



## **1. COMMON PROGRAMS FOR BOTH SLOW LEARNERS AND ADVANCED LEARNERS**



## 1.1 INDUCTION PROGRAM FOR NEWLY ADMITED STUDENTS IN COLLEGE

### P.V.G's College of Science, Pune 09.

Date: 22/06/2015

Notice

F. Y. B. Sc. (Computer Science)

Induction Program

2015-16

All F. Y. B. Sc. (Computer Science) students should note that the course will commence from 29<sup>th</sup> June, 2015 at 11.20 am in classroom I. Induction program is arranged on this day. Attendance is Compulsory.



*RAJESH*  
I/c Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



# Pune Vidyarthi Griha's College of Science, Pune -09

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College of Science, Pune -09

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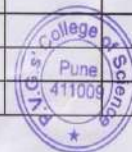
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2015-16

P. V. G's College of Science, Pune 09.  
F. Y. B. Sc. (Comp. Sci.) 2015-16

Sr. No.	Name	29.06.15							
1	Agarwal Mayuri Pavan								
2	Bhat Ketaki Prasad	<u>Bhatt</u>							
3	Bhat Jui Rahul	<u>Juibhat</u>							
4	Shetty Varsha Suresh	<u>Shetty</u>							
5	Ambardekar Chaitanya Shashank	<u>Chaitanya</u>							
6	Khenat Rasika Rajendra	<u>Rasika</u>							
7	Pujari Parth Shashikant	<u>Pujari</u>							
8	Dhamale Saurabh Sanjay								
9	Shahakavhekar Suyog Rasiklal	<u>Suyogkavhekar</u>							
10	Sawaargaokar Tejashree Prakash	<u>Tejashree</u>							
11	Shukla Kamana Dattatreya	<u>Shukla</u>							
12	Wawale Kiran Suresh								
13	Punde Swananda Mahesh	<u>Punde</u>							
14	Kulkarni Tanmay Praveen	<u>Tanmay</u>							
15	Pawar Shivam Ravindra	<u>Shivam</u>							
16	Shah Yash Sudhir	<u>Yash</u>							
17	Sortur Navneeth Aneel	<u>Navneeth</u>							
18	Walimbe Ashutosh Yashwant								
19	Mahajan Madhura Jitendra								
20	Herekar Rutuja Rajesh	<u>Rutuja</u>							
21	Kalal Onkar Raju	<u>Onkar</u>							
22	Kale Rohan Jayant	<u>Rohan</u>							
23	Konkati Komal Ganesh	<u>Komal</u>							
24	Kulkarni Rutuja Ratnakar								
25	Sable Sharayu Prakash								
26	Amrale Siddhesh Nitin	<u>Siddhesh</u>							

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Sr. No.	Name	29.06.15							
27	Kadam Kajal Sahebrao	Kajal							
28	Kulakani Sai Milind	Sai							
29	Bhalerao Shriram Vasant	Bhalerao							
30	Tawale Manali Kundan	Manali							
31	Kadam Rishikesh Vasantrao	Rishikesh							
32	Kokje Rahul Atul	Rahul							
33	Purandare Abhishek Suresh	Abhishek							
34	Karadkhedkar Chaitanya Suhas	Chaitanya							
35	Bhalerao Aditya Vijay	Aditya							
36	Shete Sonali Prakash	Sonali							
37	Kulkarni Maitreyee Milind	Maitreyee							
38	Sakhare Sarita Haribhau	Sarita							
39	Mulay Mugdha Sanjeev	Mugdha							
40	Guhagarkar Prasad Vijay	Prasad							
41	Dhankawadw Rajeshwari Subhash	Rajeshwari							
42	Jahagirdar Jitesh Jagdish	Jitesh							
43	Bhandwalkar Ajay Rajendra	Ajay							
44	Dighe Shambhavi Arun	Shambhavi							
45	Gujar Payal Rajendra	Payal							
46	More Udayati Satish	Udayati							
47	Mandhare Makrand Satish	Makrand							
48	Ghatge Vaikrant Vijay	Vaikrant							
49	Deosale Manasi Mahavir	Manasi							
50	Gade Pranjal Pratap	Pranjal							
51	Naik Rucha Yogesh	Rucha							
52	Patole Gayatri Ravba	Gayatri							
53	Pawar Rachana Pandurang	Rachana							

Principa

P.V.G.'s College of Science  
Vidyavanani, S. No. 1, Pt. Parvati,  
Pune - 411 009







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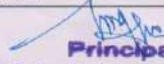
1.2 GUEST LECTURE, SEMINARS ON ADVANCED TOPICS


Date: 12/09/2015

P.V.G.'s College of Science, Pune - 09  
M.C.A. (II) SEM - I : Attendance

Guest Lecture: Database & Future Scope

Roll No.	Name of the Student	Sign
701	Kashid Prasad	K. Prasad
702	Dhamnaskar Ritesh Mohan	
703	Bhutkar Anway Pramod	
704	Mulla Gousia Riaz	
705	Botre Abhaya Sanjay	AS Botre
706	Borole Harshada R.	Harshada
707	Bagade Ankita Hemant	
708	Kulkarni Sanika	SK
709	Pote Dipika Milind	Dipika
710	Bhalekar Mohini	
711	Wable Deepali Bajirao	
712	Khamkar Prajakta Amol	Prajakta
713	Janjale Vrushali R.	Vrushali
714	Patankar Apoorva Milind	
715	Kulkarni Yogiraj	
716	Kodilkar Sameer Vishwas	
717	Gokhale Mayuresh	
718	Bagade Dhanashree S.	DSB
719	Phadtare Swati Ramchandra	
720	Arde Pranita Sanjay	
721	Prasad Pallavi Arun	
722	Jadhav Brahmi Rajendra	Brahmi
723	Shirke Abhishek Anil	
724	Deo Sukrut V	
725	Chavan Madhuri Baban	
726	Tathe Abhishek Rajendra	
727	Ramaraf Devkinandan V.	
728	Raut Ashwini	Ashwini
729	Patil Rakhi Ratan	Rakhi

  
Principal  
P.V.G.'s College of Science  
Wdyanagari, S. No. 44, Parvati,  
Pune - 411 009

  
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Pune  
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Principal  
P.V.G.'s College of Science





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Date : 12/09/2015

P.V.G's College of Science, Pune 411009  
Class : M.C.A.F.Y. ( Science)

Guest Lecture: Database & future scope

Sr. No.	Roll No.	Name	Sign
1	601	Bhutkar Siddhant	
2	602	Bopshetty Shantanu	
3	603	Buibule Akhilesh	
4	604	Deshpande Rohit	
5	605	Gandhi Shweta	
6	606	Gujarathi Minal	
7	607	Hadap Yashada	
8	608	Marathe Pooja	
9	609	Pisal Archana	
10	610	Satpute Swapnil	
11	611	Sugandhi Tushar	
12	612	Surya Pradnya	
13	613	Telang Monali	
14	614	Trivedi Dhairya	
15	615	Gade Akash	
16	616	Walzade Swapnil	
17	617	Deokar Vibhawari	
18	618	More Shivani	
19	619	Muley Aditya	
20	620	Gabriel Aaron	
21	621	Parad Sagar	
22	622	Patil Vaishali	



Principal  
P.V.G.'s College of Science  
Vishwanagar, S. No. 44, Parvati,  
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Vishwanagar,  
Pune





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Date : 12<sup>09</sup>.2015

P.V.G'S College Of Science ,Pune

M.C.A.T.Y.

Attendance for guest lecture

Database & Future scope

Roll No.	Name	Signature
801	Phansalkar Gargee Abhijit	
802	Rajput Aniket Sunil	<i>Aniket</i>
803	Sagvekar Dipika Dilip	<i>Sagvekar</i>
804	Pashankar Yuvraj Dattatraya	
805	Kale Utkarsha Ravindra	<i>Kale</i>
806	Mishra Shailja Shivakant	
807	Babar Komal Ramchandra	<i>Babar</i>
808	Bhosale Deepali Prakash	<i>Bhosale</i>
809	Puranik Amita Ashok	
810	Kotkunde Rasika	<i>Kotkunde</i>
811	Shinde Swapnil Jayavantrao	
812	Khose Sonali Gorakh	<i>Khose</i>
813	Gokhale Dhananjay Rajendra	<i>Gokhale</i>
814	Gosavi Ajinkya Vishram	<i>Gosavi</i>
815	Moholkar Madhura	<i>Moholkar</i>
816	Vaspate Sneha Yashawant	<i>Vaspate</i>
817	Adhyapak Rohan Prashant	<i>Adhyapak</i>
818	Patwardhan Shantanu	<i>Patwardhan</i>
819	Kulkarni Sourabh	<i>Kulkarni</i>
820	Bodhe Tejas	
821	Kalaskar Kalyani Hemant	
822	Deshmukh Sonal	
823	Waghmare Ratnadeep	<i>Waghmare</i>



*[Signature]*  
Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



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2015-16

P.V.G's College Of Science , Pune - 9

Year: 2015 - 16

Class : S.Y.B.Sc.(Computer Science)

Name of the Teacher: Sumedh Ambekar

Guest Lecture

Databases :  
From IT  
perspect

12/09/2015

Subject :

Month :

Roll No.	Name	DB										
201	Shinde Shrikant Dattatraya	12/09/15										
202	Gawali Jyotsna Navnath											
203	Dharap Suhrud Mukund											
204	Miss Dimble Sanjana Sunil											
205	Chinchalkar Saish Shantanu											
206	Miss Kale Geetal Nitin											
207	Miss Mahangare Nupoor M											
208	Miss Shilimkar Ankita											
209	Chinchkar Ajinkya Manoj											
210	Kshirsagar Anant Nitin											
211	Miss Dhadve Aswhini P											
212	Gadade Akshaykumar Shivaji											
213	Late Priyanka Dadasaheb											
214	Miss Singar Dhanashree R.											
215	Miss Dhage Shital Bharat											
216	Wagh Nagesh Gurudatta											
217	Miss Paradkar Soniya S											
218	Miss Kulkarni Ketki Kishor											



P.V.G's College of Science  
 Principal  
 P.V.G's College of Science  
 Pune - 411009



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2015-16

Roll No.	Name	DB																		
219	Malwadkar Rohan C	DB 42108115																		
220	Nene Mayuresh Milind																			
221	Thakur Ankit Subhash																			
222	Gandhi Aditya Shrikant																			
223	Darda Samrat Kumar																			
224	Yedke Rushabh Rajesh																			
225	Miss Turakhia Veerashree N																			
226	Bhattad Jayesh Dilip																			
227	Miss Adake Bhakti Nishikant																			
228	Miss Kadam Mrunal Sanjay																			
229	Miss Chaudhari Pallavi A																			
230	Miss Trimal Piyusha B.																			
231	Miss Naik Gayatri Sunil																			
232	Miss Sambhus Aishwarya M																			
233	Bhalerao Pritam Nitin																			
234	Miss Salunkhe Rutuja Sunil																			
235	Ms. Kadam Neha Bharat																			
236	Jagtap Karan Chandrakant																			
237	Pawar Akshay Satish																			
238	Miss Mandavgane Pranita R																			
239	Tambe Mrunmayee S																			

Pricipal  
PVG's College of Science  
Pune - 411 009  
Vidya Vihar, Pune - 411 009

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Pune - 411 009





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**College of Science, Pune -09**

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2015-16

Roll No.	Name	DB																		
240	Miss Solanki Nikita Mukesh	12/09/15																		
241	Damle Akash Anant																			
242	Tumne Rutwin Avikshit																			
243	Bhargude Siddhika Deepak																			
244	Miss Kanade Sai Sanjay																			
245	Dhiwar Swapnali Ramesh																			
246	Miss Kadu Neha Devidas																			
247	Kadam Rajgauri Shashikant																			
248	Miss Survase Sandhya P.																			
249	Miss Naik Laxmi Nandkishor																			
250	Miss Vora Saroni Kiran																			
251	Oswal Saniket Sanjay																			
252	Kulkarni Prasad Pramod	Rasad																		
253	Walsankar Akshay Deepak																			
254	Miss Mare Shivani Suhas																			
255	Miss Bhosale Aarti Anil																			
256	Maral Prasad Bhagwan																			
257	Miss Katare Shweta Sanjay																			
258	Shukla Sushant Mangesh																			
259	Suravse Santaji Dhaneji																			
260	Miss Bingi Pallavi Rajendra																			



P.V.G.'s College of Science  
Vaynagar, S. No. 41, Pimpri,  
Pune - 411 008  
Principal  
[Signature]

















# Pune Vidyarthi Griha's College of Science, Pune -09

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2015-16

P.V.G's College of Science, Pune 9

M.Sc (Comp.Sci) 2015-16

Guest Lecture : Database & Future Scope

Name of Teachers:-

Subject:-

Month:-

Roll No.	Name of the student	DB																
401	Adodra Pooja	12/09/15																
402	Babhale Amey Avinash																	
403	Bangad Pooja Sunil																	
404	Bankar Shamali Ravindra																	
405	Barhanpurkar Sampada																	
406	Bhagat Abhishek Dilip																	
407	Bhosale Shraddha Vikas																	
408	Bhujbal Neha Hemant																	
409	Bhus Gaurav Sanjay																	
410	Borakar Priyanka C.	Borakar																
411	Borugale Akshay Mohan																	
412	Choudhary Ramesh V.																	
413	Chavan Nikhil Narendra																	
414	Deshpande Advait																	
415	Dhanawale Sanket G.																	
416	Gaikwad Prathamesh																	
417	Jain Vrushali Pratap																	
418	Gogate Nitish Anil																	



P.V.G's College of Science  
Principals  
Mysuramangal, S. No. 44, Parvati,  
Pune - 411 009









# Pune Vidyarthi Griha's College of Science, Pune -09


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## VIRTUAL LAB SESSION FOR ALL YEAR STUDENTS



**Pune Vidyarthi Griha's  
COLLEGE OF  
ENGINEERING & TECHNOLOGY**

Affiliated to University of Pune : Identification No. PU/PN/088/ENGG/1985  
Approved by AICTE, Letter No. F-26-14/89-T-5 dtd. 3-12-90

Fax : (020) 24226858  
Website : [www.pvgcoet.ac.in](http://www.pvgcoet.ac.in)

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44, 'Vidyanagari', Parvati, Pune 411009, Tel. : 24226258/65/79  
E-mail : [principal@pvgcoet.ac.in](mailto:principal@pvgcoet.ac.in) [info@pvgcoet.ac.in](mailto:info@pvgcoet.ac.in)

Fax : (020) 24226858  
Website : [www.pvgcoet.ac.in](http://www.pvgcoet.ac.in)

Virtual Labs Nodal Centre (VLNC)

**Activity:** Virtual Labs Outreach Workshop @PVG's COET Nodal Centre

**Date:** 27<sup>th</sup> & 28<sup>th</sup> August 2015

**Reporting Time:** 8:30 to 10:30 am & 3:30 pm to 5:30 pm

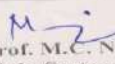
**Venue:** Lab 407; Lab 201


**College Name:** College of Science, Pune


**Total No. of Students:** 138


**Usage (No. of Experiments):** 1,274

Sr. No.	Date	Class	No. of Users	No. of Expt. Usage	Lab	Coordinators
1	27/8/2015	Master of Computer Science (MCS)	29	258	Data Structures Lab	Prof. M. R. Apsangl Prof. U.M.Kalshetti Prof. M.S.Kore Prof. M. M. Kamble
2	27/8/2015	Master of Computer Application(MCA)	30	270		
3	28/8/2015	Master of Computer Science (MCS)	39	346		Prof. U.M.Kalshetti Prof. Mrs.R. Ghosh Prof. M. M. Kamble
4	28/8/2015	Bachelor of Computer Science (BCS)	40	400	Compiler Programming Lab	Prof. Mrs. V. V. Sovani Prof. Mrs. M.R. Apsangl
<b>Total</b>			<b>138</b>	<b>1,274</b>		

  
Prof. M.C. Nagoshe  
Main System Coordinator

  
Prof. Mrs. T. S. Khatavkar  
Nodal Coordinator, VLABS

  
**Principal**  
**P.V.G.'s College of Science**  
**Vidyanagari, S. No. 44, Parvati,**  
**Pune - 411 009**

Head of the Institute  
  
**DR. Y. P. NERKAR**  
**PRINCIPAL**  
**PVG's College of Engineering**  
**and Technology**  
**44, Vidyanagari, Parvati, Pune-9.**

PVG'S COET, Pune\VLNC\Outreach Activity-27-28<sup>th</sup> Aug 2015



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Pune Vidyarthi Griha's, College of Engineering & Technology, Pune-09



Virtual Labs Outreach Workshop

@

PVG's COET, Pune Nodal Centre

27<sup>th</sup> - 28<sup>th</sup> August 2015



# Pune Vidyarthi Griha's College of Science, Pune -09

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2015-16

## ATTENDANCE OF VIRTUAL LAB SESSION

MCS

PVG's College of Engineering & Technology, Pune -09

Virtual Labs Nodal Centre (VLNC)

**VLABS Outreach Workshop.** Date: 27/8/15

Department: Computer / IT

YEAR: 2015-16

ACADEMIC YEAR: 2015-2016

Division: I/II

Total No. of Students: 29

Activity: Students' Training Session on Virtual Labs.

Date: 27/8/15  $29 \times 9 = 3 = 258$

Reporting Time: 3:30 - 5:30

Venue: Comp/IT -407

Outreach Team from IITB: Mr. Pushdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
18	Sayali M. Potdar	
19	Shreeya Dhongade	
20	Priyanka Waitkar	
21	Vikramsinha Deshmukh	
22	Sanika Deshpande	
23	Komal Teinade	
24	Rutuja Des	
25	Namrata Deshpande	
26	Mihir D. Kulkarni	
27	Aditya Athar	
28	Jyoti Bansal	
29	Mrs. Prajakta Agashe (Faculty)	

Dept. VLAB COORDINATOR  
M.R. Apsangi

U.M. Kalshe

Prof. Mrs. T. S. Khatavkar  
NODAL COORDINATOR

Principal  
P.V.G.'s College of Science



# Pune Vidyarthi Griha's College of Science, Pune -09

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2015-16

MCS

PVG's College of Engineering & Technology, Pune -09

## Virtual Labs Nodal Centre (VLNC)

Department:

Date:

YEAR:

Division: III

ACADEMIC YEAR: 2015-2016

Total No. of Students:

Activity:

Students' Training Session on Virtual Labs.

Date:

Reporting Time:

Venue:

Outreach Team from IITB:

Mr. Pushpdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
1	Sonal N. Lahoti	Sonal
2	Priyanka S. Garud	Priyanka
3	Nikita V. Shelar	Nikita
4	Pratik Shindkar	Pratik
5	Sachin A. Pardeshi	Sachin
6	Meju Elsa Oommen	Meju
7	Ashwati R. Poduval	Ashwati
8	Ritay S. Bhosale	Ritay
9	Neha C. Vaidya	Neha
10	Supriya D. Jadhav	Supriya
11	Soyali Hosabnis	Soyali
12	Priya Edlabadkar	Priya
13	Manoj Deshmukhi	Manoj
14	Akash Sherkar	Akash
15	Chinmay Upadhye	Chinmay
16	KARTIK J. SHETTY	Kartik
17	Pardeshi Rajesh	Rajesh

Dept. VLAB COORDINATOR

M.R. Apsanghe

M.S. Kore

V.M. ...



PROF. MRS. T. S. KHARAVKAR  
NODAL COORDINATOR

Principal

PVG's College of Science  
Pune -09





# Pune Vidyarthi Griha's College of Science, Pune -09

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2015-16

MCA

PVG's College of Engineering & Technology, Pune -09

Virtual Labs Nodal Centre (VLNC)

Department: \_\_\_\_\_ Division: EIT

YEAR: \_\_\_\_\_ Total No. of Students: 30

ACADEMIC YEAR: 2015-2016

Activity: Students' Training Session on Virtual Labs.

Date: \_\_\_\_\_

Reporting Time: \_\_\_\_\_

Venue: \_\_\_\_\_

Outreach Team from HTB: Mr. Pashupdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
1	Amita Puranik	Amita Puranik
2	Sonali Khose	Sonali Khose
3	Boban Komal	Boban Komal
4	Garje Phansalkar	Garje Phansalkar
5	Kalyani Kaloukar	Kalyani Kaloukar
6	Dipika Sagarika	Dipika Sagarika
7	Deepali Bhosale	Deepali Bhosale
8	Harshada Bhosale	Harshada Bhosale
9	Abhaya Bothe	Abhaya Bothe
10	Ankita Bagade	Ankita Bagade
11	Mohini Bhalekar	Mohini Bhalekar
12	Pranjana Khanikar	Pranjana Khanikar
13	Vrushali Janjale	Vrushali Janjale
14	Dhanashree Bagade	Dhanashree Bagade
15	Swati Phadfare	Swati Phadfare
16	Pranita Arde	Pranita Arde
17	Sanika Kulkarni	Sanika Kulkarni

Total experiments performed 270

Dept. VLAB COORDINATOR  
M.R. Apsangi  
MRS. Kore  
V. M. Kalshekar

PVG's College of Science  
Pune  
411009

Principal  
P.V.G.'s College of Science  
Vishyanagar, S. No. 44, Parvati,  
Pune - 411 009



# Pune Vidyarthi Griha's College of Science, Pune -09

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2015-16

MCA

PVG's College of Engineering & Technology, Pune -09

Virtual Labs Nodal Centre (VLNC)

Department: \_\_\_\_\_ Date: \_\_\_\_\_

YEAR: \_\_\_\_\_ Division: PII/ \_\_\_\_\_

ACADEMIC YEAR: 2015-2016 Total No. of Students: \_\_\_\_\_

Activity: \_\_\_\_\_ Students' Training Session on Virtual Labs.

Date: \_\_\_\_\_

Reporting Time: \_\_\_\_\_

Venue: \_\_\_\_\_

Outreach Team from IITB: \_\_\_\_\_ Mr. Pushpdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
18	Dipika Milind Pote	
19	Dhananjay R Gokhale	
20	Sukrut V. Deo	
21	Tejas Bodhe	
22	Ratnadeep Waghmare	
23	Ravika Kothkunde	
24	Jonal Deshmukh	
25	Swarnal Amde	
26	Yuvraj Pashankar	
27	Rohan Adhyapak	
28	Sneha Vaspathe	
29	madhura maholkar	
30	Priyanka Suresh	

Dept. VLAB COORDINATOR

M. R. Apsangi

Prof. Mrs. E. S. Khalavkar

NODAL COORDINATOR

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Vidyanagar, No. 44, Parvati,  
Pune - 411 009

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## Virtual Labs Nodal Centre (VLNC)

Department:

Date:

YEAR:

Division: I-II

ACADEMIC YEAR: 2015-2016

Total No. of Students:

Activity:

Students' Training Session on Virtual Labs.

Date:

Reporting Time:

Venue:

Outreach Team from HTB:

Mr. Pushpdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
18	Nitesh R. Habib	[Signature]
19	Ramesh V Choudhary	[Signature]
20	Ravindra P. Kela.	[Signature]
21	Anurag Shivale	[Signature]
22	Sunil Satam	[Signature]
23	Hrushikesh Talabur	[Signature]
24	Praveen Suryawanshi	[Signature]
25	Poojanka Borkar	[Signature]
26	Shrutika Joshi	[Signature]
27	Shameli Bankar	[Signature]
28	Renuka Krise	[Signature]
29	Shraddha Bhosale	[Signature]
30	Purva Jathar	[Signature]
31	Prathmesh Gaitwad.	[Signature]
32	Amey Avinash Babhale	[Signature]
33	Gaurav Bhus	[Signature]

Dept. VLAB COORDINATOR

Prof. U. M. Kalshetti  
Prof. R. Ghosh

Principal

P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



Prof. Mrs. T. S. Khaivkar  
NODAL COORDINATOR

Principal

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Virtual Labs Nodal Centre (VLNC)

VLABS Outreach Workshop

Date: 28.8.2015

Department: College of Science, Pune.  
 YEAR: MCS - I  
 ACADEMIC YEAR: 2015-2016

Division: IT  
 Total No. of Staff: 06

Activity: Students' Training Session on Virtual Labs.  
 Date: Faculty 28-8-15  
 Reporting Time: 8:30 - 10:30 am  
 Venue: Lab 201 (Mech. Dept.)  
 Outreach Team from IITB: Mr. Pushdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
1	Rekha A Joshi	
2	Ms. Rajashree N. Bhalerao	
3	Mrs. Sapna R. Malpani	
4	Mrs Shradha A Zanwar	
5	Mrs. Shilpa S. Pawale	
6	Ms. Radhika Kulkarni	

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 Prof. U.M. Kalsketti   
 Prof. R. Ghosh



Prof. Mrs. E. S. Khatavkar  
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Virtual Labs Nodal Centre (VLNC)

VLABS Outreach Workshop Date: 28/8/15

Department: College of Science

YEAR: S.Y & T.Y (B.C.S)

ACADEMIC YEAR: 2015-2016

Division: V.II

Total No. of Students: 20

Activity: Students' Training Session on Virtual Labs.

Date: 28.8.15

Reporting Time: 3:30 to 5:30

Venue: Lab # 407.

Outreach Team from IITB: Mr. Pashdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
1	Pallavi Arvind Chaudhari	Pallavi
2	Swagnali Ramesh Dhivar	Swagnali
3	Reygauri Shevikant Kadam	Reygauri
34	Neha Devidas Kadu	Neha
5	Sandhya Prabhakar Sasavase	Sandhya
6	Soniya Shrikant Paradkar	Soniya
7	Ketki Kishor Kulkarni	Ketki
8	Satoni Kishor Vora	Satoni
9	Prasad Pravod Kulkarni	Prasad
10	Beitani Nitin Bhatnagar	Beitani
11	Anant Nitin Kshirsagar	Anant
12	Ajinkya Manoj Chinchkar	Ajinkya
13	Akshaykumar Shivaji Gadade	Akshay
14	Shrikant Dattatraya Shinde	Shrikant
15	Saish Shantanu Chinchalkar	Saish
16	Naik Laxmi Nandkishor	Naik
17	Anuja Manohar Bhilare	Anuja

Dept. VLAB COORDINATOR

M.R. Apsangaj Mishra

V. K. Savarni MS



Prof. Mrs. F. S. Khatavkar  
NODAL COORDINATOR

M. S. W.

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Virtual Labs Nodal Centre (VLNC)

Department: College of Science, Pune Date: 28-8-15  
 YEAR: T.Y & S.Y (BCS) Division: DIH  
 ACADEMIC YEAR: 2015-2016 Total No. of Students: 40

Activity: Students' Training Session on Virtual Labs.  
 Date: 28-8-15  
 Reporting Time: 3:30 to 5:30 pm  
 Venue: Lab # 407  
 Outreach Team from HTB: Mr. Pushpdeep Mishra, Project Manager, V Labs

The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
18	Aarti kundlik Yadar	<u>Ayadar</u>
19	Dhanshree R. singar	<u>Dsingar</u>
20	Shital. B. Dhage	<u>sdhage</u>
21	Sanjana S. Dimble	<u>Sanjana</u>
22	Shruti Shrikant Borkar.	<u>Shruti</u>
23	Ashwini P. Dhadve	<u>Dhadve</u>
24	Priyanka Dadasaheb Late	<u>PLate</u>
25	Neeta S. Ichake	<u>Nichake</u>
26	Priyanka P. Amrale	<u>PAmrale</u>
27	Radhika R. Shirke	<u>RShirke</u>
28	Suegawanshi Revati	<u>SRevati</u>
29	Chikhlikar Urvee	<u>Urvee</u>
30	Geetal kale.	<u>Gkale</u>
31	N upaer mahangare	<u>Nmahangare</u>
32	Ankita shilimkar	<u>Ankita</u>
33	Minnal S. Kadam	<u>Minnal</u>
34	Naik Gayatri - Sunil	<u>Gayatri</u>

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M.R. Apsang  
V.V. Savani  
 Principal  
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Prof. Mrs. T. S. Khatavkar  
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T.S. Khatavkar  
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### Virtual Labs Nodal Centre (VLNC)

Department: College of Science, Pune Date: 28.8.15  
 YEAR: T.Y & S.Y (BCS) Division: ITM  
 ACADEMIC YEAR: 2015-2016 Total No. of Students: 40

Activity: Students' Training Session on Virtual Labs.  
 Date: 28.8.15  
 Reporting Time: 3:30 to 5:30  
 Venue: Lab # 407  
 Outreach Team from IITB: Mr. Pushdeep Mishra, Project Manager, V.Labs  
 The following students have attended Students' Training Session on Virtual Labs:

Sr. No.	Name	Signature
35	Momin Shekhar Rashed	<i>[Signature]</i>
36	Mohik Sayali Subhash	<i>[Signature]</i>
37	Snaha Shingate	<i>[Signature]</i>
38	Shubhada Ghinde	<i>[Signature]</i>
39	Joshi Ketakee Ramesh	<i>[Signature]</i>
40	Garkwad Priya	<i>[Signature]</i>

Dept. VLAB COORDINATOR  
 M. R. Apsarangi *[Signature]*  
 V. V. Sovani *[Signature]*



Prof. Mrs. T. S. Khatavkar  
 NODAL COORDINATOR

*[Signature]*  
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### 1.3 QUESTION BANK

**P.V.G'S COLLEGE OF SCIENCE,  
PUNE 9.**

**QUESTION-BANK**

**SEM I (2017-18)**

**CLASS: F.Y.B.Sc.**

**CS I : C Programming**

**(One and Two Marks Questions)**

1. Define algorithm and flowchart.
2. What are the properties of algorithm?
3. How the software is classified?
4. What is assembly Language? Give example.
5. Comment "C is mid level language"?
6. What is variable?
7. What is the difference between declaration and definition?
8. What is constant?
9. How many bytes are required to store integer type value?
10. How many bytes are required to store float type value?
11. How many bytes are required to store char type value?
12. How many bytes are required to store double type value?
13. What is the difference between variable and constant?
14. What is local variable?
15. What is global variable?
16. What is NULL statement?
17. What are the different types of C-Tokens?
18. What do you mean by Keywords?
19. Give the general syntax of conditional operator?
20. Which are relational operators?
21. Which are logical Operators?
22. Which are Bitwise Operators?
23. Explain the use of comma ,sizeof() and type cast operators.
24. Which are unformatted input output functions?
25. Which are formatted input output functions?
26. What is the use of getchar() function?
27. What is the use of getch() function?
28. What is the use of getche() function?
29. Give syntax of simple if stmt
30. Give syntax of simple if - else stmt
31. Give syntax of simple nested if - else stmt?
32. What is nested loop?
33. What is process loop?
34. What is Syntax Error?
35. What is Logical Error?
36. What is Run Time Error?
37. What is the escape sequence for NULL character?

