Code :9ABS304

R9

II B.Tech I Semester(R09) Supplementary Examinations, May 2011
PROBABILITY & STATISTICS
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) There are 12 cards numbered 1 to 12 in a box, if two cards are selected what is the probability that seam is odd.
   i. With replacement
   ii. Without replacement.
   (b) Three machines I,II,III produce 40%, 30%, 30% of the total number of items of factory. The percentages of defective items of these machines are 4%, 2%, 3%. If an item is selected at random, find the probability that the item is defective.

2. (a) If X and Y are discrete random variables and K is a constant then prove that
   i. E(X+K)=E(X)+K
   ii. E(X+Y)=E(X)+E(Y)
   (b) Let the continuous random variable X have the probability density function, $f(x) = \frac{2}{x^3}, if 1 < x < \infty$, otherwise O. find F(x).

3. (a) Define poisson distribution and derive its mean and variance.
   (b) Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are under 63.

4. A population consists of six numbers 4,8,12,16,20,24. Consider all samples of size two which can be drawn without replacement from this population. Find
   (a) Population mean
   (b) Population S.D
   (c) Mean of the sampling distribution of means
   (d) S.D of the sampling distribution of means.

5. (a) A random sample of 400 items is found to have mean 82 and S.D of 18.7. Find the maximum error of estimation at 95% confidence internal. Find the confidence limits for the mean if x=82?
   (b) Measurements of the weights of a random sample of 200 ball bearings made by a certain machine during one week showed a mean of 0.824 and a.s.D of 0.042. Find maximum error at 95% confidence internal. Find the confidence limits for mean if x=32?

6. (a) Explain the procedure generally followed in testing of hypothesis.
   (b) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers.

7. Producer of 'gutkha' claims that the nicotine content in his 'gutkha' on the average is 1.83mg. can this claim be accepted if a random sample of 8 'gutkha' of this type have the nicotine contents of 2.0, 1.7, 2.1, 1.9, 2.2, 2.1, 2.0, 1.6mg ? use 0.05 los.

8. (a) Assume that both arrival rate and service rate following poission distribution. The arrival rate and service rate are 25 and 35 customers /hour . respectively at a single window in RTC reservation counter. Find
   i. ρ
   ii. L_S
   iii. L_q
   iv. W_S
   v. W_q
   (b) Explain the general properties of engineering system.

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