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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA I Semester Examinations, October/ November - 2020
PROBABILITY AND STATISTICS

Time: 2 Hours **Max.Marks:75**

Answer any five questions
All questions carry equal marks

1.a) The probabilities of passing in subjects A, B, C and D are $\frac{3}{4}$, $\frac{2}{3}$, $\frac{4}{5}$ and $\frac{1}{2}$ respectively. To qualify in the examination a student should pass in A and two among the other three. What is the probability of qualifying in the examination?

b) A purse contains 2 silver and 4 copper coins and a second purse contains 4 silver and 4 copper coins. A coin is selected from one of the purses and found that it is silver. Find the probability that it is
i) From purse I ii) From purse-II [7+8]

2.a) A bag contains 100 tickets numbered 1 to 100. If one ticket is selected, What is the probability that the number is divisible by 3 or 4 or both?

b) A box I contains 3 red balls, 2 black and 1 white balls. Box II contains 1 red, 1 black balls and 3 white balls, Box III contains 3 red, 3 black balls and 3 white balls. A box is chosen at random and a ball is drawn, if it is from box I, what is the probability that it
i) Red ii) Black iii) White [7+8]

3.a) The probability of a defective bolt is 0.2. Find the mean and the standard Deviation of defective bolts in a total of 400.

b) Given that the mean heights of students in a class is 158 cms with a standard deviation of 20 cms. Find how many students heights lie Between 150 cms and 170 cms. [7+8]

4.a) Given that $2P(x=0) = 24p(x=2)$ for a Poisson variate X. Find the Probability that $x \leq 3$.

b) The marks obtained by 100 students is normally distributed with mean 68 % and Standard deviation 5%. Determine how many get more than 70%. [7+8]

5.a) A random sample of 500 Apples was taken from a large consignment and 60 were found to be bad. Obtain 98% confidence interval for the percentage number of bad apples in the consignment.

b) A candidate for election made a speech in a city. Among 500 voters from city A 59.6% are in favour of him where as among 300 voters from city B 50% are in favour of him. Test the significance between the difference of two proportions at 5% level. [7+8]

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6.a) A coin is tossed 10,000 times and it turns up head 5195 times. Discuss whether the coin may be regarded as unbiased one.

b) Among the items produced by a factory out of 500, 15 were defective in another sample out of 400, 20 were defective. Test the significance between the differences of two proportions at 5% level. [7+8]

7.a) A random sample of size 200 is taken whose variance is 12.25 and the mean is 56. Construct 90% confidence interval for the population mean.

b) In a city X, 20% of a random sample of 900 men had an eye defect and 18.5% of a random sample of 1600 women had the same defect. Is the difference between the proportions significant at 5% level of significance? [7+8]

8. The heights of mother and daughters are given in the following table from the two lines of regression estimate the expected average height of daughter when the height of mother is 64.5 inches. Also find the coefficient of correlation. [15]

Height of mother (inches)	62	63	64	64	65	66	68	70
Height of daughter (inches)	64	65	61	69	67	68	71	65

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