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38. Explain the difference between bitwise AND and Logical AND operators with the help of example.
39. Explain bitwise shift operators?
40. Enlist Character Test and conversion function from ctype.h header file.
41. What is unary operator?
42. Explain putchar ( )?
43. What is an expression? How is an expression differing from variables?
44. Comment "C is mid level language"?
45. What is use of if statement?
46. Write a syntax of while loop?
47. What is mean by associativity?
48. If  $x = 8, y = 3.5, z = -5.2$ , then determine value of following expression  
a)  $2 * y + 3 * (x - z)$  b)  $2 * x / (3 * y)$
49. Explain scanf();
50. What is operator? Enlist all operators used in C?
51. Explain the difference between '=' and '==' operator explain with example?
52. Differentiate between relational and logical operators used in C?
53. Explain the following functions  
i) getch() and ii) clrscr()

(Five Marks Questions)

1. Explain primitive data types used in C?
2. Difference between formatted & unformatted statement?
3. Explain Type Qualifier and Type Modifier in C?
4. Explain different data types used in C language?
5. Explain in brief structure of C programming?
6. Explain syntax and use of Do\_While statement
7. Which looping statements C provides? Explain any one.
8. Explain continue And break statements.
9. Explain switch statement with its syntax and example.
10. What is Nested if else explain with an example?
11. Explain nested for loop with an example.
12. Explain for loop?
13. Enlist different format specifier in C?
14. Explain All types of Jump statement.
15. Describe arithmetic operators?
16. Explain Pre and Post Increment –Decrement with example.
17. Explain Exit controlled and entry controlled loops.
18. Explain counter controlled and sentinel controlled loop.
19. Write a short note precedence of operator & Associativity of Operators?
20. Explain escape sequence character in C?
21. Write an algorithm and draw a flowchart to check whether the given string is palindrome or not.
22. What are the advantages and disadvantages of Algorithm?
23. What are the advantages and disadvantages of Flowchart?
24. Difference between Algorithm and flowchart.
25. Write an algorithm and draw a flowchart to calculate roots of quadratic equation.
26. Write an algorithm and draw a flowchart to find largest of 3 no.s.
27. Write an algorithm and draw a flowchart to find given no. is prime or not.
28. Explain Difference between compiler and Interpreter.
29. Explain Advantages and Limitations of C.
30. Explain Development lifecycle of C.

All Programs from practicals and lectures. & trace the output from Ajay Mittal)

CS II : DBMS

1. What is fixed length record and variable length record?
2. What are the different kinds of operations that can be carried out on a database file?
3. Give the different types of file organizations.
4. Define : I) Logical file II) Physical file.



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5. What is primary index and secondary index?
6. What is hashing?
7. Explain ISAM.
8. Explain B+ tree index structures?
9. Explain the concept of Overflow pages in ISAM.
10. Write the difference between primary and secondary index.
11. Can a secondary index be a sparse index? Justify your answer.
12. In sequential file records are added as and when they are available. Comment.
13. What is DBMS? Give two advantages of DBMS.
14. Who are the different database users?
15. What is logical and physical data independence?
16. What is data abstraction?
17. Define instance and schema.
18. What are the disadvantages of a DBMS?
19. What is DBA? State Functions of DBA.
20. What is Data Models? State its Types.
21. What is Record based Model? State its types.
22. What is Query Processor Component?
23. What is Storage Manager Component?
24. What is a data file?
25. What is Data dictionary?
26. What is DDL, DCL, DML, and TCL ?
27. What is Entity?
28. What is Attributes? Explain its types?
29. What are relationships and relationship sets?
30. Define. i) Super key ii) Candidate key iii) Prime attributes
31. What are Strong Entity and Weak Entity?
32. What is Specialization?
33. What is Generalization?
34. What is aggregation?
35. State the different types of relationships that can exist in entity sets in an ER Model.
36. What degree of relationship type? Explain its types.

## Electronics I

- 1) Draw the circuit symbol for i) resistor, ii) variable resistor, iii) polar capacitor, iv) variable capacitor, v) iron core inductor, vi) transformer with many secondaries
- 2) What is resultant / equivalent of series and parallel combination of capacitors if  $C_1 = 0.1 \mu\text{f}$  and  $C_2 = 0.47 \mu\text{f}$  & resistors if  $R_1 = 1 \text{ Kohm}$  and  $R_2 = 100 \text{ Kohm}$ .
- 3) Give colour code for the following resistance values for +/- 10% tolerance. i)  $47 \text{ kohm}$  ii)  $10 \text{ kohm}$
- 4) Name any two applications of transformer.
- 5) Name different types of cables.
- 6) Explain any two types of switches in detail.
- 7) Explain the working principle of a fuse.
- 8) Draw structure of coaxial cable.
- 9) Name the different types of capacitors.
- 10) Name the different types of resistors.
- 11) Name the different types of inductors.
- 12) Draw the circuit symbol for i) DC voltage source, ii) AC voltage source, iii) constant current source, iv) variable DC voltage source.
- 13) State the following i) KVL, ii) KCL, iii) Thevenin's Theorem, iv) Norton's Theorem, v) Superposition Theorem, vi) Maximum power transfer theorem
- 14) Problems related to i) KVL, ii) KCL, iii) Thevenin's Theorem, iv) Norton's Theorem, v) Superposition Theorem, vi) Maximum power transfer theorem
- 15) Draw the circuit symbol for i) PN junction diode, ii) LED, iii) Zener diode, iv) Photodiode
- 16) Define i) doping, ii) knee voltage, iii) breakdown voltage, iv) depletion region

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- 17) Draw I-V characteristics of an ideal diode.
- 18) Draw I-V characteristics of a practical diode.
- 19) State any two applications of LED and photodiode.
- 20) Explain working of opto-coupler and its applications.
- 21) Explain forward biasing of P-N junction diode.
- 22) Explain reverse biasing of P-N junction diode.
- 23) Explain Zener diode as a voltage regulator.
- 24) State different materials used in LED.
- 25) What is a clipping circuit?
- 26) What is a clamping circuit?
- 27) Define unregulated power supply.
- 28) Define regulated power supply.
- 29) Draw block diagram of regulated power supply.
- 30) Draw half wave rectifier.
- 31) Draw full wave rectifier with center tapped.
- 32) Draw full wave rectifier with four diodes.
- 33) Mention any two applications of solar cell.
- 34) What are the applications of varactor diode?
- 35) What are advantages of bridge rectifier?
- 36) Explain the concept of potential divider.

Electronics II

1. Define the Base or Radix of a number system. Give the radix of following number systems – Binary, Hexadecimal, decimal & Octal.
2. State the bit size of – word, byte, nibble & double word.
3. What is difference between Signed and unsigned numbers? What is the range of numbers represented by 8bit Signed number.
4. Solve  $(57.42)_{10} = ( ? )_2 = ( ? )_8 = ( ? )_{16}$
5. Convert  $(11011)_2 = ( ? )_{Gray}$   $(00010)_{Gray} = ( ? )_2$
6. Convert  $(82)_{10} = ( ? )_{16}$   $(89AD)_{16} = ( ? )_2$   $(110011.11)_2 = ( ? )_{10}$   $(0.98)_{10} = ( ? )_2$
7. Differentiate between gray and binary
8. Solve  $(E5)_{16} = ( ? )_{10}$
9. Express each decimal number in binary as an 8-bit sign-magnitude number  
a. (a)+29 (b)-152
10. What are the signed & unsigned binary numbers? Give the decimal range of 8 bit signed & unsigned numbers.
11. Solve the following using 1's complement method. (a)  $(10)_{10} - (5)_{10}$  (b)  $(7)_{10} - (11)_{10}$
12. Solve the following using 2's complement method. (a)  $(13)_{10} - (6)_{10}$  (b)  $(1001)_2 - (1101)_2$
13. Solve (a)  $(10110)_2 \times (10101)_2$  (b)  $1100 \div 100$
14. Define weighted & non weighted codes with examples.
15. What is BCD? State the smallest and largest number in BCD.
16. Determine which of the following even parity codes are in error  
a. (a)100110010 (b)011101010
17. What is Excess 3 code & Gray code? Why Gray code cannot be used for arithmetic operations?
18. Convert binary 1110 to Gray & 1011 Gray to binary.
19. What is ASCII & extended ASCII?
20. Draw logic diagram for 4 bit adder and subtractor using Exor gate.
21. What are the types of Parity? What is the purpose of adding parity bit to data bits?
22. Construct BCD & Excess 3 code for the decimal numbers 0 to 9 in a tabular form.
23. What is positive & negative logic?
24. Give the symbol & write the Boolean expression for the outputs of the following logic gates – NOT, AND, OR, NAND, NOR, EXOR
25. State and prove DeMorgan's Theorems.
26. What are universal gates? Construct AND, OR & EXOR gates using NAND / NOR gates.



27. Draw the symbol and write the truth table for two input bubbled OR gate & input bubbled AND gate.  
28. How EXOR gate can be used as NOT gate

29. Prove that (a)  $A + AB = A + B$  (b)  $AB + AB + AB + A = 1$  (c)  $A(B+C) + AB = A$

30. Draw the combinational circuit using basic logic gates to obtain the following output.

31.  $Y = A \bar{B} + BC + A \bar{B}$

32.  $Y = 1$

33. What is K map? Give the structure of four variable K map.

34. Draw the logic diagram of Half Adder & Half Subtractor circuit. Also write their Truth Tables.

35. Draw the logic diagram of Full Adder circuit. Also write its Truth Table.

36. Draw the logic diagram of Full Subtractor circuit. Also its truth table.

37. What do you mean by parity Bit? What is the purpose of adding Parity Bit?

38. Simplify equation and then draw logic diagram  $Y = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + A\bar{B}C$

39. Simplify using K map

$$Y = ABC + \bar{A}BC + AB\bar{C} + A\bar{B}C + ABC + \bar{A}BC$$

$$Y = ABC + \bar{A}BC + \bar{A}B\bar{C} + A\bar{B}C$$

$$Y = A\bar{B}C + ABC + \bar{A}BC + A\bar{B}C$$

40.  $Y = m\sum(2,3,4,5,6,7,9,12,13,14,15)$

$$Y = m\sum(1,2,3,6,7)$$

41. Simplify:  $Y = (A + B) \cdot (C + D)$

42. Convert following to standard SOP Form

a.  $Y = AB + BC + AC$

43. Convert following to standard POS Form

a.  $Y = (A+B)(B+C)(C+A)$

Mathematics II

Q.1 Define a relation R on Z by a R b iff a-b is an even integer. Show that R is an equivalence relation. Determine the equivalence class of 3 and -2

Q.2 Let ~ be a relation define on the set of integers Z by  $x \sim y$  if and only if  $5x + 6y$  is divisible by 11. Show that ~ is an equivalence relation.

Q.3 Let R be an equivalence relation on a set A. Then show that any two equivalence classes are either disjoint or identical.

Q.4 If  $A = \{1,2,3\}$  and  $R = \{(1,1), (1,2), (2,1), (2,2), (2,3), (3,1), (3,3)\}$ . Find  $M(R)$  and  $[M(R)]^2$ .

Q.5 Define '\*' as  $a * b = \frac{a+b}{10}$ ,  $\forall a, b \in \mathbb{Q}$ . Show that  $(\mathbb{Q}, *)$  is not a monoid.

Q.6 Find  $R^{-1}$  where  $R: A \rightarrow B$ ,  $A = \{2, 5, 6\}$  to  $B = \{4, 7\}$  and  $R = \{(2, 7), (5, 7), (6, 4), (2, 4)\}$ .

Q.7 Let  $A = B = C = \mathbb{R}$ . Let  $f: A \rightarrow B$ ,  $g: B \rightarrow C$  be defined by  $f(x) = 2x+1$  and  $g(x) = x^2$ . Find  $f \circ g(x)$  and hence find  $f \circ g(1)$  and  $f \circ g(-4)$

Q.8. Using Warshall's algorithm find the transitive closure  $R^*$  of relation  $R = \{(1,1), (1,3), (2,2), (2,3), (3,1)\}$  defined on set  $A = \{1,2,3\}$ . Draw digraphs of R and  $R^*$

Q.9 If  $f: \mathbb{R} \rightarrow \mathbb{R}$  is defined by  $f(x) = 2x + 3$ , then show that f is a bijection and hence find  $f^{-1}$

Q.10 Prove Euclid's Lemma. i.e. If p is a prime and a, b are integers such that  $p | ab$  then  $p | a$  or  $p | b$

Q.11 Consider the set  $N \times N$  of all ordered pair of natural numbers. For  $(a, b), (c, d) \in N \times N$ , we define  $(a, b) \sim (c, d)$  if  $ad = bc$ . Show that ~ is an equivalence relation.

Q.12 Let  $R = \{(1,1), (1,2), (2,3), (1,3), (3,1), (3,2)\}$  be a relation on a set  $A = \{1,2,3\}$ . Draw directed graph of R. Also find transitive closure of R.

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Q.13 Let  $A = \{1, 2, 3\}$ ,  $B = \{a, b, c\}$  and  $C = \{x, y, z\}$ . Let  $R_1: A \rightarrow B$  defined by  $R_1 = \{(1, a), (3, b), (2, c), (3, c)\}$  and  $R_2: B \rightarrow C$  defined by  $R_2 = \{(b, x), (b, z), (c, y)\}$ . Find the composition relation  $R_1 \circ R_2$  and also find the matrices  $M(R_1)$ ,  $M(R_2)$ , and  $M(R_1 \circ R_2)$

Q.14 Let  $S = \{a, b, c, d\}$  and  $R = \{(a, b), (b, a), (c, d), (a, c), (b, c), (b, b), (b, d)\}$  be a relation on  $S$ . Write matrix,  $M(R)$  and draw digraph of  $R$ .

Q.15 Let  $A = \{1, 2, 3, 4, 5\}$  be any set and  $R$  be a relation defined on  $A$  as  $x R y$  if  $x < y$ . Obtain transitive closure of  $R$  using Warshall's algorithm.

Q.16 Show that congruence relation in  $Z$  is an equivalence relation. Congruence relation is defined as  $m \in Z, m \neq 0$  and  $a, b \in Z, a \equiv b \pmod{m} \Leftrightarrow m \mid a - b$

Q.17 Show that  $n^3 + 2n$  is divisible by 3 for  $n \geq 1$ , by using 1<sup>st</sup> Principle of Mathematical Induction

Q.18 Give the statement of Fermat's Theorem and use it to find remainder when  $333^{1011}$  is divided by 7

Q.19 Let  $f: R \rightarrow R$ , (set of real numbers) defined by  $f(x) = \frac{1-7x}{9}$ . Prove that  $f$  is a bijection and find its inverse.

Q.20 Let  $G = \{1, -1, i, -i\}$ . Show that  $G$  is cyclic group under usual complex multiplication. What are the generators of group  $G$ ? Find order of each element of  $G$ , where  $i = \sqrt{-1}$

Q.21 If  $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 1 & 5 & 2 \end{pmatrix}$  and  $\beta = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 1 & 5 & 2 \end{pmatrix}$ , find  $\alpha \circ \beta$ ,  $\beta \circ \alpha$  and  $\beta \circ \alpha$ . Find order of  $\alpha$  and  $\beta$

Q.22 Using 1<sup>st</sup> Principle of Mathematical Induction, prove that following statements are true:

- a)  $P(n): 3^{2n} + 7$  is divisible by 8,  $\forall n \in N$   
b)  $P(n): \frac{1}{3.5} + \frac{1}{5.7} + \frac{1}{7.9} + \dots + \frac{1}{(2n+1)(2n+3)} = \frac{n}{3(2n+3)}$ ,  $\forall n \in N$

Q.23 Prove by 1<sup>st</sup> Principle of Mathematical induction,  $n < 2^n, n \geq 3$

Q.24 If  $\gcd(a, b) = d$ , then prove that  $\gcd\left(\frac{a}{d}, \frac{b}{d}\right) = 1$

Q.25 If  $x \equiv y \pmod{m}$ , then show that  $\gcd(x, m) = \gcd(y, m)$

Q.26 Prove that there are infinitely many pairs of  $x$  and  $y$  satisfying  $x + y = 10$  and  $(x, y) = 2$ .

Q.27 Find  $d = (2415, 3289)$ . Also find integers  $x$  and  $y$  such that  $d = 2415x + 3289y$ .

Q.28 Find  $d = (244, 354)$ . Also find integers  $x$  and  $y$  such that  $d = 244x + 354y$ .

Q.29 If  $a \equiv b \pmod{m}$  and  $c \equiv d \pmod{m}$ , then prove that  $a + x \equiv b + x \pmod{m}$  and  $ac \equiv bd \pmod{m}$

Q.30 Construct composition table for  $Z_{15}^*$  w.r.t. multiplication

Q.31 Construct composition table for

- a)  $Z_7$  w.r.t. addition. Find  $(\bar{7} + \bar{7}) + \bar{7}$   
b)  $Z_4$  w.r.t. multiplication. Find  $\bar{3} \cdot \bar{4} (\bar{4} \cdot \bar{4})$

Q.32 Find unit digit of  $7^{5019}$  using Euler's Theorem

Q.33 Find last two digits of  $29^{4552}$  using Euler's Theorem

Q.34 Using Fermat's Theorem, find the remainder when  $27^{783} + 456$  is divided by 13

Q.35 Find value of Euler's Totient function for a)  $\phi(65)$  b)  $\phi(108)$  c)  $\phi(37)$  d)  $\phi(400)$

### Objectives

- 1) Define: i) Transitive Closure ii) Equivalence relation iii) Partial Order Relation  
iv) Bijective function v) Equivalence class
- 2) Give an example of a relation on set  $A = \{1, 2, 3\}$  which is symmetric but not transitive
- 3) Let  $A = \{a, b, c\}$  and  $B = \{1, 2\}$ . Find total number of functions from  $A$  to  $B$
- 4) Define i) Common Divisor ii) Greatest Common Divisor

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- 5) Let  $A = \{a, b, c, d\}$  be any set. Construct an example of a relation on  $A$  which is
  - a) Symmetric and reflexive but not transitive.
  - b) Transitive and symmetric but not reflexive
- 6) Is every relation on a nonempty set an equivalence relation? Justify
- 7) Show that  $\gcd(23, 999) = 1$
- 8) Define the following with an example:
  - a) One to one function
  - b) Onto function.
- 9) Write statement of Second Principle of Mathematical Induction.
- 10) Write definition of Congruence relation with an example
- 11) Show that  $\gcd(a, a+2) = 1$  or  $2$  for every integer  $a$ .
- 12) Give an example of a function which injective but not surjective
- 13) Define: Group and Abelian group
- 14) Show that subtraction is not a binary operation on  $\mathbb{N}$
- 15) From the given relation matrix  $M(R)$  on set  $A = \{1, 2, 3, 4\}$ , draw the digraph of  $R$

$$M(R) = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix}$$

17) Let  $a \neq 0, b \neq 0$  be in  $\mathbb{Z}$ . If  $a \mid b$  and  $b \mid a$  then  $a = \pm b$

18) List all the elements of  $\mathbb{Z}_6$  which satisfies  $x^2 = x$

19) Give an example of a semigroup which is not a monoid

20) Find value of  $\phi(15)$ , where  $\phi$ : Euler's Totient function

Let  $R = \{(1,1), (2,2), (3,3), (1,3), (3,1)\}$  be an equivalence relation, find equivalence class of 1, 2 and 3

### Statistics I

Questions for one or two marks

1. Define attribute and variable with examples.
2. Define Discrete and continuous variable.
3. Define class-mark or Midvalues.
4. Define the term: relative frequency.
5. Define the term: frequency & cumulative frequency.
6. Describe various methods of graphical presentation of frequency distribution.
  - 1) Histogram
  - 2) Simple bar diagram
  - 3) Subdivided bar diagram
  - 4) Pie diagram
7. Explain less than and more than "Ogive Curves".
8. Explain stem & leaf chart. Construct the stem & leaf chart for given data  
05, 08, 10, 15, 25, 30, 32, 15, 12, 09, 07, 15, 33, 25.
9. Define mean, median and mode. (for three cases)
10. Write formula for combined mean
11. Write formula for combined variance
12. State the empirical relation between mean, median and mode
13. Describe computation of mode by graphical method.
14. Define quartiles.
15. Define Deciles. Write formula for  $D_5$ .
16. Define Percentiles. Write formula for  $P_{50}$ .
17. Define Range and coefficient of Range
18. Define standard deviation. Write formula for S.D.
19. State formulae for coefficient of variation, coefficient of range.
20. Compute standard deviation and coefficient of variation for the following data: 18, 15, 14, 12, 21, 14.
21. Find the first 4 central moments of the numbers 5, 4, -2, 3, 6, -7, -2, 5, 6.
22. Define Skewness. Explain different types of Skewness with suitable diagram
23. Write formula for Karl Pearson coefficient of Skewness. (depends on mean, mode)
24. State Pearsonian's coefficient of skewness. (depends on moments)

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- Q. 14. Prove that  $0 \leq P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$ .
- Q. 15. State Bayes' theorem.
- Q. 16. Define independence of two events A & B.
- Q. 17. If A & B are independent then prove that A' & B' are also independent.
- Q. 19. If A, B, & C are three mutually exclusive & exhaustive events on  $\Omega$ , find  $P(A \cup B)$  if  $P(C) = 8P(A) = 2P(B)$ .
- Q. 20. The odds against student A solving a problem are 8:6 and odds in favour of student B are 14:16 for the same problem find the probability that the problem is solved if they try independently.
- Q. 21. The letters of the word 'SINGULAR' are arranged at random. Find the probability that the words so formed will i) start with G and end with N  
ii) have all vowels together.
- Q. 22. A box contains 3 blue and 2 red marbles while another box contains 2 blue and 5 red marbles. A box is selected at random and a marble is drawn from it. It turned out to be blue, what is the probability that it came from the first box?
- Q. 23. If  $P(A) = 1/3$ ,  $P(B) = 1/2$  and  $P(A|B) = 1/2$ , then find  $P(B|A)$
- Q. 24. State Boole's inequality.
- Q. 25. If A & B are two events defined on  $\Omega$ , such that  $P(A) = 3/4$ ,  $P(B) = 3/8$ , then prove that  $1/8 \leq P(A \cap B) \leq 3/8$ .
- Q. 26. Define continuous random variable with a illustration.
- Q. 27. Define probability density function of a continuous r.v.
- Q. 28. State distribution function, expectation and variance of a continuous r. v.
- Q. 29. State any 4 properties of distribution function.
- Q. 30. Prove that  $E(aX+b) = aE(X)+b$  and  $V(aX+b) = a^2 V(X)$ .
- Q. 31. Define median and mode of a continuous r. v. X.
- Q. 32. If p. d. f. of X is  
 $f(x) = k \cdot x \cdot (1-x)$ ,  $0 < x < 1$   
 $= 0$ , otherwise.  
Find mode of X.
- Q. 33. If X has pdf  
 $f(x) = 3x^2$ ,  $0 < x < 1$   
 $= 0$ , otherwise  
Find median of x
- Q. 34. If distribution function of a continuous r.v. X if  
 $F(x) = \begin{cases} 0, & \text{if } x < 1, \\ (x-1)^2/4, & \text{if } 1 \leq x < 3 \\ 1, & \text{if } x \geq 3 \end{cases}$
- Q. 35. Find p.d.f. of X and hence or otherwise find  $P[3/2 < X < 2]$

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Q. 36. Verify whether the following is the p. d. f. of a continuous r. v.

$$f(x) = 2 \cdot e^{-x}, \quad x \geq 0 \\ = 0, \quad \text{otherwise.}$$

Q. 37. If p. d. f. of a continuous random variable X is :

$$f(x) = k \cdot x, \quad 0 < x < 2 \\ = 0, \quad \text{otherwise.}$$

Find a) k and b)  $P[\frac{1}{2} < X < \frac{3}{4}]$ .

Q. 38. If p. d. f. of X is  $f(x) = 2 \cdot x$ ,  $0 < x < 1$   
 $= 0$ , elsewhere,

find mean of X.

Q. 39. If distribution function of a continuous r. v. is

$$F(x) = (x + 1)/2, \quad \text{if } -1 < x < 1 \\ = 1, \quad \text{if } x > 1. \text{ Then state its p. d. f.}$$

Q. 40. Find mean and mode of x if, its p.d.f. is

$$f(x) = 12 \cdot (x^2 - x^3), \quad 0 < x < 1 \\ = 0, \quad \text{otherwise.}$$

Q. 41. A continuous random variable X has the p.d.f.

$$f(x) = A+B \cdot x, \quad 0 < x < 1, A, B > 0 \\ = 0, \quad \text{otherwise}$$

If the mean of X is  $\frac{1}{2}$ , find the values of A and B



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Question Bank

Class: F.Y.B.Sc.

Subject: M-I (Term I)

1. Define the following terms :  
Totally ordered set, Maximal element, Minimal element, GLB, LUB, complement of an element, lattice, complimented lattice, distributive lattice.
2.  $D_{12}$ =set of positive divisors of 12. Draw the Hasse diagram with divides relation.
3. Draw the Hasse diagram of the following posets.  
( { 1,2,4,8,12,24,30 } , ' $\mid$ ' )  
 $D_{30}$   
( $P(A), \subseteq$ ) where  $A=\{1,2,3\}$
4.  $D_{42}$ =set of positive divisors of 42. Draw the Hasse diagram with divides relation. Construct tables to find lub, glb of any two elements in it. Also find complement of elements in it.
5. Problems of type : Determine whether the given set is a lattice or not e.g.  $D_{24}$  etc.
6. In a distributive lattice, if an element has a complement then show that it is unique.
7. Let  $L$  be a complemented lattice and  $a, b \in L$ . Then show that  
 $\overline{a \vee b} = \overline{a} \wedge \overline{b}$
8. Find DNF of following Boolean functions  
a)  $F(x,y,z) = x+y+z$   
b)  $F(x,y) = (x+y).z$   
c)  $F(x,y,z) = x.y$
9. Find CNF for the following function.  
a)  $F(x,y,z) = x+y+z$   
b)  $F(x,y) = (x+z).y$   
c)  $F(x,y) = x.y$
10. Solve the following homogeneous recurrence relation.  
 $a_n - 7a_{n-1} + 10a_{n-2} = 0$  ;  $a_0 = 4, a_1 = 17$ .
11. Find total solution of the recurrence relation  $a_n - 6a_{n-1} - 16a_{n-2} = 1$

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12.  $a_n = 3 a_{n-1} + 4 a_{n-2}$ .
13. Solve the recurrence relation  $a_n = 5 a_{n-1} + 6 a_{n-2}$  where  $a_0 = 1, a_1 = 4$ .
14. Find total solution of the recurrence relation  $a_n - 3 a_{n-1} - 10 a_{n-2} = 2$
15. Find the particular solution of the recurrence relation  $a_n - 8a_{n-1} - 15a_{n-2} = n$ .
16. Find the total solution of the following recurrence relations.  
 $a_n - 2 a_{n-1} + a_{n-2} = 3 - 4n$ , where  $a_0 = a_1 = 1$  Also find  $a_2, a_3, a_4$  and  $a_5$ .
17. Solve the recurrence relation  
 $a_n + 3a_{n-1} + 3a_{n-2} + a_{n-3} = n$ , where  $a_0 = -1, a_1 = 2, a_2 = 3$ :
18. Find total solution of the recurrence relation  
 $a_n = 4a_{n-1} - 3 a_{n-2} + 2^n + n + 3$ ; with initial conditions  $a_0 = 1, a_1 = 4$ .
19. Define Cardinality of set.
20. Explain Principle of Inclusion and Exclusion.
21. How many 4-letter words can be formed using a, b, c, d and e.  
i) Without repetition ii) With repetition.
22. Define the Pigeon-Hole Principle. Show that if there are 30 students in a class then at least two have their last names beginning with the same letter.
23. In how many ways can 25 late admitted students be assigned to three practical batches if the first batch can accommodate 9 students the second 8 and third also 8.
24. Define the principal of Inclusion-Exclusion for three sets and hence Solve the following example :  
A survey of 500 television watchers the following data were observed. 195 watch hockey games. 285 watch foot ball games. 15 watch basket ball games. 70 watch foot ball & hockey games. 45 watch foot ball & basket ball games. 50 watch hockey & basket ball games. 50 do not watch any of the three games.  
i. How many people in the survey watch all the three games?  
ii. How many people watch exactly one of the three games?
25. Let  $A = \{1, 2, 3\}$  and  $B = \{a, b\}$  How many different functions are there from A into B and what are they ?
26. Find the number of integers between 1 to 1000 that are divisible by 2 or 3 or 7.
27. How many integers from 1 to 450 which are divisible by either 3 or 7?
28. In how many ways can we arrange the word 'VOWEL' such that V and L will occupy even places?



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29. Find the number of permutations for the word 'VISITING'.
30. How many ways are there to pick 2 different cards from a standard 52 – cards such that the first card is an ace and the second card is not a queen?
31. In how many ways a cricket team of eleven can choose a captain and vice-captain amongst themselves.
32. How many integers are there between 100 and 999 inclusive that are divisible by 3 but not by 4?
33. Find the number of integers between 1 to 1000 that are divisible by 2 or 3 or 7.
34. There are 9 faculty members in the Mathematics department, 11 in the computer Science department and 12 in the electronics department. How many ways are there to form a committee of 7 members to develop a course, if the committee is to consist of at least 3 and at most 5 members from the Mathematics department.
35. How many friends must you have to guarantee that at least 10 of them will have birthday in the same month?
36. List all possible functions from the set  $A=\{a,b,c\}$  to the set  $B=\{x,y\}$ .



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QUESTION-BANK

SEM I (2017-18)

CLASS: S.Y.B.Sc.

CS I : DS

Questions worth 1 or 2 marks each

1. Define Data Structure and give its types.
2. What is the need of data structure?
3. Define an algorithm. What are the characteristics of an algorithm?
4. Choice of data structure determines program efficiency. Comment.
5. Define ADT. List some common operations that can be performed on data structure.
6. Calculate the address of  $m[4][2][1]$  for an array  $m[5][3][4]$  assuming row major representation. (assume base address as 100 and each integer requires 4 bytes of storage)
7. What do you mean by stable sorting method?
8. Define internal sorting and external sorting.
9. Describe in one / two sentences the working of all searching & sorting techniques.
10. Give best case & worst case time complexity of
  - Sequential & binary search
  - Bubble sort, Insertion sort, Quick sort & Merge sort
11. How many number of comparisons / swappings / shiftings will be needed to sort the numbers 8, 22, 7, 9, 31, 19, 5, 13 in ascending order using bubble, insertion, & quick sort?
12. Which is better computing time in case of searching & sorting operations? Why?
13. Differentiate between arrays & linked lists.
14. Write function to perform following operations on linked list
  - Insert at first / last / any position
  - Delete from first / last / any position
  - Display alternate nodes
  - Display data starting with vowel (in case of linked list of strings) or data divisible by 3 (in case of linked list of integers)
15. Give structure declaration for a node in polynomial operation.
16. Give diagrammatic representation of following list.  
(A, B, (C,D,E), G, (H (I, J (K,L))) M)
17. Convert the following infix expression to prefix and postfix form.
  - 1)  $((((A+B)^C)-D)^*E)$
  - 2)  $A+B^*D^*C-E/D$
18. What are the primitive operations of stack?
19. Consider the expression "a/b+c\*d". Convert it into its equivalent prefix & postfix form. & then show how prefix & postfix expressions will be evaluated with help of stack.
20. Evaluate the postfix expression  $xy+z-wu^*$  where  $x=6, y=4, z=2, w=3, u=2$ .
21. What is need of dynamic implementation of stack.
22. Give Data structure for implementing
  - Static stack
  - Dynamic Queue
23. Discuss the need of circular queue.
24. Give Qfull & QEmpty condition in case of Linear Queue & Circular Queue.
25. Write functions to add & delete element from static circular queue.
26. What is dequeue? What are advantages of it?



