MALLA REDDY UNIVERSITY

Probability and Statistics

Qno	Question	Marks	Section
1	(a) A Statistics class for engineers consists of 25 Industrial, 10 Mechanical, 10 Electrical and 8 Civil Engineering students. If a student is randomly selected by the instructor to answer a question, find the probability that the student chosen is (i) an industrial engineering (ii) a civil or an electrical engineering. (b) There are 3 economists, 4 engineers, 2 statisticians and 1 doctor. A committee of 4 from among them is to be formed. Find the probability that the committee: (i) consist of one of each kind (ii) has at least one economist (iii) has the doctor as a member and three others.	8	Section-I
2	A fuse box containing 20 fuses, of which 5 are defective. If 2 fuses are selected at random and removed from the box in succession without replacing the first, what is the probability that both fuses are defective?	8	Section-I
3	In a certain assembly plant, three machines B_1, B_2 and B_3 make 30%, 45% and 25% respectively of the products. It is known from the past experience that 2%, 3% and 2% of the products made by each machine, respectively are defective. What is the probability that the product is defective? If the product was chosen randomly and found to be defective, what is the probability that it was made by machine: (i)B_1 (ii)B_2	8	Section-I
4	In a bolt factory, machines A, B and C manufactures respectively 20%, 30% and 50% of the total output. Of their outputs 5, 4 and 2 percent are known to be defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by (i) Machine A (ii) Machine B?	8	Section-I
5	Verify whether the following functions can serve as probability distributions or not. If yes, write down the cumulative probability distributions in each case: $(a)\ \ f(x) = \frac{x-2}{2},\ for\ x = 1,2,3,4.$ $(b)\ f(x) = \frac{x^2}{25},\ for\ x = 0,1,2,3,4$	8	Section-I
6	The error in reaction temperature, in ^0C, for a controlled laboratory experiment is a continuous random variable X having the probability density function: $f(x) = \begin{cases} \frac{x^2}{3}, & -1 < x < 2, \\ 0, & elsewhere \end{cases}$ (a) Verify that the above is probability density function or not (b) Find $P(0 < X < 1), P(0 < X \leq 1.5)$ (c) Compute the mean, variance and standard deviation of X	8	Section-I
7	Assuming that half of the population is vegetarian so that the chance of an individual being a vegetarian is 0.5 and assuming that 100 investigators can take a sample of 10 individuals to see whether they are vegetarians, how many investigators would you expect to report that three people or	8	Section-I

	less were vegetarians?		
8	In a certain town 20% of the population is literate, and assume that 200 investigators take a sample of 10 individuals, each to see whether they are literate. How many investigators would you expect to report that three people or less are literates in the sample?	8	Section-I
9	The number of breakdowns of a computer is a random variable having Poisson distribution with a mean of 1.8 per month. Find the probability that the computer will function for a month a) without any breakdowns b) with only one breakdown c) with at least 2 breakdowns.	8	Section-I
10	A manufacturer of cotter pins knows that 2% of his product is defective. If he sells cotter pins in boxes of 200 and guarantees that not more than 5 pins will be defective. What is the probability that a box will fail to meet the guaranteed quality by using (i) formula for binomial distribution (ii) Poisson approximation to the binomial distribution?	8	Section-I
11	Given a standard normal distribution, find the area under the curve that lies: a) to the left of z = -1.39; b) to the right of z = -0.89 c) between z = -0.48 and z = 1.74	8	Section-II
12	If a random variable has the standard normal distribution, find the probability that it will take on a value: a) less than 1.65; b) greater than -1.95; c) lies in between -1.75 and -1.04	8	Section-II

13	Given a standard normal distribution, find the value of k such that
	a) P (Z > k) = 0.2946;
	b) P (Z < k) = 0.0427;
	c) P (k < Z < −0.18) = 0.4197.
	d) P (−0.93 < Z < k) = 0.7235.
		8	Section-II

14	A research scientist reports that mice will live an average of 40 months when their diets are sharply restricted and then enriched with vitamins and proteins. Assuming that the lifetimes of such mice are normally distributed with a standard deviation of 6.3 months, find the probability that a given mouse will live a) more than 32 months; b) less than 28 months; c) between 37 and 49 months.	8	Section-II
15	The time required to assemble a piece of machinery is a random variable having approximately a normal distribution with mean (μ) is 12.9 minutes and standard deviation (σ) is 2.0 minutes. What is the probability that the assembly of a piece of machinery of this kind will take: (i) at least 11.5 minutes (ii) anywhere from 11.00 to 14.80 minutes?	8	Section-II
16	The hourly wages of 1000 workmen are normally distributed	8	Section-II

	with a mean of Rs. 70 and a standard deviation of Rs.5. Estimate the number of workers whose hourly wages will be (i) between Rs.69 and Rs.72 (ii) more than Rs.75 (iii) less thanRs.63.		
17	A population consists of 4 observations 10, 20, 30, 40. Determine the mean and variance of the population. Write all the possible samples of size 2 (with replacement and without replacement). Construct the sampling distribution about mean. Show that the mean of sample means is equal to the population mean.	8	Section-II
18	A population consists of observations 2, 3, 6, 8 and 11. Determine the mean and variance of the population. Write all the possible samples of size 2 (with replacement and without replacement). Construct the sampling distribution about mean. Show that the mean of sample means is equal to the population mean.	8	Section-II
19	An industrial engineer collected data on the labor time required to produce an order of automobile mufflers using a heavy stamping machine. The data on times (hours) for 52orders of different parts has a mean of 1.865 hours with a standard deviation of 1.250 hours. What can one assert with 99% confidence about the maximum error, if sample mean is used as a point estimate the true population means labor time required to run the heavy stamping machine?	8	Section-II
20	The management of a manufacturing firm wishes to determine the average time required to complete a certain manual operation. There should be 95% confidence that the error in the estimate will not exceed 2 minutes. How large a sample size is required if the standard deviation of the time needed to complete the manual operation is estimated by a time and motion study expert as 10minutes?	8	Section-II
21	(a) An electrical firm manufactures light bulbs that have a lifetime that is approximately normally distributed with a mean of 800 hours and a standard deviation of 40 hours. Test the hypothesis that $\mu = 800$ hours against the alternative $\mu \neq 800$ hours, if a random sample of 30 bulbs has an average life of 788 hours. Use a 0.05 level of significance. (b) The manufacturer of television tubes knows from the past experience that the average life of a tube is 2000 hours with a standard deviation of 200 hours. A sample of 100 tubes has an average life of 1950 hours. Test at 0.05 level of significance if this sample came from a normal population of mean 2000hours.	8	Section-III
22	An investigation of two kinds of photocopying equipment showed that 71 failures of the first kind of equipment took on the average 83.2 minutes to repair with a standard deviation of 19.3 minutes, while 75 failures of the second kind of equipment took on the average 90.8 minutes to repair with a standard deviation of 21.4 minutes. Test the null hypothesis $\mu_1 - \mu_2 = 0$ (the hypothesis that on the average it takes an equal amount of time to repair either kind of equipment) against the alternative hypothesis $\mu_1 - \mu_2 \neq 0$ at the 0.05 level of significance.	8	Section-III
23	A manufacturer claims that the average tensile strength of Thread-A exceeds the average tensile strength of Thread-B by at least 12 kilograms. To test this claim, 50 pieces of each type of thread were tested under similar conditions. Type A thread had an average strength of 86.7 kilograms with a standard deviation of 6.28 kilograms, while Type B thread	8	Section-III

