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**Date: 29-01-2021.**

**II.B.TECH- I-SEM (R22)-I MID Examinations-November-2023 Date: 25/11/2023**

**Subject: Computer Oriented & statistical Methods Time:10:00 TO 12:00**

**Branch: IT, CSC&CSD Marks: 30 M**

***Answer all Questions in Part -A & Answer any FOUR Questions in Part -B***

**PART-A 5x2=10 M**

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

F(x) = c, where - < x <. Prove that c =. (CO 1)

1. If the mean of Binomial distribution is 3 and variance is , find n. (CO 2)
2. Find the area A under the normal curve to the left of z = -1.78

[Given: A (1.78) =0.4625] (CO 2)

1. Define Point and Interval Estimation. (CO 3)

**PART-B 4x5 = 20**

6) Of the three men, the chances that a politician, a business man or an academician will be appointed as a

Vice - Chancellor (V.C.) of a university are 0.5, 0.3, 0.2 respectively. The probability that research is

Promoted by these persons if they are appointed as V.C. are 0.3, 0.7, and 0.8 respectively. Determine the

Probability that research is promoted. If research is promoted, what is the probability that V.C. is an

Academician? (CO 1)

7) 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 |

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

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

Mean and variance of the distribution. [Given: A (0.19) = 0.5 and A (0.42) = 1.4] (CO 2)

9) Samples of size 2 are taken from the population 2,3,6,8 and 11 with replacement. Find (CO 2)

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.

10) A random sample of size 100 has a standard deviation of 5. What can you say about the

Maximum error with 95 % confidence. (CO 3)

11) Find 95% confidence limits for the mean of a normally distributed population from

which the following sample was taken 15,17,10,18,16,9,7,11,13,14. (CO 3)

SCHEME OF EVALUATION

PART-A

|  |  |  |  |
| --- | --- | --- | --- |
| S NO | THEORY | MARKS | TOTAL |
| 1 | If P (AUB) = , P() = and P(AB) = . Compute P (. | 2 | 2 |
| 2 | The probability density function of a continuous random variable X is given by  F(x) = c, where - < x <. Prove that c =. | 2 | 2 |
| 3 | If the mean of Binomial distribution is 3 and variance is , find n. | 2 | 2 |
| 4 | Find the area A under the normal curve to the left of z = -1.78  [Given: A (1.78) =0.4625] | 2 | 2 |
| 5 | Define Point and Interval Estimation. | 2 | 2 |

PART-B

|  |  |  |  |
| --- | --- | --- | --- |
| S NO | THEORY | MARKS | TOTAL |
| 6 | Of the three men, the chances that a politician, a business man or an academician will be appointed as a Vice - Chancellor (V.C.) of a university are 0.5, 0.3, 0.2 respectively. The probability that research is  Promoted by these persons if they are appointed as V.C. are 0.3, 0.7, and 0.8 respectively. Determine the Probability that research is promoted. If research is promoted, what is the probability that V.C. is an Academician?  (or) | 5 | 5 |
| 7 | 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 | k | 2k2 | 7k2+k |   a) Find the value of k. b) Evaluate P(X < 6), P(X 6), P (0 < X < 5). | 5 | 5 |
| 8 | In a normal distribution, 31 % of the items are under 45 and 8 % are over 64. Find the Mean and variance of the distribution. [Given: A (0.19) = 0.5 and A (0.42) = 1.4]    (or) | 5 | 5 |
| 9 | Samples of size 2 are taken from the population 2,3,6,8 and 11 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. | 5 | 5 |
| S NO | THEORY | MARKS | TOTAL |
| 10 | A random sample of size 100 has a standard deviation of 5. What can you say about the Maximum error with 95 % confidence.  (or) | 5 | 5 |
| 11 | Fi Find 95% confidence limits for the mean of a normally distributed population from which the following sample was taken 15,17,10,18,16,9,7,11,13,14 | 5 | 5 |