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27. Define priority queue. Give one application
28. Write various operations that can be performed on queue.
29. Consider stack of characters of size 6. If stack contains A, C, D, F, K describe the stack contents as following operations take place.
- POP
  - PUSH(M)
  - PUSH(O)
  - POP
30. Trace the output for queue operations
- ```
int x,y;      create(); insert(11);
for(i=0; i<100; i+=11) insert(i);
insert(i);
x = del(); y=del();
while(!isempty())  printf("%d", del());
```
31. Which method / data structure will prove to be beneficial in following applications:
- Reverse a string
  - Resource allocation
  - To simulate any recursive function
  - Search a particular element in linked list
  - Sort the playing cards
32. Give any one example of unstable sorting method.
33. Give the representation of generalized list  $B = (p(q,r),s)$ .
34. Give any 2 applications of stack.
35. Create a binary search tree for following words,  
Tushar, Amit, Beena, Pranav, Hemant, Neeta
36. Which data structure is used in DFS?
37. "Queuefull condition in a queue necessarily implies that there is no free space in the array." Comment.
38. Define the terms - balance factor & critical path.
39. Define big oh notation and omega ( $\Omega$ ) notation.
40. "Binary search tree could be an example of a skewed binary tree." Comment.
41. Which data structure is used for BFS?
42. Define the term - threaded binary tree.
43. Write a function to delete element from a circular queue implemented dynamically.
44. Define - height balance tree & strictly binary tree.
45. List down the best, average and worst case complexities for - merge sort, quick sort, bubble sort, insertion sort algorithms.
46. Linked list is a linear data structure." Comment.
47. Define AOV network.
48. List out the areas in which data structures are applied extensively.
49. Write a recursive for -
- a) Inorder traversal of tree
  - b) Preorder traversal of tree
  - c) Postorder traversal of tree
  - d) To count the number of nodes of tree
  - e) To find the mirror image of a tree
50. For the following graph calculate indegree, outdegree and total degree of each vertex.



51. For the above graph write the BFS and DFS traversal if the start vertex is B.
52. For the above graph show the adjacency matrix and adjacency list representation.
53. Write a function to store the graph as adjacency matrix.



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CS II : RDBMS

Questions of 1 or 2 marks each

- 1) Write down the syntax of any one loop control statement.
- 2) Write down the syntax of any one conditional statement.
- 3) Explain how does view differ from table?
- 4) Write down the difference between stored procedure and function.
- 5) Explain the use of RAISE NOTICE.
- 6) Define Cursors. Explain its types in short.
- 7) Write down the syntax of cursors.
- 8) State the different error levels handled in raise statement.
- 9) What is rollback?
- 10) Define the term starvation.
- 11) Define Referential Integrity.
- 12) Define Super key.
- 13) Define Serial Schedule.
- 14) What is the output of the following command?  
Extract ( YEAR\_MONTH FROM '2016-11-28');
- 15) What is database security?
- 16) State Thomas Write Rule.
- 17) Give any two advantages of three-tier architecture.
- 18) Define time stamp.
- 19) What is trigger?
- 20) State any 2 differences between Discretionary Access Control and Mandatory Access Control.
- 21) Define the term Granularity.
- 22) State how to detect Deadlock?
- 23) Define Deadlock.
- 24) Define properties of transaction.
- 25) State the phases of 2PL protocol.
- 26) Give the disadvantages of a concurrent schedule.
- 27) Problems based on finding out whether given schedule are serial schedule.
- 28) Define Encryption.
- 29) State any two client components in client-server architecture.
- 30) What is UNIQUE Modifier?
- 31) Define different lock modes used in 2 phase locking protocol.
- 32) Enlist the names of variations of 2PL protocol.
- 33) Enlist and explain in short deadlock prevention algorithms.
- 34) Explain different states of transaction.
- 35) Explain in short wait for graph algorithm.
- 36) State how to detect deadlock.
- 37) Give the types of security classes used in mandatory access control method.

Electronics I

Questions worth 1 or 2 marks each

1. ALU of register organized CPU has 5-bit control line. How many number of operations performed by CPU?
2. What is volatility of memory?
3. What is cycle stealing mode of data transfer in DMA?
4. Define cycle time of memory.
5. Give any two differences between synchronous and asynchronous serial communication.
6. If  $T_c=100$  ns, hit ratio  $h=0.95$  and  $T_m=1000$  ns. Calculate efficiency of cache memory.
7. Define cache hit.
8. What DMA stands for?

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9. What is the function of RS-232 bus?
10. How many inputs and outputs, the multiplexer should have in general register organization, if seven general registers and one external input is used?
11. Which are the different cache mapping procedures?
12. What are the different blocks of CPU?
13. Calculate the number of address bits required to address 64 GB memory.
14. Define hit ratio.
15. Name the different mapping procedures used in a cache memory.
16. State the features of USB.
17. Calculate average access time of a memory system if main memory access time is 600ns and cache access time is 100ns and hit ratio is 90%.
18. Calculate number of miss if hit ratio is 0.95 and number of references to cache memory is 200.
19. The page size is 512 words, the size of main memory is 4K words and size of auxiliary memory is 64K words. Calculate pages and blocks present in auxiliary and main memory respectively.
20. Write the need of Interface unit in data transfer between CPU and peripheral.
21. Draw block diagram of DMA interface.
22. Define virtual memory.
23. Draw circuit diagram of an associative memory cell.
24. Explain two way set associative mapping used in cache.
25. Consider a system with 4kx8 RAM and 8kx8 ROM with a processor of 16 address lines. The available memory chips are of 1 KB each. Draw memory address map.
26. What are the important components in the CPU?
27. State the various types of user visible registers.
28. What is the difference between register stack and memory stack?
29. What is the function of instruction register?
30. What is the role of stack pointer register?
31. State the various modes of data transfer.
32. State any two advantages of serial port communication.
33. What is polling?
34. Define the term baud rate.
35. What is the importance of UART?
36. Explain the concept of data bus, address bus and control bus.
37. What is priority interrupt?
38. Describe the interrupt cycle for interrupt initiated data transfer.
39. With the help of suitable diagram explain the daisy chaining priority interrupt.
40. With the help of suitable diagram explain the parallel priority interrupt.
41. Differentiate between synchronous and asynchronous serial data communication.
42. What is multicore Processor?
43. State segment registers of 8086 microprocessor.
44. Give two features of CISC architecture.
45. Give two features of RISC architecture.
46. What is the size of data bus and address bus of 8086 microprocessor.
47. List the general purpose registers of Pentium.
48. Define super scalar architecture.
49. Mention any two features of 8088 microprocessor.
50. Give the functions of the following unit of 8086, Queue, Flag register, BIU, EU, ALU.
51. Give the functions of the following blocks of Pentium, Pipelines, TLB, FPU, Prefetch Buffer, Bus unit.
52. Give the functions of the following registers, SP, IP, CS, AX, BP.
53. Convert 100101 gray code into binary code.
54. Convert 110101 binary code into gray code.
55. Differentiate in between Von Neumann Architecture and Harvard Architecture.

## Electronics II

- 1) Define sensor and transducer with example.
- 2) What do you mean by active and passive transducer?
- 3) Define accuracy/sensitivity/range/resolution/reproducibility/stability with reference to sensors.
- 4) Write working principle of LDR in short. Which main materials used to construct LDR.
- 5) Calculate output voltage of LM35 at 100°C, 35°C, 95°C.
- 6) What is principle of LVDT?
- 7) List features of LM35 and AD590.
- 8) Write a short note on ultrasonic sensor.
- 9) Draw block diagram of analog electronic system.

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- 10) State principle of PH measurement.
- 11) Explain Capacitive type touch sensor.
- 12) Write a short note on Tilt sensor.
- 13) Draw block diagram of Signal Conditioning system.
- 14) Find the unknown resistance  $R_X$  for balanced Wheatstone's Bridge if  $R_1=7k, R_2=5k, R_3=20k$ .
- 15) Draw circuit diagram of Inverting and non inverting amplifier. Write expression for its gain
- 16) Differentiate between active and passive filter.
- 17) What is features of Instrumentation amplifier.
- 18) What do you mean by Order of Filter?
- 19) Draw circuit diagram of OPAMP level shifter.
- 20) What are the types of Filter? Why it is used?
- 21) Draw frequency response of all filters.
- 22) Draw Twin T-network.
- 23) What is Wheatstone's bridge? What is its importance?
- 24) Find the output voltage from 4 bit R-2R ladder type DAC for digital input 1100. Assume that  $0=0v$  and  $1=-10v$ .
- 25) Draw circuit diagram for R-2R ladder network.
- 26) Define Parameters of ADC.
- 27) What are advantages and disadvantages of Flash ADC.
- 28) Differentiate between Flash type ADC and Dual Slope ADC.
- 29) A Flash ADC has resolution of 4 bits. If clock rate is 50khz, what is conversion time?
- 30) How many bits are required to build R-2R DAC if reference voltage is 10v and DAC has resolution 100mv?
- 31) Using Thevenin Theorem, solve 4 bit R-2R DAC for input  $(1000)_2$ . Given logic 1=7V and logic 0=0V.
- 32) What are the application of ADC and DAC.
- 33) Define Settling time and monotonicity of DAC.
- 34) What are disadvantages of weighted resistor?
- 35) For 3 bit weighted resistive DAC, find output. i) output due to LSB ii) Full scale output (Assume reference voltage=10v.)
- 36) Draw waveform of Dual slope ADC.
- 37) List types of infrared sensor.
- 38) Define 1) ECG of one cardiac cycle 2) Heart rate.
- 39) Draw block diagram of water level indicator using float switch.
- 40) Draw diagram of normal ECG waveform.
- 41) State various types of float sensor, explain any one.
- 42) What are the applications of infrared radiation.
- 43) Draw symbol and pinout diagram of PIR sensor.

Mathematics I

Write True or False with justification. (For questions 1 to 23)

1.  $V = \{ (x, y) / x, y \in \mathbb{R} \}$  is a vector space w. r. t. + & . defined by  $u + v = (x_1 + x_2, y_1 + y_2)$ ,  $k.u = (kx_1, ky_1)$  where  $u = (x_1, y_1)$  &  $v = (x_2, y_2)$
2.  $V = \{ (x, y) / x, y \in \mathbb{R} \}$  is a vector space w. r. t. + & . defined by  $u + v = (x_1 + x_2, y_1 + y_2)$ ,  $k.u = (kx, 0)$  where  $u = (x_1, y_1)$  &  $v = (x_2, y_2)$
3. The set of all the points on the line  $y = 5x$  is a subspace of  $\mathbb{R}^2$  w. r. t. usual addition and scalar multiplication
4. The set of all the points on the line  $y = 4x - 9$  is a subspace of  $\mathbb{R}^2$  w. r. t. usual co-ordinate wise addition and scalar multiplication.
5.  $W = \{ (x, y, z) / \text{either } x=y \text{ or } y=z, x, y, z \in \mathbb{R} \}$  is a subspace of  $\mathbb{R}^3$  w. r. t. usual addition and scalar multiplication
6.  $W = \left\{ \begin{bmatrix} a \\ a \\ 0 \\ 0 \end{bmatrix} / a \in \mathbb{R} \right\}$  is a subspace of  $(M_{2 \times 2}(\mathbb{R}), +, \dots)$





7. Union of two subspaces is also a subspace.

8. The matrix

$$A = \begin{bmatrix} 3 & 0 \\ 0 & 2 \end{bmatrix}, \text{ a linear combination of } B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \text{ and } C = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$$

8.  $S = \{ (1, 2, 0), (1, 1, 4) \}$  are linearly dependent vectors

9.  $S = \{ (1, 0, 3), (-1, 2, -1), (-1, 1, 1) \}$  are linearly dependent vectors

10.  $S = \{ v_1, v_2, v_3, v_4, v_5 \}$  a subset of  $\mathbb{R}^4$  is a basis for  $\mathbb{R}^4$

11.  $S = \{ (1, 2, 0), (0, 0, 4) \}$  is a basis for  $\mathbb{R}^3$

12.  $S = \{ (1, 1, 1), (-1, 0, -1), (-1, 2, 3) \}$  is a basis for  $\mathbb{R}^3$

13.  $S = \{ (1, 1, 1), (0, 0, 4), (2, 2, -2) \}$  is a basis for  $\mathbb{R}^3$

14.  $S = \{ (1, 2), (4, -3) \}$  is a basis for  $\mathbb{R}^2$

15.  $S = \{ (1, 2), (-4, -8) \}$  is a basis for  $\mathbb{R}^2$

16.  $S = \{ (0, 0, 0, 0), (0, 0, 4, 0), (1, 2, 3, 4), (2, 1, 0, 1) \}$  is a basis for  $\mathbb{R}^4$

17.  $S = \{ t^2 + t^2 + 1, t^3 - 1, t^3 + t^2 + t \}$  is a basis for  $P_3$

18.  $B = \{ t^2 + t, t - 1, t + 1 \}$  is a basis for  $P_2$

19.  $S = \{ (1, 2, 0), (0, 0, 4) \}$  is a basis for  $\mathbb{R}^3$

20. Find co-ordinates of  $v = (1, 2)$  relative to basis  $B = \{ (3, -5), (-2, 7) \}$

21. Find dimension of vector space  $(M_{m \times n}(\mathbb{R}), +, \cdot)$

22. If  $v$  is a vector in  $\mathbb{R}^2$  such that  $[v]_B = (2, 0)$ ,  $B = \{ (1, 1), (2, 3) \}$  then find  $v$ .

23. Give an example of infinite dimensional vector space.

24. Define row space, column space, null space

25. Write in matrix notation  $Q: x^2 + y^2 + 4xy$

26. Write any two properties of eigen values.

27. Write quadratic form related to following symmetric matrix.

$$A = \begin{bmatrix} 1 & 4 & -3 \\ 4 & 2 & 5 \\ -3 & 5 & 3 \end{bmatrix}$$

28. If  $G = \{ 1, -1, i, -i \}$  is a group w. r. t. multiplication and if  $H = \{ 1, -1 \}$  is a subgroup of  $G$ . Then find all distinct cosets of  $H$  in  $G$ .

29. Find basis for null space of  $A$

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 2 & 5 \\ 3 & 6 & 9 \end{bmatrix}$$

30. Find basis for row space of  $A$

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$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 2 & 5 \\ 3 & 6 & 9 \end{pmatrix}$$

31. Find basis for column space of A

$$A = \begin{pmatrix} -1 & 3 & 2 \\ 1 & 2 & -3 \\ 2 & 1 & -2 \end{pmatrix}$$

32. Find basis for null space, row space, column space of A. Find rank and nullity of following matrix

$$A = \begin{pmatrix} 1 & -1 & 3 \\ 5 & -4 & -4 \\ 7 & -6 & 2 \end{pmatrix}$$

33. Determine if  $B = \begin{pmatrix} 8 \\ 7 \end{pmatrix}$  is in column space of  $\begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$

34. Find eigen values & vectors of

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

Mathematics II

- Q.1 Define absolute error.  
Q.2 Define relative error.  
Q.3 Define percentage error.  
Q.4 If  $y = \operatorname{cosec}^2 x$  then find error in  $x$ .  
Q.5 Suppose that you have a task to measuring diameter of wire and come up with 2.5 mm. If the true value is 2.4560 then compute absolute error, relative error and percentage error.  
Q.6 Derive the formula for False Position Method.  
Q.7 Derive the formula for Newton Raphson Method.  
Q.8 Show that Newton Raphson Method has second order convergence.  
Q.9 Using Newton Raphson method find a root of the following equation.  
 $x^3 - 3x^2 - 5.5x + 9.5 = 0$  correct upto 5 decimal places.  
Q.10 Find  $\sqrt{17}$  using Newton Raphson Method.

Q.11 Prove that

$$\begin{array}{ll} 1) \Delta = E - 1 & 2) \Delta E = E \Delta \\ 3) \delta = E^{1/2} - E^{-1/2} & 4) \mu = E^{1/2} + E^{-1/2} / 2 \end{array}$$

Q.12 Use Regula Falsi method to determine the root of equation  $\cos x - xe^x = 0$

Q.13 Prepare forward difference table for the following data.

|   |      |      |      |      |       |
|---|------|------|------|------|-------|
| x | 1    | 2    | 3    | 4    | 5     |
| y | 2.38 | 3.65 | 5.85 | 9.95 | 14.85 |

Q.14 Prepare backward difference table for the following data.

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| x | 45    | 50    | 55    | 60    | 65    |
| y | 2.871 | 2.404 | 2.083 | 1.862 | 1.712 |

Q.15 For the following data calculate forward differences and obtain  $f(0.15)$

|   |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|
| x | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 |
|---|-----|-----|-----|-----|-----|



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|          |      |      |      |      |      |
|----------|------|------|------|------|------|
| $f(x)=y$ | 1.40 | 1.50 | 1.70 | 2.00 | 2.28 |
|----------|------|------|------|------|------|

Q.16 Derive Gauss forward interpolation formula.

Q.17 Derive Gauss backward interpolation formula.

Q.18 Estimate the missing term in the following data

|        |   |   |   |   |    |
|--------|---|---|---|---|----|
| x      | 1 | 2 | 3 | 4 | 5  |
| f(x)=y | 2 | 5 | 7 | ? | 32 |

Q.19 Derive Lagrange's interpolation formula.

Q.20 Apply Bessel's formula to find the value of f (27.5) from the table.

|      |   |   |    |    |
|------|---|---|----|----|
| x    | 0 | 1 | 2  | 3  |
| f(x) | 3 | 6 | 12 | 15 |

Q.21 Find the polynomial of degree 3 which takes the values as shown below.

|      |   |   |   |   |
|------|---|---|---|---|
| x    | 0 | 1 | 2 | 4 |
| f(x) | 1 | 1 | 2 | 5 |

(Use Lagrange's interpolation formula)

Q.22 Derive Newton's divided difference formula.

Q.23 Use Newton's divided difference method to obtain y at x=2 from the given data.

|   |   |   |   |    |
|---|---|---|---|----|
| x | 1 | 3 | 4 | 6  |
| Y | 4 | 7 | 8 | 11 |

Q.24 Use Newton's divided difference method to obtain f (3) from the following table.

|      |   |    |    |   |   |    |
|------|---|----|----|---|---|----|
| x    | 0 | 1  | 2  | 4 | 5 | 6  |
| f(x) | 1 | 14 | 15 | 5 | 6 | 19 |

Q.25 Derive Quadrature formula for numerical integration.

Q.26 Derive Trapezoidal rule for numerical integration.

Q.27 Derive Simpson's (1/3)<sup>th</sup> rule numerical integration.

Q.28 Derive Simpson's (3/8)<sup>th</sup> rule numerical integration.

Q.29 Evaluate  $\int \cos dx$  using  $h = 0.2$  using Trapezoidal rule between the limits 0 & 1.

Q.30 Evaluate  $\int (1 + e^x \sin 4x) dx$  using  $h = 0.2$  using Simpson's (1/3)<sup>th</sup> rule between the limits 0 & 1.

Q.31 If  $f(0) = 0$ ,  $f(1) = 2$ ,  $f(2) = 6$  and  $f(3) = 12$  Evaluate  $\int f(x) dx$  by Simpson's (3/8)<sup>th</sup> rule.

Q.32 Write down formula for Error in Trapezoidal rule.

Q.33 Write down formula for Error in Simpson's (1/3)<sup>th</sup> rule.

Q.34 Write down formula for Error in Simpson's (3/8)<sup>th</sup> rule.

Q.35 Solve  $dy = -2y$ ;  $y(0) = 1$  Using Euler's method. Find y (0.1).

Q.36  $dy/dx = xy$  where  $x_0 = 0$ ,  $y_0 = 1$  Take  $h = 0.1$  Find  $y_{0.1}$ ,  $y_{0.2}$ ,  $y_{0.3}$ ,  $y_{0.4}$  Use Euler's method.

Q.37 Determine the value of y when  $x = 0.1$  by Euler's modified method  
Given that  $dy/dx = x^2 + y$  with  $y(0) = 0.94$ .

Q.38 Using Runge-Kutta Method of fourth order to solve  $dy/dx = y - x$  where  $y(0) = 2$   
Obtain y (0.1), y (0.2). Take  $h = 0.1$

Q.39 For the difference equation  $dy/dx = y - x$ ;  $x_0 = 0$ ,  $y_0 = 2$  Take  $h = 0.1$   
Using Runge-Kutta Method of second order find  $y_{0.1}$ ,  $y_{0.2}$

Q.40 Derive formula for Euler's Method.



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PUNE 9.

QUESTION-BANK

SEM I (2017-18)

CLASS: T.Y.B.Sc.

CS I : SYSPRO

Chapter 1: Introduction

1. Define: System program & Application program
2. Differentiate between system programming and application programming
3. List the elements of programming environment & their role.
4. Why is editor considered as System tool and not application program?
5. What is simulator? What is SMAC0?

Chapter 2: Editors

6. What is Editor? Discuss the need or purpose of editors.
7. What are different types of Editors?
8. Explain (i) Line editor (ii) Stream editors (iii) Screen editors (iv) structured editor. Give examples of each
9. Explain structure of Editor.

Chapter 3: Assembler

10. What is Assembler?
11. Discuss features of Assembly language. List advantages of it over HLL.
12. Write the format of Assembly language statement.
13. What are different types of statements in Assembly language?
14. Differentiate between constants and literals.
15. "Use of literals is preferred over constants". Justify.
16. Explain assembler directives: (i) ORIGIN (ii) EQU (iii) LTORG
17. What is the difference between START & ORIGIN
18. List various data structures required in assembler.
19. What is intermediate code?
20. Explain the design of assembler OR Discuss in detail analysis & synthesis phase of Assembler.
21. Write a short note on pass structure of assembler. List the factors which affect pass structure.
22. Discuss the problems encountered in 1-pass assembler. How they are tackled? **OR**  
What is forward referencing? How is forward reference handled in two pass assembler? Explain why table of incomplete instruction is required?
23. Explain how literals are processed by assembler?
24. Compare variant I and variant II.
25. Given an assembly language program,
  1. show contents of symbol table at the end of Pass I
  2. show the intermediate code generated for the program

Chapter 4: Macros & Macro processors

26. Define (i) macro and (ii) macro processor
27. Differentiate between macros & functions. **OR** Write advantages and disadvantages of macros over functions.
28. What are positional parameters and keyword parameters? Differentiate between them.
29. List various data structures to be used for macro definition and use.
30. What leads to expansion of macro call? Explain with examples
31. What is meant by nesting of macro? How nested macros are processed by macro processor?

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32. Explain the various TCS with example
33. What is sequencing symbol?
34. Write a short note on (i) Expansion time variables and (ii) attributes of parameters
35. Given an assembly language program containing macros, show contents of various data structures
36. What is difference between macro processor and macro assembler?
37. Discuss pass structure of macro assembler.
- Chapter 5: Compiler design options**
38. Define interpreter.
39. Differentiate between interpreter and compiler.
40. What are pure and impure interpreters?
41. What is p-code compiler? Explain with diagram.
- Chapter 6 : Linkers & Loaders**
42. Define (i) linker (ii) loader
43. Differentiate between static & dynamic binding
44. Write a short note on address of a program entity at different times.
45. What are address sensitive instructions?
46. What is relocation?
47. How public definitions and external references are handled?
48. What are (i) non relocatable, (ii) relocatable and (iii) self relocating programs?
49. List 4 components of object module.
50. What are overlays? Why they are used?
- Chapter 7: Debuggers and development utilities**
51. Write a short note on debuggers
- Chapter 8 : OS as system software**
52. Define Operating system
53. Write a short note on OS functions
54. List different services provided by OS
- Chapter 9 : System structure**
55. What is a system call? Explain different types of system calls.

CS II : TCS

1. Define the following terms with example:
- (a) Symbol, alphabet, string, language,
  - (b) empty string, length of string, prefix of a string, suffix of a string, proper prefix, proper suffix
  - (c) Kleene closure, positive closure,  $\epsilon$ -closure
  - (d) parse tree, ambiguous grammar, leftmost derivation, rightmost derivation, nullable symbol, left linear grammar, right linear grammar
  - (e) State machine used for context free grammar and context sensitive grammar.
2. If  $\Sigma = \{c, o, m, p, u, t, e, r\}$ , find  $\Sigma^*$  and  $\Sigma^+$
3. Compare 'λ' function of mealy and Moore machine
4. (a) State pumping lemma of regular set.  
(c) CFG is closed under union comment  
(d) Differentiate between  $\epsilon$  and  $\lambda$   
(e) DFA can have  $\epsilon$ -transitions Comment.
5. Construct DFA for a language over
- a.  $\{0,1\}$  to accept strings having even number of 0's and even numbers of 1's.
  - b.  $\{a,b,c\}$  end with bc and having substring bb.
  - c.  $\{0,1\}$  to accept strings that end with 01.
  - d.  $\{0,1, \dots, 9\}$  check whether given decimal number is divisible by 3 or not.
  - e.  $\{0,1\}$  to accept strings containing all possible combination of 0's and 1's having two consecutive 0's.
6. Differentiate between NFA & DFA

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7. NFA & DFA are equivalent. Comment.
8. Convert a given NFA to its equivalent DFA.
9. Construct Moore / Mealy machines for given languages.
10. Convert Mealy m/c to its equivalent Moore m/c or vice versa.
11. Minimize the given DFAs.
12. Differentiate between
  - a. NFA with epsilon & NFA without epsilon
  - b. Moore & Mealy machine
13. Regular languages are closed under union/concatenation/intersection/complement/ Kleene closure. Justify.
14. Show that certain languages are not regular, using pumping lemma.
15. Write regular expression for
  - (a) String having at least two a's over {a,b}
  - (b) The set of all strings over {a,b} not having 2 consecutive a's.
16. Convert following Regular expression to FA :
  - (a)  $(0+1)^*(00+11)(0+1)^*$
  - (b)  $10+(0+11)0^*1$
17. Write in English, the languages accepted by following REs:
  - (a)  $(a+b)^*aa(a+b)^*$
  - (b)  $(b+ba)^*+a(b+ba)^*$
  - (c)  $(0+01)^*$
18. Show that P and Q are equivalent
  - (a)  $P = (1+011)^*$        $Q = \epsilon + 1^*(011)^*(1^*(011))^*$
  - (b)  $P = (a^* + b^*)^*$        $Q = (a + b)^*$
19. If  $L_1 =$  all strings are palindrome over {a, b} and  $L_2 = \{a^n b^n | n \geq 0\}$  find CFG for  $L_1 \cup L_2$ .
20. Construct CFGs for following:
  - a.  $L = \{a^n b^m c^{n+m} | n, m \geq 1\}$
  - b.  $(0+1+2)^*$
  - c.  $L = \{a^n b^m c^k | n=m \text{ or } m < k\}$
  - d.  $L = \{a^n b^m c^m | n \geq 1, m \geq 0\}$
21. Describe the following languages:
  - (a)  $L = \{a^n b^n | n \geq 1\}$
  - (b)  $S \rightarrow aSa / aBa$        $B \rightarrow bB/b$
  - (c)  $S \rightarrow abScB/\epsilon$        $B \rightarrow bB/b$
  - (d)  $S \rightarrow aB/bA$        $A \rightarrow a/aS/bAA$        $B \rightarrow b/bS/aBB$
22. When the grammar is said to be ambiguous? Explain with example.
23. Discuss how to simplify the given grammar.
24. When the grammar is said to be useless? Write the algorithms used for removing useless symbols from the grammar.
25. What are the prerequisites for the grammar to be in CNF?
26. Convert the given grammar to their equivalent CNF & GNF.
27. FA & RG are equivalent. Comment.
28. Convert the regular grammar to its equivalent FA and vice versa.
29. Construct PDA for the following languages:



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- a.  $L = \{a^n \mid n \geq 1\}$
- b.  $L = \{a^m b^n c^k d^l \mid n \geq 0, m \geq 1\}$
- c.  $L = \{a^n b^m c^{n+2} \mid n, m \geq 1\}$
- d.  $L = \{a^m b^n \mid n > m, m > 0\}$

30. DPDA & NPDA are equivalent. Comment.
31. Convert given CFG to its equivalent PDA.

CS III-Networking

1. Explain Parallel and Serial Transmission. Name subtypes of both.
2. Difference between OSI and TCP/IP reference model.
3. What is Baseline Wandering?
4. Define terms-Baud Rate, Pipelining, Peers.
5. What types of services are provided by computer networks?
6. What is Framing? State different methods of Framing.
7. Example on Error detection using CRC.
8. Difference between Physical Address, Logical Address and Port Address.
9. What is Computer network? What are the goals of computer network?
10. Explain Packet Switching.
11. Numerical Problems on Shannon's law and Nyquist's Bit Rate theorem.
12. Explain: Time Division Multiplexing.
13. Describe Go Back N Protocol.
14. Differentiate between Synchronous and Asynchronous Transmission.
15. Example on Line coding RZ/NRZ/Manchester/Differential Manchester Coding.
16. Write short note on: HDLC.
17. Name various transport layer protocols.
18. Explain term Guided and Unguided Transmission Media with their types.
19. Which are different Propagation Modes?
20. What are the services provided by the data link layer to the network layer?
21. Discuss CSMA protocol with 1-persistent, p-persistent and non-persistent.
22. What is Bridges? Explain types of the Bridges.
23. Explain Service Primitives.
24. How errors are handled by data link layer?
25. Explain Physical Layer Device.
26. Differentiate between UTP vs STP
27. What is Backbone?
28. Define- Latency, Throughput, Jitter
29. What is Broadcasting? Also explain multicasting.
30. Explain design issues of layers.
31. What are De-facto and De-jure Standards?
32. Describe the concept of ALOHA with its type.
33. Explain PPP.
34. Write a note on Polling and Token Passing.
35. Describe 1-Bit Sliding Window Protocol.
36. Differentiate between circuit switching and Packet switching.
37. Describe Analog and Digital Data.
38. Example on bit stuffing/byte stuffing.
39. Define Line Coding. State its types.
40. Difference CAT5 vs CAT6.
41. What is Piggybacking?



