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R-11

Code: 1GC41

Last Chance Special Supplementary Examinations

II B.Tech. II Semester Supplementary Examinations July 2021

Probability & Statistics

(Information Technology)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal Marks (**14 Marks** each)

1. Explain briefly the following
(i) Mean (ii) Median (iii) Mode (iv) Range (v) Standard Deviation 14M
2. Two cards are drawn at random from an ordinary deck of 52 playing cards. What is the probability of getting two aces if
(i) the first card is replaced before the second card is drawn;
(ii) the first card is not replaced before the second card is drawn? 14M
3. Find the value of k and the distribution function $F(x)$ given the probability density function of a random variable X as:
$$f(x) = \frac{k}{x^2 + 1}, \quad -\infty < x < \infty.$$
 14M
4. If the probability of a bad reaction from a certain injection is 0.001. Determine the chance that out of 2000 individuals more than two will get a bad reaction. 14M
5. Sample of size 2 are taken the population 1, 2, 3, 4, 5, 6 without replacement.
Find (i) the mean of population
(ii) standard deviation of the population
(iii) means of sampling distribution
(iv) standard deviation of the means of sampling distribution. 14M
6. The average zinc concentration recovered from a sample of zinc measurements in 36 different locations is found to be 2.6 grams per millilitre. Find a 95% confidence intervals for the mean zinc concentration in the river. Assume that the population standard deviation is 0.3. 14M
7. A storekeeper wanted to buy a large quantity of bulbs from two brands A and B respectively. He bought 100 bulbs from each brand A and B and found by testing brand A had mean life time of 1120 hrs and the S.D of 75 hrs and brand B had mean life time 1062 hrs and S.D of 82 hrs. Examine whether the difference of means is significant. Use a 0.01 level of significance. 14M
8. A study shows that 16 of 200 tractors 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? 14M
