J – 2998

Reg. No. : ....

Name : ....

Fourth Semester B.Sc. Degree Examination, June 2020

First Degree Programme Under CBCSS

Complementary Course for Geography

ST 1431.3 – STATISTICAL TECHNIQUES FOR GEOGRAPHY

(2017 Admission onwards)

Time 3 Hours

Max Marks 80

SECTION – A

Answer all the questions, each carrying 1 mark

1 What is spatial data?

2 Define point patterns.

3 What do you mean by area pattern?

4 Name the non-parametric test used to compare the median of more than two populations.

5 Which is the test used for testing the randomness in the data?

6 Give an example for irregular patterns.

7 What is variogram?

8 Give one example for two samples median test.

9. What is the sampling distribution of ANOVA test statistic?

10. Name the test used for testing the goodness of fit of data that follows binomial distribution.

<div align="right">(10 × 1 = 10 Marks)</div>

SECTION – B

Answer **any eight** questions, each carrying **2 marks**

11. Give an example for one way ANOVA.

12. What are the advantages of two way ANOVA over one way ANOVA?

13. Define non-parametric tests. Name any two non-parametric tests.

14. Write any two advantages of non-parametric test.

15. Name the two types of point patterns.

16. Mention the two types of lattice patterns.

17. Give any two uses of spatial data.

18. Define spatial autocorrelation.

19. Name a measure of autocorrelation in spatial data.

20. Write the assumptions for two way ANOVA.

21. Give an example for Sign test.

22. Write the null and alternate hypothesis for Kolmogrov-Smirnov test of normality.

<div align="right">(8 × 2 = 16 Marks)</div>

SECTION – C

Answer **any six** questions, each carrying **4 marks**

23. Write a short note on quadrat analysis

24. Give the two way ANOVA table.

25. How many hypothesis can be tested in a two way ANOVA? Write all those null hypotheses and corresponding alternate hypotheses for two way ANOVA

26. Write a short note on one sample Kolmogrov-Simrnov test.

27. Explain one way ANOVA table.

28. Write the null hypothesis, alternate hypothesis and test statistic formula for Kruskal Wallis test.

29. Write a short note on one sample Run test for quantitative data

30. Describe Wilcoxon signed rank test.

31. Briefly explain two samples Kolmogrov-Simrnov test

$$(6 \times 4 = 24 \text{ Marks})$$

SECTION – D

Answer **any two** questions, each carrying **15 marks**

32. A researcher wishes to know whether distance travelled to works varies by income. Ten individuals in each of three income groups are survey The resulting data are giving in the following table (in commuting miles) Assume the distance follows normal distribution, use one way ANOVA to test at 5% level of significance whether the mean commuting distance significantly differs between the three income groups. (The F table value for the appropriate degrees of freedom is 4.24) Give the ANOVA table for this problem. What is your conclusion regarding the acceptance of the null hypothesis?

Distance travelled (in miles) among three income groups

Income groups		
Low	Medium	High
5	7	6
4	4	9
6	5	10
3	6	11
5	8	12
2	3	9
7	7	8
4	9	6
3	10	10
5	9	8

33   Fit a Poisson distribution to the following data and test the goodness of fit

X	0	1	2
Frequency	32	15	13

34   A survey was conducted in a State in South India to study the migration rate among people. The table below gives the distribution of number of migrant family among the major three religious groups. Test at 5% level of significance whether there is significant association between religion and migration. The Chi square table value for 2 degrees of freedom is 5 99)

Distribution of number of migrant family among the three religious groups

Migrant	Religious groups		
	Hindu	Muslim	Christian
Yes	75	60	65
No	805	770	750

35   (a)   Explain Mann Whitney U test

(b)   Describe median test

(2 × 15 = 30 Marks)