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CS IV-PHP

1. What is PHP & What are the advantages of PHP ?
2. What is difference between single quote string and double quote string.
3. What is type juggling & type casting?
4. What is variable variable?
5. Explain one dimensional & multidimensional declaration of array in php.
6. Explain foreach( ) loop with example.
7. How to add & remove the element from an array using single function explain with the example.
8. Differentiate between array\_search( ) & in\_array( ) ?
9. Explain following array function with example.  
i)array\_diff() ii) array\_reverse() iii) array\_pad() iv)count() v)array\_splice() vi) array\_slice()  
vii)sizeof()
10. How to define multiline string in PHP ?
11. Define variable interpolation.
12. State the purpose of var\_dump( ),print\_r( ).
13. Explain various string decomposition function in PHP.
14. Write purpose of implode() & explode().
15. How to inherit the class from an existing class ?
16. Define lexical structure.
17. Compare between include( ) and require( )
18. Write any two conditions where Boolean variable return false value.
19. What is sticky form.
20. Explain self processing page.
21. What is the use default parameter in function.
22. How to create object in PHP.
23. What is an associative array & multidimensional array.
24. Explain recursion with example.
25. Explain how to delete file in PHP
26. Explain introspection.
27. What is the purpose of function func\_get\_args( ),func\_num\_args(), fun\_get\_arg( )
28. State the differences between GET & POST methods.
29. State the purpose of \$this variable.
30. How will u determine the size of file in PHP
31. What is use of heredoc ?
32. What is serialization. Explain \_\_sleep( ) & \_\_wakeup( ).
33. Without using global keyword how to declare global variables.
34. Explain in detail regular expression. Explain ereg( ) & ereg\_replace( ) with example.
35. Explain get\_object\_vars( ), strip\_tags( ) str\_repeat( ) with example.
36. Explain reading and writing files.
37. Explain various file & directory functions.
38. Explain How to implement stack & queue using various built in functions
39. Explain array\_walk() with example.
40. Explain array push & pop function with example.
41. Explain array merge, union & intersection, difference function with example.
42. Explain various array sort function.
43. Explain Extract() & Compact() function with example.
44. Explain reset() & unset() with example.
45. Explain various string cleaning functions.
46. Explain Constructors & Destructors.





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47. What is PEAR DB LIBRARY.
48. What is DSN ? Explain with example.
49. What is the difference between free( ) & disconnect( ) method.
50. How to connect to database using PEAR DB.
51. How to find out number of rows returned by the result set. Explain with example.
52. What are the different ways to access database from PHP? Explain.
53. Explain foll. Methods
  - a) isError()
  - b) query()
  - c) fetchRow()
  - d) prepare()
  - e) execute()
  - f) getOne()
  - g) getRow()
  - h) getCol()
  - i) getAssoc()
  - j) getAll()
  - k) numRows
  - l) numCols()
  - m) affectedRows
  - n) tableInfo()

## CS V-JAVA

1. What is Unicode?
2. What is the purpose of java tools? (Explain with example).
3. Java is compiled and interpreted language. Comment.
4. What is the role of JVM?
5. Describe features of Java?
6. "If operating system is changed, the bytecode of a java program should also be changed". State true / false.
7. Compare Java and C++.
8. Explain "public static void main (String args[])".
9. What happens when we are trying to access index of an array that is greater than size of an array?
10. Give the example of creating arrays.
11. Explain command line arguments.
12. Write a note on scanner class.
  1. List methods of object class with syntax.
  2. Why garbage collector is used?
  3. List uses of final keyword.
  4. What is autoboxing and unboxing of primitive types?
  5. What is use of static keyword?
  6. How call by reference is achieved in Java. Explain with suitable example.
  7. State the use of wrapper classes.
  8. Explain the use of finalize ( ) method.
  9. State advantage of using break with levels.
  10. Which package is automatically loaded by JVM?
  11. What are packages?
  12. What are types of nested classes?
  13. Is it necessary to use all methods from an interface? Justify.
  14. State the two uses of 'super' keyword.
  15. Can interface be final? Justify.
  16. State differences between abstract class and interface.
  17. A class cannot be declared both, abstract and final. State true/ false. Justify.
  18. What is the use of throws/throw statement? Explain with example.
  19. State the use of clone ( ) method in Java. Give its syntax.
  20. What is assertion? Give its forms.
  21. Give the names of predefined final class.
  22. What are checked and unchecked exceptions?
  23. Write syntax of try - catch - throw - throws - finally.
  24. Differentiate between BufferedReader and BufferedWriter.
  25. Explain syntax of different string handling functions.
  26. Strings are immutable in java. Explain.
  27. How does String class differ from StringBuffer class?
  28. What are two basic stream types supported by Java?
  29. Which stream is use to read primitive data from a file?



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30. Which method is use to know the size of file? Which class provides that method?
31. Write a Java statement that opens a file for reading, writing and one can "jump around" in the file while accessing file.
32. Explain use and constructors of File class.
33. What is the standard way to read a text file in Java?
34. What is the default layout for Frame and panel?
35. State any FOUR methods of: any type of Listener
36. Which method is use to specify containers layout? Write its syntax.
37. What is the use of class ButtonGroup?
38. Why swing objects are not called as heavy weight components?
39. Differentiate between AWT and swings.
40. Differentiate between JScrollBar and JScrollPane components.
41. What are the different types dialogs in java?
42. List the attributes of the APPLET tag.
43. Can an applet class have a constructor? Justify your answer.
44. What is the difference between the repaint () and update () method?
45. Write user define method / class / program for the given problem.
46. What is listener? Explain any two listeners in details.
47. What is the difference between method overloading and method overriding? Explain with example.
48. What is checked and unchecked exceptions? Explain the use of try catch and finally block.
49. Explain AWT components.
50. Explain life cycle of applet.
51. What is byte stream? Explain byte stream in detail.
52. Explain event handling mechanism in java in brief with the help of an example.
53. What is an interface? How does it differ from an abstract class? Can an interface be extended?
54. What is package? How to create package? Explain access specifier with suitable example.
55. Explain the concept of stream, stream classes and predefined stream classes.
56. Write a short note on object destruction and finalize method.
57. What is user defined exception? Illustrate them with an example.
58. What is an assertion? State the use of assertions and also state assertion rules.
59. Write a note on MVC architecture. Why are swing components light – weight?
60. State the advantages that Java's layout managers provide over traditional windowing system. Explain any two layout supported by swings.
61. Differentiate between throws and throw.
62. Explain methods of InputStream Class.
63. What is a nested class? Explain its type with suitable examples.
64. What is an applet? Explain the lifecycle of an applet.
65. Inheriting two classes into one class is allowed in java. State true or false. Justify.

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CS VI -OOSE

1. What is mean by object oriented construction?
2. What is mean by organizing object?
3. Which are the building blocks of UML?
4. What is UML ?Explain different views of UML.
5. Which are the types of things in UML?
6. State the Structural Things in UML.
7. Which are the four kinds of relationship in the UML?
8. Which are the rules of the UML?
9. Explain common mechanisms in UML?
10. Explain the architecture of the UML?
11. State advantages of the UML?
12. What is aggregation? Give example.
13. What is association? State its types.

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14. What is mean by interface?
15. Expalin abstract and concrete classes with example.
16. Define Role in the UML?
17. "It is possible to connect a class to itself" state true or false-Justify.
18. Differentiate between aggregation and generalization with suitable example.
19. What is Role?
20. Define the object 'Bank Account 'with possible attributes and operations with visibility.
21. "You cannot create unlimited instances of given class". State true or false and justify.
22. Draw class diagram for online shopping system.
23. Draw class diagram for Hospital Management System.
24. Draw class diagram for college library System.
25. What is the purpose of Use case view?
26. What is the purpose of life line in sequence diagram?
27. Discuss the components of the sequence diagram.
28. Define forking and joining.
29. What are advantages of iterative development?
30. What is RUP? What are its phases?
31. What is inception? What is its purpose?
32. Explain Elaboration with some key ideas and best practices.
33. Explain different elements of Object model.
34. Write a note on Rumbaugh Method?
35. Explain the structural aspects of collaboration.
36. What are components of deployment diagram?
37. What is the use of component diagram? Explain it with suitable example.
38. Define Alpha testing?
39. What is integration testing?
40. Define Beta testing?
41. Explain stress and volume testing?
42. Explain black box and white box testing?
43. What is acceptance testing?
44. Give the difference between alpha and beta testing?
45. Define: (a) Class (b) Attributes (c) Operations (d) Tagged Value (e) Note (f) constraint (g) Association (h) Swim lanes (i) Instance (j) Abstract Class (K) Qualifier
46. State the components of use case diagram.
47. Explain Aggregation and composition with example.
48. Explain Package with example.
49. Which artifacts use in Inception.
50. Explain Booch, Rambhugh, Jacobson, coad & Yourdon methods.
51. Explain Task Management Component.
52. Explain Data Management Component.
53. Where UML is used?
54. What is multiplicity?
55. What is mean by Model?



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1.4 RECORD FOR DOUBT SOLVING

P. V. G's College Of Science Pune 09  
Academic Year 2017-18  
Doubt Solving

| Class & Subject | Topic                                         | Name Of Teacher   | Name Of Student           | Sign Of Student With Date and Time |
|-----------------|-----------------------------------------------|-------------------|---------------------------|------------------------------------|
| S-Y.B.Sc.       | oops concepts                                 | Manjushni Gore    | Tushar Rajendra Akurdekar |                                    |
| Tushar T.Y.     | Open G-L.                                     | S.P. mam          | Prasad Gubhakar           |                                    |
| J.Y. B.Sc.      | C-G. rotation                                 | Neeta Ranbhakar   | Mayasee Agaswal           |                                    |
| S-Y.            | PIE-pie                                       | Bhupal Sir        | Tanmay Kulkarni           |                                    |
| T.Y.BSc         | Networking                                    | Priyanka Khutwad  | Anayesh Kalyankar         |                                    |
| TYBSC           | CG Project                                    | Shilpa Pawate     | Gayatri Patole            |                                    |
| TYBSC           | PHP cookies                                   | Deepali Thorat    | Gayatri Patole            |                                    |
| T.Y.BSc.        | Java - Servlet                                | Shilpa Shingate   | Prasad Gubhakar           |                                    |
| F-Y.            | Equivalence class                             | Medha Mam         | Vaishnavi More            |                                    |
| MSC-I           | Project demo & guidance of .Net               | Priyanka Khutwad  | Anayesh Kalyankar         |                                    |
| MSC-I           | Project demo & Guidance .Net                  | Priyanka Khutwad  | Prasad Gubhakar           |                                    |
| MSC-I           | Assignment evaluation & doubt solving of .Net | Priyanka Khutwad. | Prasad Gubhakar           |                                    |

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## 1.5 MOCK TEST

P.V.G's College Of Science,Pune

**Time Table of FY Bsc. For MockTest**      Time: 11.50 to 2.50 pm

| Date | 12/2/2018 | 14/2/2018 | 15/2/2018 | 16/2/2018 | 17/2/2018 | 20/2/2018 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|
| CS I | BI        | BIII      | BIV       | BV        | BVI       | BII       |
| CSII | BII       | BIV       | BV        | BVI       | BI        | BIII      |

Note:

- 1.Students must carry labbook.
- 2.Students must be present before 15 minutes for mocktest.
- 3.Submission of CSI and CSII on the same day of test of respective batches.
- 4.Those students who are absent will get zero internal marks of practical.

*Shingate*  
Ms.Shilpa Shingate  
(class-Teacher)

*Surekha*  
Mrs. Surekha Deshmukh  
(Principle)

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F.Y.Bsc.comp.sci. Mock Test 17-18  
Lab Course -I

| ROLL NO | NAME                          | ATTEND | SUBMIS<br>SION | MOCKTES<br>T MARK | OUT<br>OF(10) | WBMARKS(<br>10) | TOTAL(20) | ROUND<br>OFF(20) |
|---------|-------------------------------|--------|----------------|-------------------|---------------|-----------------|-----------|------------------|
| 101     | Agarwal Himanshu Rawan        | p      | c              | 75                | 9             | 10              | 19        | 19               |
| 102     | Anil Sanket Ambalkar          | p      | c              | 44                | 6             | 7               | 13        | 13               |
| 103     | Aradhya Swarali Sanjay        | p      | c              | 24                | 3             | 7               | 10        | 10               |
| 104     | Athavale Abhishek Ramesh      | ab     | ab             | 0                 | 0             | 0               | 0         | 0                |
| 105     | Atkari Harshavardhan Narendra | p      | c              | 20                | 3             | 7               | 10        | 10               |
| 106     | Bakare Aditya Harish          | p      | c              | 33                | 4             | 2               | 6         | 6                |
| 107     | Bhadirge Rushikesh Rajendra   | p      | c              | 31                | 4             | 7               | 11        | 11               |
| 108     | Bhagwat Sourabh Umesh         | p      | c              | 47                | 6             | 7               | 13        | 13               |
| 109     | Bhoirkar Anuja Suhas          | p      | c              | 37                | 5             | 8               | 13        | 13               |
| 110     | Chavan Chirag Yuvraj          | p      | c              | 17                | 2             | 10              | 12        | 12               |
| 111     | Dagade Sakshi Lakman          | p      | c              | 31                | 4             | 10              | 14        | 14               |
| 112     | Darwatkar Anagha Umesh        | p      | c              | 12                | 2             | 5               | 7         | 7                |
| 113     | Devgirkar Tushar Ramesh       | p      | c              | 36                | 5             | 0               | 5         | 5                |
| 114     | Dhamale Manish Balaji         | p      | c              | 32                | 4             | 1               | 5         | 5                |
| 115     | Dhanawade Tejasvini Sakharan  | p      | c              | 26                | 3             | 8               | 11        | 11               |
| 116     | Dolas Sourabh Sunil           | p      | c              | 29                | 4             | 0               | 4         | 4                |
| 117     | Dombe Akansha Ratnasing       | p      | c              | 32                | 4             | 7               | 11        | 11               |
| 118     | Dudhale Vaishnavi Chandrakant | p      | c              | 34                | 4             | 7               | 11        | 11               |
| 119     | Dugari Siddhi Shantilal       | p      | c              | 32                | 4             | 7               | 11        | 11               |
| 120     | Gadgil Arpit Amar             | p      | c              | 38                | 5             | 1               | 6         | 6                |
| 121     | Ghatage Shrutika Sheev        | p      | c              | 58                | 7             | 10              | 17        | 17               |
| 122     | Gogawale Shivam Narhari       | p      | c              | 34                | 4             | 2               | 6         | 6                |
| 123     | Goti Prathamesh Sunil         | p      | c              | 38                | 5             | 1               | 6         | 6                |
| 124     | Hinge Prachi Rajesh           | p      | c              | 34                | 4             | 7               | 11        | 11               |
| 125     | Jadhav Aditya Baburao         | p      | c              | 44                | 6             | 5               | 11        | 11               |
| 126     | Jagtap Sahil Rajaram          | p      | c              | 47                | 6             | 10              | 16        | 16               |
| 127     | Jagtap Sameer Sambhaji        | p      | c              | 53                | 7             | 10              | 17        | 17               |
| 128     | Jamernis Vedang Sameer        | p      | c              | 32                | 4             | 10              | 14        | 14               |
| 129     | Joshi Sarang Sushil           | p      | c              | 0                 | 0             | 10              | 10        | 10               |
| 130     | Kadam Pranav Rajesh           | p      | c              | 26                | 3             | 10              | 13        | 13               |
| 131     | Kadam Shishir Shivaji         | p      | c              | 28                | 4             | 4               | 8         | 8                |
| 132     | Kamble Rohit Rajendra         | ab     | ab             | 0                 | 0             | 6               | 6         | 6                |
| 133     | Kale Tarvi Ganesh             | p      | c              | 38                | 5             | 10              | 15        | 15               |
| 134     | Kamble Rutuja Shiram          | p      | c              | 24                | 3             | 10              | 13        | 13               |
| 135     | Kavathekar Devendra Kushaba   | p      | c              | 37                | 5             | 7               | 12        | 12               |
| 136     | Khaniwale Omkar Anil          | ab     | c              | 10                | 1             | 7               | 8         | 8                |
| 137     | Korade Shamita Mahesh         | p      | c              | 28                | 4             | 7               | 11        | 11               |
| 138     | Korde Swaroop Chandrashekhar  | p      | c              | 73                | 9             | 10              | 19        | 19               |
| 139     | Kshirsagar Isha Shishank      | p      | c              | 65                | 8             | 7               | 15        | 15               |
| 140     | Kulkarni Isha Milind          | p      | c              | 41                | 5             | 7               | 12        | 12               |
| 141     | Kumar Ayushi Ashwani          | p      | c              | 27                | 3             | 7               | 10        | 10               |
| 142     | Lakshkar Pankaj Omprakash     | p      | c              | 32                | 4             | 5               | 9         | 9                |
| 143     | Lohokare Parth Parag          | p      | ni             | 25                | 3             | 7               | 10        | 10               |
| 144     | Patange Pranav Prafulla       | ab     | ab             | 0                 | 0             | 2               | 2         | 2                |
| 145     | Mahangare Shital Dryanoba     | p      | c              | 75                | 9             | 10              | 19        | 19               |
| 146     | Makhija Harpreet Tarlochan    | p      | c              | 56                | 7             | 10              | 17        | 17               |
| 147     | Mehendale Abhishek Sanjay     | p      | c              | 36                | 5             | 2               | 7         | 7                |
| 148     | Mohansing Rajput Vinayak      | ab     | ab             | 0                 | 0             | 5               | 5         | 5                |
| 149     | More Vaishnavi Satyevan       | p      | c              | 75                | 9             | 10              | 19        | 19               |
| 150     | Nikam Harshada Shashikant     | p      | ic             | 21                | 3             | 4               | 7         | 7                |
| 151     | Nitsure Mayuresh Yashodhan    | p      | c              | 39                | 5             | 10              | 15        | 15               |
| 152     | Oza Neha Bhavari              | ab     | ab             | 0                 | 0             | 5               | 5         | 5                |
| 153     | Pacharane Aakansha Laxmikant  | p      | c              | 46                | 6             | 10              | 16        | 16               |
| 154     | Palnitkar Nachiket Waman      | p      | c              | 63                | 8             | 5               | 13        | 13               |
| 155     | Pangarkar Akshada Namdeo      | p      | c              | 26                | 3             | 5               | 8         | 8                |
| 156     | Pardehi Pranit Bhausaheb      | ab     | ab             | 0                 | 0             | 0               | 0         | 0                |
| 157     | Pardehi Shivani Devendrasingh | p      | c              | 41                | 5             | 7               | 12        | 12               |
| 158     | Pardehi Vaishnavi Ganesh      | p      | c              | 33                | 4             | 5               | 9         | 9                |
| 159     | Pataskar Vinit Nishikant      | ab     | ab             | 0                 | 0             | 1               | 1         | 1                |



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|-----|--------------------------------|---|----|----|---|----|----|----|
| 160 | Pawar Tejaswini Vijay          | p | c  | 24 | 3 | 7  | 10 | 10 |
| 161 | Pokale Pratik Suryakant        | p | c  | 3  | 0 | 7  | 7  | 7  |
| 162 | Ranpise Mona Shantaram         | p | c  | 35 | 4 | 7  | 11 | 11 |
| 163 | Raut Sanskriti Pravin          | p | c  | 26 | 3 | 5  | 8  | 8  |
| 164 | Sahasrabudhe Antara Vivekanand | p | c  | 29 | 4 | 5  | 9  | 9  |
| 165 | Sajure Tanmay Prashant         | p | c  | 30 | 4 | 5  | 9  | 9  |
| 166 | Saipelkar Atharva Vinayak      | p | c  | 32 | 4 | 5  | 9  | 9  |
| 167 | Satpute Snehal Sunil           | p | c  | 37 | 5 | 7  | 12 | 12 |
| 168 | Sawant Satyam Suraj            | p | c  | 19 | 2 | 7  | 9  | 9  |
| 169 | Shelar Shreya Deepak           | p | c  | 37 | 5 | 7  | 12 | 12 |
| 170 | Shinde Reshma Manohar          | p | c  | 74 | 9 | 10 | 19 | 19 |
| 171 | Soman Shruti Mandar            | p | c  | 63 | 8 | 5  | 13 | 13 |
| 172 | Thite Shefali Balasaheb        | p | nd | 25 | 3 | 1  | 4  | 4  |
| 173 | Tnksale Rohan Anantrao         | p | c  | 53 | 7 | 10 | 17 | 17 |
| 174 | Madiwale Varad Vikas           | p | ni | 38 | 5 | 7  | 12 | 12 |
| 175 | Bagade Ojas                    | p | c  | 37 | 5 | 5  | 10 | 10 |
| 176 | Waingankar Sudeep Prashant     | p | c  | 71 | 9 | 9  | 18 | 18 |
| 177 | Wani Poonam Bharat             | p | c  | 30 | 4 | 5  | 9  | 9  |
| 178 | Wanjale Pooja Mahadeo          | p | c  | 38 | 5 | 1  | 6  | 6  |
| 179 | Rajshirke Neel Shailandra      | p | c  | 36 | 5 | 5  | 10 | 10 |
| 180 | Wakdkar Isha Mangesh           | p | c  | 48 | 6 | 7  | 13 | 13 |
| 181 | Rasal Shrushti                 | p | c  | 24 | 3 | 7  | 10 | 10 |
| 182 | Dave Dhawal Prakash            | p | c  | 14 | 2 | 2  | 4  | 4  |
| 183 | Mandale Diksha                 | p | IC | 14 | 2 | 7  | 9  | 9  |
| 184 | Karbhare Abhishek Appasaheb    | p | c  | 59 | 7 | 9  | 16 | 16 |
| 185 | Shelu Mrunalee                 | p | IC | 16 | 2 | 5  | 7  | 7  |
| 186 | Thete Kaustubh                 | p | c  | 47 | 6 | 7  | 13 | 13 |
| 187 | Hunda Rekha                    | p | c  | 21 | 3 | 5  | 8  | 8  |
| 188 | Bhosale Akshata                | p | ic | 36 | 5 | 7  | 12 | 12 |



  
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F.Y.Bsc.comp.sci. Mock Test 17-18  
LAB COURSE -II

| ROLL NO | NAME                          | ATTEND. | SUBMIS<br>SION | MOCKTEST<br>MARK | OUT<br>OF(10) | WBMARKS<br>(10) | TOTAL<br>(20) | ROUND<br>OFF(20) |
|---------|-------------------------------|---------|----------------|------------------|---------------|-----------------|---------------|------------------|
| 101     | Agarwal Himanshu Pawan        | p       | c              | 72               | 9             | 10              | 19            | 19               |
| 102     | Anil Sanket Ambalkar          | P       | c              | 50               | 6             | 7               | 13            | 13               |
| 103     | Aradhya Swarali Sanjay        | P       | c              | 51               | 6             | 7               | 13            | 13               |
| 104     | Athavale Abhishek Ramesh      | P       | N              | 3                | 0             | 0               | 0             | 0                |
| 105     | Atkari Harshavardhan Narendra | P       | c              | 42               | 5             | 7               | 12            | 12               |
| 106     | Bakare Aditya Harish          | p       | c              | 15               | 2             | 7               | 9             | 9                |
| 107     | Bhadirge Rushikesh Rajendra   | P       | c              | 36               | 5             | 7               | 12            | 12               |
| 108     | Bhagwat Sourabh Umesh         | p       | c              | 51               | 6             | 7               | 13            | 13               |
| 109     | Bhoirkar Anuja Suhas          | p       | c              | 73               | 9             | 8               | 17            | 17               |
| 110     | Chavan Chirag Yuvaraj         | p       | c              | 53               | 7             | 10              | 17            | 17               |
| 111     | Dagade Sakshi Laxman          | P       | c              | 25               | 3             | 10              | 13            | 13               |
| 112     | Darwatkar Anagha Umesh        | P       | c              | 36               | 5             | 10              | 15            | 15               |
| 113     | Devgirkar Tushar Ramesh       | p       | c              | 34               | 4             | 5               | 9             | 9                |
| 114     | Dhamale Manish Balaji         | p       | c              | 7                | 1             | 6               | 7             | 7                |
| 115     | Dhanawade Tejasvini Sakharam  | P       | c              | 63               | 8             | 8               | 16            | 16               |
| 116     | Dolas Saurabh Sunil           | p       | c              | 6                | 1             | 5               | 6             | 6                |
| 117     | Dombe Akansha Ratnasing       | A       | N              | 0                | 0             | 1               | 1             | 1                |
| 118     | Dudhale Vaishnavi Chandrakant | p       | c              | 38               | 5             | 6               | 11            | 11               |
| 119     | Dugad Siddhi Shantilal        | A       | C              | 0                | 0             | 1               | 1             | 1                |
| 120     | Gandhi Arpit Amar             | p       | c              | 22               | 3             | 6               | 9             | 9                |
| 121     | Ghatge Shrutika Sheev         | p       | c              | 64               | 8             | 10              | 18            | 18               |
| 122     | Gogawale Shivam Narhari       | p       | c              | 54               | 7             | 7               | 14            | 14               |
| 123     | God Prathamesh Sunil          | p       | c              | 28               | 4             | 6               | 10            | 10               |
| 124     | Hinge Prachi Rajesh           | p       | c              | 35               | 4             | 7               | 11            | 11               |
| 125     | Jadhav Aditya Baburao         | p       | c              | 47               | 6             | 7               | 13            | 13               |
| 126     | Jagtap Sahil Rajaram          | p       | c              | 73               | 9             | 7               | 16            | 16               |
| 127     | Jagtap Sameer Sambhaji        | p       | c              | 36               | 5             | 10              | 15            | 15               |
| 128     | Jamenis Vedang Sameer         | p       | c              | 18               | 2             | 10              | 12            | 12               |
| 129     | Joshi Sarang Sushil           | p       | c              | 6                | 1             | 10              | 11            | 11               |
| 130     | Kadam Pranav Rajesh           | p       | c              | 2                | 0             | 10              | 10            | 10               |
| 131     | Kadam Shishir Shivaji         | p       | c              | 58               | 7             | 9               | 16            | 16               |
| 132     | Kamble Rohit Rajendra         | p       | c              | 2                | 0             | 6               | 6             | 6                |
| 133     | Kale Tanvi Ganesh             | p       | c              | 48               | 6             | 10              | 16            | 16               |
| 134     | Kamble Rutuja Shriram         | p       | c              | 48               | 6             | 10              | 16            | 16               |
| 135     | Kavathekar Devendra Kushaba   | p       | c              | 21               | 3             | 7               | 10            | 10               |
| 136     | Khamiwale Omkar Anil          | p       | c              | 14               | 2             | 7               | 9             | 9                |
| 137     | Korade Shamita Mahesh         | p       | c              | 16               | 2             | 6               | 8             | 8                |
| 138     | Korde Swaroop Chandrashekhar  | p       | c              | 22               | 3             | 9               | 12            | 12               |
| 139     | Kshirsagar Isha Shashank      | p       | c              | 68               | 9             | 7               | 16            | 16               |
| 140     | Kulkarni Isha Milind          | p       | c              | 31               | 4             | 7               | 11            | 11               |
| 141     | Kumar Ayushi Ashwani          | p       | c              | 19               | 2             | 10              | 12            | 12               |
| 142     | Lakshikar Pankaj Omprakash    | P       | c              | 0                | 0             | 10              | 10            | 10               |
| 143     | Lohokare Parth Pareg          | p       | c              | 18               | 2             | 10              | 12            | 12               |
| 144     | Patange Pranav Prafulla       | A       | N              | 0                | 0             | 2               | 2             | 2                |
| 145     | Mahangare Shital Dnyanoba     | p       | c              | 56               | 7             | 10              | 17            | 17               |
| 146     | Makhija Harpreet Tarlochan    | p       | c              | 39               | 5             | 10              | 15            | 15               |
| 147     | Mehendale Abhishek Sanjay     | p       | c              | 37               | 5             | 7               | 12            | 12               |
| 148     | Mohansing Rajput Vinayak      | p       | c              | 0                | 0             | 5               | 5             | 5                |
| 149     | More Vaishnavi Satyavan       | p       | c              | 50               | 6             | 10              | 16            | 16               |
| 150     | Nikam Harshada Shashikant     | p       | c              | 31               | 4             | 9               | 13            | 13               |
| 151     | Nitsure Mayuresh Yashodhan    | p       | c              | 67               | 8             | 10              | 18            | 18               |
| 152     | Oza Neha Bhavarlal            | A       | N              | 0                | 0             | 5               | 5             | 5                |
| 153     | Pacharane Aakansha Laxmikant  | p       | c              | 21               | 3             | 10              | 13            | 13               |
| 154     | Painitkar Nachiket Waman      | p       | c              | 33               | 4             | 5               | 9             | 9                |
| 155     | Pangarkar Akshada Namdeo      | p       | c              | 36               | 5             | 10              | 15            | 15               |



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2015-16

F.Y.Bsc.comp.sci. Mock Test 17-18  
LAB COURSE -II

| ROLL NO | NAME                           | ATTEND. | SUBMISSION | MOCKTEST MARK | OUT OF(10) | WBMARKS (10) | TOTAL (20) | ROUND OFF(20) |
|---------|--------------------------------|---------|------------|---------------|------------|--------------|------------|---------------|
| 156     | Pardeshi Pranit Bhausaheb      | A       | N          | 0             | 0          | 0            | 0          | 0             |
| 157     | Pardeshi Shivan Devendrasingh  | p       | c          | 16            | 2          | 6            | 8          | 8             |
| 158     | Pardeshi Vaishnavi Fanesh      | p       | c          | 26            | 3          | 10           | 13         | 13            |
| 159     | Pataskar Vinit Nishikant       | A       | N          | 0             | 0          | 1            | 1          | 1             |
| 160     | Pawar Tajaswini Vijay          | p       | c          | 23            | 3          | 6            | 9          | 9             |
| 161     | Pokale Pratik Suryakant        | p       | c          | 6             | 1          | 6            | 7          | 7             |
| 162     | Ranpise Mona Shantaram         | p       | c          | 30            | 4          | 7            | 11         | 11            |
| 163     | Raut Sanskriti Pravin          | p       | c          | 24            | 3          | 6            | 9          | 9             |
| 164     | Sahasrabudhe Antara Vivekanand | p       | c          | 54            | 7          | 10           | 17         | 17            |
| 165     | Sajure Tanmay Prashant         | p       | c          | 25            | 3          | 6            | 9          | 9             |
| 166     | Salpekar Atharva Vinayak       | p       | c          | 23            | 3          | 6            | 9          | 9             |
| 167     | Satpute Snehal Sunil           | p       | c          | 36            | 5          | 6            | 11         | 11            |
| 168     | Sawant Satyam Suraj            | P       | c          | 36            | 5          | 7            | 12         | 12            |
| 169     | Shelar Shreya Deepak           | p       | c          | 27            | 3          | 6            | 9          | 9             |
| 170     | Shinde Reshma Manohar          | p       | c          | 42            | 5          | 10           | 15         | 15            |
| 171     | Soman Shruti Mandar            | p       | c          | 54            | 7          | 5            | 12         | 12            |
| 172     | Thite Shefali Balasaheb        | p       | c          | 3             | 0          | 5            | 5          | 5             |
| 173     | Triksale Rohan Anantrao        | p       | c          | 50            | 6          | 10           | 16         | 16            |
| 174     | Madiwale Varad Vikas           | p       | c          | 27            | 3          | 10           | 13         | 13            |
| 175     | Bagade Ojas                    | p       | c          | 25            | 3          | 5            | 8          | 8             |
| 176     | Waingankar Sudeep Prashant     | p       | c          | 62            | 8          | 6            | 14         | 14            |
| 177     | Wani Poonam Bharat             | p       | c          | 7             | 1          | 10           | 11         | 11            |
| 178     | Wanjale Pooja Mahadeo          | p       | c          | 31            | 4          | 6            | 10         | 10            |
| 179     | Rajshirke Neel Shailandra      | p       | c          | 2             | 0          | 2            | 2          | 2             |
| 180     | Waidkar Isha Mangesh           | p       | c          | 37            | 5          | 6            | 11         | 11            |
| 181     | Rasal Shrushti                 | P       | c          | 29            | 4          | 7            | 11         | 11            |
| 182     | Dave Dhawal Prakash            | p       | c          | 12            | 2          | 7            | 9          | 9             |
| 183     | Mandale Diksha                 | p       | c          | 12            | 2          | 6            | 8          | 8             |
| 184     | Karbhare Abhishek Appasaheb    | p       | c          | 46            | 6          | 9            | 15         | 15            |
| 185     | Shalu Mrunalee                 | p       | c          | 0             | 0          | 6            | 6          | 6             |
| 186     | Thete Kaustubh                 | P       | c          | 40            | 5          | 7            | 12         | 12            |
| 187     | Hunda Rekha                    | p       | c          | 18            | 2          | 10           | 12         | 12            |
| 188     | Bhosale Akshata                | p       | c          | 16            | 2          | 7            | 9          | 9             |



  
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2015-16

P.V.G's College of Science, Pune – 411009  
F.Y.B.Sc. (C.S.)

