGE |
| 14    | PATEL SADAF NAAZ SHAKEEL AHMED | S.I.W.S. COLLEGE |
| 15    | FAROOQUI RAIYAN MEHFOOZ AHMED  | S.I.W.S. COLLEGE |
| 16    | SHAH JEMIT CHETAN              | S.I.W.S. COLLEGE |
| 17    | MOHAMMED ZAID KHAN             | S.I.W.S. COLLEGE |
| 18    | MOHD FARAZ FAROOQUI            | S.I.W.S. COLLEGE |
| 19    | KUMAR NARENDRA KODI            | S.I.W.S. COLLEGE |
| 20    | KAIRAMKONDA GANESH SHRINIVAS   | S.I.W.S. COLLEGE |
| 21    | AKSHATA SURESH SABLE           | S.I.W.S. COLLEGE |
| 22    | PRANAV VISHNU BANE             | S.I.W.S. COLLEGE |
| 23    | RUSHIKESH YASHWANT PATIL       | S.I.W.S. COLLEGE |
| 24    | JOSHUA RICHARD JOSEPH          | S.I.W.S. COLLEGE |
| 25    | JAYESH CHANDRAKANT NAWALE      | S.I.W.S. COLLEGE |
| 26    | NAGARKAR ADESH NILKANTH        | S.I.W.S. COLLEGE |



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|----|------------------------------|------------------|
| 27 | CHETAN DILIP RAJPUT          | S.I.W.S. COLLEGE |
| 28 | AASHISH SHAHU                | S.I.W.S. COLLEGE |
| 29 | ANUJA AMIT NAIK              | S.I.W.S. COLLEGE |
| 30 | SUBBIAH MUTHU THEVAR         | S.I.W.S. COLLEGE |
| 31 | MAHESH MUDIRAJ               | S.I.W.S. COLLEGE |
| 32 | SAHBIYA MOHAMMED SALEEM KHAN | S.I.W.S. COLLEGE |
| 33 | SWETA KAMLAKAR HATISKAR      | S.I.W.S. COLLEGE |



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Vice Principal



Principal

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Date: 19/3/2021

## DEPARTMENT OF COMPUTER SCIENCE

### NOTICE

The Department of Computer Science organizes a Webinar on "Goal Setting and Mind Management" on 22nd March, 2021 by guest Dr. Shobha Mathew between 10 AM to 11 AM. Attendance for all students is compulsory.

  
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Date: 12 /07/2019

## DEPARTMENT OF COMPUTER SCIENCE

“Seminar on Project Implementation”

### NAME & BRIEF ABOUT COURSE

The Department of Computer Science organized a seminar on Project Implementation.

### OBJECTIVE

To understand the different phases and documentation work of project development.

### DURATION & DATE

Date : 12<sup>th</sup> July, 2019  
Time : 11 a.m. to 1 p.m.  
No of students attended : 34


### RESOURCE PERSON

Mr. Christopher  
Lopez  
HD Media link Ltd

### OUTCOME

Students were able to understand the different phases and documentation work of project development.



  
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## PARTICIPANTS

| Sr No. | Roll No | Name                                   |
|--------|---------|----------------------------------------|
| 1      | 39001   | HENRY CHARLES JENITA HENRY CHARLES     |
| 2      | 39002   | JOTHI LAKSHMI RAMESH                   |
| 3      | 39003   | MAHIMYRUBAN MAHIMDASS                  |
| 4      | 39004   | KALAISELVAN MANOJ KALAISELVAN          |
| 5      | 39005   | KAMRAJ MUTHU SELVAM KAMRAJ CHELLADURAI |
| 6      | 39006   | RAJALINGAM MUTHIAH                     |
| 7      | 39007   | RAMAN SURENDRA KUMAR                   |
| 8      | 39008   | ARUNTHATYAR RAVINDRAN KASHILINGAM      |
| 9      | 39009   | SANKAR SURYA SANKAR                    |
| 10     | 39010   | ADAK BIKI PRADIP                       |
| 11     | 39012   | ANSARI KADIR MEHRAJALI FATIMA          |
| 12     | 39013   | BHANDARI GOPAL GANGAPPA                |
| 13     | 39014   | BHOSALE VAIBHAV SURESH                 |
| 14     | 39016   | DEVKAR SHUBHAM SUBHASH                 |
| 15     | 39017   | GOUD ROHITH SURYA PRAKASH              |
| 16     | 39018   | GOUNDER SHRIDHAR MANI                  |
| 17     | 39019   | GUPTA SACHIN                           |
| 18     | 39020   | HATISKAR SWETA KAMLAKAR                |
| 19     | 39021   | JAIN PRIYANK BHARAT                    |
| 20     | 39022   | MAGANAKE BARID NAZMUDDN                |
| 21     | 39023   | MAHADIK PAVANRAJ VIKAS                 |
| 22     | 39024   | MOMIN MUSAB MOHAMMED KALAM             |
| 23     | 39025   | NADAR BINSON SELVIN                    |
| 24     | 39026   | NALAWADE RUTUJA SANJAY                 |
| 25     | 39028   | PATIL RUSHIKESH YASHWANT               |
| 26     | 39029   | RAI RAJIV SUDHIR                       |
| 27     | 39030   | RAJBHAR DEEPAK CHHANGUR                |
| 28     | 39031   | SAHANI RAVI MOHIT                      |
| 29     | 39033   | SHAH JEMIT CHETAN                      |
| 30     | 39034   | SHAH SHAHID RAZA GULAM RAZA            |
| 31     | 39035   | SHAIKH JAMEEL SHAKIL SHAIKH            |
| 32     | 39036   | SHARMA VASUDEV RAGHUVAR                |
| 33     | 39037   | KAIRAMKONDA GANESH SHRINIVAS           |
| 34     | 39038   | SINGH MAHENDRA KHAMAN                  |