<table>
<tr><td></td><td>had an average tensile strength of 77.8 kilograms with a standard deviation of 5.61kilograms. Test the manufacturer's claim using a 0.05 level of significance.</td><td></td><td></td></tr>
<tr><td>24</td><td>Ten individuals are chosen at random from a normal population and their heights are found to be: 63, 63, 66, 67, 68, 69, 70, 70, 71, 71 in inches. Test if the sample belongs to the population whose mean height is 66 inches?</td><td>8</td><td>Section-III</td></tr>
<tr><td>25</td><td>A manufacturer of gunpowder had developed a new powder which is designed to produce a muzzle velocity equal to 3000ft/sec. Seven shells are loaded with the charge and the muzzle velocities are measured. The resulting velocities are: 3005, 2935, 2965, 2995, 3905, 2935 and 2905. Do these data present sufficient evidence to indicate that the average velocity differs from 3000ft/sec?</td><td>8</td><td>Section-III</td></tr>
<tr><td>26</td><td>(a) The gain in weight of two random samples of patients fed on two different Diets: A and B are given below. Examine whether the difference in mean increase in weight is significant?
<table>
<tr><td>Diet-A</td><td>13</td><td>14</td><td>10</td><td>11</td><td>2</td><td>16</td><td>10</td><td>8</td><td></td></tr>
<tr><td>Diet-B</td><td>7</td><td>10</td><td>12</td><td>8</td><td>10</td><td>11</td><td>9</td><td>10</td><td>11</td></tr>
</table>
(b) The following data represent the running times (in minutes) of films produced by two motion-picture companies:
<table>
<tr><td>Company-1</td><td>102</td><td>86</td><td>98</td><td>109</td><td>92</td><td></td><td></td></tr>
<tr><td>Company-2</td><td>81</td><td>165</td><td>97</td><td>134</td><td>92</td><td>87</td><td>114</td></tr>
</table>
Test the hypothesis that the average running time of films produced by company-2 exceeds the average running time of film produced by the company- 1 by 10 minutes. Use a 0.01 level of significance.</td><td>8</td><td>Section-III</td></tr>
<tr><td>27</td><td>Two independent samples of 8 and 7 items respectively had the following values of the variable:
<table>
<tr><td>Sample – I</td><td>9</td><td>11</td><td>13</td><td>11</td><td>15</td><td>9</td><td>12</td><td>14</td></tr>
<tr><td>Sample – II</td><td>10</td><td>12</td><td>10</td><td>14</td><td>9</td><td>8</td><td>10</td><td></td></tr>
</table>
Do the estimates of population variances differ significantly?</td><td>8</td><td>Section-III</td></tr>
<tr><td>28</td><td>200 digits were chosen at random from a set of tables. The frequency of the digits were:
<table>
<tr><td>Digits</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr>
<tr><td>Frequency</td><td>18</td><td>19</td><td>23</td><td>21</td><td>16</td><td>25</td><td>22</td><td>20</td><td>21</td><td>15</td></tr>
</table>
Use Chi-Square test, to assess the correctness of hypothesis that the digits were distributed in equal number in the table at the level of significance0.05.</td><td>8</td><td>Section-III</td></tr>
<tr><td>29</td><td>A die is thrown 60times with the following results.
<table>
<tr><td>Face</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>Frequency</td><td>8</td><td>7</td><td>12</td><td>8</td><td>14</td><td>11</td></tr>
</table>
Test at 5% level of significance if the die is unbiased, at 0.05 level of significance.</td><td>8</td><td>Section-III</td></tr>
<tr><td>30</td><td>To determine whether there really is a relationship between an employee's performances in the company's training</td><td>8</td><td>Section-III</td></tr>
</table>

	programme and his or her ultimate success in the job, the company takes a sample of 400 cases from its very extensive files and obtained the results shown in the following table:		

		Performance in Training Programme		
		Below Average	Average	Above Average
Success in Job (Employers Rating)	Poor	23	60	29
	Average	28	79	60
	Very Good	9	49	63

31	a) Calculate the correlation coefficient between X and Y from the following data:								8	Section-IV

X	65	66	67	67	69	68	70	72
Y	67	68	65	68	72	72	69	71

b) Calculate the correlation coefficient between X and Y from the following data:

X	1	3	4	5	7	8	10
Y	2	6	8	10	14	16	20

c) Calculate the correlation coefficient between X and Y from the following data:

X	-3	-2	-1	1	2	3
Y	9	4	1	1	4	9

32	The marks obtained by 10 students in Mathematics (X) and in Statistics (Y) are given below. Compute the correlation coefficient between X and Y.										8	Section-IV

Roll No.	1	2	3	4	5	6	7	8	9	10
X	75	30	60	80	53	35	15	40	38	48
Y	85	45	54	91	58	63	35	43	45	44

33	The marks secured by recruits in Selection Test (X) and in the Proficiency Test (Y) are given below. Use rank correlation method to determine the relationship between X and Y.										8	Section-IV

X	10	15	12	17	13	16	24	14	22	20
Y	30	42	45	46	33	34	40	35	39	38

34	Given the following Aptitude and I.Q. Scores for a group of students. Compute the rank correlation coefficient between them.										8	Section-IV

Aptitude Score	57	58	59	59	60	61	60	64
I.Q Score	97	108	95	106	120	126	113	110

35	A Chemical company wishing to study the effect of extraction time(X) on the efficient of extraction operation(Y), obtained the following data:										8	Section-IV

X	27	45	41	19	35	39	19	49	15	31
Y	57	64	80	46	62	72	52	77	57	68

Obtain the two regression lines. Also determine the extraction efficiency one can expect when the extraction time is 35 minutes.

