

**II. B.Tech - I - SEM - II MID EXAMINATIONS Date: 07--12-2024 Time: FN 10.00AM TO 12:00PM**

**Subject: COSM Branch: CSE(DS), IT Marks: 30 M SET-1**

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

**PART A 5x2 = 10**

1. Define Null & Alternative hypothesis. (CO3)

2. Explain briefly the χ2 (Chi-Square) test. (CO4)

3. Explain t-distribution. (CO4)

4. Define stochastic process & Markov chain. (CO5)

5. If the transition probability matrix is . Find x, y an z ? (CO5)

**PART-B 4x5= 20**

6. An oceanographer wants to check whether the depth of the ocean in a certain region is 57.4

fathoms, as had previously been recorded. What can he conclude at the level of significance α=0.05,

if readings taken at 40 random locations in the given region yielded a mean of 59.1fathoms with a

standard deviationof 5.2 fathoms? (CO3)

7. 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. Is there a significant difference

between the means of two groups ? (CO3)

8. A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer

claims that the mean life of bulbs is 1000 hours. Is the sample not up to the

standard. (CO4)

**9.** The heights of 10 males of a given locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, 66

inches. Is it reasonable to believe that the average height is greater than 64 inches? Test at 5%

significance level assuming that for 9 degrees of freedom (t=1.833 at α=0.05). (CO4)

10**.** Find the equilibrium vector or steady state vector for the transition matrix (CO5)

11. The transition probability matrix of a Markov chain , n= 1,2,3 ……. having 3 states

1, 2 and 3 is P= and the initial distribution is = .

Find (i) P(X2=3) (ii) P(X3=2, X2=3, X1=3, X0=2). (CO5)

**MID-II**

**Subject: COMPUTER ORIENTED STASTCAL METHODS Date: 07--12-2024**

**Scheme of Evaluation**

| **PART** | **S.NO** | **QUESTIONS** | **MARKS** | **TOTAL** |
| --- | --- | --- | --- | --- |
| **A** | 1 | Null + Alternative hypothesis | 1+1 | 2 |
| 2 | Formula | 2 | 2 |
| 3 | Formula | 2 | 2 |
| 4 | stochastic process + Markov chain | 1+1 | 2 |
| 5 | Formula + Calculations | 2 | 2 |
| **B** | 6. | Given data + Formula  Procedure + Conclusion | 2  3 | 5 |
| 7 | Given data + Formula  Procedure + Conclusion | 2  3 | 5 |
| 8 | Given data + Formula  Procedure + Conclusion | 2  3 | 5 |
| 9 | Given data + Formula  Procedure + Conclusion | 2  3 | 5 |
| 10 | Vp =v and v1+v2+v3=1  Application + Answer | 1  3+1 | 5 |
| 11 | (i) P(X2=3)  (ii) P(X3=2, X2=3, X1=3, X0=2) | 2  3 | 5 |