*S.P.*

Co-ordinator

*Amul*

Vice Principal

*S.P.*

Principal





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Date: 8 /07/2019

## DEPARTMENT OF COMPUTER SCIENCE

### NOTICE

“Project Implementation”

This is to inform that we are organizing a seminar on “Project Implementation” on the date given below. T.Y.B.Sc.C.S. students are requested to attend the same. Attendance is mandatory.

Date : 12<sup>th</sup> July, 2019  
Time : 11 a.m. to 1 p.m.

Co-ordinator

Vice Principal

Principal



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Date : 24/3/21

## DEPARTMENT OF COMPUTER SCIENCE

**"Cloud Computing: Platforms, Development and Applications"**

### **WEBINAR REPORT**

#### **NAME & BRIEF ABOUT COURSE**

The Department of Computer Science organized a Webinar on "Cloud Computing: Platforms, Development and Applications" on March 23rd, 2021 from 10 a.m. to 11 a.m. conducted by our chief guest Asif Rampurawala, Vice Principal, VSIT. He shared insights on Cloud Computing, making participants familiar with the upcoming area of Cloud Computing and its applications and helping them improvise their skills.

It had a good response with 118 participants all over including Faculty, Students and Professionals. 70 participants were from SIWS. The Overall Impact for all the days as rated by majority of the participants for the webinar was **Excellent**.

#### **OBJECTIVE**

To introduce and enhance about the current trends in Cloud Computing

#### **DURATION & DATE**

Date : 23<sup>rd</sup> March, 2021  
Time : 10 a.m. to 11 a.m.  
No of Participants : 118 (70 participants were from S.I.W.S College)

#### **RESOURCE PERSON**

Prof. Asif Rampurawala  
Vice Principal, VSIT

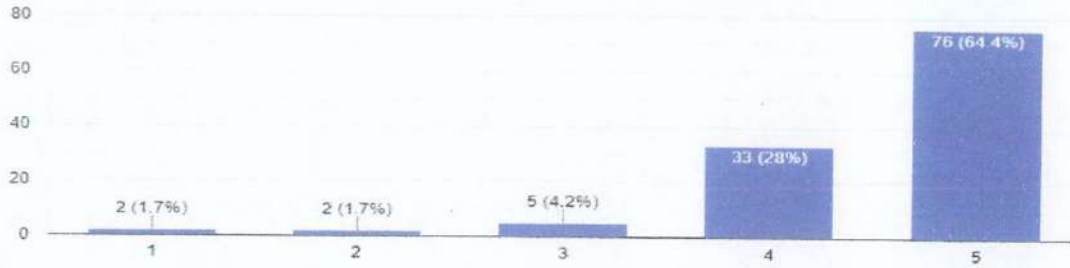
#### **OUTCOME**

Participants were able to augment their skills about the current trends in Cloud Computing



Overall impact

118 responses



Feedback/Takeaways shared by some of the participants about the webinar:

Please share your takeaways from the session

118 responses

I was really helpful and inspiring. I really like the presentation as well. I hope there will be more of these webinars about such wonderful topics.

SESSION WAS GOOD

Computing Applications

Yes it is very good webinar and very helpful to advocated the cloud computing.

nice session. learned lot on Cloud Computing

Clear

It was very useful for us . got overview basic understanding of cloud computing along with application and clusters and got understanding scope of it's use.