36	The following data gives the experience of the machine operators and their performance ratings as given by the number of good parts turned out per 100 pieces.										8	Section-IV

Experience(X)	16	12	18	4	3	10	5	12
Performance Ratings (Y)	88	87	89	68	78	80	75	83

<table>
<tr><td></td><td>Obtain the regression line of performance ratings on experience and estimate the probable performance if the operator has 7 years of experience.</td><td></td><td></td></tr>
<tr><td>37</td><td>For the following bivariate data obtain the two lines of regression. Determine the value of Y when X=3.5
<table>
<tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>Y</td><td>14</td><td>33</td><td>40</td><td>63</td><td>76</td><td>85</td></tr>
</table></td><td>8</td><td>Section-IV</td></tr>
<tr><td>38</td><td>Fit a Straight line of the form: Y = a + bX for the following data
For 8 randomly selected observations, the following data were recorded:
<table>
<tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>Y</td><td>1.0</td><td>1.2</td><td>1.8</td><td>2.5</td><td>3.6</td><td>4.7</td><td>6.6</td><td>9.1</td></tr>
</table></td><td>8</td><td>Section-IV</td></tr>
<tr><td>39</td><td>Fit a Second-degree parabola of the form: $Y = a + bX + cX^2$ for the following data
For 10 randomly selected observations, the following data were recorded:
<table>
<tr><td>Over time (X)</td><td>1</td><td>1</td><td>2</td><td>2</td><td>3</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Additional Units (Y)</td><td>2</td><td>7</td><td>7</td><td>10</td><td>8</td><td>12</td><td>10</td><td>14</td><td>11</td><td>14</td></tr>
</table></td><td>8</td><td>Section-IV</td></tr>
<tr><td>40</td><td>Fit a Second-degree parabola of the form: $Y = a + bX + cX^2$ for the following data and use to determine the value of Y corresponding to the value of X=6.2 and the value of X when Y=14.5
<table>
<tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr>
<tr><td>Y</td><td>9</td><td>8</td><td>10</td><td>12</td><td>11</td><td>13</td><td>14</td><td>16</td><td>15</td></tr>
</table></td><td>8</td><td>Section-IV</td></tr>
<tr><td>41</td><td>A television repairman finds that the time spent on his jobs has an exponential distribution with mean of 30 minutes. If he repairs sets in the order in which they came in, and if the arrival of sets follows a Poisson distribution approximately with an average rate of 10 per 8-hour day, what is the repairman's expected idle time each day? How many jobs are ahead of the average set just brought in?</td><td>8</td><td>Section-V</td></tr>
<tr><td>42</td><td>Students arrive at the head office according to a Poisson input process with a mean rate of 40 per hour. The time required to serve a student has an exponential distribution with a mean of 50 per hour. Assume that the students are served by a single individual, find the average waiting time of a student.</td><td>8</td><td>Section-V</td></tr>
<tr><td>43</td><td>New Delhi Railway Station has a single ticket counter. During the rush hours, customers arrive at the rate of 10 per hour. The average number of customers that can be served is 12 per hour. Find out the following: (i) Probability that the ticket counter is free. (ii) Average number of customers in the queue.</td><td>8</td><td>Section-V</td></tr>
<tr><td>44</td><td>There is congestion on the platform of a railway station. The trains arrive at a rate of 30/days. The service time for any train is ED with an average of 36mins. Calculate: (a) Mean queue size (b) Probability that there are more than 10 trains in the system.</td><td>8</td><td>Section-V</td></tr>
<tr><td>45</td><td>At a one-man barber shop customers arrive according to P.D with a mean arrival rate of 5/hr. The hair cutting time is ED with a haircut taking 10 min on an average assuming that the customers are always willing to wait find:
a) Average number of customers in the shop
b) Average waiting time of a customer
c) The percent of time an arrival Can walk right without having to wait
d) The probability of a customer waiting more than 5mins.</td><td>8</td><td>Section-V</td></tr>
</table>

46	Consider a single server queuing system with Poisson input, exponential service times. Suppose the mean arrival rate is 3 calling units per hour, the expected service time is 0.25 hour and the maximum permissible calling units in the system is two. Derive the steady-state probability distribution of the number of calling units in the system, and then calculate the expected number in the system.	8	Section-V
47	At a railway station, only one train is handled at a time. The railway yard is sufficient only for two trains to wait while the other is given signal to leave the station. Trains arrive at the station at an average rate of 6 per hour and the railway station can handle them on an average of 12 per hour. Assuming Poisson arrivals and exponential service distribution, find the steady-state probabilities for the various number of trains in the system. Also find the average waiting time of a new train coming into the yard.	8	Section-V
48	If for a period of 2 hours in the day (8 to 10 a.m.) trains arrive at the yard every 20 minutes but the service time continues to remain 36 minutes, then calculate for this period a) the probability that the yard is empty, and b) the average number of trains in the system, on the assumption that the line capacity of the yard is limited to 4 trains only.	8	Section-V
49	A one – person barbershop has six chairs to accommodate people waiting for haircut. Assume customers who arrive when all six chairs are full, leave without entering the barbershop. Customers arrive at the average rate of 3 per hour and spend on average of 15 minutes in the barbershop. Then find the a) the probability a customer can get directly into the barber chair upon arrival. b) Expected number of customers waiting for haircut. c) Effective arrival rate. d) The time a customer can expect to spend in the barbershop.	8	Section-V
50	Trains arrive at the yard every 15 minutes and the service rate is 33 minutes. If the line capacity at the yard is limited to 4 trains, find a) The probability that the yard is empty. b) The average number of trains in the system.	8	Section-V

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Data Visualization in R

Qno	Question	Marks	Section
1	What is statistics? Explain Descriptive statistics in detail.	8 M	Section-I
2	a) Distinguish between Descriptive Statistics and Inferential Statistics. b) Explain variables and its types	4 M 4M	Section-I
3	What is Sampling? Explain different types of sampling methods.	8M	Section-I
4	What is Data visualization? Give characteristics of Effective Graphical Visual	8 M	Section-I
5	What are the Advantages and Disadvantages of using R for data Visualization? Also give application areas.	8 M	Section-I
6	Discuss data visualization and its importance in Detail	8 M	Section-I
7	Discuss different types of sampling methods with suitable example.	8 M	Section-I
8	Explain the process of installing R and R Studio	8 M	Section-I
9	Discuss Importance of Data Visualization in different areas.	8 M	Section-I
10	Explain the different types of descriptive statistics in detail with a suitable example.	8 M	Section-I
11	a) List the Features of R programming b) Explain the rules for writing a variable name in R with example.	4 M 4 M	Section-II
12	Explain the data types of R programming language with an example.	8 M	Section-II
13	a) Demonstrate how to create and access the elements of following R objects with example 1) Vector 2) dataframe b) Write a R program to count the number of NA values in a data frame column	4 M 4 M	Section-II
14	Illustrate Descriptive Data Analysis using R in detail.	8 M	Section-II
15	Explain how to import data from different sources in R.	8 M	Section-II
16	Discuss about how to install and load packages in R. Also mention different packages used for data visualization in R	8 M	Section-II
17	Discuss the verbs of 'dplyr' package in R with an example	8 M	Section-II
18	Explain the different functions of 'tidyr' package in R with suitable example.	8 M	Section-II
19	Discuss in detail how to handle date and time in R with lubridate package	8 M	Section-II
20	Explain the following commands of Tidyr Package with an example a) gather () b) spread () c) unite () d) separate ()	8 M	Section-II
21	Explain different types of plots using R.	8 M	Section-III
22	Explain the following plot with suitable example: a) Barplot b) boxplot c) pie chart d) scatter plot	8 M	Section-III
23	How to create a 3D pie chart in R? explain with an example	8 M	Section-III
24	Discuss about Pie chart in R and also create a pie chart for a student marks percentage.	8 M	Section-III

