Code No: 07A3BS03 **R07** **Set No. 2**

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010

PROBABILITY AND STATISTICS

Common to Information Technology, Computer Science And Engineering, Computer Science And Systems Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. In an engineering workshop, motors breakdown at an average rate of 5 per day, the number of breakdowns being Poisson distributed. The present unqualified mechanic can repair motors at an average rate of six per day and is paid a daily wage of Rs.100. A qualified mechanic offers his series at a daily wage of Rs.200 and is capable of repairing, on a average, eight motors per day. Whenever a motor is idle, there is a downtime cost incurrence at the rate of Rs.100 per day. Would it be worthwhile to employ the qualified mechanic in lieu of the present mechanic? Justify on cost/benefit analysis. [16]

2. (a) If P $(A \cup B) = 4/5$, P $(B^C) = 1/3$ and P $(A \cap B) = 1/5$; Find
   i. P(B)
   ii. P(A)
   iii. P $(A^C \cap B)$.

   (b) The probability of A, B, C to become M.D's of a factory are 5/10, 3/10 2/10. The probabilities that bonus scheme will be introduced if they become M.D's are 0.02, 0.03 , 0.04. Find the probabilities that A, B, C become M.D's if bonus schemes introduced. [8+8]

3. (a) The distribution of a random variable X is as follows:

X=x:	1	2	3	4
P(X=x):	1/10	2/10	3/10	4/10

   Find
   i. Mean
   ii. Variance

   (b) A die is rolled twice. If the event of getting an even number is denoted by a success and the number of successes as a random variable, write the distribution and mean of the variable. [8+8]

4. (a) The mean and standard deviation of a population are 11795 and 14054 respectively, what can one assert the 95% confidence about the maximum error if x = 11795 and n= 50. Find the confidence limits for the mean if x = 84?

   (b) Find 95% confidence limits for the mean of a normality distribution population form which the following sample was taken 15,17,10,18,16,9,7,11,13,14? [8+8]

Code No: 07A3BS03 **R07** **Set No. 2**

5. (a) Write short notes on Type I and Type II errors.
   (b) Two samples of 200 electric bulbs each has a means 1600 and 1650 S.D. 50 and 60 can it be concluded that two brands differ significantly at 1% level of significance in equality. [6+10]

6. A tea company appoints 4 Sales men A,B,C,D and observes their sales in three(3) seasons summer, winter, monsoon, the figures given in lakhs.

Seasons	**Sales man**				**Seasons Total**
Summer	A	B	C	D	
	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	112
Salesman's Total	90	93	81	96	360

   Test for the significant difference between salesmen with regard to the seasons (α=0.05). [16]

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

8. (a) How would you use the Normal distribution to find approximately the frequency of exactly 5 success in 100 trails, the probability of success in each trail being p=0.1.
   (b) A telephone switch board operator expects to come across 6 ghosts calls per day, evaluate the probability of
      i. 4 calls being ghost calls on any day
      ii. 10 calls being ghost calls on any two consecutive days. [8+8]

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Code No: 07A3BS03 **R07** **Set No. 4**

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010

PROBABILITY AND STATISTICS

Common to Information Technology, Computer Science And Engineering, Computer Science And Systems Engineering

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

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   (b) A die is rolled twice. If the event of getting an even number is denoted by a success and the number of successes as a random variable, write the distribution and mean of the variable. [8+8]

5. (a) If P $(A \cup B) = 4/5$, P $(B^C) = 1/3$ and P $(A \cap B) = 1/5$; Find
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Code No: 07A3BS03 **R07** **Set No. 1**

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010

PROBABILITY AND STATISTICS
Common to Information Technology, Computer Science And Engineering, Computer Science And Systems Engineering

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Code No: 07A3BS03 **R07** **Set No. 3**

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010

PROBABILITY AND STATISTICS
Common to Information Technology, Computer Science And Engineering, Computer Science And Systems Engineering

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Find

i. Mean

ii. Variance

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