R07 **SET-4**

Code.No 43200

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II.B.TECH - I SEMESTER REGULAR EXAMINATIONS NOVEMBER, 2009
PROBABILITY AND STATISTICS
(Common to CSE, IT, CSS)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1. a] For any 3 arbitrary events A,B and C prove that
$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(C \cap A) + P(A \cap B \cap C)$

   b] If A and B are independent events, then prove that A^C and B^C are also independent events. [8+8]

2. a] A sample of 4 items is selected at random from a box containing 12 items of which 5 are defective. Find the expected number E of a defective items.

   b] If the probability of a defective bolt is $\frac{1}{8}$. Find:

   i) The mean ii) The variance for the distribution of defective bolts of 640. [8+8]

3. a] Define Poisson distribution and find 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. [8+8]

4. Samples of size 2 are taken from the population 3, 6, 9, 15, 27 with replacement. Find
   a) The mean of the population.
   b) The standard deviation of the population.
   c) Mean of the sampling distribution of means.
   d) The standard deviation of the sampling distribution of means. [16]

5. a] Explain about “Point Estimation”.
   b] Find 95% confidence limits for the mean of a normality distribution population from which the following sample was taken 15,17,10,18,16,9,7,11,13,14. [4+12]

6. Explain the procedure generally followed in “Testing of Hypothesis”. [16]

7. a] Write the formula for testing a single proportion.
   b] A manufacturer claims that at least 95% of the equipment which he supplies to a factory conforms to specifications. An examination of a sample of 200 pieces of the equipment revealed that 18 were faulty. Test his claim at a significant level of 0.05. [4+12]

8. a] Explain about Poisson distribution?
   b] Explain about exponential distribution. [8+8]

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