25	a) How do you create a jitter plot for a dataset using ggplot2 b) Write a short note on: The grammar of graphics	8 M	Section-III
26	Explain the process of plotting a graph using different layers of ggplot2 in detail	8 M	Section-III
27	Explain different types of colour palette for visualization in RColorBrewer package in R.	8 M	Section-III
28	Illustrate working with Legends in ggplot2 with an example.	8 M	Section-III
29	Demonstrate the process of creating side by side pie charts in R	8 M	Section-III
30	Explain how to create following plots using ggplot2 with example a) jitter plot b) scatter plot	8 M	Section-III
31	Explain the process of generating the Word Clouds in R	8 M	Section-IV
32	Discuss the implementation of waffle chart in R with suitable example	8 M	Section-IV
33	Demonstrate the implementation of radar chart in R with an example.	8 M	Section-IV
34	a) Write and explain the different packages used for creating maps in R. b) Explain Plotting Simple Features (sf) with Plot	4 M 4 M	Section-IV
35	Explain the process of creating an Interactive Web Map with leaflet package in R	8 M	Section-IV
36	Write a short note on: Labelled maps in R	8 M	Section-IV
37	Explain the following packages used for maps in R: a) Leaflet b) mapview	8 M	Section-IV
38	Write a short note on: a) waffle charts in R b) word cloud in R	8 M	Section-IV
39	Illustrate the process of plotting points on a Map with mapview	8 M	Section-IV
40	Explain with an example the process of Creating a Choropleth Map with ggplot2	8 M	Section-IV
41	Explain Important Functions of plotly package in R.	8 M	Section-V
42	a) Differentiate between ggplot2 and plotly packages in R. b) How to add widgets to shiny app? Give one example.	4 M 4 M	Section-V
43	Explain the following functions of 'plotly' package in R a) plot_ly( ) b) plotly_build( )	8 M	Section-V
44	Discuss the process of plotting a bubble plot using 'plotly' package in R	8 M	Section-V
45	Explain the following plots using 'plotly' package in R: a) Bar plot b) Scatter plot	8 M	Section-V
46	Explain the structure of shiny app in detail	8 M	Section-V

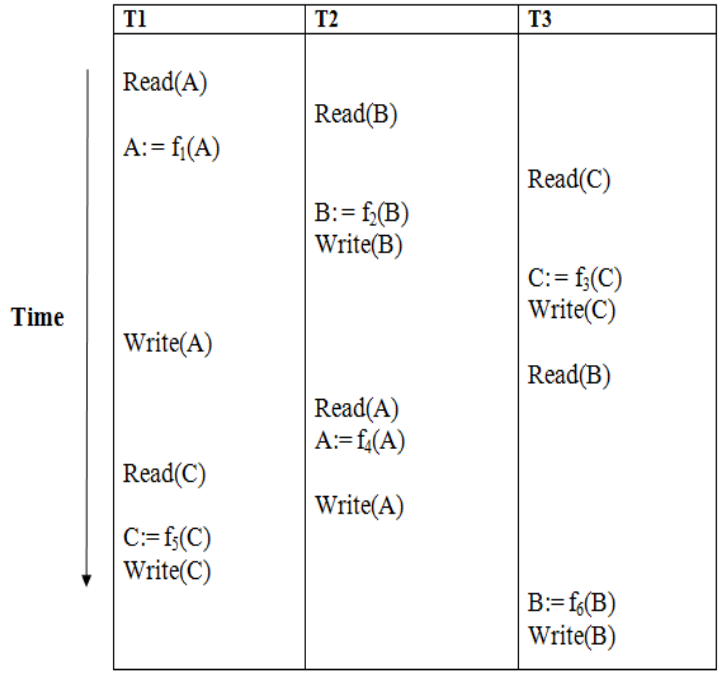
47	a) List the standard Shiny widgets. b) Give the features of plotly package in R.	4 M 4 M	Section-V
48	Explain the user interface section and server section of shiny app in detail.	8 M	Section-V
49	Explain the following Verb Functions in Shiny Package a) **fluidPage( )** **b) shinyApp()** **c) reactive()** **d)** observeEvent( )	8 M	Section-V
50	Give the syntax for following functions of shiny package in R: a)actionButton() b)checkboxGroupInput() c)extInput() d**) textOutput()**	8 M	Section-V

Database Management Systems

Qno	Question	Marks	Section
1	What is Data Model? List out various Data Model and explain with suitable example.	8	Section-I
2	Describe the Structure of Database Management system with a neat diagram.	8	Section-I
3	Differentiate between File System and Database Management System.	8	Section-I
4	What is meant by Data Abstraction? Describe various levels of Data Abstraction.	8	Section-I
5	Define Data Independence. Describe Physical Data Independence and Logical DataIndependence with a neat diagram.	8	Section-I
6	Define Database Management System (DBMS). List out the advantages and various applications of DBMS.	8	Section-I
7	Explain Storage System and its types in DBMS briefly.	8	Section-I
8	List the types of Database Users with their roles.	8	Section-I
9	Define Data Model Schema and instance. Illustrate with an example.	8	Section-I
10	What is 3 level Architecture for DBMS and also explain how it can be used.	8	Section-I
11	What is Relational Model? List out various Relational Integrity Constraints with examples.	8	Section-II
12	List out the types of keys and explain them with examples.	8	Section-II
13	Construct an Entity Relationship diagram for a University Database. Assume your own entities (Minimum of 5 entities), attributes and relations.	8	Section-II
14	What is Relational Algebra? List out various types of Relational operations and explain with an example.	8	Section-II
15	What is Relational Calculus? Describe types of Relational Calculus with suitable example.	8	Section-II
16	Illustrate various types of attributes with notations. What is meant by Mapping Cardinality? List and explain types of Cardinality Ratios.	8	Section-II
17	Translate Entity Relationship diagram into a collection of	8	Section-II

