Code No: R1922051 **R19** SET - 1

II B. Tech II Semester Supplementary Examinations, February - 2022
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
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1 a) Show that sum of deviations about arithmetic mean is zero [8M]

b) Calculate the mean for the following data [7M]

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

Or

2 a) Define Karl Pearson's coefficients γ_1 and γ_2 and discuss their utility in statistics. [7M]

b) Calculate the Upper and lower quartiles for the following data. [8M]

C.I	0-4	4-8	8-12	21-14	14-18	18-22	22-26	26-30
Frequency	10	12	18	7	5	3	4	6

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

x	1	2	3	4	5
y	4	7	10	15	25

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

x	3	5	8	4	7	7	10
y	6	4	9	8	1	2	3

Or

4 a) Fit the curve $y = ax + b$ for the following data [7M]

x	40	50	60	70	80
y	600.5	600.6	600.8	600.9	601

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

x	15	18	20	24	30	35	40	50
y	85	93	95	105	120	130	150	160

5 a) A fair coin is tossed until head, or five tails occurs then find (i) the distribution (ii) mean [7M]

b) If 2% bulbs are defective then find (i) $P(X \geq 1)$ (ii) $P(1 < X < 4)$ in a sample of 50. [8M]

Or

6 a) The three machines I ,II , III produces 40% , 30% , 30% of the items in a factory. The percentage of defective items produced by three machines are 4%, 2% , 3% respectively . If any item is selected what is the probability of that it is defective. [8M]

b) Suppose the weight of 800 male students is normally distributed with mean 140 and S.D 10 kgs. Then find the number of students whose weights are (i) between 125 and 150 (ii) more than 145. [7M]
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7 Samples of size 2 are taken from the population 2,3, 6, 8 without replacement. Find [15M]
(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) The mean voltage of a battery is 15 and S.D 0.2. Find the probability that four such batteries connected in series will have combined voltage of 60.8 or more volts. [8M]

b) Among 100 fish caught in a large lake, 18 were inedible due to the pollution of the environment. With what confidence can we assert that the error of this estimate is at most 0.65. [7M]

9 a) Test the significance of two variances at 1% level of significance for the following data : [7M]

Sample A	24	27	26	23	25	
Sample B	29	30	30	30	24	36

b) A sample of 26 machines given mean life of 90 hrs with S.D 20 hrs. The manufacturer claims that mean life of the machine was 100 hrs. Do the claim is valid test at 5% level. [8M]

Or

10 a) In a hospital 480 females and 520 male babies were born in a week. Do these information conform male and female are born equal in number test at 5% level. [7M]

b) Test the claim at 5% level whether the training programme in a college was effective for the following data. [8M]

Before training	40	70	45	120	35	55	77
After training	35	65	42	116	33	50	73