



II B.Tech I Sem Supply End Examination, October 2021  
**PROBABILITY AND STATISTICS**  
 (CIVIL)

Max. Marks: 70

Time: 3 Hours.

- Note: 1. Answer any FIVE questions.  
 2. Each question carries 14 marks and may have a, b as sub questions.

Final: 29-10-21

- 6 a) Determine the regression equation of Y on X from the data given below.

Price (Rs.) (X)	10	12	13	12	16	15
Amount demand (Y)	40	38	43	45	37	43

7M C04 BL3

- b) Fit a curve from the following table of the form  $y = Ax^b$

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

7M C04 BL3

- 7 a) A sample of 12 fathers and their elder sons gave the following data about their elder sons. Calculate the rank correlation Coefficient

Father	65	63	67	64	68	62	70	66	68	67	69	71
Sons	68	66	68	65	69	66	68	65	71	67	68	70

7M C04 BL5

- b) A study shows that 16 of 200 Tractor's produced on one assembly line required extensive adjustments before they could be shipped, while the same was true for 14 of 400 tractors produced on another assembly line. At the 0.01 level of significance, does this support the claim that the second production line does superior work?

7M C03 BL3

- 8 a) Two sets of 100 students each were taught to read by two different methods. After the instructions were over, a reading test given to them revealed that  $\bar{x}_1 = 73.4, \bar{x}_2 = 70.3, s_1 = 8, s_2 = 10$ . Test the hypothesis that  $\mu_1 = \mu_2$ .

7M C05 BL3

- b) Pumpkins were grown under two experimental conditions. Two random samples of 11 and 9 pumpkins. Show the sample standard deviations of their weights as 0.8 and 0.5 respectively. Assuming that the weight distributions are normal, test hypothesis that the true variances are equal.

7M C05 BL5

- 3 a) Suppose 2% of the people on the average are left-handed. Find (i) the probability that 3 or more people are left-handed (ii) the probability that at most one is left-handed.  
 b) Assuming that the chance of an individual being literate is 1/5 and assuming 100 investigators each take 10 individuals to see whether they are literate, how many investigators report 8 or more were literate.

7M C02 BL3

7M C02 BL4

- 4 a) Derive mean and variance of a Gamma Distribution.  
 b) Find Mean, Median, Mode of a continuous random variable X having the density function  $f(x) = \begin{cases} \frac{1}{2} \sin x & \text{if } 0 \leq x \leq \pi \\ 0, & \text{else where} \end{cases}$

7M C02 BL3

7M C03 BL5

And also find the probability that the random variable lie between 0 and  $\frac{\pi}{2}$ .

- 5 a) If 'x' is a Poisson variate such that  $3P(x=4) = \frac{1}{2}P(x=2) + P(x=0)$ . Find

7M C03 BL3

- i) The mean of x      ii)  $P(x \leq 2)$ .

- b) If X is a Normal Variable with mean 30 and variance 25 then find

7M C03 BL3

- (i)  $P(26 \leq X \leq 40)$       (ii)  $P(X \geq 45)$

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