

**II B. Tech II Semester Regular Examinations, August/September - 2021**  
**PROBABILITY AND STATISTICS**  
 (Com to CSE, IT)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit  
 All Questions carry **Equal** Marks

1 a) What is grouped and ungrouped frequency distribution? what are their uses [8M]

b) Calculate the Standard deviation of the distribution. [7M]

Class interval	2-8	6-12	12-18	18-24
Frequency	2	8	3	2

Or

2 a) Explain dispersion with suitable examples and also explain the merits and demerits of the dispersion. [7M]

b) Calculate the median for the following data [8M]

C.I	5-10	10-15	15-20	20-25	25-30	30-35	35-40
frequency	6	8	17	21	15	11	2

3 a) Fit the curve  $y = ab^x$  for the following data [8M]

x	1	2	3	4	5	6
y	151	100	61	50	20	8

b) Calculate the coefficient of correlation from the following data. [7M]

x	12	9	8	10	11	13	7
y	14	8	6	9	11	12	3

Or

4 a) Fit the curve  $y = a + bx + cx^2$  for the following data [7M]

x	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

b) Calculate the Rank correlation from the following data. [8M]

x	9	8	7	6	5	5	4
y	15	16	14	13	12	12	11

5 a) Two digits are selected random from 1 to 9 then find the probability that [7M]

(i) If sum is odd that 2 is selected as one of the numbers

(ii) If 2 is one of the numbers, then sum is odd

b) Find the mean and variance of the distribution. [8M]

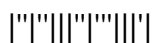
$$f(x) = \begin{cases} cx(2-x) & \text{if } 0 \leq x \leq 2 \\ 0 & \text{if otherwise} \end{cases}$$

Or

6 a) Find  $E(2X-3)$  and  $\text{Var}(2X-3)$  for the following distribution. [8M]

X	-2	-1	0	1	2
P(X)	0.2	0.1	0.3	0.3	0.1

b) Suppose 10% of the probability of Normal distribution is below 35 and 5% is above 90. Then find the mean and variance of the distribution. [7M]



- 7 Samples of size 2 are taken from the population 16 , 14, 12 , 8 without replacement. [15M]  
Find  
(i) The mean of the population  
(ii) The standard deviation of the population  
(iii) Mean of the sampling distribution of means  
(iv) The standard deviation of the sampling distribution of means

Or

- 8 a) When we draw a sample from an infinite population what happens to the [8M]  
standard error of means if the sample size (i) increased from 50 to 100 (ii)  
decreased from 100 to 40.  
b) In random sample of 100 packages shipped by the air freight 13 had some [7M]  
damage. Construct 90% of confidence interval for true proportion of damage  
package.  
9 a) In two large populations 30% and 25% are beautiful faces. Is the difference [7M]  
likely to be equal in a sample 1200 and 900 respectively from the two  
populations at 1% level of significance.  
b) The heights of 10 males are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, 66 . [8M]  
Test the claim that the average height is greater than 64 at 5% level

Or

- 10 a) A mean life time of a sample of 100 bulbs is found to be 1560 hrs with a [7M]  
population S.D of 90 hrs . Test the hypothesis at 5% level of significance that the  
mean life time of bulbs is 1580hrs.  
b) Test the weather is any association among Economic conditions and I.Q level of [8M]  
1000 students in an university at 5% level.

Economic condition/I.Q	High	Low
Rich	460	140
Poor	240	160

