QP CODE: 24803829

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Reg No : .....

Name : .....

INTEGRATED MSC DEGREE EXAMINATION, JULY 2024

Fourth Semester

INTEGRATED MSC COMPUTER SCIENCE-DATA SCIENCE

COMPLEMENTARY - ICSD4CM2 - PROBABILITY DISTRIBUTIONS AND STATISTICAL INFERENCE

2021 Admission Onwards

BF04A5C6

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Define Degenerate Distribution.
2. Define Hyper Geometric Distribution.
3. Mention any 2 examples of poisson Distribution.
4. Obtain the mean value of Gamma Distribution
5. Define Pareto Distribution.
6. Define Bivariate Normal Distribution.
7. Define Estimates.
8. A random sample of size 11 from a normal population found to have variance 12.3. Find a 95% confidence interval for the population variance.
9. Explain Standard Error.
10. Explain the test based on normally distributed test statistics when s.d is known.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. The mean and variance of a binomial variate X are 16 and 8.Find (1)P(X=0) ,(2)P(X≥2)

12. A sample of 3 items is selected at random from a box containing 12 items of which 3 are defective.Find the possible number of defective combinations of the said 3 selected items along with probability of a defective combination.

13. If X is uniformly distributed with mean 1 and variance 4/3. Find P(X<0)

14. Explain standard error and its uses.

15. State and prove the additive property of chi-square Distribution.

16. Explain Efficiency.

17. Distinguish between Simple and Composite Hypothesis.

18. The S.D of two samples of size 10 and 14 from the normal populations are 3.5 and 3.0 respectively. Examine whether the S.D's of the populations are likely to be equal.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. (1) A die is roled five times.Find the probability of getting a_1,a_2 and three other numbers. (2) A community consists of 50 per cent Hindus,30 per cent Muslims and 20 per cent Sikhs.If a sample of six individuals is selected at random,what is the probability that two are Hindus,three are Muslims and one is a Sikh?

20. The weekly wages of 1000 workmen are normaly distributed around a mean of Rs. 70 and with a standard deviation of Rs. 5 . Estimate the number of workers whose weekly wages will be (i) between Rs. 70 and Rs. 72 (ii) more than Rs. 75 (iii) less than Rs. 63 .

21. Show how you can obtain the confidence interval for the difference of means of two normal populations. What assumption do you make?

22. Derive the analysis of variance table for one way classification.

(2×5=10 weightage)