R09

Code No: F3104

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA I Semester Examinations, April/May - 2019
PROBABILITY AND STATISTICS

Time: 3hrs **Max.Marks:60**

Answer any five questions
All questions carry equal marks
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1.a) Define Probability. Find the probability of getting 2 diamonds, if we draw 2 cards at random from a pack of 52 cards.
b) An integer is chosen at random from the first 200 positive integers. What is the Probability that the integer chosen is divisible by 6 or 8 [6+6]

2.a) Explain Conditional Probability. If the Probability that a communication system will have high fidelity is 81 and the Probability that it will have high fidelity and selectivity is 18. What is the Probability that a system will high fidelity will also have high selectivity?
b) State and Prove Baye's Theorem [6+6]

3.a) Find the mean and variance of the Binomial Distribution
b) Four coins are tossed 160 times. The number of times x heads occur (x = 0, 1, 2, 3, 4) is given below. Fit the Binomial distribution [6+6]

x	0	1	2	3	4
No.of times	8	34	69	43	6

4.a) Show that the Mean and Variance of Poisson distribution are equal
b) If X is a poisson variate such that $p(x = 0) = p(x = 1)$ find $p(x = 0)$ *and* Using recurrence formula finds the probabilities at $x = 1,2,3,4$ *and* 5. [6+6]

5.a) Derive the mean and median of Normal Distribution
b) 1000 students had written an examination the mean of test is 35 and Standard deviation is 5. Assuming the distribution to be normal find How many students marks lie between 25 and 40? [6+6]

6.a) A sample of 100 electric light bulbs produced by a manufacturer A showed a mean lifetime of 1190hrs.and a standard deviation of 90hrs. A sample of 75bulbs, produced by a manufacturer B showed a mean life time of 1230 hrs with a S.D of 120 hrs. Is there difference between the mean life times of the two brands at a significant level of .05?
b) Explain Bayesian estimation. [6+6]

7. Two independent samples of 8 and 7 items respectively had the following values of the variables

Sample I	9	11	13	11	16	10	12	14
Sample II	11	13	11	14	10	8	10	-

Do the estimates of population variances differ significantly?

A random sample of size 100 is taken from an infinite population having the mean $\mu = 76$ *and the variance* $\sigma^2 = 256$. what is the probability that $\bar{x}$ will be between 75 and 78 [12]

8. Compute the coefficient of correlation and the two lines of regression for the following data [12]

x	14	16	17	18	19	20	21	22	23
y	84	78	70	75	66	67	62	58	60

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