



QP CODE: 25050781



25050781

Reg No :

Name :

MSc DEGREE (CSS) EXAMINATION DECEMBER 2025

First Semester

MSC Data Analytics

Core Courses - ST050101 - STATISTICAL FOUNDATION FOR DATA ANALYTICS

2020 Admission Onwards

713FA47E

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. State Axiomatic definition of probability?
2. Derive the mean and variance of Exponential distribution.
3. Obtain the relationship between normal and lognormal distributions.
4. Define F distribution?
5. If x_1, x_2 denote a random sample of size two taken from a Poisson Distribution and if $t_1 = 2x_1 - x_2$ and $t_2 = 3x_1 - 2x_2$ are statistics for estimating λ , check whether they are unbiased and compare their efficiencies.
6. What is moment estimation.
7. Explain p value?
8. What is a Most Powerful Critical Region.
9. What do you mean by run?
10. What is posterior probability?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Derive the moment generating function of a Poisson distribution and hence obtain its mean and variance.
12. What is standard normal distribution? Derive its pdf?
13. Describe inversion method of random number generation?
14. Which are the sufficient conditions for consistency?





15. Find the confidence interval for the difference of means?
16. Derive the confidence interval for the proportion of Binomial population?
17. What is locally most powerful test?
18. Explain Wilcoxon signed rank test.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Show that Binomial distribution tends to Normal distribution as n becomes large, provided p nor q is small.
20. Explain Maximum Likelihood Estimation Method . Find the MLE of λ of Poisson distribution?
21. (a) Explain the test procedure for testing the equality of variances of two Normal populations.
(b) A random sample of 8 pigs fed on diet A over a period gave mean value as 6 and S.D 3.8. Another sample of 5 pigs fed on diet B gave the mean value as 9 and S.D 4.15. Test whether the diets A and B differ significantly in their variances.
22. What is Sequential Probability Ratio test?

(2×5=10 weightage)