Learned alot interesting things

Nice content and relevant topic

It's bring new thing to learn and understand

Various things regarding Cloud computing

This one lecture was equivalent to all the lectures of my semester, Thankyou

The session was very good, it was very helpul to this current pandemic. I really need to thank the speaker and all who arranged this. it will be more good if the webinar will be on class but because of covid we are doing it online but very helpful. Thank you.

Guidance

Overall feedback was great and it was very useful to the participants to add on their knowledge.

Co-ordinator

Page 2 of 3



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CLIPS




Chief guest Asif Rampurawala, Vice Principal, VSIT introduced the basics of Cloud computing.




Dr.Usha Iyer interacted with the Chief guest Asif Rampurawala, Vice Principal, VSIT along with all staff members of Computer Science Department

  
**Co-ordinator**



  
**Vice Principal**

  
**Principal**  
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Date: 19/3/2021

## DEPARTMENT OF COMPUTER SCIENCE

### NOTICE

The Department of Computer Science organizes a Webinar on “Cloud Computing: Platforms, Development and Applications” on March 23rd, 2021 from 10 a.m. to 11 a.m. conducted by our chief guest Asif Rampurawala, Vice Principal, VSIT. Attendance is mandatory.

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Date : 24/3/2021

## DEPARTMENT OF COMPUTER SCIENCE

**“Cloud Computing: Platforms, Development and Applications”**

### **PARTICIPATION LIST**

| Sr.No | Name                         | College         |
|-------|------------------------------|-----------------|
| 1     | SHAIKH MOHAMMED OWAIS        | S.I.W.S COLLEGE |
| 2     | BORKAR FAIZAN                | S.I.W.S COLLEGE |
| 3     | FAROOQUI RAIYAN              | S.I.W.S COLLEGE |
| 4     | SIVA                         | S.I.W.S COLLEGE |
| 5     | SHAHID RAZA SHAH             | S.I.W.S COLLEGE |
| 6     | MUTHU SELVAM                 | S.I.W.S COLLEGE |
| 7     | PRATEEK KUMAR SINGH          | S.I.W.S COLLEGE |
| 8     | SHRADDHA MAHENDRA MISHRA     | S.I.W.S COLLEGE |
| 9     | ANAMAY PRASAD POTDAR         | S.I.W.S COLLEGE |
| 10    | KARBARI ZAMEEL               | S.I.W.S COLLEGE |
| 11    | MOHIT VERMA                  | S.I.W.S COLLEGE |
| 12    | JUSTIN JOSE                  | S.I.W.S COLLEGE |
| 13    | PRITI CHANDRAKANT MAHABADI   | S.I.W.S COLLEGE |
| 14    | MAYURI SHIKHARE              | S.I.W.S COLLEGE |
| 15    | SHAH JEMIT CHETAN            | S.I.W.S COLLEGE |
| 16    | MOHAMMED ZAID KHAN           | S.I.W.S COLLEGE |
| 17    | MOHD FARAZ FAROOQUI          | S.I.W.S COLLEGE |
| 18    | KUMAR NARENDRA KODI          | S.I.W.S COLLEGE |
| 19    | KAIRAMKONDA GANESH SHRINIVAS | S.I.W.S COLLEGE |
| 20    | AKSHATA SURESH SABLE         | S.I.W.S COLLEGE |
| 21    | PRANAV VISHNU BANE           | S.I.W.S COLLEGE |
| 22    | RUSHIKESH YASHWANT PATIL     | S.I.W.S COLLEGE |
| 23    | JOSHUA RICHARD JOSEPH        | S.I.W.S COLLEGE |
| 24    | JAYESH CHANDRAKANT NAWALE    | S.I.W.S COLLEGE |
| 25    | NAGARKAR ADESH NILKANTH      | S.I.W.S COLLEGE |
| 26    | CHETAN DILIP RAJPUT          | S.I.W.S COLLEGE |
| 27    | SWETA KAMLAKAR HATISKAR      | S.I.W.S COLLEGE |



*[Handwritten Signature]*

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| 35 | MOHAMMED AQEEB IBRAHIM SHAIKH | S.I.W.S COLLEGE |
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| 37 | AASHISH SHAHU                 | S.I.W.S COLLEGE |
| 38 | VARMA SHUBHAM SANADKUMAR      | S.I.W.S COLLEGE |
| 39 | RAJ JAISWAL                   | S.I.W.S COLLEGE |
| 40 | SINGH RITESH PRAMOD           | S.I.W.S COLLEGE |
| 41 | BIKI ADAK                     | S.I.W.S COLLEGE |
| 42 | RAJALINGAM MUTHIAH            | S.I.W.S COLLEGE |
| 43 | MR RAHUL KUMAR                | S.I.W.S COLLEGE |
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| 63 | VERNON FERNANDO               | S.I.W.S COLLEGE |
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