Time: 1.30pm -2.30pm

Maximum Marks: 20

Date: 10/1/2017

Day: Tuesday

*Instructions:*

- All Questions are compulsory.
- Figures to the right indicate full marks.

Q.1. Attempt all questions- Write formula for the following:

[1X20=20 Marks]

- 1) Pmf of poisson
- 2) P(AUB)
- 3) Mean of binomial distribution
- 4) Correlation (r)
- 5) Multiple correlation (R 1.23)
- 6) Median for continuous
- 7) Coefficient of Quartile deviation
- 8) SKb
- 9) Partial correlation  $r_{21.3}$
- 10) Equation of regression plans of  $x_3$  on  $x_1$  &  $x_2$
- 11) Baye's theorem
- 12) Equation of regression line X on Y
- 13) Relation between second central moment with raw moments
- 14) P.M.F of poisson distribution
- 15) Coefficient of range
- 16) Mean & variance of geometric distribution
- 17) Coefficient of skewness
- 18) P.d.f. of uniform distribution
- 19) Third Quartile for continuous data
- 20) Mean for continuous case.



  
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2015-16

P.V.G's College of Science, Pune – 411009  
F.Y.B.Sc. (C.S.)

Time: 1.30pm -2.30pm

Maximum Marks: 20

Date: 9/1/2017

Day: Monday

*Instructions:*

- All Questions are compulsory.
- Figures to the right indicate full marks.

Q.1. Attempt all questions- Write formula for the following:

[1X20=20 Marks]

- 1) Mean for discrete case.
- 2) Range for discrete data
- 3) Pmf of binomial
- 4)  $V(x)$  for individual data
- 5)  $P(A/B)$
- 6) Correlation ( $r$ )
- 7) Multiple correlation (R 2.13)
- 8) Mode for continuous distribution
- 9) Quartile deviation
- 10)  $SK_p$
- 11) Partial correlation  $r_{12.3}$
- 12) Equation of regression plans of  $x_1$  on  $x_2$  &  $x_3$
- 13) Second degree equation
- 14) Equation of regression line  $Y$  on  $X$
- 15) Relation between third central moment with raw moments
- 16) Pdf of exponential distribution
- 17) Mean & p. m. f. of geometric distribution
- 18) Coefficient of Kurtosis
- 19)  $P(A')$
- 20)  $S.D(X)$



  
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2015-16

P.V.G's College of Science, Pune – 411009  
F.Y.B.Sc. (C.S.)  
Statistics practical Formulae Test

Time: 1.00pm -2.00pm

Maximum Marks: 20

Date: 20/12/2017

Day: Wednesday

Instructions:


- All Questions are compulsory.
- Figures to the right indicate full marks.

Q.1. Attempt all questions- Write formula for the following:

[1X20=20 Marks]

- 1) P.d.f. Normal distribution
- 2) Mean for discrete data
- 3) Mean &  $v(x)$  of Geometric distribution
- 4) Correlation
- 5) Multiple correlation (R 1.23)
- 6)  $V(x)$  for continuous
- 7)  $P(A/B)$
- 8) Correlation
- 9) Baye's theorem
- 10) Equation of regression line Y on X
- 11) Relation between second central moment with raw moments
- 12) P.m.f. of poisson distribution
- 13) Range
- 14) Mean of exponential distribution
- 15)  $P(A \cup B)$
- 16) P.m.f. of uniform distribution
- 17) Coefficient of kurtosis
- 18)  $P(A)'$
- 19) Third Quartile for continuous data
- 20) Combined Variance



  
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2015-16

## Year 2016-17 Final Practical Marks (Statistics)

| Roll No | Marks                |               |                  |            | Internal Total Marks(20) | signs  |
|---------|----------------------|---------------|------------------|------------|--------------------------|--------|
|         | Practical Sheets (5) | Exel Test (5) | Formula Test (5) | Project(5) |                          |        |
| ✓ 101   | 1+3                  | 4.5           | 3.25             | 4.5        | 16                       | 24.105 |
| ✓ 102   | 4                    | 3.25          | 2.375            | 5          | 15                       | 15     |
| ✓ 103   | 5                    | 4.25          | 3.375            | 5          | 18                       | Margal |
| ✓ 104   | 4                    | 3.75          | 1.375            | 5          | 14                       | Ques   |
| ✓ 105   | 5                    | 4             | 2.75             | 5          | 17                       | Ques   |
| ✓ 106   | 2                    | 0             | 0                | 5          | 7                        | Ques   |
| ✓ 107   | 4                    | 4.125         | 0.5              | 5          | 14                       | Ques   |
| ✓ 108   | 5                    | 4.5           | 2                | 5          | 17                       | Ques   |
| ✓ 109   | 4                    | 4             | 2                | 5          | 15                       | Ques   |
| ✓ 110   | 5                    | 5             | 1                | 5          | 16                       | Ques   |
| ✓ 111   | 5                    | 3.5           | 2                | 5          | 16                       | Ques   |
| ✓ 112   | 4                    | 3.5           | 2.375            | 5          | 15                       | Ques   |
| ✓ 113   | 0                    | 0             | 0                | 5          | 5                        | Ques   |
| ✓ 114   | 5                    | 4.5           | 4                | 5          | 19                       | Ques   |
| ✓ 115   | 2                    | 0             | 0                | 5          | 7                        | Ques   |
| ✓ 116   | 5                    | 5             | 4.625            | 5          | 20                       | Ques   |
| ✓ 117   | 5                    | 4             | 1.75             | 5          | 16                       | Ques   |
| ✓ 118   | 5                    | 4.75          | 2.75             | 5          | 18                       | Ques   |
| ✓ 119   | 5                    | 4.5           | 2.75             | 5          | 17                       | Ques   |
| ✓ 120   | 1+3                  | 0             | 0                | 5          | 1+8                      | Ques   |
| ✓ 121   | 5                    | 5             | 3.25             | 5          | 18                       | Ques   |
| ✓ 122   | 5                    | 4.75          | 3.125            | 5          | 18                       | Ques   |
| ✓ 123   | 5                    | 5             | 2.25             | 5          | 17                       | Ques   |
| ✓ 124   | 4                    | 2.5           | 1.875            | 5          | 13                       | Ques   |
| ✓ 125   | 5                    | 5             | 4.5              | 5          | 20                       | Ques   |
| ✓ 126   | 0                    | 0             | 0                | (5)        | 5                        | Ques   |
| ✓ 127   | 5                    | 4.75          | 2.5              | 5          | 17                       | Ques   |
| ✓ 128   | 5                    | 4.375         | 2.875            | 5          | 17                       | Ques   |
| ✓ 129   | 5                    | 4.25          | 3.75             | 5          | 18                       | Ques   |
| ✓ 130   | 4                    | 4.5           | 1.75             | 2.5 (5)    | 13                       | Ques   |
| ✓ 131   | 5                    | 4.25          | 3.75             | 5          | 18                       | Ques   |
| ✓ 132   | 5                    | 4.75          | 5                | 5          | 20                       | Ques   |
| ✓ 133   | 5                    | 5             | 4.75             | 5          | 20                       | Ques   |
| ✓ 134   | 4                    | 4.25          | 3.375            | 5          | 17                       | Ques   |
| ✓ 135   | 5                    | 4.75          | 2.75             | 5          | 18                       | Ques   |
| ✓ 136   | 5                    | 4.5           | 4                | 5          | 19                       | Ques   |
| ✓ 137   | 0                    | 0             | 0                | 5          | (5)                      | Ques   |
| ✓ 138   | 4                    | 4.75          | 3.375            | 5          | 17                       | Ques   |
| ✓ 139   | 5                    | 5             | 4.625            | 5          | 20                       | Ques   |
| ✓ 140   | 4                    | 4.25          | 3.5              | 5          | 17                       | Ques   |
| ✓ 141   | 4                    | 5             | 3.625            | 5          | 18                       | Ques   |
| ✓ 142   | 5                    | 5             | 3                | 5          | 18                       | Ques   |
| ✓ 143   | 2+1                  | 0             | 0                | 5          | 2+6                      | Ques   |



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|   |     |     |       |       |     |      |                    |
|---|-----|-----|-------|-------|-----|------|--------------------|
| ✓ | 144 | 5   | 5     | 4.75  | 5   | 20   | <i>Handwritten</i> |
| ✓ | 145 | 3   | 1.5   | 3     | (5) | 13   |                    |
| ✓ | 146 | 5   | 5     | 3     | 5   | 18   | <i>Handwritten</i> |
| ✓ | 147 | 5   | 3.375 | 2.75  | 5   | 16   | <i>Handwritten</i> |
| ✓ | 148 | 5   | 3.75  | 3.25  | 5   | 17   | <i>Handwritten</i> |
| ✓ | 149 | 5   | 5     | 2.625 | 5   | 18   | <i>Handwritten</i> |
| ✓ | 150 | 5   | 2.75  | 2.875 | 5   | 16   | <i>Handwritten</i> |
| ✓ | 151 | 5   | 2.5   | 2.375 | 5   | 15   | <i>Handwritten</i> |
| ✓ | 152 | 5   | 5     | 4.375 | 5   | 19   | <i>Handwritten</i> |
| ✓ | 153 | 5   | 5     | 3.125 | 5   | 18   | <i>Handwritten</i> |
| ✓ | 154 | 5   | 4.5   | 3     | 5   | 18   | <i>Handwritten</i> |
| ✓ | 155 | 5   | 3.25  | 2.125 | 5   | 15   | <i>Handwritten</i> |
| ✓ | 156 | 3   | 3     | 1.625 | 5   | 13   | <i>Handwritten</i> |
| ✓ | 157 | 0   | 0     | 0     | 5   | (5)  |                    |
| ✓ | 158 | 5   | 5     | 4.75  | 5   | 20   | <i>Handwritten</i> |
| ✓ | 159 | 0   | 0     | 0     | 5   | (5)  |                    |
| ✓ | 160 | 4   | 3     | 2.25  | 5   | 14   | <i>Handwritten</i> |
| ✓ | 161 | 4   | 3.5   | 1.125 | 5   | 14   | <i>Handwritten</i> |
| ✓ | 162 | 3   | 1.25  | 0     | 5   | 9    | <i>Handwritten</i> |
| ✓ | 163 | 4   | 4     | 2.5   | 5   | 16   | <i>Handwritten</i> |
| ✓ | 164 | 4   | 3.75  | 1.25  | 5   | (14) | <i>Handwritten</i> |
| ✓ | 165 | 5   | 3.25  | 2.75  | 5   | 16   | <i>Handwritten</i> |
| ✓ | 166 | 5   | 3.5   | 1.625 | 5   | 15   | <i>Handwritten</i> |
| ✓ | 167 | 3   | 0     | 0     | 5   | (8)  |                    |
| ✓ | 168 | 4   | 3.75  | 2.25  | 5   | 15   | <i>Handwritten</i> |
| ✓ | 169 | 0   | 0     | 0     | 5   | (5)  |                    |
| ✓ | 170 | 3   | 3.375 | 1.875 | 5   | 13   |                    |
| ✓ | 171 | 5   | 4.25  | 2.625 | 5   | 17   | <i>Handwritten</i> |
| ✓ | 172 | 4   | 3.25  | 3.125 | 5   | 15   | <i>Handwritten</i> |
| ✓ | 173 | 4   | 2     | 1     | 5   | 12   | <i>Handwritten</i> |
| ✓ | 174 | 1   | 3.25  | 0.75  | 5   | 10   |                    |
| ✓ | 175 | 5   | 5     | 3.5   | 5   | 19   |                    |
| ✓ | 176 | 5   | 3.75  | 1.375 | 5   | 15   | <i>Handwritten</i> |
| ✓ | 177 | 3   | 0     | 0     | 5   | 8    |                    |
| ✓ | 178 | 5   | 4.75  | 4.875 | 5   | 20   | <i>Handwritten</i> |
| ✓ | 179 | 1+2 | 3.25  | 2.125 | 5   | 1+12 |                    |
| ✓ | 180 | 4   | 4.5   | 2.875 | 5   | 16   | <i>Handwritten</i> |
| ✓ | 181 | 1   | 0     | 0     | 5   | (6)  |                    |
| ✓ | 182 | 4   | 4.75  | 2.375 | 5   | 16   | <i>Handwritten</i> |
| ✓ | 183 | 3   | 4.25  | 2.375 | 2.5 | 12   | <i>Handwritten</i> |
| ✓ | 184 | 5   | 4.75  | 3     | 5   | 18   | <i>Handwritten</i> |
| ✓ | 185 | 5   | 5     | 3.125 | 5   | 18   | <i>Handwritten</i> |
| ✓ | 186 | 5   | 5     | 2.5   | 5   | 18   | <i>Handwritten</i> |
| ✓ | 187 | 3   | 2     | 1.5   | 5   | 12   | <i>Handwritten</i> |
| ✓ | 188 | 2+1 | 3.5   | 1.875 | 5   | 2+11 | <i>Handwritten</i> |
| ✓ | 189 | 0   | 0     | 0     | 5   | (5)  |                    |
| ✓ | 190 | 0   | 0     | 0     | 5   | (5)  |                    |

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|      | Practical Sheets (5) | Exel Test (5) | Formula Test (5) | Project | Total Marks(20) | Signs       | Year 2017-18 |
|------|----------------------|---------------|------------------|---------|-----------------|-------------|--------------|
| ✓101 | 5                    | 5             | 5                | 5       | 15+5=20         | Humamhu     |              |
| ✓102 | 5                    | 4             | 1                | 5       | 11+4=15         | Sambhar     |              |
| ✓103 | 5                    | 3             | 1                | 5       | 11+3=14         | 23/10       |              |
| ✓104 | 4                    | 3             | 02               | 5       | 9+5=14          | Tahner      |              |
| ✓105 | 5                    | 5             | 3                | 5       | 13+5=18         | Hauch       |              |
| ✓106 | 5                    | 4             | 2                | 5       | 12+4=16         | Adha        |              |
| ✓107 | 5                    | 4             | 3                | 5       | 13+4=17         | Rubha       |              |
| ✓108 | 5                    | 5             | 3                | 5       | 13+5=18         | Shayam      |              |
| ✓109 | 5                    | 2             | 3                | 5       | 13+2=15         | or          |              |
| ✓110 | 4                    | 3             | 3                | 5       | 12+3=15         | Pichavan    |              |
| ✓111 | 4                    | 3             | 2                | 5       | 11+3=14         | 1/10        |              |
| ✓112 | 5                    | 4             | 3                | 5       | 13+4=17         | Chiragraj   |              |
| ✓113 | 4                    | 5             | 2                | 5       | 11+5=16         | or          |              |
| ✓114 | 5                    | 3             | 2                | 5       | 12+3=15         | Blomade     |              |
| ✓115 | 5                    | 2             | 3                | 5       | 13+2=15         | Tushara     |              |
| ✓116 | 5                    | 2             | 2                | 5       | 12+2=14         | or          |              |
| ✓117 | 5                    | 3             | 2                | 5       | 12+3=15         | A. D. Domb  |              |
| ✓118 | 5                    | 5             | 3                | 5       | 13+5=18         | or          |              |
| ✓119 | 5                    | 4             | 2                | 5       | 12+4=16         | or          |              |
| ✓120 | 5                    | 4             | 1                | 5       | 11+7=18         | or          |              |
| ✓121 | 5                    | 5             | 5                | 5       | 15+5=20         | Shrutika    |              |
| ✓122 | 5                    | 5             | 3                | 5       | 13+5=18         | S.N.G.      |              |
| ✓123 | 5                    | 3             | 02               | 5       | 10+6=16         | P. G. S.    |              |
| ✓124 | 5                    | 5             | 2                | 5       | 12+5=17         | Chiranjeev  |              |
| ✓125 | 5                    | 5             | 2                | 5       | 12+5=17         | or          |              |
| ✓126 | 5                    | 5             | 3                | 5       | 13+5=18         | or          |              |
| ✓127 | 5                    | 5             | 3                | 5       | 13+5=18         | or          |              |
| ✓128 | 5                    | 3             | 3                | 5       | 13+3=16         | Yamun       |              |
| ✓129 | 04                   | 3             | 02               | 5       | 5+9=14          | or          |              |
| ✓130 | 4                    | 4             | 2                | 5       | 11+4=15         | Pakadam     |              |
| ✓131 | 5                    | 3             | 2                | 5       | 12+3=15         | or          |              |
| ✓132 | 03                   | 4             | 02               | 5       | 5+9=14          | or          |              |
| ✓133 | 5                    | 5             | 4                | 5       | 14+5=19         | Pratik      |              |
| ✓134 | 5                    | 5             | 3                | 5       | 13+5=18         | R. Kumbhar  |              |
| ✓135 | 5                    | 5             | 3                | 5       | 13+5=18         | or          |              |
| ✓136 | 4                    | 3             | 1                | 5       | 10+3=13         | Ashwiniwade |              |
| ✓137 | 4                    | 5             | 2                | 5       | 11+5=16         | or          |              |
| ✓138 | 5                    | 4             | 3                | 5       | 13+4=17         | or          |              |
| ✓139 | 5                    | 5             | 4                | 5       | 14+5=19         | or          |              |
| ✓140 | 5                    | 3             | 3                | 5       | 13+3=16         | Pham        |              |
| ✓141 | 4                    | 4             | 1                | 5       | 10+4=14         | Arjunw.     |              |

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|       | Practical Sheets (5) | Exel Test (5) | Formula Test (5) |   |           |                |
|-------|----------------------|---------------|------------------|---|-----------|----------------|
| ✓ 142 | 5                    | 5             | 4                | 5 | $14+5=19$ | Tankar         |
| ✓ 143 | 4                    | 4             | 3                | 5 | $12+4=16$ | Tankar         |
| ✓ 144 | 0                    | 0             | 0                | 0 | 0         |                |
| ✓ 145 | 5                    | 5             | 4                | 5 | $14+5=19$ | Shital         |
| ✓ 146 | 5                    | 5             | 4                | 5 | $14+5=19$ | Abinav         |
| ✓ 147 | 5                    | 5             | 3                | 5 | $13+5=18$ | A. M. K. D. A. |
| ✓ 148 | 4                    | 5             | 2                | 5 | $11+5=16$ | Shital         |
| ✓ 149 | 5                    | 5             | 4                | 5 | $14+5=19$ | Shital         |
| ✓ 150 | 5                    | 4             | 3                | 5 | $13+4=17$ | Shital         |
| ✓ 151 | 5                    | 4             | 4                | 5 | $14+4=18$ | Shital         |
| ✓ 152 | 5                    | 0             | 2                | 5 | $12+0=12$ | Shital         |
| ✓ 153 | 5                    | 4             | 2                | 5 | $12+4=16$ | Shital         |
| ✓ 154 | 5                    | 4             | 3                | 5 | $13+4=17$ | Shital         |
| ✓ 155 | 5                    | 3             | 4                | 5 | $14+3=17$ | Shital         |
| ✓ 156 | 0                    |               | 0                | 0 | 0         |                |
| ✓ 157 | 5                    | 4             | 1                | 5 | $11+4=15$ | Shital         |
| ✓ 158 | 5                    | 5             | 5                | 5 | $15+5=20$ | Shital         |
| ✓ 159 | 0+4                  | 4             | 0                | 5 | $5+8=13$  | Shital         |
| ✓ 160 | 5                    | 4             | 0.4              | 5 | $10+8=18$ | Shital         |
| ✓ 161 | 4                    | 5             | 2                | 5 | $11+5=16$ | Shital         |
| ✓ 162 | 5                    | 3             | 3                | 5 | $13+3=16$ | Shital         |
| ✓ 163 | 4                    | 2             | 3                | 5 | $12+2=14$ | Shital         |
| ✓ 164 | 5                    | 5             | 3                | 5 | $13+5=18$ | Shital         |
| ✓ 165 | 5                    | 3             | 3                | 5 | $13+3=16$ | Shital         |
| ✓ 166 | 5                    | 4             | 2                | 5 | $12+4=16$ | Shital         |
| ✓ 167 | 4                    | 3             | 3                | 5 | $12+3=15$ | Shital         |
| ✓ 168 | 5                    | 5             | 2                | 5 | $12+5=17$ | Shital         |
| ✓ 169 | 5                    | 5             | 2                | 5 | $12+5=17$ | Shital         |
| ✓ 170 | 5                    | 4             | 5                | 5 | $15+5=20$ | Shital         |
| ✓ 171 | 5                    | 5             | 4                | 5 | $14+5=19$ | Shital         |
| ✓ 172 | 4                    | 3             | 0                | 5 | $9+5=14$  | Shital         |
| ✓ 173 | 5                    | 4             | 4                | 5 | $14+4=18$ | Shital         |
| ✓ 174 | 5                    | 4             | 1                | 5 | $11+4=15$ | Shital         |
| ✓ 175 | 5                    | 3             | 1                | 5 | $11+3=14$ | Shital         |
| ✓ 176 | 5                    | 3             | 2                | 5 | $12+3=15$ | Shital         |
| ✓ 177 | 5                    | 3             | 1                | 5 | $11+3=14$ | Shital         |
| ✓ 178 | 5                    | 5             | 4                | 5 | $14+5=19$ | Shital         |
| ✓ 179 | 4                    | 3             | 0.1              | 5 | $9+4=13$  | Shital         |
| ✓ 180 | 5                    | 5             | 2                | 5 | $12+5=17$ | Shital         |
| ✓ 181 | 5                    | 2             | 2                | 5 | $12+2=14$ | Shital         |

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| Roll No | Marks                |               |                  |            | Total Marks(20) | signs    |
|---------|----------------------|---------------|------------------|------------|-----------------|----------|
|         | Practical Sheets (5) | Exel Test (5) | Formula Test (5) | Project(5) |                 |          |
| ✓ 182   | 4                    | 4             | 2                | 5          | 11 + 4 = 15     | Fajal    |
| ✓ 183   | 4                    | 3             | 0 3              | 5          | 9 + 6 = 15      | W        |
| ✓ 184   | 4                    | 3             | 2                | 5          | 11 + 3 = 14     | Kaathasa |
| ✓ 185   | 4                    | 3             | 0 1              | 5          | 9 + 4 = 13      | Rishu    |
| ✓ 186   | 4                    | 4             | 3                | 5          | 12 + 4 = 16     | Khite    |
| ✓ 187   | 5                    | 2             | 3                | 5          | 13 + 3 = 15     | Rishi    |
| 188     | 5                    | 3             | 2                | 5          | 12 + 3 = 15     | ARA      |
|         |                      |               |                  |            |                 |          |
|         |                      |               |                  |            |                 |          |



  
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## 1.6 HOME ASSIGNMENTS FOR FY STUDENTS

### Assignment I

Class: F. Y. B. Sc. (Comp. Sci.)

Subject: M II

- Q 1) Define Relation , Function .  
Q 2) Show that any two consecutive integers are relatively prime .  
Q 3) State Euclid's Lemma.  
Q 4) Find integers a, b, c such that  $c \mid (ab)$ . But neither  $c \mid a$  nor  $c \mid b$ .  
Q 5) If a, b, c, d are integers such that  
 $a \mid b$ ,  $b \mid c$  then show that  $a \mid c$   
Q 6)  $a \mid b$ ,  $c \mid d$  then show that  $ac \mid bd$   
Q 7) On set of integers Z define a relation R by  $xRy$  if  $x^2 = y^2$ .  
Show that R is an equivalence relation .  
Q 8) Hence find [1], [0], [-125], [500], [-1] in problem of Q7.  
Q 9) How many distinct equivalence classes are there in problem of Q7?  
Q 10) Represent following relation R defined on set  $A = \{1,2,3,4,5\}$  by digraph  
Where  $R = \{(1,2), (2,2), (2,4), (2,5), (4,1), (4,2), (5,1)\}$ .  
Q 11) Is R in Q10) transitive? If not, name the method used to find it's transitive closure.  
Q 12) Find equivalence relation R corresponding to following partition P of set  
 $A = \{x, y, z, t\}$  where  $P = \{\{y\}, \{t\}, \{x, z\}\}$ .  
Q 13) Find partition P induced by equivalence relation  
 $R = \{(1,1), (2,2), (4,4), (3,3), (1,3), (3,1), (2,3), (3,2), (1,2), (2,1)\}$   
Q 14) Find remainder when  $35^{121}$  is divided by 13.  
Q 15) On set of integers if relation R is defined as  $aRb$  if 'a - b' is divisible by 5'  
Then show that R is an Equivalence Relation.  
Q 16) Find  $d = \gcd(540, 126)$ . Also find x & y such that  $d = 540x + 126y$ .  
Q 17) Using Warshall's Algorithm find transitive closure of  
 $R = \{(1, 2), (3, 4), (3, 2), (4, 5), (5, 3), (1,5)\}$  on set  $A = \{1, 2, 3, 4, 5\}$   
Q 18) Using Euclidean Algorithm only find g.c.d. d' of 7469 and 2464 and find  
integers x & y such that  $d = 7469x + 2464y$ .  
Q 19) Show that the equation  $2x + y = 100$  dose not have any solution where  
g. c. d.(x, y) = 30.  
Q 20) Let  $A = \{1, 2, 3, 4, 5, 6\}$ . Define relation R on A by  $xRy$  iff  $x \geq y$ . Write  
all elements of R.  
c) Construct composition table for  $(Z_6, \times_6)$ .  
Q 21) Define g. c. d. of two integers a, b.  
Q 22) Define relatively prime integers.  
Q 23) Using Euclidean Algorithm only find g.c.d. of 3587 and 1819.  
Hence find integers x, y such that  $d = 3587x + 1819y$ .  
Q 24) Which of following relations defined on set A are reflexive?symmetric? transitive?  
antisymmetric?  
 $A = \{a, b, c, d, e\}$   
i)  $R = \{(a,b), (b,a), (c,d), (d,c)\}$ .  
ii)  $R = \{(a, b), (a, c), (a, d), (d, a)\}$ .  
iii)  $R = \{(c, c), (a, c), (a, d), (c, a), (d, a)\}$ .  
iv)  $R = A \times A$ .  
v)  $R = \{(a,a),(b,b),(c,c),(a,c), (e,d)\}$ .  
Q 25) Show that  $13 \mid (6^{12} - 1)$



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Assignment 2:  
chap: Divisibility in Integers.

Q.1) Prove by mathematical induction,  
 $1^2 + 3^2 + 5^2 + \dots + (2n-1)^2 = \frac{n(2n-1)(2n+1)}{3}, \forall n \geq 1$

Q.2)  $8^n - 3^n$  is multiple of 5  $\forall n \geq 1$ , Prove by mathematical induction.

Q.3) Let  $a_n$  be the recursive relation defined by,  
 $a_n = 2a_{n-1} + a_{n-2}, \forall n \geq 2$  with initial conditions  $a_0 = 1, a_1 = 2$ , Prove that,  
 $a_n \leq \left(\frac{5}{2}\right)^n$ .

Q.4) Define G.C.D.

Q.5) Show that  $\sqrt{5}$  is not a rational number.

Q.6) Prove, if  $a|b$  and  $a|c$  then  $a|bx+cy$ .

Q.7) Find the gcd of 7677 and 4647. Hence find 'm' and 'n' such that  $d = 7677m + 4647n$ .

Q.8) Show that we can find infinitely many pairs of  $x$  and  $y$  satisfying  $x+y=100$  and  $(x,y)=5$ .

Q.9) Find the remainder when  $5^{2009} + 185$  is divided by 11.

Q.10) Find addition and multiplication table for



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Assignment 03  
Chap 02: Binary Operations and Groups.

Q.1) Define the following:

- Group
- Semi-group.
- Sub-group. (Trivial & proper)
- Monoid
- finite & Infinite groups.
- order of an element in group.
- Cyclic Group.
- Permutation.

Q.2) Show that the set  $S = \{a + b\sqrt{2} \mid a, b \in \mathbb{Z}\}$  is a group under multiplication.

Q.3) Let  $\alpha$  and  $\beta$  are two permutations in  $S_5$  such that,

$$\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 4 & 5 & 2 \end{pmatrix}, \quad \beta = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 4 & 1 & 3 & 5 \end{pmatrix}$$

Find orders of  $\alpha$  &  $\beta$ .

Q.4) Let  $\mathbb{Q}^+$  be set of all positive rational numbers. Let  $a, b \in \mathbb{Q}^+$ . Define  $*$  by  $a * b = \frac{a \cdot b}{7}$ . Show that  $(\mathbb{Q}^+, *)$  is abelian group.

Q.5) If  $\sigma$  is permutation on  $A = \{1, 2, 3, 4, 5, 6\}$  defined by  $\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 5 & 4 & 1 & 6 & 2 \end{pmatrix}$  write  $\sigma$  as product of transpositions. Find order of  $\sigma$  & find  $\sigma^{-1}$ .

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Term II Assignment - I 2018-19  
Mathematics - II (Algebra & Calculus)  
Chap 4: Continuity & Differentiability

- 1) State and prove Rolle's Theorem.
- 2) State and prove Lagrange's Mean Value Theorem.
- 3) State and prove Cauchy's Mean Value Theorem.
- 4) Using Lagrange's Mean Value Theorem, find approximate value of  $\sqrt{88}$ .

5) Discuss the continuity of  $f(x)$ , where,

$$f(x) = \begin{cases} 2x+1, & \text{if } x \leq 1 \\ x^2, & \text{if } 1 < x \leq 2 \end{cases}$$

6) Evaluate  $\lim_{n \rightarrow 0} \frac{2^n - 1}{3^n - 1}$ .

