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**II.B.Tech-I-SEM-I MID EXAMINATIONS Date: 05-10-2024 Time & Session:10.00AM TO 12.00 PM**

**Subject: COSM Branch: CSE(DS), IT Marks: 30**

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**Note: Question paper contains two parts, Part - A and Part - B.**

**Part - A is compulsory which carries 10 marks. Answer all questions in Part - A.**

**Part - B Answer any four questions out of six questions.**

**Part -A 5x2 = 10**

1. If P(AUB) = , P() = and P(AB) = . Compute P(. (BL - 1) (CO 1)
2. The probability density function of a continuous random variable X is given by

f(x) = c, Show that c = . (BL - 2) (CO1)

1. If the mean of Binomial distribution is 3 and variance 9/4, obtain the value of n.

(BL - 1) (CO2)

1. If the mean of a Poisson distribution is 3, then Find P (X = 0). (BL - 1) (CO2)
2. Write Confidence Interval formulae for large and small samples for large samples. (BL - 1) (CO 3)

**Part - B 4x5 = 15**

1. In a bolt factory machines A,B,C manufacture 20%, 30%, and 50% of the total of their output and 6%,3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that it is manufactured from

i) Machine A ii) Machine B iii) Machine C (BL - 5) (CO 1)

1. A random variable X has the following probability function:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| x: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| p(x): | 0 | k | 2k | 2k | 3k | k2 | 2k2 | 7k2+k |

Find the value of k. b) Evaluate P(X < 6), P(X 6), P (0 < X < 5). (BL - 5) (CO 1)

1. Four coins are tossed 160 times. The number of times x heads occur is given below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 0 | 1 | 2 | 3 | 4 |
| No. of times | 8 | 34 | 69 | 43 | 6 |

Fit a Binomial distribution to this data on the hypothesis that coins are unbiased.

(BL - 4) (CO 2)

1. In a normal distribution, 31 % of the items are under 45 and 8 % are over 64. Find the

mean and variance of the distribution. (BL - 1) (CO 2)

1. Samples of size 2 re taken from the population 3,6,9,15,27 with replacement. Find
   1. The mean of the population.
   2. The standard deviation of the population.
   3. The mean of the sampling distribution of means and
   4. The standard deviation of the sampling distribution of means. (BL - 1) (CO 2)
2. The mean and standard deviation of a population are 11795 and 14054. If n=50, find 95% confidence interval for the mean. (BL - 1) (CO 3)

**MID-I**

**Subject: COMPUTER ORIENTED STASTCAL METHODS Date: 05-10-2024**

**Scheme of Evaluation**

| **PART** | **S.NO** | **QUESTIONS** | **MARKS** | **TOTAL** |
| --- | --- | --- | --- | --- |
| **A** | 1 | Formula  Calculations | 1  1 | 2 |
| 2 | Formula  Calculations | 1  1 | 2 |
| 3 | Formula  Calculations | 1  1 | 2 |
| 4 | Formula  Calculations | 2 | 2 |
| 5 | Formula for small  Formula for Large | 2 | 2 |
| **B** | 6. | Formula  Application+ Calculations | 1  1+3 | 5 |
| 7 | Find the value of K. b) Evaluate P(X < 6),  P(X 6), P (0 < X < 5). | 2+1+1+1 | 5 |
| 8 | Mean + Calculations | 2+3 | 5 |
| 9 | Graph +z1&z2 +Claclations | 1+2+2 | 5 |
| 10 | Solve a&b  Solve c&d | 1+1  3 | 5 |
| 11 | Formula +Calculations | 2+3 | 5 |