	tables with associated constraints to a relational database schema.		
18	Define view. Write the syntax for creating updating and destroying a view with suitableexample for Simple and Complex Views.	8	Section-II
19	Explain the following terms with examples. i. Generalization ii. Specialization iii. Aggregation	8	Section-II
20	Illustrate different types of Constraints with examples.	8	Section-II
21	Convert ER Diagram to Relational Model by listing the rules for attributes, and relationship.	8	Section-III
22	Explain Create, Insert, Delete, Select commands with examples.	8	Section-III
23	Identify and list various Data Manipulation Language (DML) commands. Explain DML commands with suitable example.	8	Section-III
24	Identify and list various Data definition Language (DDL) commands. Create a table by specifying key and referential constraints in Structured Query Language.	8	Section-III
25	Make use of Structured Query Language in solving the following with proper example i. Sub queries & Correlated Queries ii. Joins iii. Aggregate functions	8	Section-III
26	List and explain various commands on Transaction Control Language and Data Control language.	8	Section-III
27	Explain how Order By , Group By , Having Clauses used in SQL	8	Section-III
28	How would you use the operators IN, EXISTS, BETWEEN and LIKE in writing sub queries? Why are they useful? Explain with an example.	8	Section-III
29	Consider following relations and write SQL queries for given statements. Assume suitable constrains: Instructor (ID, Name, Dept_name , Salary) Teaches (ID, Course_id, Sec_id, Semester (even/odd),Year) i) Find the average salary of the instructors in CSE department. ii) Find the number of instructors in each department who teach a course in even semester of 2016 iii) Find the names of instructor with salary amounts between 30000 and 50000. iv) Find the minimum and maximum Salary in each department. v)Find the Instructor names that start with letter “A”	8	Section-III
30	Illustrate an example for Nested Queries and Correlated Queries.	8	Section-III
31	Define Schema Refinement. Analyze the problems caused by redundancy.	8	Section-IV
32	Define Functional Dependency. List and explain various Functional Dependencies.	8	Section-IV
33	Define normalization. Interpret the data by applying various normalization techniques such as 1Normal Form (1NF), 2NF	8	Section-IV

	and 3NF to reduce redundancy in database tables.		
34	What is the relationship exists between 3Normal Form (3NF) and Boyce Codd NormalForm (BCNF). Distinguish between 3NF and BCNF. Consider any one relation schema. Which is 2NF and convert into BCNF?	8	Section-IV
35	Define Decomposition. Describe various types of Decomposition with suitable example.	8	Section-IV
36	What are the problems caused by Redundancy? Explain about Normalization and need for normalization.	8	Section-IV
37	Define and explain the Axioms of Functional Dependencies.	8	Section-IV
38	Explain various types of Inference Rules used for Normalization.	8	Section-IV
39	Consider a relation R (A, B, C, D, E, F, G) with the functional dependencies set F:{A → BC BC → DE, D → F, CF → G} Find all candidate keys in relation R.	8	Section-IV
40	Given a relation R (P, Q, R, S, T, U, V, W, X) and Functional Dependency set F: {PQ → R, QS → TU, PS → VW, and P → X}, determine the given R is in which normal form?	8	Section-IV
41	List out the ACID properties. Describe the transaction states with a neat diagram.	8	Section-V
42	Describe Lock based concurrency control with suitable example.	8	Section-V
43	Explain different types of Locks used in concurrency control.	8	Section-V
44	Describe concurrency control with Time stamp based locking protocols.	8	Section-V
45	Explain concurrency control with optimistic methods.	8	Section-V
46	Define locking protocol. Describe the Strict Two-Phase Locking protocol with an example	8	Section-V
47	What is 2-Phase Locking? Explain phases in it.	8	Section-V
48	Classify the types of Schedules. List out the benefits of Serializability in DBMS.	8	Section-V

49	 **Schedule S1** Apply Precedence Rule and check whether the above given Schedule is Serializable or not.	8	Section-V
50	Define Serializability. Explain Conflict Serializability and View Serializability with an example.	8	Section-V

Data Wrangling

Qno	Question	Marks	Section
1.	Define Data Science and explain the applications of data science in various sectors.	8	Section-I
2.	Define Data Wrangling. Explain its importance and various steps involved in it.	8	Section-I
3.	Write about the essential python libraries.	8	Section-I
4.	Write about the built in data structures used in python.	8	Section-I
5.	a) Explain about List comprehension with example? b) Explain about Dictionary comprehension with example?	4 4	Section-I
6.	What are Functions? Explain about Local and Global Variable?	8	Section-I
7.	Explain about importance of data, types of data and sources of data?	8	Section-I
8.	a) What are the different types of data quality issues in process of Data wrangling? b) Explain about Anonymous (lambda) Functions?	4 4	Section-I
9.	What is Numpy. What are its main areas of functionalities used for data analysis applications.	8	Section-II
10.	a) Write about numpy ndarray. b) What are the arithmetic operations performed using numpy arrays. Explain with examples.	4 4	Section-II

11.	Write about different array creation methods in numpy. Explain with examples.	8	Section-II
12.	a) Explain about the basic data structures used in pandas. b) Write the syntax for creating a Series with list, and a Data Frame with list and dictionary.	8	Section-II
13.	What is Pandas? Write about the essential functionalities in pandas?	8	Section-II
14.	Explain the following in detail using suitable examples: a) Re indexing b) Dropping entries from an axis. c) Indexing d) Selection e) Filtering	8	Section-II
15.	a) What is Data Frame in Pandas? Explain with example b) What is Series in Pandas? Explain with example.	4 4	Section-II
16.	a) What are Different ways of creating Data Frame? b) What is Python Pandas and what is it used for?	4 4	Section-II
17.	Explain About the significant features of Pandas Library?	8	Section-II
18.	a)How do you split a Data Frame according to a Boolean criterion? b)How can we convert Numpy array into a DataFrame?	4 4	Section-III
19.	a)How are iloc and loc different ?Give syntax and examples b)How to set index to Pandas Data Frame?	4 4	Section-III
20.	a) How to add a row to a Pandas Data Frame? b)how to add a column to a Pandas Data Frame?	4 4	Section-III
21.	Explain about web scraping with an example?	8	Section-IV
22.	Write about Interacting with web API's with an example.	8	Section-IV
23.	Write about function arguments used for reading csv/excel files.	8	Section-III
24.	Explain about Data cleaning and preparation?	8	Section-IV
25.	a) How do you handle the Missing data? b) Explain how do you filter out Missing Data?	4 4	Section-IV
26.	Explain about a) removing duplicates b) transforming data using a function or mapping	4 4	Section-IV
27.	a)Explain about replacing values b)Explain about renaming index	4 4	Section-IV
28.	Write about detecting and filtering outliers?	8	Section-IV
29.	Write about regular expression and write the code to retrieve pattern on email address?	8	Section-IV
30.	Explain about the different built -in string manipulation methods?	8	Section-IV
31.	Explain the different type of joins in pandas with syntax and	8	Section-V