7) Verify Lagrange's Mean Value theorem for,

$$f(x) = x(x-1)(x-2), \quad x \in [0, 2]$$

8) Find the value of  $\alpha$  if function is continuous in  $(-2, 1)$

$$f(x) = \begin{cases} 4x+5, & -2 < x < 0 \\ 2x+\alpha, & 0 \leq x < 1 \end{cases}$$

9) Evaluate  $\lim_{x \rightarrow \infty} (1 + \frac{1}{x})^x$

10) Evaluate  $\lim_{x \rightarrow 0} (\frac{1}{x} - \cot x)$

11) Evaluate  $\lim_{x \rightarrow 0} \left[ \frac{1}{x} - \frac{1}{e^x - 1} \right]$

12) Verify Cauchy's mean value theorem for the functions  $f(x) = x^2$ ,  $g(x) = x^4$  in  $[a, b]$  where  $a$  &  $b$  are positive real numbers.







Q.13) Using Lagrange's mean value theorem, show that  
 $1 - \frac{a}{b} < \log \frac{b}{a} < \frac{b}{a} - 1$ , for  $0 < a < b$

14) For functions,  $f(x) = x^2 + 2$ ,  $g(x) = x^3 - 1$ , test whether Cauchy's mean value theorem holds in the interval  $(1, 2)$  and if so find value of  $c$ .

15) Apply Rolle's Theorem to  $f(x) = (4-x) \log x$ ,  $x \in [1, 4]$  and show that  $x \log x = 4 - x$  for  $x \in (1, 4)$ .



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Assignment 1  
Class : S.Y.B.Sc. Subject M I

Write True or False with justification. (For questions 1 to 23)

- $V = \{ (x, y) / , x, y \in \mathbb{R} \}$  is a vector space w. r. t.  $+$  &  $\cdot$  defined by  $u + v = (x_1 + x_2, y_1 + y_2)$ ,  $k \cdot u = (kx_1, ky_1)$  where  $u = (x_1, y_1)$  &  $v = (x_2, y_2)$
- $V = \{ (x, y) / , x, y \in \mathbb{R} \}$  is a vector space w. r. t.  $+$  &  $\cdot$  defined by  $u + v = (x_1 + x_2, y_1 + y_2)$ ,  $k \cdot u = (kx, 0)$  where  $u = (x_1, y_1)$  &  $v = (x_2, y_2)$
- The set of all the points on the line  $y = 5x$  is a subspace of  $\mathbb{R}^2$  w. r. t. usual addition and scalar multiplication
- The set of all the points on the line  $y = 4x - 9$  is a subspace of  $\mathbb{R}^2$  w. r. t. usual co-ordinate wise addition and scalar multiplication.
- $W = \{ (x, y, z) / \text{either } x=y \text{ or } y=z, x, y, z \in \mathbb{R} \}$  is a subspace of  $\mathbb{R}^3$  w. r. t. usual addition and scalar multiplication
- $W = \left\{ \begin{bmatrix} a & a \\ 0 & 0 \end{bmatrix} \mid a \in \mathbb{R} \right\}$  is a subspace of  $(M_{2 \times 2}(\mathbb{R}), +, \cdot)$
- Union of two subspaces is also a subspace.
- The matrix  $A = \begin{bmatrix} 3 & 0 \\ 0 & 2 \end{bmatrix}$  is a linear combination of  $B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  and  $C = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$
- $S = \{ (1, 2, 0), (1, 1, 4) \}$  are linearly dependent vectors
- $S = \{ (1, 0, 3), (-1, 2, -1), (-1, 1, 1) \}$  are linearly dependent vectors
- $S = \{v_1, v_2, v_3, v_4, v_5\}$  a subset of  $\mathbb{R}^4$  is a basis for  $\mathbb{R}^4$
- $S = \{ (1, 2, 0), (0, 0, 4) \}$  is a basis for  $\mathbb{R}^3$

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13.  $S = \{ (1, 1, 1), (-1, 0, -1), (-1, 2, 3) \}$  is a basis for  $\mathbb{R}^3$
14.  $S = \{ (1, 1, 1), (0, 0, 4), (2, 2, -2) \}$  is a basis for  $\mathbb{R}^3$
15.  $S = \{ (1, 2), (4, -3) \}$  is a basis for  $\mathbb{R}^2$
16.  $S = \{ (1, 2), (-4, -8) \}$  is a basis for  $\mathbb{R}^2$
17.  $S = \{ (0, 0, 0, 0), (0, 0, 4, 0), (1, 2, 3, 4), (2, 1, 0, 1) \}$  is a basis for  $\mathbb{R}^4$
18.  $S = \{ t^3 + t^2 + 1, t^3 - 1, t^3 + t^2 + t \}$  is a basis for  $P_3$
19.  $B = \{ t^2 + t, t - 1, t + 1 \}$  is a basis for  $P_2$
20.  $S = \{ (1, 2, 0), (0, 0, 4) \}$  is a basis for  $\mathbb{R}^3$
21. Find co-ordinates of  $v = (1, 2)$  relative to basis  $B = \{ (3, -5), (-2, 7) \}$
22. Find dimension of vector space  $(M_{m \times n}(\mathbb{R}), +, \cdot)$
23. If  $v$  is a vector in  $\mathbb{R}^2$  such that  $[v]_B = (2, 0)$ ,  $B = \{ (1, 1), (2, 3) \}$  then find  $v$ .
24. Give an example of infinite dimensional vector space.

  
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Class: S.Y.B.Sc.

Subject: M I

- 1) Write down transformation matrices for following two dimensional (2 D) transformation.
- Scaling in X direction by a units
  - Scaling in Y directions by b units
  - Scaling in X & Y directions by a & b units respectively
  - Uniform scaling by a units
  - Reflection through X axis
  - Reflection through Y axis
  - Reflection through origin
  - Reflection through line  $y = x$ .
  - Shearing in X direction by a units
  - Shearing in Y direction by b units
  - Shearing in X & Y directions by a & b units respectively
  - Rotation about origin through an angle  $\theta$  in anticlockwise (counterclockwise) direction
  - Rotation about origin through an angle  $\theta$  in clockwise direction
  - Translation in X direction by m units
  - Translation in Y direction by n units
  - Translation in X & Y directions by m & n units respectively

- 2) Identify 2D transformation given by

$$[T] = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 2 & 5 & 1 \end{bmatrix}$$

- 3) Identify 2D transformation given by

$$[T] = \begin{bmatrix} 1 & -2 \\ 5 & 1 \end{bmatrix}$$

- 4) Identify 2D transformation given by

$$[T] = \begin{bmatrix} -2 & 0 \\ 0 & 1 \end{bmatrix}$$

- 5) Identify 2D transformation given by

$$[T] = \begin{bmatrix} 4 & 0 \\ 0 & -1 \end{bmatrix}$$

- 6) Identify 2D transformation given by

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$$[T] = \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

- 7) Apply Shearing in X-direction proportional to y co-ordinate by 2 units on line joining A[1 2], B[2 3].
- 8) Apply Shearing in Y-direction proportional to x co-ordinate by -5 units on A[4 2].
- 9) Apply Shearing in X-direction proportional to y co-ordinate by -10 and shearing in Y-direction proportional to x co-ordinate by 3 units on A[-7 2]
- 10) Apply Reflection about line  $y = x$  on A[-1 3].
- 11) Apply Reflection about line  $y = -x$  on A[-1 3].
- 12) Write Transformation Matrix for Overall scaling by 6 units
- 13) The circle with radius 2 units is transformed by using transformation matrix,

$$[T] = \begin{bmatrix} 3 & 1 \\ 1 & 2 \end{bmatrix}$$

Obtain the area of transformed figure

- 14) Write transformation matrix to convert circle  $x^2 + y^2 = 36$  to its half size.
- 15) Write transformation matrix to convert circle  $x^2 + y^2 = 1$  into ellipse with length of semi major axis 4 and length of semi major axis 6. Obtain the area of transformed figure.
- 16) Write transformation matrix for translation in X & Y directions by units 2 & -3 respectively.
- 17) Write transformation matrix that transforms point P[-3 10] to the origin.
- 18) Suppose the line segment between the points A[2 5] and B[-3 8] is transformed to the line segment A\*B\* using transformation T

$$[T] = \begin{bmatrix} 6 & 4 \\ 2 & -1 \end{bmatrix}$$

Find midpoint of line segment A\*B\* .

- 19) Suppose the line segment between the points A[2 1] and B[-3 -3] is transformed to the line segment A\*B\* using T. M.

$$[T] = \begin{bmatrix} -1 & 1 \\ 2 & 1 \end{bmatrix}$$

Find the slope, intercept & hence equation of A\*B\* .

- 20) What will be the effect, if order of a sequence of transformation is changed, in combined transformation?
  - i) Scaling in X- coordinate by factor 2
  - ii) Rotation about origin by an angle  $45^\circ$
- 21) Find concatenated transformation matrix if following sequence of transformation is applied  
Apply this transformation on the point P[ 3 2 ]
  - i) Scaling in Y- coordinate by factor 2.
  - ii) Rotation about origin through an angle  $60^\circ$  in clockwise direction.
  - iii) Translation in X & Y directions by 3 & -4 units respectively.
- 22) Write algorithm for rotation about an arbitrary point through angle  $\theta$  .  
Rotate the line joining A[2 3] & B[1 5] through angle  $50^\circ$  about point P[4 1]



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Class : S.Y.B.Sc. Subject M I Assignment 2

Write True or False with justification. (For questions 1 to 25)

1. Define row space, column space, null space

2. Find matrix related to Q:  $x^2 + y^2 + 4xy$

3. Write any two properties of eigen values.

4. Write quadratic form related to following symmetric matrix.

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

5. If  $G = \{1, -1, i, -i\}$  is a group w. r. t. multiplication and if  $H = \{1, -1\}$  is a subgroup of  $G$ . Then find all distinct cosets of  $H$  in  $G$ .

6. Find basis for null space of A

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 2 & 5 \\ 3 & 6 & 9 \end{pmatrix}$$

7. Find basis for row space of A

$$A = \begin{pmatrix} 2 & 0 & 1 \\ -1 & 2 & 5 \\ 3 & 2 & 3 \end{pmatrix}$$



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8. Find basis for column space of A

$$A = \begin{pmatrix} -1 & 3 & 2 \\ 1 & 2 & -3 \\ 2 & 1 & -2 \end{pmatrix}$$

9. Find basis for null space, row space, column space of A. Find rank and nullity of following matrix

$$A = \begin{pmatrix} 1 & -1 & 3 \\ 5 & -4 & -4 \\ 7 & -6 & 2 \end{pmatrix}$$

10. Determine if  $B = \begin{pmatrix} 8 \\ 7 \end{pmatrix}$  is in column space of  $\begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$

11. Find eigen values & vectors of

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



  
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### 1.7 PRACTICE TEST FOR FY STUDENTS

**P.V.G's College of Science, Pune 9**  
F.Y.B.Sc. (Computer Science) Practice Test Time Table, 2017-18

| Sr.No | Date       | Timing    | Paper |
|-------|------------|-----------|-------|
| 1     | 30/11/2017 | 3.15-4.15 | CSI   |
| 2     | 8/12/2017  | 3.15-4.15 | CSII  |
| 3     | 15/12/17   | 3.15-4.15 | EI    |
| 4     | 5/1/2018   | 3.15-4.15 | EII   |
| 5     | 12/1/2018  | 3.15-4.15 | SI    |
| 6     | 19/1/2018  | 3.15-4.15 | SII   |
| 7     | 25/1/2018  | 3.15-4.15 | MI    |
| 8     | 2/2/2018   | 3.15-4.15 | MII   |



*S. Dhruv*  
I/C Principal  
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*mg*  
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F.Y.B.Sc. (Computer Science) PRACTICE TEST 2017-18

File Organization and Fundamentals of Databases  
Computer Science Paper II

Time: 3.15am – 4.15 am

Maximum Marks: 30

Date: 8.12.2017

Day: Friday

N.B:-

- All questions are compulsory.
- Use of non-programmable calculator is allowed.
- Draw neat diagram wherever necessary.
- Figures to the right indicate full marks

Q.1 Attempt all of the following.

(4x2=8)

- What is strong entity and weak entity?
- What is super key and candidate key?
- What is fixed length record and variable length records?
- Which are the data types in SQL?

Q.2 Answer any FOUR of the following.

(4x4=16)

- What are DDL, DCL, DML, and TCL?
- What is DBA? Explain its function?
- State different File organization and explain heap file organization in detail?
- Write the difference between Generalization and Specialization.
- Explain and distinguish among the terms primary key, Candidate key and super key?
- What is Data Models? Explain any two types of it.

Q.3 Draw the 3NF form for the relations and Create the following tables (primary keys are underlined).

Sales\_order(s\_order\_no, s\_order\_date)

Client(client\_no, name, address)

A client can give one or more sales\_orders, but a sales\_order belongs to exactly one client.

Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

- insert 2 client records into client table.
- insert 3 sales records for each client
- change order date of client\_no 'C004' to 12/4/08
- Delete all sale records having order date before 10th feb. 08

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F.Y.B.Sc. (Computer Science) PRACTICE TEST 2017-18

Discrete Mathematics

Mathematics Paper I

Time: 3.15am – 4.15 am

Maximum Marks: 30

Date: 25.1.2018

Day: Friday

N.B:-

- All questions are compulsory.
- Use of non-programmable calculator is allowed.
- Draw neat diagram wherever necessary.
- Figures to the right indicate full marks

Q.1 Attempt all of the following.

(4x2=8)

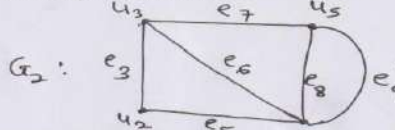
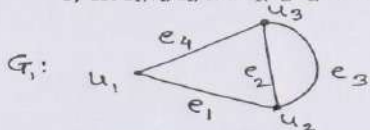
- 1) Define the self complementary graph.
- 2) Does there exist a binary tree with 2146 vertices?
- 3) Give an example of Balanced digraph.
- 4) State True or False. "There are 60 edges in a graph with 10 vertices each of degree 6."

Q.2 Answer any FOUR of the following.

(4x4=16)

- 1) Draw the complete bipartite graph  $K_{3,2}$  and find its vertex connectivity and edge connectivity.
- 2) Find maximum and minimum height of a binary tree with 13 vertices and draw such tree.

3) Let  $G_1(V_1, E_1)$  and  $G_2(V_2, E_2)$  be two graphs then find  $G_1 \oplus G_2$  and  $G_1 \cup G_2$



4) Give an example of a graph which is (i) Eulerian but not Hamiltonian

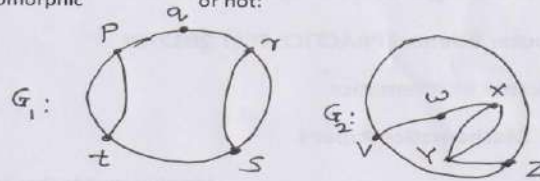
(ii) Symmetric digraph

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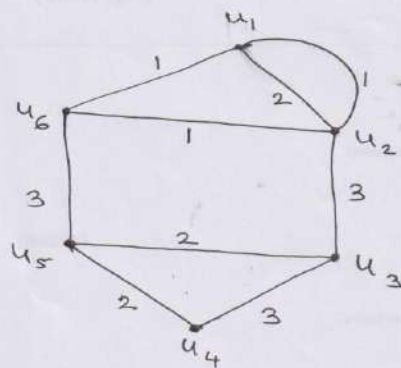


5) Let  $G_1(V_1, E_1)$  and  $G_2(V_2, E_2)$  be two graphs then check whether  $G_1$  and  $G_2$  are isomorphic or not:



(1x6 = 6)

Q.3 Using Kruskal's Algorithm, find shortest spanning tree of the following graph.



  
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F.Y.B.Sc. (Computer Science) PRACTICE TEST 2017-18

Algebra and Calculus

Mathematics Paper II

Time: 3.15am – 4.15 am

Maximum Marks: 30

Date: 2.2.2018

Day: Friday

N.B:-

- All questions are compulsory.
- Use of non-programmable calculator is allowed.
- Draw neat diagram wherever necessary.
- Figures to the right indicate full marks

Q.1 Attempt all of the following.

(4x2=8)

- If  $(G, \cdot)$  is a group such that  $(a \cdot b)^2 = a^2 \cdot b^2 \forall a, b \in G$  is a abelian group.
- If  $y = 1/(3x + 5)$  then find  $y_n$ .
- Define row rank and column rank.
- State Cauchy's mean value theorem.

Q.2 Answer any FOUR of the following.

(4x4=16)

- Solve the linear system  $AX = B$  by LU factorization method.  
$$\begin{aligned} 2x - 2y - 2z &= -4 \\ 2y + 2z &= -2 \\ -x + 5y + 2z &= 6 \end{aligned}$$
- Find  $\alpha$  &  $\beta$  if the function  $f(x)$  is continuous on  $(-3, 5)$  where  
$$\begin{aligned} f(x) &= x + \alpha && \text{if } -3 < x < 1 \\ &= 3x + 2 && \text{if } 1 \leq x < 3 \\ &= \beta + x && \text{if } 3 \leq x < 5 \end{aligned}$$
- Evaluate  $\lim_{x \rightarrow 0} (\log \sin x) / \cot x$
- If  $f(x)$  is a polynomial of degree 5 such that  $f(1) = f'(1) = f''(1) = 0$ ,  $f'''(1) = 18$ ,  $f^{IV}(1) = 72$   $f^V(1) = 120$  then find  $f(2)$ .
- Using Maclaurin's series expand real valued function  $f(x) = 1/(1-x)$ .

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Q.3

1. State and prove Leibnitz's theorem. (1x6=6)
2. Write down geometric interpretation of Roll's mean value theorem.



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## **2. SPECIAL PROGRAMS FOR ADVANCED LEARNERS**



## 2.1 Book Bank Scheme

| Sl. No. | Name              | Address                                                   | Last Year Percentage | Book Nos                                                                        | Cost            | Annual Income | Resi No | Mob. No/ student / parent | email-id                       | sign & Date |
|---------|-------------------|-----------------------------------------------------------|----------------------|---------------------------------------------------------------------------------|-----------------|---------------|---------|---------------------------|--------------------------------|-------------|
| 1       | Naik Laxmi N.     | S. No. 629/2, Kamthe chawl, near Yaga-499 society Pune-37 | 63%                  | FY 140401<br>140402<br>140403<br>140404<br>140405<br>140406<br>140407<br>140408 | open<br>Maratha | 50,000        |         | 9765850316                | mayuzinaik @Naik 775@gmail.com | 18/5/15     |
| 2       | Chaudhari Parvati | Sukhsagar, Nagar, Part 2, 102E-11, Kharaj                 | 63%                  | FY 140201<br>140202<br>140203<br>140204<br>140205<br>140206<br>140207           | open<br>Marathi | 80,000        |         | 8303462672                |                                | 18/5/15     |
| 3       | Naik Yashwantrao  | Sukhsagar, Nagar, Part 2, 102E-11, Kharaj                 | 56%                  | FY 140101<br>140102<br>140103<br>140104<br>140105<br>140106<br>140107           | open<br>Marathi | 45,000        |         | 9600274431                |                                | 18/5/15     |
| 4       | Naik Yashwantrao  | Sukhsagar, Nagar, Part 2, 102E-11, Kharaj                 | 67%                  | FY 140301<br>140302<br>140303<br>140304<br>140305<br>140306<br>140307           | open<br>Marathi | 30,000        |         | 9970066119                |                                | 18/5/15     |

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| Sl. No. | Roll No. | Gr. Name      | Address                                            | Percentage | CGPA                                                                            | Annual Income             | Res. No. | Phone No.  | email id.                 | Sign                                      |
|---------|----------|---------------|----------------------------------------------------|------------|---------------------------------------------------------------------------------|---------------------------|----------|------------|---------------------------|-------------------------------------------|
| 5       | 148      | Sandhya Patil | Br No. 636<br>Palle Vaikhi<br>Bibheradi<br>Pune 37 | 63.38      | Fy 140501<br>140502<br>140503<br>140504<br>140505<br>140506                     | Open 60,000/-<br>(Wardha) |          | 9175535490 | S.Sukhate<br>sk@gmail.com | <i>[Signature]</i><br>13/8/14             |
| 6       | 45       | Dhondra Singh | Anandnagar<br>Sukhnagar<br>Pune 46                 | 65         | Fy 140601<br>140602<br>140603<br>140604<br>140605<br>140606<br>140607<br>140608 | Open 80,000/-<br>(Marath) |          | 9982185587 | -                         | <i>[Signature]</i><br>Returned on 18/5/15 |
| 7       | 195      | Shital dhage  | Sukhsagar<br>Nagar, Kolhapur<br>Pun 46             | 72         | Fy 140701<br>140702<br>140703<br>140704<br>140705<br>140706<br>140707<br>140708 | Open 70,000/-<br>(Marath) |          | 9011765551 | -                         | <i>[Signature]</i><br>Returned on 18/5/15 |

  
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| Sl. No. | Roll No. | Name       | Address                                                       | Last year                                      |           | Book val.                                                                                            | Date | Type                   | Annual Income | Reg. no.    | Web. no.                 | Gr. multi. 10 | Sign    |
|---------|----------|------------|---------------------------------------------------------------|------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------|------|------------------------|---------------|-------------|--------------------------|---------------|---------|
|         |          |            |                                                               | Percentage                                     | Fee       |                                                                                                      |      |                        |               |             |                          |               |         |
| 3       | 107      | Anuja      | Sukhagar Nagar<br>Manchar Bldg Part-2, lane<br>no. 2, Pune-46 | 52.15%                                         | Fy-140801 | 140802<br>140803<br>140804<br>140805<br>140806<br>140807<br>140808                                   |      | Open<br>(Manch) 80,000 |               |             | 9764090211               | -             | Student |
|         |          |            |                                                               |                                                |           |                                                                                                      |      |                        |               | Returned on | 19.5.15                  |               | Student |
| 9       | 157      | Washimabai | Appas depe<br>sawpril satywan, near                           | 48.00%                                         | Fy-140901 | 140902<br>140903<br>140904<br>140905<br>140906<br>140907<br>140908                                   |      | SC<br>(Manch)          | 40,000        |             | 9766690310               |               | Student |
|         |          |            |                                                               |                                                |           |                                                                                                      |      |                        |               | Returned on | 18.5.15                  |               | Student |
| 10      | 103      | Shinde     | Dr. Yashwanth<br>Sawabh<br>Kadley                             | S.F.P.S.<br>nagar soc.<br>Dadrawadi<br>pune-09 |           | Fy-141001<br>Fy-141002<br>Fy-141003<br>Fy-141004<br>Fy-141005<br>Fy-141006<br>Fy-141007<br>Fy-141008 |      | (SC)<br>Manch          | 60,000        |             | 9522121113<br>8766220510 |               | Student |

  
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| Sr. No./Roll No. | Name              | Address                                                                         | last year percentage | 89%    | Collg | Annual Income | Res. No    | mob. no.   | email id               | sign    |
|------------------|-------------------|---------------------------------------------------------------------------------|----------------------|--------|-------|---------------|------------|------------|------------------------|---------|
| 1.               | Kadam Kajal       | mane bul. lah but                                                               | 68.40%               | 14401  | open  | 65,000        | 9371061330 | 932872000  | kajalkadam13@gmail.com | Kajal   |
| ✓                | sohetzoo          | stop Dhankawadi Pune-43                                                         | 14402                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14403                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14404                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14405                |        |       |               |            |            |                        |         |
| 2.               | Kadam Rishika     | sr. No. 17/11, mane bul                                                         | 60.91%               | 14401  | open  | 38,000        | 780446131  | 976024843  | krushi433@gmail.com    | Rishika |
| ✓                | vasantxoo         | 4th, 2nd floor, opp. police station, chank wadi, pune-43                        | 14402                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14403                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14404                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14405                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14406                |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 14407                |        |       |               |            |            |                        |         |
| 3.               | 167 Bhole Rasika  | Aradhana Society, Shrikant                                                      | 55.54%               | 140101 | o8c   | 98,000/-      | 9960044568 | 9930671072 |                        | Rasika  |
| ✓                |                   | Fl. No. 18, Sr. No. 20/1, opp. K. K. Market, Panyaji Nagar, Dhankawadi, Pune-43 | 140102               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140103               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140104               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140105               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140106               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140107               |        |       |               |            |            |                        |         |
| 4.               | 165 Sana Rajendra | C-2/11, lower                                                                   |                      | 140601 | Open  | 72,000/-      | 9850504015 | 8393263820 | sanallimbase@gmail.com | Sana    |
| ✓                | limbase           | indrayanagi, Bibwadi, pune-54                                                   | 66.92%               | 140602 |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140603               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140604               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140605               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140606               |        |       |               |            |            |                        |         |
|                  |                   |                                                                                 | 140607               |        |       |               |            |            |                        |         |

  
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| Sl. No. | Name                                | Address             | Last year percentage | Book No.                                                                     | Caste | Annual Income | RES. No    | Mob No.    | email id                | Signature                        |
|---------|-------------------------------------|---------------------|----------------------|------------------------------------------------------------------------------|-------|---------------|------------|------------|-------------------------|----------------------------------|
| 153     | Sonika Sakhe Sukhrajrao Naga        | Katraj, Pune -46    | 72.46%               | 14901<br>14902<br>14903<br>14904<br>14905<br>14906<br>14907<br>14908         | OPEN  | 60,000        | 80877284   | 80877284   | sonikasakhe@gmail.com   | Handwritten signature            |
| 157     | Pooja Geomane Manderdevi Arundh     | Katraj, Pune -46    | 84.46%               | 140201<br>140202<br>140203<br>140204<br>140205<br>140206<br>140207<br>140208 | DBC   | 70,000        | 9860321600 | 9860321600 | poojagomane11@gmail.com | Handwritten signature<br>14/5/16 |
| 158     | Swarali Karande. Manakmaruti Sastry | Badajiger, Pune -48 | 67.83%               | 140501<br>140502<br>140503<br>140504<br>140505<br>140506<br>140507<br>140508 | BC    | 60,000        | 9322356087 | 7753236510 | swaralika@gmail.com     | Handwritten signature<br>9-4-16  |

  
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| Roll No. | Name           | Address                                    | Last year Percentage | Bank                                                                         | Costs | Annual Income | RES. No    | Mob No / stud. Id | email id                            | Sign                |
|----------|----------------|--------------------------------------------|----------------------|------------------------------------------------------------------------------|-------|---------------|------------|-------------------|-------------------------------------|---------------------|
| 153      | Sonika Sakhar  | Sukharagga Naga<br>Katraj, Pune -46        | 72.467               | 14901<br>14902<br>14903<br>14904<br>14905<br>14906<br>14907<br>14908         | OPRF  | 60,000        | 80872264   | 80872264          | Sonika.sakh<br>ase 310<br>gmail.com | 14/5/16             |
| 157      | Pooja Goman    | Manderdevi Arcade<br>Katraj, Pune -46      | 84.467               | 140801<br>140802<br>140803<br>140804<br>140805<br>140806<br>140807<br>140808 | DBC   | 70,000        | 9860981600 | 860638980         | Poojagoman@M<br>10345@<br>gmail.com | PM Goman<br>14/5/16 |
| 158      | Swarali Khande | Manakmarket Saakh<br>Bajaj Nagar, Pune -46 | 67.877               | 140501<br>140502<br>140503<br>140504<br>140505<br>140506<br>140507<br>140508 | BC    | 60,000        | 982276487  | 778899551         | S.Khande<br>Returnd<br>9-9-16       | 9-9-16              |

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Book Bank Scheme Application

Name: More Vaishnavi Satyavan

Class: FY Bsc (Comp sci) Roll No.     

Address: At/Post Kurangwadi

Tal - Bhor Dist - Pune

Student's Contact No.: 7709755879

Parent's Contact No.: 7588943729

Date: 1-July-17

To,

The Principal,

P. V. G's College of Science, Pune.

Subject: Application for Book Bank Scheme.

Respected Madam,

I am Student of FY Class and I wish to apply for Book Bank Scheme.

The annual Income of my family is Rs. : 50000/-.

Percentage of marks I scored in Last Qualified Examination is : 66%.

Please consider my application. If I receive the book set, I assure that I will return the whole set in good condition, immediately after my final examination.

Thanking you,

Yours Faithfully,

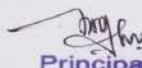
Student's Sign.: More.

The information given above is true to the best of my knowledge and belief.

(Parent's Name & Signature):

Relationship with the Student:



  
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12511705300003612900

तहसीलदार कार्यालय

क्रमांक : ४१९८५००२८६९  
जिल्हा : पुणे

१ वर्षासाठी उत्पन्नाचे प्रमाणपत्र

प्रमाणित करण्यात येते की, श्री. सत्यवान गेनबा मोरे राहणार : गाव कुळंगवडी, तहसील मोर, जिल्हा पुणे येथील अर्जदार आहेत. त्यांचे तलाठी अहवाल या आधारावर अर्जदार व त्यांच्या कुटुंबातील सर्व सदस्यांचे सर्व मार्गाने व साधनाने मिळालेले १ वर्षांचे उत्पन्न खालील प्रमाणे आहे.

| वर्ष        | वार्षिक उत्पन्न (₹) | अक्षरी (रुपये) |
|-------------|---------------------|----------------|
| २०१६ - २०१७ | ५०,०००              | पन्नास हजार    |

सदरचा दाखला श्री. सत्यवान गेनबा मोरे यांची मुलगी कुमारी वैष्णवी, कु.नायत्री, कु.गौरी कु.राधा -- सत्यवान मोरे यांना शैक्षणिक कामी या कामासाठीच देण्यात येत आहे, तसेच त्यांनी कार्यालयास सादर केलेल्या कागदपत्रांच्या आधारे देण्यात येते आहे.

हे प्रमाणपत्र ३१ मार्च २०१८ पर्यंतच वैध राहील.

सादर केलेल्या दस्तऐवज / पुराव्याचे तपशील

|                                            |                                            |
|--------------------------------------------|--------------------------------------------|
| १. तलाक्याने जारी केलेला उत्पन्नाचा दाखला  | दि. १३/०४/२०१७                             |
| २. तलाक्याने जारी केलेले रहिवास प्रमाणपत्र | दि. १३/०४/२०१७                             |
| ३. शिवापत्रिकेची प्रमाणित प्रत             | मौजे कुळंगवडी ता. मोर जि. पुणे क्र. ०५३०१६ |
| ४. आधार कार्ड                              | No. ४०२५ १८९५ ३४४५                         |
| ५. स्वघोषण पत्र                            | दि. ०४/०५/२०१७                             |

स्थळ : मोर  
दिनांक : ०१/०६/२०१७

Signature valid  
Digitally Signed By BALASUBHAS BABAN  
SIRSATH (GOVERNMENT OF  
MAHARASHTRA)  
Date : 01-Jun-2017 12:33:33 IST  
तहसीलदार / नायब तहसीलदार  
मोर

Printed By - OMTID : MH032201104 VLE Name : Vikas Raghunath Borge, Date: 01/06/2017 1:18PM

माहिती तंत्रज्ञान (गव) अधिनियम, २००० नुसार डिजिटल स्वाक्षरी असणारा हा दस्तऐवज कायदेशीररित्या वैध आहे.  
पडताळणीसाठी - <https://www.mahaonline.gov.in/Verify> येथे गेट टा क्लिक वीरसएनएल, एमटीएनएल, डाटा मोबाईल क्र. परतून घ्यावे अन्य केंद्रे १९१९ या क्रमांकावर  
"MH<space>CSC<space>VFIFY<space><२० अंकी बारकोड क्रमांक>" अशा एसेएमएस पाठवा.



Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009





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College of Science, Pune -09

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2015-16

महाराष्ट्र राज्य माध्यमिक व उच्च माध्यमिक शिक्षण मंडळ, पुणे  
Maharashtra State Board Of  
Secondary and Higher Secondary Education, Pune  
पुणे विभागीय मंडळ / PUNE DIVISIONAL BOARD  
उच्च माध्यमिक प्रमाणपत्र परीक्षा - गुणपत्रक  
HIGHER SECONDARY CERTIFICATE EXAMINATION - STATEMENT OF MARKS

| शाखा<br>STREAM | आसन क्रमांक<br>SEAT NO. | केन्द्र क्रमांक<br>CENTRE NO. | विल्हा व उच्च माध्य. शाळा क्रमांक<br>DIST. & HR. SEC. SCHOOL NO. | परीक्षेचा महिना व वर्ष<br>MONTH & YEAR OF EXAM. | गुणपत्रकेचा अनुक्रमांक<br>SR.NO. OF STATEMENT |
|----------------|-------------------------|-------------------------------|------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| SCIENCE        | P031447                 | 0112                          | 11.03.014                                                        | FEBRUARY-17                                     | 012295                                        |

उमेदवाराचे संपूर्ण नाव (आडनाव प्रथम) / CANDIDATE'S FULL NAME (SURNAME FIRST)  
**More Vaishnavi Satyavan**

उमेदवाराच्या आईचे नाव / CANDIDATE'S MOTHER'S NAME **Lata**

| विषयाचा सांकेतिक क्रमांक व विषयाचे नाव<br>Subject Code No. and Subject Name | * माध्यम<br>Medium                     | कमाल<br>गुण<br>Max.<br>Marks | प्राप्त गुण / Marks Obtained |                    |                                        |
|-----------------------------------------------------------------------------|----------------------------------------|------------------------------|------------------------------|--------------------|----------------------------------------|
|                                                                             |                                        |                              | अंकात<br>In Figures          | अक्षरात / In Words |                                        |
| 01 ENGLISH                                                                  | ENG                                    | 100                          | 078                          | SEVENTYEIGHT       |                                        |
| 40 MATHEMATICS & STATISTICS                                                 | ENG                                    | 100                          | 055                          | FIFTYFIVE          |                                        |
| 54 PHYSICS                                                                  | ENG                                    | 100                          | 051                          | FIFTYONE           |                                        |
| 55 CHEMISTRY                                                                | ENG                                    | 100                          | 062                          | SIXTYTWO           |                                        |
| 56 BIOLOGY                                                                  | ENG                                    | 100                          | 063                          | SIXTYTHREE         |                                        |
| 97 INFORMATION TECHNOLOGY(SCI)                                              | ENG                                    | 100                          | 072                          | SEVENTYTWO         |                                        |
| 31 ENVIRONMENT EDUCATION                                                    | ENG                                    | 050                          | 048                          | FORTYEIGHT         |                                        |
| 30 HEALTH & PHYSICAL EDUCATION (GRADE)                                      | A                                      |                              |                              |                    |                                        |
| Result / निकाल<br><b>PASS</b>                                               | Percentage / टक्केवारी<br><b>66.00</b> | एकूण गुण /<br>Total Marks    | <b>650</b>                   | <b>429</b>         | <b>FOUR HUNDRED AND<br/>TWENTYNINE</b> |

**H171012295**

3610869175355

महत्वाचे, टीप, आरोग्य व शारीरिक शिक्षण विषयातील श्रेणी आणि चिन्हाची माहिती यास तपशील घालील पृष्ठावर पहावा.  
See overleaf for Important, Notes, Grades in Health & Physical Education Subject and meaning of special characters.

विभागीय सचिव/Divisional Secretary



P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



## 2.2 SEMINAR COMPETITION

# Seminar Competition

P.V.G.'s College of Science, Pune 411009

### Registration Process:

1. The students should personally register their names and topic with respective class representative on or before 17.08.2017 .
2. Registration after 17<sup>th</sup> Aug, 2017 will not be entertained.

### Topics :

- Applications of Mathematics in Computer Science
- E-ball Technology
- Jini Technology
- Hyper Threading Technology

### Competition will be held

- on Saturday, 19.8.2017
- at 01.30 pm
- in Classroom # 2

Please note that minimum 2 entries per class should be registered.

  
Principal  
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Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009





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2.3 INTER COLLEGE COMPETITION CERTIFICATES







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KANNADA SANGHA PUNE'S  
KAVERI COLLEGE OF ARTS, SCIENCE & COMMERCE

AFFILIATED TO SAVITRIBAI PHULE PUNE UNIVERSITY, NON-AIDED COLLEGE UNDER MINORITY STATUS (LANGUAGE)

NAAC ACCREDITED 'B' GRADE

Sr. No. 36, Shri. G. M. Shetty Educational Complex, Ganeshnagar, Near CDSS, Erandwane, Pune - 411038.  
Ph.: 020-25456328 Email: kaveri.college@gmail.com Website: www.kaveri.edu.in/ksc

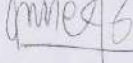
Certificate

This is to certify that Mr. / Ms. Parth Pujari  
from Pune Vidyarthi Grouh has participated / attended in  
Intn College Project Competition arranged by our college  
on / from 30.1.2018 to \_\_\_\_\_

Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009

  
Mr. Kushal Hegde  
President  
Kannada Sangha Pune

Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009

  
Dr. S. B. Kharosekar  
Principal



  
Programme Incharge



Pune Vidyarthi Griha's  
College of Science, Pune -09

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Maharashtra Education Society  
**Abasaheb Garware College**  
Karve Road, Pune - 411 004.  
Best College Award – Savitribai Phule Pune University.  
NAAC Re-Accredited 'A' Grade

**Computer Science Association**  
INTERFACE - 2018  
CERTIFICATE

Awarded to Mr. / Miss Parth Pujari Class T.Y. BSc (C.S.)  
of P. V. G. for the Second  
Prize/Participation in Project (Intercollegiate) Competition.

Principal  
P.V.G.'s College of Science  
Dnyanagari, S. No. 44, Parvati,  
Pune - 411 009

P. Bahalen  
In-charge, C.S.A.


Principal

Date : 11/1/2018





Pune Vidyarthi Griha's  
College of Science, Pune -09


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(Maharashtra Education Society)

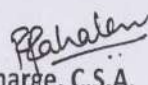
 **Abasaheb Garware College**  
Karve Road, Pune - 411 004.  
Best College Award – Savitribai Phule Pune University.  
NAAC Re-Accredited 'A' Grade



**Computer Science Association**  
INTERFACE - 2018  
CERTIFICATE

Awarded to Mr. / Miss Prasad Guhagarkar Class T.Y. BSc (C.S.)  
of P. V. G. for the Second  
Prize/Participation in Project (Intercollegiate) Competition.

Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati  
Pune - 411 009

Date: 11/1/2018

  
In-charge, C.S.A.

   
Principal

P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



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Savitribai Phule Pune University  
Board Of Student's Development  
Pune District Education Association's

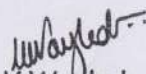



Prof. Ramkrishna More Arts, Commerce & Science College  
Akurdi, Pune-44

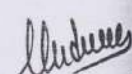


P.V.G.'s College of Science  
Vidyannagar, S. No. 44, Parvati,  
Pune - 411 009


This Certificate is Proudly Presented to  
Mr./Ms. Prasad Guhagarkar of T.Y.B.Sc.(C.S.) From  
Pune Vidyarthi Griha's College of Science College in Recognition Of  
Outstanding Performance For Project Competition  
held on 12th and 13th Jan 2018.

  
As. M. V. Waykole  
Event Incharge

  
Dr. B. G. Lobo  
S. D. O Principal  
P.V.G.'s College of Science

  
Mr. S. G. Lakhdiv  
H. O. D. (Comp. Sci.)



  
Dr. M. G. Chaskar  
Principal





Pune Vidyarthi Griha's  
College of Science, Pune -09

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Savitribai Phule Pune University  
Board Of Student's Development  
Pune District Education Association's



**Prof. Ramkrishna More Arts, Commerce & Science College**  
Akurdi, Pune-44



P.V.G.'s College of Science  
Vidyanagar, S. No. 44, Parvati,  
Pune - 411 009

Principal

This Certificate is Proudly Presented to

Mr./Ms. Parth Pujari of T.Y. B.Sc. (C.S.) From

Pune Vidyarthi Griha's College of Science College in Recognition Of

Outstanding Performance For Project Competition

held on 12<sup>th</sup> and 13<sup>th</sup> Jan 2018.

Ms. M. V. Waykole  
Event Incharge

Dr. B. G. Lobo  
S.D.O. Principal  
P.V.G.'s College of Science

Mr. S. G. Lakhdive  
H.O.D. (Comp.Sci.)



Dr. M. G. Chaskar  
Principal



Pune Vidyarthi Griha's  
College of Science, Pune -09

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 The Poona Gujarati Kelawani Mandal's  
**HARIBHAI V. DESAI COLLEGE**  
Re-accredited with "A" Grade by NAAC (2012), Best College Award by BSW, University of Pune  
(Affiliated to Savitribai Phule Pune University)

 ADROIT  
UNLOCK YOUR CAPABILITIES

**2k17-18**

**Certificate** 

This is to certify that Mr./Miss Prasad Guhagarkar  
from PVG college has won  
First prize in Quiz Competition event held  
during ADROIT 2K17-18 on 12<sup>th</sup> and 13<sup>th</sup> of January 2018,  
at Haribhai V. Desai College, Pune.

  
Prof. Geetanjali D. Kople  
Co-ordinator

  
Prof. Sneha V. Babel  
Co-ordinator

  
Prof. Narendra V. Deore  
Head of Department

  
Dr. Girish R. Pathade  
Principal

ORGANISED BY  
Computer Science Department  
Celebrating 17 Years Of Glory  
Principal

596, Budhwar Peth, Behind Shaniwar wada, Near Sakar Press, Pune 411002  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009






Pune Vidyarthi Griha's  
College of Science, Pune -09


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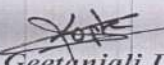
  
The Poona Gujarati Kelawani Mandal's  
HARIBHAI V. DESAI COLLEGE, PUNE  
Re-accredited with "A" Grade by NAAC (2012), Best College Award by BSW, University of Pune  
(Affiliated to Savitribai Phule Pune University)

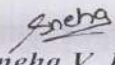
  
ADROIT  
UNLOCK YOUR CAPABILITIES

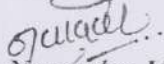
  
Winner


**2k17-18**  
**Certificate**

This is to certify that Mr./Miss Aditya Bhalerao  
from PVG college has won  
First prize in Quiz Competition event held  
during ADROIT 2K17-18 on 12<sup>th</sup> and 13<sup>th</sup> of January 2018,  
at Haribhai V. Desai College, Pune.


  
Prof. Geetanjali D. Kople  
Co-ordinator

  
Prof. Sneha V. Babel  
Co-ordinator

  
Prof. Narendra V. Deore  
Head of Department

  
Dr. Girish R. Pathade  
Principal

ORGANISED BY  
Computer Science Department  
Principal  
P.V.G.'s College of Science  
Celebrating 19 Years Of Glory  
Vidyanagar, S. No. 44, Parvati,  
Pune - 411 009







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**Pune Vidyarthi Griha's  
College of Science**

SEED IT IDOL Results and Shortlisted Candidates


**SEED Infotech Ltd. and  
Savitribai Phule Pune University**  
cordially invites you, to attend the  
**Final Round  
&  
Prize Distribution Ceremony**  
of  
**SEED IT Idol - Pune 2017**

Day, Date : Friday, 24<sup>th</sup> March 2017  
Time : 12.30pm to 03.30pm

Venue :  
Balgandharv Rangmandir,  
Jangali Maharaj Road,  
Shivajinagar,Pune - 411004

Please be there to applaud the Winners!

**INVITATION**

  
Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009





# Pune Vidyarthi Griha's College of Science, Pune -09

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P.V.G.'s College of Science, Pune - 09.

## SEED IT IDOL COMPETITION


Under the Scheme of S.D.C., Savitribai Phule Pune University, Pune.

Date: 23/01/18

### Attendance Sheet

| Class | Roll No. | Name                  | Sign      |
|-------|----------|-----------------------|-----------|
| FY    | 181      | Shrushti Rasal        | Shrushti  |
| FY    | 103      | Anuja S. Bhoirkar     | Anuja     |
| FY    | 177      | Poonam Bharat Wani    | Poonam    |
| FY    | 141      | Ayushi Sawastava      | Ayushi    |
| FY    | 145      | Shital Mahangare      | Shital    |
| FY    | 149      | Vaishnavi More        | Vaishnavi |
| FY    | 146      | Harpreet Kaur Maklija | Harpreet  |
| FY    | 155      | Akshada Pangarkar     | Akshada   |
| FY    | 158      | Vaishnavi Paudyal     | Vaishnavi |
| FY    | 170      | Rekha Shinde          | Rekha     |
| FY    | 187      | Rekha Hunda           | Rekha     |
| FY    | 121      | Shrutika Ganatage     | Shrutika  |
| FY    | 160      | Tyasaani Pawar        | Tyasaani  |
| FY    | 164      | Antara V. Sabharwal   | Antara    |
| FY    | 188      | Akshata A. Bhosale    | Akshata   |
| FY    | 162      | Mana Ranpise          | Mana      |
| FY    | 180      | Wakadkar Isha Mangesh | Isha      |
| FY    | 171      | Shruti Somani         | Shruti    |
| SY    | 247      | Pranjita Jagtap       | Pranjita  |
| FY    | 103      | Swarali Aradhya       | Swarali   |
| FY    | 115      | Tejasvini Dhonawade   | Tejasvini |
| SY    | 250      | Meera Nagtilak        | Meera     |
| SY    | 251      | Revati Shrinje        | Revati    |
| SY    | 241      | Sujata Vakse          | Sujata    |
| FY    | 139      | Isha Kshirsagar       | Isha      |
| FY    | 132      | Rishi Kumbhar         | Rishi     |
| FY    | 129      | Sarang Joshi          | Sarang    |
| FY    | 119      | Siddhi Dugad          | Siddhi    |
| FY    | 118      | Vaishnavi Dudhale     | Vaishnavi |
| SY    | 210      | Maksha Shah           | Maksha    |
| SY    | 209      | Pratik Dharmal        | Pratik    |



  
Principal  
P.V.G.'s College of Science,  
Vidyasagar, S. No. 44, Parve,  
Pune - 411 009



Pune Vidyarthi Griha's  
College of Science, Pune -09

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2015-16

P.V.G.'s College of Science, Pune - 09.

SEED IT IDOL COMPETITION

Under the Scheme of S.D.C., Savitribai Phule Pune University, Pune.

Date: 23/01/18

Attendance Sheet

| Class | Roll No. | Name                  | Sign      |
|-------|----------|-----------------------|-----------|
| FY    | 101      | Himanshu Aggarwal     | Himanshu  |
| FY    | 102      | Sanket Ambekar        | Sanket    |
| FY    | 168      | Jayram Sawant         | Jayram    |
| FY    | 122      | Shikram Gogawale      | Shikram   |
| FY    | 165      | Tanmay Sajgure        | Tanmay    |
| FY    | 175      | Ojas Pagade           | Ojas      |
| F.Y.  | 184      | Abhishek Karkhane     | Abhishek  |
| F.Y.  | 126      | Sahil Jagtap          | Sahil     |
| F.Y.  | 110      | Chirag Chavhan        | Chirag    |
| F.Y.  | 106      | Aditya Bakare         | Aditya    |
| F.Y.  | 186      | Kaustabh Ravi Thete   | Kaustabh  |
| F.Y.  | 131      | Shishir Kadam         | Shishir   |
| F.Y.  | 127      | Sameer Jagtap         | Sameer    |
| F.Y.  | 144      | Pranav Patange        | Pranav    |
| S.Y.  | 239      | Rathod Vipul P        | Rathod    |
| S.Y.  | 242      | Atharva P. Ganekar    | Atharva   |
| S.Y.  | 252      | Aniket D. Padwal      | Aniket    |
| T.Y.  | 331      | Chaitanya K. Kulkarni | Chaitanya |
| S.Y.  | 207      | Tanmay S. Kolekar     | Tanmay    |
| S.Y.  | 206      | Adwait Kulkarni       | Adwait    |
| S.Y.  | 281      | YASH KARANDHE         | Yash      |
| S.Y.  | 282      | Tushar Akurdekar      | Tushar    |
| S.Y.  | 244      | Chirmay Sumbe         | Chirmay   |
| S.Y.  | 245      | Abhishek Dighe        | Abhishek  |
| F.Y.  | 143      | Lohkare Parth         | Parth     |
| F.Y.  | 174      | Madhwal Yash          | Madhwal   |
| F.Y.  | 124      | Prachi Hinge          | Prachi    |
| F.Y.  | 150      | Haryhada Nikam        | Haryhada  |
| F.Y.  | 152      | Neha Oza              | Neha      |
| F.Y.  | 132      | Rohit Kambhe          | Rohit     |
| F.Y.  | 129      | Sarang Joshi          | Sarang    |
| F.Y.  | 119      | Siddhi Dugad          | Siddhi    |
| F.Y.  | 118      | Nishant Kulkarni      | Nishant   |

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## SEED IT IDOL COMPETITION

Under the Scheme of S.D.C., Savitribai Phule Pune University, Pune.

Date: 23/01/18

### Attendance Sheet

| Class | Roll No. | Name                  | Sign        |
|-------|----------|-----------------------|-------------|
| SY    | 256      | Manasi Mahite         | Manasi      |
| SY    | 260      | Samruddhi Dhadehale   | S.D.        |
| SY    | 257      | Kalyani Chavan        | KPS         |
| SY    | 235      | Gargi Memane          | Gargi       |
| SY    | 236      | Vaishnavi Meharunkar  | V.M.        |
| SY    | 234      | Namrata Sureshase     | N.Sureshase |
| TY    | 335      | Amruta Shirole        | A.S.        |
| TY    | 316      | Rucha Naik            | R.N.        |
| SY    | 219      | Antarsha Jagtap       | A.J.        |
| SY    | 217      | Rajeshwari Dhankawade | R.D.        |
| SY    | 262      | Rutuja Dhamdhare      | R.D.        |
| SY    | 263      | Priya Kulkarni        | P.K.        |
| SY    | 246      | Yukta Kulkarni        | Y.K.        |
| SY    | 216      | Sakshi Marne          | S.M.        |
| SY    | 225      | Vaishnavi Khopade     | V.K.        |
| SY    | 215      | Kamari Shukla         | K.S.        |
| SY    | 218      | Manali Tawate         | M.Tawate    |
| SY    | 249      | Athila Walimbe        | A.W.        |
| SY    | 248      | Mayuri Chingvi        | M.C.        |
| SY    | 239      | Gayatri Abnave        | G.Abnave    |
| SY    | 232      | Shivani Kale          | S.Kale      |
| SY    | 230      | Shubhangi Gunjal      | S.G.        |
| SY    | 227      | Shravani Wagh         | S.W.        |
| MSC-I | 457      | Suravse Santaji       | S.S.        |
| TY    | 325      | Surya Shetkar         | S.S.        |
| SY    | 228      | Priya Chaudhari       | P.C.        |
| SY    | 229      | Sayali Bunte          | S.B.        |
| SY    | 231      | Sayali Girme          | S.G.        |
| TY    | 327      | Manasi Deosade        | M.D.        |
| TY    | 328      | Akanksha Bankar       | A.B.        |
| TY    | 317      | Udayati More          | U.M.        |
| SY    | 221      | Shriram Bhaknao       | S.B.        |
| SY    | 222      | Makand Kananda        | M.K.        |



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| Sr.No | Candidate Name               | Mob. No.   | Stream | Year | Marks | Result                    |
|-------|------------------------------|------------|--------|------|-------|---------------------------|
| 1     | RUTUJA RAJESH DHAMDHERE      | 9850404449 | CS     | FY   | 10    | -                         |
| 2     | AMEYA DATTARAM KALYANKAR     | 8600266594 | CS     | SY   | 12    | -                         |
| 3     | SAMEER SURESH TAMBE          | 7757064966 | CS     | SY   | 9     | -                         |
| 4     | SIDDESH NITIN AMRALE         | 7276373539 | CS     | SY   | 19    | Shortlisted for 2nd Round |
| 5     | SAYALI SUNIL GIRME           | 7744948771 | CS     | FY   | 6     | -                         |
| 6     | PRASAD VIJAY GUHAGARKAR      | 8087293811 | CS     | SY   | 8     | -                         |
| 7     | RUTUJ SANJAY FARANDE         | 9096503369 | CS     | FY   | 9     | -                         |
| 8     | BANKAR AKANKSHA ASHRU        | 9405035492 | CS     | SY   | 6     | -                         |
| 9     | RACHANA PANDURANG PAWAR      | 8411835940 | CS     | SY   | 11    | -                         |
| 10    | KARANDE SWARALI HRUDYANATH   | 9822864697 | CS     | SY   | 10    | -                         |
| 11    | SHETTY VARSHA SURESH         | 7767030921 | CS     | SY   | 12    | -                         |
| 12    | MOKSHA JAGADISH SHAH         | 8446292762 | CS     | FY   | 10    | -                         |
| 13    | RUCHA YOGESH NAIK            | 9763216894 | CS     | SY   | 8     | -                         |
| 14    | SONAL RAJENDRA LIMBORE       | 8793263820 | CS     | SY   | 10    | -                         |
| 15    | PRAJAKTA PRADIP JAGTAP       | 9112398592 | CS     | FY   | 9     | -                         |
| 16    | ADWAIT SANDEEP KULKARNI      | 8552925135 | CS     | FY   | 8     | -                         |
| 17    | RAJAT MADHAV KULKARNI        | 9028532270 | CS     | FY   | 5     | -                         |
| 18    | SUYOG RASIKAL SHAHAKAVHEKAR  | 9527127954 | CS     | SY   | 11    | -                         |
| 19    | RAKHI ASHOK BHAGWAT          | 8308309337 | CS     | SY   | 8     | -                         |
| 20    | SONALI PRAKASH SHETE         | 9139947233 | CS     | SY   | 10    | -                         |
| 21    | SANKET SATISH SAITAWDEKAR    | 8379013083 | CS     | SY   | 9     | -                         |
| 22    | PATIL SONAL ANIL             | 7040970038 | CS     | FY   | 14    | Shortlisted for 2nd Round |
| 23    | PAYAL RAJENDRA GUJAR         | 9503513015 | CS     | SY   | 9     | -                         |
| 24    | SWANANDA MAHESH PUNDE        | 7588286471 | CS     | SY   | 20    | Shortlisted for 2nd Round |
| 25    | RUTUJA ASHOK BANKAR          | 9850339581 | CS     | FY   | 10    | -                         |
| 26    | KAUSTUBH RAJEEV UMALKAR      | 9175734539 | CS     | SY   | 12    | -                         |
| 27    | AJAY KAILAS SHINDE           | 9975654445 | CS     | FY   | 10    | -                         |
| 28    | PRATIK KESHAV DHUMAL         | 8975203436 | CS     | FY   | 10    | -                         |
| 29    | VIVEK SUNIL BAGADE           | 8308221649 | CS     | FY   | 6     | -                         |
| 30    | RASIKA SHARIKANT UBALE       | 9730671072 | CS     | SY   | 13    | -                         |
| 31    | ADITYA DURGAPRASAD HONKALAS  | 8007947733 | CS     | SY   | 4     | -                         |
| 32    | PEMARAM NAGARAM SIRAVI       | 7387701996 | CS     | FY   | 6     | -                         |
| 33    | UDAYATI SATISH MORE          | 9623921069 | CS     | SY   | 15    | Shortlisted for 2nd Round |
| 34    | MAITREYEE MILIND KULKARNI    | 8308654247 | CS     | SY   | 8     | -                         |
| 35    | VIKRANT VIJAY GHATGE         | 8975543445 | CS     | SY   | 8     | -                         |
| 36    | MANASI MAHAVIR DEOSALE       | 8007939116 | CS     | SY   | 10    | -                         |
| 37    | SNEHLATA SADANAND GHONGADE   | 7249083765 | CS     | SY   | 6     | -                         |
| 38    | CHAJITANYA AMBARDEKAR        | 9021792888 | CS     | SY   | 6     | -                         |
| 39    | GARGI BALASAHEB MEMANE       | 9011336600 | CS     | FY   | 7     | -                         |
| 40    | NAMRATA DNYANOBA SURAWASE    | 8551079961 | CS     | FY   | 9     | -                         |
| 41    | MANGALYA ABHAY WANWASE       | 8554054500 | CS     | FY   | 11    | -                         |
| 42    | SAI MILIND KULKARNI          | 9763355772 | CS     | SY   | 6     | -                         |
| 43    | AISHWARYA JAYENDRA SHILIMKAR | 9168535292 | CS     | FY   | 10    | -                         |
| 44    | KALYANI CHAVAN               | 8552084348 | CS     | FY   | 7     | -                         |
| 45    | SAKHARE SARITA HARIBHAU      | 8626078027 | CS     | SY   | 16    | Shortlisted for 2nd Round |
| 46    | POOJA MAHADEO GOMANE         | 8605389980 | CS     | SY   | 11    | -                         |
| 47    | RAHUL KOKIE                  | 9145338758 | CS     | SY   | 21    | Shortlisted for 2nd Round |
| 48    | SOHAM PRASAD SHAHANE         | 9527095449 | CS     | FY   | 13    | -                         |
| 49    | RUTUJA RAJESH HEREKAR        | 7588290782 | CS     | SY   | 9     | -                         |
| 50    | HARSHAL LAXMAN RAJGURU       | 8412983530 | CS     | SY   | 10    | -                         |
| 51    | AISHWARYA NITIN DHATTORE     | 7767030336 | CS     | SY   | 5     | -                         |
| 52    | TANMAY UMESH SHETH           | 8411071616 | CS     | FY   | 15    | Shortlisted for 2nd Round |

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|-----|---------------------------------|------------|----|----|----|---------------------------|
| 53  | PRACHI SOMNATH GAIKWAD          | 9657267812 | CS | FY | 10 | -                         |
| 54  | SARASWATI KALIDAS NAGTILAK      | 916835209  | CS | SY | 12 | -                         |
| 55  | AGARWAL MAYURI PAVAN            | 8378012523 | CS | SY | 13 | -                         |
| 56  | CHAITANYA DASHARATH DAWKHAR     | 8793880868 | CS | FY | 11 | -                         |
| 64  | VISHAL RAJENDRA BANDE           | 9960138174 | CS | FY | 18 | Shortlisted for 2nd Round |
| 65  | NIKITA NITIN KOSANDAR           | 8983436424 | CS | FY | 7  | -                         |
| 66  | SHWETA NARAYAN BARAD            | 8237736175 | CS | FY | 13 | -                         |
| 67  | NEHA ARUN CHHAJED               | 7507730016 | CS | FY | 11 | -                         |
| 68  | AISHWARYA DARDA                 | 8380947795 | CS | FY | 13 | -                         |
| 69  | MEENAKSHI JAIVEERSINGH YADAV    | 7276121929 | CS | FY | 13 | -                         |
| 70  | MADHAVEE NAVANATH TOTARE        | 9780770431 | CS | FY | 13 | -                         |
| 71  | SHRIKANT DATTATRAYA SHINDE      | 7507911878 | CS | TY | 11 | -                         |
| 72  | DATAR UTKARSH SUHAS             | 8308990460 | CS | FY | 16 | Shortlisted for 2nd Round |
| 73  | BHUSHAN CHIKHALIKAR             | 8149656011 | CS | FY | 19 | Shortlisted for 2nd Round |
| 74  | NISARGA AVINASH ATHAVALE        | 8600931092 | CS | FY | 11 | -                         |
| 75  | URVEE VIJAY CHIKHALIKAR         | 9881451143 | CS | TY | 9  | -                         |
| 76  | SHUBHANKAR CHARUDATTA CHOUDHARI | 9421847848 | CS | FY | 16 | Shortlisted for 2nd Round |
| 77  | BHALERAJ PRITAM NITIN           | 9762241955 | CS | TY | 9  | -                         |
| 78  | SHITAL BHARAT DHAGE             | 9021207674 | CS | TY | 9  | -                         |
| 79  | DHANSHREE RAVSAHB SINGAR        | 8983773793 | CS | TY | 9  | -                         |
| 80  | KARTIK RAKESH KAREKAR           | 8412824523 | CS | TY | 20 | Shortlisted for 2nd Round |
| 81  | KETKI KISHOR KULKARNI           | 8378836316 | CS | TY | 12 | -                         |
| 82  | KADAM RAJGAURI SHASHIKANT       | 9145588857 | CS | TY | 9  | -                         |
| 83  | SAISH SHANTANU CHINCHALKAR      | 9011912338 | CS | TY | 10 | -                         |
| 84  | MINALI PRADEEPKUMAR SHAH        | 9762870965 | CS | FY | 13 | -                         |
| 85  | DEOLE SANKET SATISH             | 9420460301 | CS | TY | 11 | -                         |
| 86  | NIKITA S PAWAR                  | 9673565429 | CS | FY | 12 | -                         |
| 87  | MEGHA ANAND TUPE                | 7066703900 | CS | FY | 20 | Shortlisted for 2nd Round |
| 88  | ROHAN CHANDRASHEKHAR MALWADKAR  | 7709377220 | CS | TY | 5  | -                         |
| 89  | NEHA KIRTIKUMAR PARMAR          | 7276149200 | CS | FY | 17 | Shortlisted for 2nd Round |
| 90  | RAJ RAMESH HAWALDAR             | 7040970575 | CS | FY | 19 | Shortlisted for 2nd Round |
| 91  | DIVYA AJIT OSWAL                | 7775877798 | CS | FY | 11 | -                         |
| 92  | OMKAR BHAGWAN KUKADE            | 9665782669 | CS | FY | 11 | -                         |
| 93  | SHUBHAM NAIK                    | 9762441005 | CS | FY | 11 | -                         |
| 94  | PRATIK PRABHAKAR DOLE           | 9552991682 | CS | FY | 11 | -                         |
| 95  | OMKAR MUKESH MONE               | 9175577991 | CS | FY | 9  | -                         |
| 96  | MRUNAL SANJAY KADAM             | 9762924217 | CS | TY | 10 | -                         |
| 97  | ANUJA MANOHAR BHILARE           | 8796746454 | CS | TY | 8  | -                         |
| 98  | AARTI KUNDLIK YADAV             | 8552037760 | CS | TY | 5  | -                         |
| 99  | SHAH NISARG NIKHIL              | 8888305550 | CS | FY | 12 | -                         |
| 100 | SUSHANT MANGESH SHUKLA          | 7276759796 | CS | TY | 5  | -                         |
| 101 | RAVINA RAMDAS BANDAL            | 7875502730 | CS | FY | 12 | -                         |
| 102 | DHAGE AKSHAY GOPINATH           | 9527579796 | CS | TY | 13 | -                         |
| 103 | PRAVIN S SOMWASE                | 9890873222 | CS | TY | 9  | -                         |
| 104 | AKSHAY DHANANJAY PUNEKAR        | 9960007452 | CS | FY | 15 | Shortlisted for 2nd Round |
| 105 | SANDHYA PRABHAKAR SURAVASE      | 9175535490 | CS | TY | 9  | -                         |
| 106 | KARAN CHARUHAS SHINDE           | 8793386879 | CS | FY | 18 | Shortlisted for 2nd Round |
| 107 | SIDDHIKA DEEPAK BHARGUDE        | 7385606776 | CS | TY | 10 | -                         |
| 108 | PIYUSHA BRAMHANAND TRIMAL       | 8983003839 | CS | TY | 10 | -                         |
| 109 | CHAITANYA SUHAS KARADKHEDKAR    | 7588400155 | CS | SY | 14 | Shortlisted for 2nd Round |
| 110 | SURAVSE SANTAJI DHANAJI         | 8554874589 | CS | TY | 13 | -                         |
| 111 | NAIK LAXMI NANDKISHOR           | 9765850316 | CS | TY | 11 | -                         |
| 112 | SWAPNALI RAMESH DHIWAR          | 9139599352 | CS | TY | 9  | -                         |

