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

II B.Tech I Semester Examinations,MAY 2011
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. A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first group there are 150 students having mean IQ of 75 with a S.D of 15 in the second group there are 250 students having mean IQ of 70 with S.D of 20.
   Test whether the groups have came from same population (Use α as 0.01) [16]

2. (a) Discuss about KENDALL'S Notation?
   (b) Discuss about classification of queing models. [6+10]

3. (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?
   (c) Explain about "Point Estimation" ? [6+6+4]

4. The following table gives the number of units of production per day turned out by four different types of machines.

Employee	Type of Machines			
	M1	M2	M3	M4
E1	43	39	49	35
E2	41	44	53	45
E3	39	34	52	38
E4	49	51	56	48

   Using ANOVA
   (a) Test the hypothesis that the mean production is the same for the four machines.
   (b) Test the hypothesis that the employees do not differ with respect to mean productivity. [16]

5. (a) A distributor of bean seeds determines from extensive tests that 5% of large batch of seeds will not germinate. He sells the seeds in packets of 200 and guarantees 90% germination. Determine the probability that a particular packet will violate the guarantee.

(b) Show that the mean deviation from the mean equals (approximately) to 4/5 of standard deviation for normal distribution. [8+8]

6. (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 defective items.

(b) If the probability of a defective bolt is 1/8. Find

i. the mean

ii. the variance for the distribution of defective bolts of 640. [8+8]

7. (a) A random sample of size 100 is taken from an infinite population having the mean μ= 76 and the variance σ^2= 256. what is the probability that $\bar{x}$ will be between 75 and 78.

(b) A sample of size 400 is taken from a population whose standard deviation is 16. Find the standard error and probable error. [10+6]

8. (a) A bag contains 4 red , 5 white and 7 black balls, if 2 balls are taken out at random, what is the probability that both of them will be black or both will be white.

(b) If A, B, C are mutually independent events then prove that A $\cup$ B and C are also independent. [8+8]

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

II B.Tech I Semester Examinations,MAY 2011
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. (a) A bag contains 4 red , 5 white and 7 black balls, if 2 balls are taken out at random, what is the probability that both of them will be black or both will be white.
   (b) If A, B, C are mutually independent events then prove that A ∪ B and C are also independent. [8+8]
2. (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?
   (c) Explain about "Point Estimation" ? [6+6+4]
3. (a) Discuss about KENDALL'S Notation?
   (b) Discuss about classification of queing models. [6+10]
4. (a) A random sample of size 100 is taken from an infinite population having the mean μ= 76 and the variance σ^2= 256. what is the probability that $\overline{x}$ will be between 75 and 78.
   (b) A sample of size 400 is taken from a population whose standard deviation is 16. Find the standard error and probable error. [10+6]
5. (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 defective items.
   (b) If the probability of a defective bolt is 1/8. Find
      i. the mean
      ii. the variance for the distribution of defective bolts of 640. [8+8]
6. The following table gives the number of units of production per day turned out by four different types of machines.

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

Employee	Type of Machines			
	M1	M2	M3	M4
E1	43	39	49	35
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E3	39	34	52	38
E4	49	51	56	48

Using ANOVA

(a) Test the hypothesis that the mean production is the same for the four machines.

(b) Test the hypothesis that the employees do not differ with respect to mean productivity. [16]

7. (a) A distributor of bean seeds determines from extensive tests that 5% of large batch of seeds will not germinate. He sells the seeds in packets of 200 and guarantees 90% germination. Determine the probability that a particular packet will violate the guarantee.

(b) Show that the mean deviation from the mean equals (approximately) to 4/5 of standard deviation for normal distribution. [8+8]

8. A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first group there are 150 students having mean IQ of 75 with a S.D of 15 in the second group there are 250 students having mean IQ of 70 with S.D of 20.
Test whether the groups have came from same population (Use α as 0.01) [16]

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Code No: 07A3BS03 **R07** **Set No. 1**

II B.Tech I Semester Examinations,MAY 2011
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. (a) A random sample of size 100 is taken from an infinite population having the mean μ= 76 and the variance σ^2= 256. what is the probability that $\bar{x}$ will be between 75 and 78.
   (b) A sample of size 400 is taken from a population whose standard deviation is 16. Find the standard error and probable error. [10+6]
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 defective items.
   (b) If the probability of a defective bolt is 1/8. Find
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      ii. the variance for the distribution of defective bolts of 640. [8+8]
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6. (a) A bag contains 4 red , 5 white and 7 black balls, if 2 balls are taken out at random, what is the probability that both of them will be black or both will be white.

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7. (a) Discuss about KENDALL'S Notation?

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8. (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?

(c) Explain about "Point Estimation" ? [6+6+4]

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

II B.Tech I Semester Examinations,MAY 2011
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. (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 defective items.
   (b) If the probability of a defective bolt is 1/8. Find
      i. the mean
      ii. the variance for the distribution of defective bolts of 640. [8+8]
2. (a) A bag contains 4 red , 5 white and 7 black balls, if 2 balls are taken out at random, what is the probability that both of them will be black or both will be white.
   (b) If A, B, C are mutually independent events then prove that A ∪ B and C are also independent. [8+8]
3. (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?
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4. The following table gives the number of units of production per day turned out by four different types of machines.

Employee	Type of Machines			
	M1	M2	M3	M4
E1	43	39	49	35
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E3	39	34	52	38
E4	49	51	56	48

Using ANOVA

   (a) Test the hypothesis that the mean production is the same for the four machines.
   (b) Test the hypothesis that the employees do not differ with respect to mean productivity. [16]

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

5. (a) A random sample of size 100 is taken from an infinite population having the mean μ= 76 and the variance σ^2= 256. what is the probability that $\overline{x}$ will be between 75 and 78.

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