	examples		
32.	a) Explain Group-by function in Pandas? b) What is the use of Pandas Aggregate Function?	4 4	Section-V
33.	Explain with example the use of Merge and Concat function?	8	Section-V
34.	Explain in detail about finding and treating Null values?	8	Section-V
35.	a) What is the use of Pandas Data Frame aggregate () function and explain its syntax and parameters? b) Explain how Groupby method is used on different columns?	4 4	Section-V
36.	Explain about the Exploratory data Analysis and methods used in EDA?	8	Section-V
37.	What is data aggregation? What are the different aggregation functions? Explain with examples	8	Section-V
38.	Explain about combining and merging Datasets? Write about different join type?	8	Section-V
39.	Explain about Concatenation along Axis? Explain with example about concat function arguments?	8	Section-V
40.	What is Hierarchical Indexing? Give examples. Explain about indexing with data frame's columns?	8	Section-V

Operating System

Qno	Question	Marks	Section
1	Elaborate on Batch and Multi Programmed Operating systems with neat sketch and list out the advantages and disadvantages?	8	Section-I
2	Explain about Time sharing and Personal Computer Operating systems with neat sketch and list out the advantages and disadvantages	8	Section-I
3	Define operating system. Explain and list out the services provided by the operating system in detail?	8	Section-I
4	a) Discuss the different Design Issues related to the Operating System. b) Discuss about System Calls?	4+4	Section-I
5	a) Explain about Real Time Operating systems and list out the advantages and disadvantages. b) Discuss about system components in OS?	4+4	Section-I
6	Elaborate on Parallel and Distributed Operating systems with neat sketch and list out the advantages and disadvantages?	8	Section-I
7	Discuss the Different Structured methods used in the OS with neat sketch and list out the merits and demerits for each?	8	Section-I
8	Explain the different structuring methods used in the OS with neat sketch?	8	Section-I
9	a)Discuss the services offered by the Operating Systems	4+4	Section-I

	b) Explain about System calls?		
10	Discuss the system components of OS and explain the structure of OS with neat sketch?	8	Section-I
11	Discuss about Process states and Process Control block with a neat sketch?	8	Section-II
12	a) Discuss the different schedulers used in process scheduling b) Explain the operations performed on a process?	4+4	Section-II
13	Explain First Come First Serve, Priority Scheduling Algorithms with suitable example and list out the Advantages and Disadvantages?	8	Section-II
14	Explain Shortest Job First, Round Robin Scheduling Algorithms with suitable example and list out the Advantages and Disadvantages?	8	Section-II
15	Discuss about the different multi-threading models with neat sketch?	8	Section-II
16	a) Explain the concept of threads. b) Discuss the different threading issues in Multithreading?	4+4	Section-II
17	a) Discuss about Thread Libraries? b) Explain the concept of scheduling criteria?	4+4	Section-II
18	a) Differentiate between Pre-emptive and Non Pre-emptive scheduling algorithms? b) Discuss about Multilevel Queue Scheduling algorithm?	4+4	Section-II
19	Explain the co-operating process in OS and its methods with neat sketch?	8	Section-II
20	a) Explain the layout of process in main memory with neat sketch? b) Discuss the different Process scheduling Queues?	4+4	Section-II
21	a) Explain the System model for Deadlocks? b) Discuss the methods for handling deadlocks?	4+4	Section-III
22	a) Discuss the necessary conditions for a deadlock to occur? b) Discuss about Resource Allocation Graph?	4+4	Section-III
23	Explain in detail about the deadlock prevention and its methods?	8	Section-III
24	Explain the Deadlock Avoidance and Discuss the Resource Allocation Graph Algorithm with example?	8	Section-III
25	a) Discuss about Safe and Unsafe State in deadlocks? b) Explain Bankers Algorithm with a suitable example?	4+4	Section-III
26	Explain about Deadlock Detection and write the algorithm for it with a suitable example?	8	Section-III
27	a) Discuss Wait for Graph in deadlock detection? b) List out the methods to recover from deadlock?	4+4	Section-III
28	Discuss the Critical Section Problem in Process Synchronization?	8	Section-III
29	Explain the Semaphores and list out its advantages and disadvantages?	8	Section-III
30	a) Discuss about monitors in Process Synchronization? b) Compare & contrast between semaphores and monitor?	8	Section-III
31	a)Explain the swapping with neat sketch b) Discuss about contiguous memory allocation?	4+4	Section-IV
32	a) Discuss the hardware protection in memory management?	4+4	Section-IV

	b) Explain the Logical and physical address space?		
33	Explain the paging concept in memory management with neat sketch?	8	Section-IV
34	a) Discuss about Segmentation? b) Explain the concept of Demand Paging?	4+4	Section-IV
35	Explain the different page replacement algorithms with a suitable example?	8	Section-IV
36	Explain interprocess communication using shared memory?	8	Section-IV
37	Explain the FIFO and LRU page replacement algorithm with suitable example?	8	Section-IV
38	Discuss how interprocess communication takes place using FIFO?	8	Section-IV
39	Discuss how interprocess communication takes place using message queues?	8	Section-IV
40	a) Discuss about Virtual Memory? b) Explain the need for Page Replacement?	4+4	Section-IV
41	Discuss the different Access methods used in the file system?	8	Section-V
42	What is a Directory? Explain the different Directory structures used in File system?	8	Section-V
43	Explain the file system interface and its operations?	8	Section-V
44	a) Discuss about the file structure? b) Explain allocation methods in file?	4+4	Section-V
45	a)Explain about file protection b) Discuss the File access methods?	4+4	Section-V
46	Explain the different system calls used for file I/O Operations?	8	Section-V
47	Discuss about disk scheduling algorithms in OS?	8	Section-V
48	Explain the FCFS and SSTF disk scheduling algorithm with suitable example?	8	Section-V
49	Explain the SCAN and C-SCAN disk scheduling algorithm with suitable example?	8	Section-V
50	Explain the different system calls in file I/O i. Read ii. Write iii. Close iv.open v. lseek	8	Section-V