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|-----|------------------------------|------------|----|----|----|---------------------------|
| 113 | SHWETA SANJAY KATARE         | 8793652211 | CS | TY | 14 | Shortlisted for 2nd Round |
| 114 | KANADE SAI SANJAY            | 8551969703 | CS | TY | 15 | Shortlisted for 2nd Round |
| 115 | ADKE BHAKTI NISHIKANT        | 9552551954 | CS | TY | 12 | -                         |
| 116 | PRASAD PRAMOD KULKARNI       | 9765853470 | CS | TY | 10 | -                         |
| 117 | PRANALI DILIP OZARKAR        | 8007959030 | CS | FY | 14 | Shortlisted for 2nd Round |
| 118 | SANKET SANJAY OSWAL          | 8177944936 | CS | TY | 14 | Shortlisted for 2nd Round |
| 119 | ADITYA JAYWANT KULKARNI      | 9028008018 | CS | FY | 10 | -                         |
| 120 | SANJANA SUNIL DIMBLE         | 9921824869 | CS | TY | 10 | -                         |
| 121 | SHUBHAM AUDUMBAR JAMDADE     | 9028146443 | CS | FY | 10 | -                         |
| 122 | THAKUR PRIYANKA PRADEEPSING  | 9604750450 | CS | FY | 7  | -                         |
| 123 | JAYESH DILIP BUATTAD         | 8177944936 | CS | TY | 10 | -                         |
| 124 | VAISHNAVI RAMCHANDRA KHOPADE | -          | CS | FY | 13 | -                         |
| 125 | REVATI VIJAY DHAINJE         | 9075739438 | CS | FY | 15 | Shortlisted for 2nd Round |
| 126 | ATHARVA RAJENDRA IJANTKAR    | 9881427010 | CS | FY | 7  | -                         |
| 127 | MAYURI ATUL SHINGVI          | 9764324824 | CS | FY | 8  | -                         |
| 128 | VAISHNAVI VIJAY SHITOLE      | 9673908417 | CS | FY | 8  | -                         |
| 129 | YUKTA ABHAY KULKARNI         | 9422000477 | CS | FY | 8  | -                         |
| 130 | SAMRUDDHI DHADPHALE          | 9604557340 | CS | FY | 6  | -                         |
| 131 | NILAM SUKHDEV BERGAL         | 7410794432 | CS | FY | 12 | -                         |
| 132 | MAHENDRA BHUSHAN KHASNIS     | 9422416107 | CS | FY | 6  | -                         |
| 133 | OMKAR MARUTI GOLE            | 9011125241 | CS | FY | 8  | -                         |
| 134 | PIYUSH ANKUSH JAGTAP         | 7219255845 | CS | FY | 13 | -                         |
| 135 | OMKAR SUNIL PATE             | 7776906218 | CS | FY | 9  | -                         |
| 136 | PRIYA ARVIND CHAUDHARI       | 9527023793 | CS | FY | 12 | -                         |
| 137 | PRASHANT BHARAT CHIKANE      | 9172565062 | CS | FY | 12 | -                         |
| 138 | SHIVANI RAJENDRA KALE        | 7040950146 | CS | FY | 5  | -                         |
| 139 | ATHILA DEEPAK WALIMBE        | 9850639571 | CS | FY | 8  | -                         |
| 140 | AKSHATA VINAYAK KALBHOR      | 9689051135 | CS | FY | 4  | -                         |
| 141 | ANIKET DNYANESHWAR PADWAL    | 9960061372 | CS | FY | 9  | -                         |
| 142 | DIVYA KULKARNI               | 8308768607 | CS | FY | 10 | -                         |
| 143 | AMANPREET SINGH GUNDEV       | 7768054022 | CS | FY | 9  | -                         |
| 144 | JANHAVI RAJIV BAHIRAT        | 9545390101 | CS | FY | 11 | -                         |
| 145 | SHUBHANGI DIGAMBAR GUNJAL    | 9623314306 | CS | FY | 8  | -                         |
| 146 | CHINMAY SANJAY SUMBE         | 9823270365 | CS | FY | 10 | -                         |
| 147 | ABHISHEK MANIK DIGHE         | 8378857576 | CS | FY | 8  | -                         |
| 148 | AMAR SANJAY CHIKANE          | 8237796965 | CS | FY | 7  | -                         |
| 149 | MEERA KALIDAS NAGTILAK       | 9271225536 | CS | FY | 14 | Shortlisted for 2nd Round |
| 150 | SHIVRAJ SUNIL PAWAR          | 9527230804 | CS | FY | 9  | -                         |
| 151 | YASHKUMAR SHANKAR JADHAV     | 8390853244 | CS | FY | 6  | -                         |
| 152 | VAISHNAVI GOVIND MEHARUNKAR  | 9822361705 | CS | FY | 11 | -                         |
| 153 | SUJATA VINAYAK VAKSE         | 9604299296 | CS | FY | 9  | -                         |
| 154 | TANMAY SHRIDHAR KOLEKAR      | 7040964748 | CS | FY | 11 | -                         |
| 155 | VEDANT RAJENDRA PARDESHI     | 7387706543 | CS | FY | 9  | -                         |
| 156 | KAUSTUBH PRAMOD DESHPANDE    | 7588323239 | CS | FY | 8  | -                         |
| 157 | AMEYA UDAY HARDIKAR          | 9657597253 | CS | FY | 16 | Shortlisted for 2nd Round |
| 158 | KAJAL DNYANESHWAR LONDHE     | 8857006172 | CS | FY | 10 | -                         |
| 159 | MUGDHA RAJESH NAIK           | 9881200811 | CS | FY | 12 | -                         |
| 160 | SAYALI PRAMOD BURTE          | 7743870932 | CS | FY | 12 | -                         |
| 161 | HRISHIKESH MANISH DHUMAL     | 9604424923 | CS | FY | 9  | -                         |
| 162 | KAUSHIK DESHPANDE            | 9145380318 | CS | FY | 8  | -                         |
| 163 | HIMAYU CHANDRASHEKHAR SISODE | 8087750612 | CS | FY | 10 | -                         |
| 164 | SHRAVANI ASHOK WAGH          | 9960311919 | CS | FY | 6  | -                         |
| 165 | ANKUR SUNIL TANDULWADKAR     | 7769088259 | CS | FY | 13 | -                         |

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|-----|----------------------------|------------|----|----|----|---|
| 166 | ATHARVA DEVENDRA DESHPANDE | 8407996606 | CS | FY | 11 | - |
| 167 | GAYATRI MAHADEO ABNAVE     | 8983040509 | CS | FY | 10 | - |
| 168 | ABHISHEK MOHAN SINNARKAR   | 8552094860 | CS | FY | 4  | - |
| 169 | SANKET GOVIND KHARDEKAR    | 8087309626 | CS | FY | 11 | - |
| 170 | ROHAN MANOJ CHORDIYA       | 8888492491 | CS | FY | 9  | - |
| 171 | ABHISHEK KEDAR THATTE      | 9404901827 | CS | FY | 9  | - |



  
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## 2.4 INTERNATIONAL PARTICIPATION OF STUDENT





## 2.5 NATIONAL PARTICIPATION OF STUDENT





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### **3.SPECIAL PROGRAMS FOR SLOW LEARNERS**





### 3.1 EXTRA GUIDENCE LECTURE

P.V.G's College of Science, Pune 9  
F.Y.B.Sc. (Computer Science) 2017-18

It is observed that following students have weak performance in Internal Examination Therefore College provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name                           |
|--------|--------------------------------|
| 1      | Chavan Chirag Yuvraj           |
| 2      | Dhamale Manish Balaji          |
| 3      | Lohokare Parth Parag           |
| 4      | Patange Pranav Prafulla        |
| 5      | Mehendale Abhishek Sanjay      |
| 6      | Mohansing Rajput Vinayak       |
| 7      | Pardeshi Shivani Devendrasingh |
| 8      | Pokale Pratik Suryakant        |
| 9      | Raut Sanskriti Pravin          |
| 10     | Madiwale Varad Vikas           |
| 11     | Bagade Ojas                    |
| 12     | Wani Poonam Bharat             |
| 13     | Rasal Shrushti                 |
| 14     | Dave Dhawal Prakash            |
| 15     | Mandale Diksha                 |
| 16     | Shalu Mrunalee                 |
| 17     | Hunda Rekha                    |



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**P.V.G's College of Science, Pune 9**  
**F.Y.B.Sc. (Computer Science) 2017-18**

**Schedule for Extra Guidance**

| Subject          | Days      | Teacher             | Slot               | Venue      |
|------------------|-----------|---------------------|--------------------|------------|
| Electronics      | Monday    | Mr.Ramakant Bhujbal | 9.00-11.00<br>a.m. | Classroom2 |
|                  | Tuesday   |                     |                    |            |
| Computer Science | Wednesday | Mrs.Swati Joshi     |                    |            |
|                  | Thursday  |                     |                    |            |
| Mathematics      | Friday    | Mrs.Neeta Ranbhare  |                    |            |
| Statistics       | Saturday  | Mrs.S.D.Deshmukh    |                    |            |



*S. Chitambar*  
J/c Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
Pune - 411 009



Pune Vidyarthi Griha's  
**College of Science, Pune -09**

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2015-16

**P.V.G's College of Science, Pune 9**  
S.Y.B.Sc. (Computer Science) 2017-18

It is observed that following students have weak performance in Internal Examination Therefore College provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name                          |
|--------|-------------------------------|
| 1      | Tawale Manali Kundan          |
| 2      | Takawale Chinmay Hanumant     |
| 3      | Shukla Kamana Dattatreya      |
| 4      | Shethgujarathi Siddarth Nitin |
| 5      | Sheth Tanmay Umesh            |
| 6      | Narsale Sanket Ramdas         |
| 7      | Kadam Rishikesh Vasantryao    |
| 8      | Dhankawade Rajeshwari Subhash |
| 9      | Dadhe Omkar Sunil             |



*J/c* Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
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**P.V.G's College of Science, Pune 9**  
S.Y.B.Sc. (Computer Science) 2017-18

**Schedule for Extra Guidance**

| Subject          | Days      | Teacher             | Slot             | Venue      |
|------------------|-----------|---------------------|------------------|------------|
| Electronics      | Monday    | Mr.Ramakant Bhujbal | 12.00-2.00<br>PM | Classroom1 |
|                  | Tuesday   |                     |                  |            |
| Computer Science | Wednesday | Mrs.Shilpa Pawale   |                  |            |
|                  | Thursday  |                     |                  |            |
| Mathematics      | Friday    | Mrs.Neeta Ranbhare  |                  |            |



*S. Chavan*  
Principal  
P.V.G.'s College of Science  
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2015-16

P.V.G's College of Science, Pune 9  
T.Y.B.Sc. (Computer Science) 2017-18

It is observed that following students have weak performance in Internal Examination Therefore College provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name               |
|--------|--------------------|
| 1      | Deophode Niranjan  |
| 2      | Angre Akshay       |
| 3      | Dhondage Shubham   |
| 4      | Ghongade Snehalata |
| 5      | Gole Akash         |
| 6      | Jagtap Manish      |
| 7      | Jain Satyajeet     |
| 8      | Kadu Piyusha       |
| 9      | Pujari Parth       |
| 10     | Surve Suraj        |



*S. D. Hanu*  
Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
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**P.V.G's College of Science, Pune 9**

T.Y.B.Sc. (Computer Science) 2017-18

**Schedule for Extra Guidance**

| Subject                              | Days      | Teacher                       | Slot               | Venue      |
|--------------------------------------|-----------|-------------------------------|--------------------|------------|
| Computer Science I (OS)              | Monday    | Respective Subject<br>Teacher | 10.00-12.00<br>am. | Classroom3 |
| Computer Sciencell (CC)              | Tuesday   |                               |                    |            |
| Computer Science III<br>(Networking) | Wednesday |                               |                    |            |
| Computer Science IV<br>(PHP)         | Thursday  |                               |                    |            |
| Computer Science V<br>(JAVA)         | Friday    |                               |                    |            |
| Computer Science VI<br>(CG)          | Saturday  |                               |                    |            |



*[Signature]*  
Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
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P.V.G's College of Science, Pune 9  
F.Y.B.Sc. (Computer Science) 2016-17

It is observed that following students have weak performance in Internal Examination Therefore college provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name                     |
|--------|--------------------------|
| 1      | Chinmay Takawale         |
| 2      | Mahendra Bhushan Khasnis |
| 3      | Shivam Sunil Gaonkar     |
| 4      | Mugdha Rajesh Naik       |
| 5      | Rashmi Rajendra Mohite   |
| 6      | Amar Sanjay Chikane      |
| 7      | Akash Shyamsunder Sawant |
| 8      | Kalyani Popatrao Chavan  |
| 9      | Prachi Somnath Gaikwad   |
| 10     | Nehal Dnyanoba Kamble    |
| 11     | Surabhi Pradeep Kale     |
| 12     | Mukund Sachin Pasalkar   |
| 13     | Anurag Vivek Chandorkar  |
| 14     | Vivek Bagade             |
| 15     | Pemaram Siravi           |
| 16     | Rutuj Sanjay Farande     |
| 17     | Siddharth Gujarathisheth |



*S. Chhansu*  
S/c Principal  
P.V.G.'s College of Science  
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**Schedule for Extra Guidance**

| Subject          | Days      | Teacher             | Slot               | Venue      |
|------------------|-----------|---------------------|--------------------|------------|
| Electronics      | Monday    | Mr.Ramakant Bhujbal | 9.00-11.00<br>a.m. | Classroom2 |
|                  | Tuesday   |                     |                    |            |
| Computer Science | Wednesday | Mrs.Swati Joshi     |                    |            |
|                  | Thursday  |                     |                    |            |
| Mathematics      | Friday    | Mrs.Neeta Ranbhare  |                    |            |
| Statistics       | Saturday  | Mrs.S.D.Deshmukh    |                    |            |



*S. Dhanu*  
Principal  
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**P.V.G's College of Science, Pune 9**  
S.Y.B.Sc. (Computer Science) 2016-17

It is observed that following students have weak performance in Internal Examination Therefore college provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name                        |
|--------|-----------------------------|
| 1      | Gade Pranjal Pratap         |
| 2      | Ghatge Vaikrant Vijay       |
| 3      | Umalkar Kaustubh Rajeev     |
| 4      | Kadu Piyusha Vilas          |
| 5      | Shirole Amruta Suryaprakash |
| 6      | Thorat Prajakta Mukund      |
| 7      | Gole Akash Narayan          |
| 8      | Waghmare Swapnil Satywan    |
| 9      | Satyajeet Ravi              |
| 10     | Jagtap Manish               |



*S. Chhavi*  
Principal  
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S.Y.B.Sc. (Computer Science) 2016-17

**Schedule for Extra Guidance**

| Subject          | Days      | Teacher             | Slot             | Venue      |
|------------------|-----------|---------------------|------------------|------------|
| Electronics      | Monday    | Mr.Ramakant Bhujbal | 12.00-2.00<br>PM | Classroom1 |
|                  | Tuesday   |                     |                  |            |
| Computer Science | Wednesday | Mrs.Shilpa Pawale   |                  |            |
|                  | Thursday  |                     |                  |            |
| Mathematics      | Friday    | Mrs.Neeta Ranbhare  |                  |            |



*Dr. Shrinu*  
Principal  
P.V.G.'s College of Science  
Vidyanagari, S. No. 44, Parvati,  
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P.V.G's College of Science, Pune 9  
T.Y.B.Sc. (Computer Science) 2016-17

It is observed that following students have weak performance in Internal Examination Therefore college provided a slot after the regular time shedule during which subject experties will guide them.

| Sr.No. | Name                       |
|--------|----------------------------|
| 1      | More Sahil Sachin          |
| 2      | Khalate Ketan Nivrutti     |
| 3      | Shukla Sushant Mangesh     |
| 4      | Yedke Rushabh Rajesh       |
| 5      | Somwase Pravin S           |
| 6      | Jagtap Karan Chandrakant   |
| 7      | Pawar Akshay Satish        |
| 8      | RajeShirke Kunal Dhananjay |
| 9      | Valsangkar Akshay Deepak   |
| 10     | Dhage Akshay               |



*S. J. Chitambar*  
S/C Principal  
P.V.G.'s College of Science  
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**P.V.G's College of Science, Pune 9  
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**Schedule for Extra Guidance**

| Subject                              | Days      | Teacher                       | Slot               | Venue      |
|--------------------------------------|-----------|-------------------------------|--------------------|------------|
| Computer Science I (OS)              | Monday    | Respective Subject<br>Teacher | 10.00-12.00<br>am. | Classroom3 |
| Computer ScienceII (CC)              | Tuesday   |                               |                    |            |
| Computer Science III<br>(Networking) | Wednesday |                               |                    |            |
| Computer Science IV<br>(PHP)         | Thursday  |                               |                    |            |
| Computer Science V<br>(JAVA)         | Friday    |                               |                    |            |
| Computer Science VI<br>(CG)          | Saturday  |                               |                    |            |



*S/C Principal*  
Principal  
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**3.2 BEST OF TWO MARKING SCHEME**

P.V.G'S College Of Science, Pune  
S.Y. B.Sc. Un<sup>1</sup> Internal Marks Final (out of 10) Sem<sup>1</sup> I (2017-18)

| Roll No. | Name                  | CS I                          |                                |                     | CS II                         |                                |                     | M I                           |                                |                     | M II                          |                                |                     |
|----------|-----------------------|-------------------------------|--------------------------------|---------------------|-------------------------------|--------------------------------|---------------------|-------------------------------|--------------------------------|---------------------|-------------------------------|--------------------------------|---------------------|
|          |                       | Strategy 1 w/o attd out of 10 | Strategy 2 with attd out of 10 | Best of 2 out of 10 | Strategy 1 w/o attd out of 10 | Strategy 2 with attd out of 10 | Best of 2 out of 10 | Strategy 1 w/o attd out of 10 | Strategy 2 with attd out of 10 | Best of 2 out of 10 | Strategy 1 w/o attd out of 10 | Strategy 2 with attd out of 10 | Best of 2 out of 10 |
| 201      | Thatte Abhishek       | 6                             | 3                              | 6                   | 8                             | 4                              | 8                   | 10                            | 7                              | 10                  | 9                             | 8                              | 9                   |
| 202      | Sinnarkar Abhishek    | 3                             | 2                              | 3                   | 7                             | 3                              | 7                   | 8                             | 6                              | 8                   | 9                             | 9                              | 9                   |
| 203      | Deshpande Kaushik     | 7                             | 3                              | 7                   | 7                             | 5                              | 7                   | 6                             | 5                              | 6                   | 7                             | 7                              | 7                   |
| 204      | Chordiya Rohan        | 7                             | 7                              | 7                   | 7                             | 8                              | 8                   | 10                            | 9                              | 10                  | 10                            | 10                             | 10                  |
| 205      | Wanwase Mangalya      | 5                             | 2                              | 5                   | 7                             | 5                              | 7                   | 9                             | 5                              | 9                   | 9                             | 7                              | 9                   |
| 206      | Kulkarni Adwait       | 5                             | 4                              | 5                   | 6                             | 5                              | 6                   | 6                             | 5                              | 6                   | 5                             | 7                              | 7                   |
| 207      | Kolekar Tanmay        | 3                             | 7                              | 7                   | 7                             | 8                              | 8                   | 9                             | 9                              | 9                   | 7                             | 9                              | 9                   |
| 208      | Khardekar Sanket      | 3                             | 5                              | 5                   | 6                             | 7                              | 7                   | 7                             | 5                              | 7                   | 8                             | 8                              | 8                   |
| 209      | Dhumal Pratik         | 5                             | 6                              | 6                   | 5                             | 5                              | 5                   | 8                             | 4                              | 8                   | 7                             | 5                              | 7                   |
| 210      | Shah Moksha           | 5                             | 4                              | 5                   | 7                             | 4                              | 7                   | 7                             | 6                              | 7                   | 7                             | 6                              | 7                   |
| 211      | Karanjkar Nikita      | 5                             | 3                              | 5                   | 4                             | 5                              | 5                   | 7                             | 3                              | 7                   | 8                             | 7                              | 8                   |
| 212      | Bankar Rutuja         | 7                             | 3                              | 7                   | 6                             | 5                              | 6                   | 8                             | 4                              | 8                   | 7                             | 3                              | 7                   |
| 213      | Khedkar Raghav        | 6                             | 3                              | 6                   | 7                             | 4                              | 7                   | 7                             | 4                              | 7                   | 6                             | 3                              | 6                   |
| 214      | Dadhe Omkar           | 2                             | 1                              | 2                   | 2                             | 1                              | 2                   | 5                             | 2                              | 5                   | 5                             | 3                              | 5                   |
| 215      | Shukla Kamana         | 2                             | 1                              | 2                   | 5                             | 3                              | 5                   | 4                             | 2                              | 4                   | 6                             | 3                              | 6                   |
| 216      | Marne Sakshi          | 2                             | 1                              | 2                   | 6                             | 3                              | 6                   | 4                             | 2                              | 4                   | 6                             | 3                              | 6                   |
| 217      | Dhankawade Rajeshwari | 3                             | 1                              | 3                   | 7                             | 3                              | 7                   | 5                             | 2                              | 5                   | 4                             | 2                              | 4                   |
| 218      | Tawale Manali         | 7                             | 3                              | 7                   | 5                             | 3                              | 5                   | 8                             | 4                              | 8                   | 6                             | 3                              | 6                   |
| 219      | Jagtap Antaksha       | 3                             | 1                              | 3                   | 5                             | 3                              | 5                   | 7                             | 4                              | 7                   | 5                             | 3                              | 5                   |
| 220      | Kadam Rishikesh       | 1                             | 1                              | 1                   | 3                             | 3                              | 3                   | 5                             | 6                              | 6                   | 3                             | 2                              | 3                   |
| 221      | Bhalerao Shriram      | 2                             | 1                              | 2                   | 6                             | 3                              | 6                   | 5                             | 3                              | 5                   | 5                             | 2                              | 5                   |
| 222      | Karande Makarand      | 3                             | 2                              | 3                   | 3                             | 2                              | 3                   | 4                             | 4                              | 4                   | 5                             | 7                              | 7                   |
| 223      | Bansod Hrishikesh     | 4                             | 2                              | 4                   | 7                             | 5                              | 7                   | 5                             | 6                              | 6                   | 4                             | 6                              | 6                   |
| 224      | Katre Hrishikesh      | 4                             | 2                              | 4                   | 6                             | 3                              | 6                   | 9                             | 5                              | 9                   | 6                             | 3                              | 6                   |
| 225      | Khopade Vaishnavi     | 6                             | 3                              | 6                   | 6                             | 3                              | 6                   | 7                             | 4                              | 7                   | 6                             | 3                              | 6                   |
| 226      | Hardikar Arney        | 3                             | 2                              | 3                   | 7                             | 4                              | 7                   | 7                             | 3                              | 7                   | 8                             | 4                              | 8                   |
| 227      | Wagh Shravani         | 5                             | 6                              | 6                   | 7                             | 8                              | 8                   | 9                             | 9                              | 9                   | 8                             | 9                              | 9                   |
| 228      | Chaudhari Priya       | 3                             | 7                              | 7                   | 6                             | 8                              | 8                   | 10                            | 10                             | 10                  | 10                            | 10                             | 10                  |



# Pune Vidyarthi Griha's College of Science, Pune -09

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P.V.G'S College Of Science, Pune  
S.Y. Sc. University Internal Marks Final (out of 10) Semester I (2017-18)

| Roll No. | Name                  | E I                                 |                                      |                        | E II                                |                                      |                        | Eng                                 |                                      |                        | Signature of student |
|----------|-----------------------|-------------------------------------|--------------------------------------|------------------------|-------------------------------------|--------------------------------------|------------------------|-------------------------------------|--------------------------------------|------------------------|----------------------|
|          |                       | Strategy 1<br>w/o attd<br>out of 10 | Strategy 2<br>with attd<br>out of 10 | Best of 2<br>out of 10 | Strategy 1<br>w/o attd<br>out of 10 | Strategy 2<br>with attd<br>out of 10 | Best of 2<br>out of 10 | Strategy 1<br>w/o attd<br>out of 10 | Strategy 2<br>with attd<br>out of 10 | Best of 2<br>out of 10 |                      |
| 201      | Thatte Abhishek       | 10                                  | 5                                    | 10                     | 8                                   | 4                                    | 8                      | 4                                   | 2                                    | 4                      | <i>[Signature]</i>   |
| 202      | Sinnarkar Abhishek    | 8                                   | 6                                    | 8                      | 4                                   | 2                                    | 4                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 203      | Deshpande Kaushik     | 9                                   | 7                                    | 9                      | 7                                   | 3                                    | 7                      | 2                                   | 3                                    | 3                      | <i>[Signature]</i>   |
| 204      | Chordiya Rohan        | 10                                  | 10                                   | 10                     | 10                                  | 10                                   | 10                     | 6                                   | 8                                    | 8                      | <i>[Signature]</i>   |
| 205      | Wanwase Mangalya      | 9                                   | 5                                    | 9                      | 8                                   | 4                                    | 8                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 206      | Kulkarni Adwait       | 10                                  | 8                                    | 10                     | 5                                   | 3                                    | 5                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 207      | Kolekar Tanmay        | 8                                   | 9                                    | 9                      | 9                                   | 10                                   | 10                     | 4                                   | 7                                    | 7                      | <i>[Signature]</i>   |
| 208      | Khardekar Sanket      | 9                                   | 9                                    | 9                      | 5                                   | 5                                    | 5                      | 4                                   | 6                                    | 6                      | <i>[Signature]</i>   |
| 209      | Dhumal Pratik         | 7                                   | 7                                    | 7                      | 5                                   | 2                                    | 5                      | 3                                   | 4                                    | 4                      | <i>[Signature]</i>   |
| 210      | Shah Moksha           | 10                                  | 8                                    | 10                     | 6                                   | 3                                    | 6                      | 4                                   | 2                                    | 4                      | <i>[Signature]</i>   |
| 211      | Karanjkar Nikita      | 7                                   | 6                                    | 7                      | 6                                   | 3                                    | 6                      | 5                                   | 2                                    | 5                      | <i>[Signature]</i>   |
| 212      | Bankar Rutuja         | 7                                   | 6                                    | 7                      | 5                                   | 2                                    | 5                      | 5                                   | 3                                    | 5                      | <i>[Signature]</i>   |
| 213      | Khedkar Raghav        | 8                                   | 4                                    | 8                      | 9                                   | 4                                    | 9                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 214      | Dadhe Omkar           | 9                                   | 5                                    | 9                      | 5                                   | 2                                    | 5                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 215      | Shukla Kamana         | 7                                   | 4                                    | 7                      | 5                                   | 3                                    | 5                      | 4                                   | 2                                    | 4                      | <i>[Signature]</i>   |
| 216      | Marne Sakshi          | 3                                   | 2                                    | 3                      | 5                                   | 3                                    | 5                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 217      | Dhankawade Rajeshwari | 7                                   | 4                                    | 7                      | 2                                   | 1                                    | 2                      | 4                                   | 2                                    | 4                      | <i>[Signature]</i>   |
| 218      | Tawale Manali         | 7                                   | 4                                    | 7                      | 4                                   | 2                                    | 4                      | 3                                   | 1                                    | 3                      | <i>[Signature]</i>   |
| 219      | Jagtap Antaksha       | 5                                   | 3                                    | 5                      | 7                                   | 4                                    | 7                      | 5                                   | 2                                    | 5                      | <i>[Signature]</i>   |
| 220      | Kadam Rishikesh       | 5                                   | 2                                    | 5                      | 2                                   | 3                                    | 3                      | 2                                   | 1                                    | 2                      | <i>[Signature]</i>   |
| 221      | Bhalerao Shriram      | 8                                   | 4                                    | 8                      | 5                                   | 2                                    | 5                      | 5                                   | 2                                    | 5                      | <i>[Signature]</i>   |
| 222      | Karande Makarand      | 6                                   | 5                                    | 6                      | 5                                   | 2                                    | 5                      | 1                                   | 1                                    | 1                      | <i>[Signature]</i>   |
| 223      | Bansod Hrishikesh     | 9                                   | 7                                    | 9                      | 5                                   | 6                                    | 6                      | 3                                   | 2                                    | 3                      | <i>[Signature]</i>   |
| 224      | Katre Hrishikesh      | 8                                   | 4                                    | 8                      | 8                                   | 4                                    | 8                      | 5                                   | 3                                    | 5                      | <i>[Signature]</i>   |
| 225      | Khopade Vaishnavi     | 8                                   | 4                                    | 8                      | 6                                   | 3                                    | 6                      | 4                                   | 2                                    | 4                      | <i>[Signature]</i>   |
| 226      | Hardikar Amey         | 7                                   | 4                                    | 7                      | 4                                   | 2                                    | 4                      | 6                                   | 3                                    | 6                      | <i>[Signature]</i>   |
| 227      | Wagh Shravani         | 8                                   | 9                                    | 9                      | 9                                   | 9                                    | 9                      | 6                                   | 7                                    | 7                      | <i>[Signature]</i>   |
| 228      | Chaudhari Priya       | 8                                   | 9                                    | 9                      | 8                                   | 9                                    | 9                      | 3                                   | 7                                    | 7                      | <i>[Signature]</i>   |

*[Handwritten Signature]*