



QP CODE: 25019419



25019419

Reg No :

Name :

**B.Sc DEGREE (CBCS)) REGULAR/ IMPROVEMENT/ REAPPEARANCE / MERCY
CHANCE EXAMINATIONS, FEBRUARY 2025**

Fourth Semester

B.Sc Mathematics Model II Computer Science

Complementary Course - ST4CMT64 - STATISTICS - APPLIED STATISTICS

2017 Admission Onwards

E5889F02

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Distinguish between large sample test and small sample test.
2. Write down the test statistic for testing the equality of means of two populations in small samples when the Population standard deviations are unknown.
3. Write down the test statistic for testing the proportion has a specified value.
4. What are the assumptions to be made for conducting the Analysis of Variance?
5. What is meant by one way analysis with unequal sample size?
6. What is additive model of time series?
7. Define moving average.
8. What is meant by process control?
9. What is meant by three sigma limits in a control chart?
10. Define the terms high spots and low spots.
11. What is meant by acceptance sampling.?
12. Write the O. C. function of a S. P. R.T.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. In a hospital it was found that during a week there were 56 male and 61 female births. Test the hypothesis that the birth rate of male and female are same at 1% level of significance.
14. Derive the test procedure for testing the equality of variance of two normal populations.





15. What are the assumptions to be made in two-way analysis of variance (with one observation per cell)?
16. Describe the method of measuring trend by free hand method.
17. If the trend equation in a problem is $Y = 50 + 2X$. Origin is 1980. Shift the origin to 1977.
18. Write the difference between Seasonal and Cyclical variation.
19. Derive the control limits of an \bar{X} chart.
20. Explain how R chart can be drawn in practice. How would you interpret the points falling outside the control limits on the chart?
21. Explain the procedure of construction O. C curve for a double sampling plan.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. The following data relates to marital status and performance in an examination. Examine whether the performance depends on marital status.

	Good performance	Bad performance
Married	60	80
Unmarried	20	40

23. To study the performance of three detergents and three different water temperatures, the following whiteness readings were obtained with specially designed equipment.

Water Temperature	Detergent A	Detergent B	Detergent C
Cold Water	57	55	67
Warm Water	49	52	68
Hot Water	54	46	58

Perform a two way analysis of variance using 5% level of significance. (F = 6.94 at 5% significance level)

24. (i) Explain how to fit a straight line by the method of least squares and estimate the trend values.
(ii) The following table gives the annual profit in an industry. Fit a straight line and find the trend values.

Year	2001	2002	2003	2004	2005	2006	2007
Profit (in 1000)	82	93	95	85	90	102	94

25. Explain the main control charts for attributes and obtain their control limits. What are the advantages and disadvantages of control charts of attributes and control chart of variables?

(2×15=30)