Software Engineering

Qno	Question	Marks	Section
1	a. What are the software applications? b. Discuss about the evolving role of software?	4 4	Section-I
2	a. List the characteristics of software? b. explain about process framework?	4 4	Section-I
3	Define “Software myth”? Discuss on various types of software myths and the true aspects of these myths?	8	Section-I
4	Justify the statement “software engineering- A Layered technology”?	8	Section-I
5	Write a short note on the capability maturity model?	8	Section-I
6	What is the use of software development process models? Explain.	8	Section-I
7	Explain why incremental development is the most effective	8	Section-I

	approach for developing business software systems. Why is this model less appropriate for real time systems engineering?		
8	a. Explain briefly about evolutionary model? b. Explain briefly about unified process model?	4 4	Section-I
9	Discuss Waterfall model with suitable diagram. Give its merits and demerits?	8	Section-I
10	Explain in detail about agile development models?	8	Section-I
11	a. List the functional requirements of software? b. List the non-functional requirements of software?	4 4	Section-II
12	a. Write short note on requirements specification? b. What are the characteristics of good SRS document?	4 4	Section-II
13	a. What is the goal of requirements analysis phase? b. Give reasons why the requirements analysis phase is a difficult one?	4 4	Section-II
14	Discuss about object model in detail?	8	Section-II
15	Explain behavioural model with suitable examples?	8	Section-II
16	Summarize the concept of software requirement specification?	8	Section-II
17	Explain about context model with suitable examples?	8	Section-II
18	Explain about data model with suitable examples?	8	Section-II
19	a. Summarize the need of SRS document? b. Explain the contents in SRS document?	8	Section-III
20	a. List the user requirements ? b. List the system requirements?	4 4	Section-III
21	Summarize the Design concepts of software engineering?	8	Section-III
22	a. Explain abstraction in the context of design concept? b. Define design process? Discuss the characteristics of good design?	4 4	Section-III
23	List the architectural styles and patterns?	8	Section-III
24	Compare the Black Box testing and White Box testing with an example.	8	Section-III
25	a. What is black box testing? Is it necessary to perform this? b. Explain various test activities	4 4	Section-III
26	Summarize the concept of art of debugging?	8	Section-III
27	Discuss about test strategies for conventional software?	8	Section-III
28	a. Explain about validation testing? b. Explain about system testing in detail?	4 4	Section-III
29	What is the strategic approach to software testing?	8	Section-III
30	Explain about design model with diagram?	8	Section-III
31	List and explain the various software quality factors?	8	Section-IV
32	List out Software Quality Assurance activities with clear explanation?	8	Section-IV
33	a. Explain about risk projection b. summarize about risk refinement?	4 4	Section-IV
34	Compare reactive and proactive risk strategies?	8	Section-IV
35	Explain about software risks in detail?	8	Section-IV
36	List the ISO 9000 quality standards?	8	Section-IV

37	Explain the overview of RMMM plan?	8	Section-IV
38	Summarize the concept of formal technical reviews?	8	Section-IV
39	Explain about statistical software quality assurance?	8	Section-IV
40	a. Define software quality and list quality concepts? b. give the overview of software reliability concept?	4 4	Section-IV
41	Explain briefly about software project management in detail?	8	Section-V
42	List the software project management activities?	8	Section-V
43	Explain the concept of effort estimation?	8	Section-V
44	What are the challenges faced in software projects?	8	Section-V
45	Summarize the concept of step wise planning for a project?	8	Section-V
46	What are called as deliverables of a project?	8	Section-V
47	Explain about project scope in detail?	8	Section-V
48	a. What are the objectives of software project management? b. Explain the concept of infrastructure wrt software project management?	4 4	Section-V
49	a. What are the goals of software project management? b. Discuss the need of software project management?	8	Section-V
50	Explain few problems associated with software projects ?	8	Section-V

Web Design and Development

Qno	Question	Marks	Section
1	a) Define web hosting and its types. b) What are Hyperlinks on a webpage? Discuss tags which are used to create hyperlinks.	4+4	Section-I
2	Write in detail about building block of HTML	8	Section-I
3	a) Differentiate between static and dynamic websites. b) List the advantages of HTML5.	4+4	Section-I
4	a) Explain “List” and its types with an example HTML program. b) Define iFrames. Explain iFrame attributes with one example program.	4+4	Section-I
5	Explain i) What is HTML ii) History of HTML iii) Features of HTML	2+2+4	Section-I
6	Write a HTML program to create a time table.	8	Section-I
7	Elaborate the procedure to validate a form in HTML with suitable example program.	8	Section-I
8	Write a HTML code for creating table which consists of product details.	8	Section-I
9	Explain input types of form and explain each type with suitable example	8	Section-I

10	Write a HTML code to demonstrate profile of a student with multiple fields.	8	Section-I
11	Discuss about the different types of selectors in CSS with suitable example.	8	Section-II
12	How to add CSS in HTML pages to format the document according to information in the style sheet with types?	8	Section-II
13	To discuss the CSS background property is used to define the background effects on element and there are 5 CSS background properties that affect the HTML elements	8	Section-II
14	a) What is the color property in CSS is used to set the color of HTML elements b) Explain different shadows with example programs	4+4	Section-II
15	Explain analysis of different CSS Gradients with example programs?	8	Section-II
16	Write about text properties in CSS with syntax and examples.	8	Section-II
17	Write a CSS code for creating a webpage to list all programs offered by university using DIV tag	8	Section-II
18	What is attribute selector? Explain how it is different from other selectors with example	8	Section-II
19	Differentiate padding with margin using a DIV tag and demonstration with syntax and example	8	Section-II
20	Write CSS code for creating a webpage for game with instructions	8	Section-II
21	a) Define java script and its applications? b) What is the difference between JavaScript and Java?	4+4	Section-III
22	What are primitive data types in Javascript? Explain their syntax with example	8	Section-III
23	Describe javascript placement in HTML with different examples?	8	Section-III
24	Write short notes on Type Conversion and Operators	8	Section-III
25	What are the pop-up boxes available in JavaScript?	8	Section-III
26	a) What are the different datatypes present in javascript? b)Explain javascript operators?	4+4	Section-III
27	ite a Javascript code for swapping two numbers without using third variable	8	Section-III

28	Explain Document object in detail and explain different methods functionalities.	8	Section-III
29	ıat is innerHTML? explain the purpose of innerHTML in javascript	8	Section-III
30	Write a Javascript code for finding simple and compound interest using function and rendering on page	8	Section-III
31	Briefly explain the Conditional statements of JavaScript.	8	Section-IV
32	Write a Javascript code for finding largest number among 4 using conditional statements	8	Section-IV
33	What are the different types of looping statements available in JavaScript?	8	Section-IV
34	Write a program to perform summation of individual element of a given number (Eg: num=127 => 1+2+7= 10)	8	Section-IV
35	Define a named function in JavaScript and explain the function parameters?	8	Section-IV
36	Write a program to return product of two real values only if the result if non-negative value.	8	Section-IV
37	Write short notes on: a) Call () b. Apply ()	4+4	Section-IV
38	a) Write a JavaScript program to display whether a given number is prime or not. b) How do you create a function using "function overloading" concept	4+4	Section-IV
39	What are strings? Perform concatenation operation on any given two strings using Javascript code	4	Section-IV
40	What are arrays? Explain arrays in detail with suitable examples	8	Section-IV
41	What is a framework? Explain the procedure to develop a webpage using Bootstrap	8	Section-V
42	a) What is Bootstrap? Explain the Responsive Web Design. b) Explain why Bootstrap is preferred for website development	4+4	Section-V
43	Explain about Bootstrap table in detail with examples	8	Section-V
44	Define Bootstrap grid and explain the types of bootstrap grid classes.	8	Section-V
45	What is the difference between Bootstrap 3 and Bootstrap 4	8	Section-V
46	a) How would you implement a carousel in Bootstrap b) How do create Nav elements in Bootstrap	4+4	Section-V
47	What is bootstrap pagination and how are they classified	8	Section-V
48	Explain themes in Bootstrap in detail to create a webpage for a website	8	Section-V
49	Design a webpage like Wikipedia using bootstrap framework.	8	Section-V

50	What are filters in Bootstrap? Explain filters using a code.	8	Section-V

Financial Accounting and Management

Qno	Question	Marks	Section
1	What do you mean by Financial Accounting? Explain it Functions of financial Accounting. **(S)**	8	Section-I
2	What is the Accounting scope in a firm? **(S)**	8	Section-I
3	Explain the accounting concepts and conventions. **(M)**	8	Section-I
4	Discuss the various phases in accounting process **(M)**	8	Section-I
5	List down the International accounting standards in detail. **(D)**	8	Section-I
6	What are the various steps of Accounting Cycle? Explain **(M)**	8	Section-I
7	Write a short note on A) GAAP B) IASB C) IFRS **(M)**	3+3+2	Section-I
8	Explain Branches of Accounting and Accounting Equation**. (S)**	8	Section-I
9	Narrate the different applications of accounting.**(S)**		Section-I
10	What do you understand about accounting standards? List out the accounting standards.	4+4	Section-I
11	Journalize the following transactions of Gautam & Co June 1 Karthik commenced business with Rs.20,000. June 2 Paid into bank Rs.5,000. June 3 Purchased Plant worth Rs.10,000 from Modi & Co. June 6 Goods worth Rs.4,000 sold to Anbu June 8 Sold goods worth Rs.2,000 for cash. June 10 Goods returned by Anbu Rs.50. June 15 Paid rent Rs.250. June 18 Withdrawn from bank for office use Rs. 2,500. June 20 Paid Salaries Rs.1,800. June 25 Withdrawn for personal use Rs.250.	8	Section-II

		June 26 — Goods returned to Anwar Rs.100. June 27 — Paid for office furniture Rs.1,500 by cheque. June 28 — Received Rs.3,900 cash from Anbu and discount allowed Rs.50. June 29 — Paid Anwar on account Rs.4,800 and discount allowed by him Rs.100.		
12	What is Double Entry System? List out the Advantages of double entry system. **(S)**		8	
13	What are the different types of accounts and their posting rules/ Golden rules with suitable examples **(S)**		8	Section-II
14	Discuss about the Revenue and Capital items. **(M)**		8	Section-II
15	Different types of Vouchers entered in Tally **(M)**		8	Section-II
16	How the balance sheet is useful for shareholders, give an example? **(D)**		8	Section-II
17	Describe the features available in Tally ERP9 for Accounting? **(M)**		8	Section-II
18	Elucidate the objectives of financial statements. **(D)**		8	Section-II
19	Shah Garden Center is retail garden supplier. Record the transactions needed to journalize, post to respective ledger account and prepare of the following for October, 2011 of the current year: *Oct. 2* Purchased inventory on credit terms of 1/10 net 30. FOB shipping point, for Rs. 3,000. Freight charges on the purchase were Rs. 150. *Oct. 9* Sold garden supplies on credit terms 3/20 net 30, FOB shipping point, for Rs. 4,000. The cost of the supplies sold was Rs. 2,500. *Oct. 10* Paid the amount owed on account for the Oct. 2 inventory purchase. *Oct. 15* Received merchandise that was returned as defective, originally sold for Rs. 500 on Oct. 9. The original cost of the supplies returned was Rs. 275. *Oct. 25* Received payment on account for the Oct. 9 sale less the appropriate sales discount. *Oct. 28* Inventory lost by fire of cost Rs. 350.		8	Section-II
20	What are the components of final account? Discuss about each in brief .		8	Section-II
21	What do you mean by the term “Management” explain its importance in the organizations? **(S)**			Section-III
22	Define the management and explain the process of management **(S)**		8	Section-III
23	Demonstrate the contribution of Taylor’s scientific theory in Management. **(D)**		8	Section-III

24	Explain the Henry Fayol 14 principles in management **(M)**	8	Section-III
25	Discuss about the different schools of management thoughts**. (M)**	8	Section-III
26	Analyze the functions of Management. **(S)**	8	Section-III
27	Demonstrate various styles of leadership. **(D)**	8	Section-III
28	What are the Social Responsibilities of an organization, Give Few Examples.**(M)**	8	Section-III
29	Explain (a) Scalar Chain (b) Esperit De crops (c) Authority	3+2+3	Section-III
30	How the management incorporated into organizations?	8	Section-III
31	What is an organization structure? Explain its features. **(S)**	8	Section-IV
32	Describe the characteristics of line and staff organization? **(S)**	8	Section-IV
33	Write a note on (A) Project organization structure (B)Committee organization structure .**(M)**	4+4=8	Section-IV
34	Why a Group Dynamics important in an organization. **(S)**	8	Section-IV
35	Explain the various types of organization structures. .**(M)**	8	Section-IV
36	What is matrix organization structure discuss about is merits and demerits**. (D)**	8	Section-IV
37	How the groups will form in organization explain with various steps in group dynamics. **(D)**	8	Section-IV
38	Draw the functional organization structure and explain its merits and demerits. **(M)**	8	Section-IV
39	Describe the features of good organization structure.	8	Section-IV
40	What are the merits and Demerits of matrix organization structure ?	8	Section-IV
41	What is the concept of contemporary management? Define any three contemporary practices in brief. **(S)**	8	Section-V
42	Write a short note on the Total quality management (TQM). **(S)**	8	Section-V
43	How the CMM levels assign to the organizations. **(M)**	8	Section-V
44	Explain the key characteristics of six sigma With it levels. **(M)**	8	Section-V
45	Wrote a short note on (A) JIT (B) Balanced Score card. **(D)**	4+4=8	Section-V
46	Define the meaning of ERP and write the advantages and dis advantages of ERP. **(S)**	8	Section-V
47	Discuss about various modules of ERP and Innovations in ERP. **(M)**	8	Section-V
48	What are the different types of Bench marking techniques? **(D)**	8	Section-V

49	How the EPR support the organization . write your view on it.	8	Section-V
50	Write any two of contemporary management practices.	4+4	Section-V