

Reg. No. : .....

Name : .....

**Fourth Semester B.Sc. Degree Examination, July 2019**

**(First Degree Programme Under CBCSS)**

**Complementary Course for Psychology**

**ST 1431.5 : STATISTICAL METHODS FOR PSYCHOLOGY – IV**

**(2017 Admission)**

Time : 3 Hours

Max. Marks : 80

**SECTION – A**

Answer **all** the questions, **each** carrying **one** mark.

1. Define a statistic.
2. What is standard error?
3. What is point estimation?
4. What is meant by confidence coefficient?
5. What is level of significance?
6. Define type 2 error.
7. What is the null hypothesis in a paired  $t$  test?
8. What is  $p$  value of a test?
9. What is meant by a non parametric test?
10. Which is the non parametric equivalent of paired  $t$  test?

**(10 × 1 = 10 Marks)**

## SECTION – B

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

11. Define a chi square statistic. What is its use?
12. Distinguish between type 1 and 2 errors.
13. Distinguish between level of significance and power.
14. Give the expression for 95% confidence interval for the population mean when a sample of size  $n$  is taken from a normal population with unknown variance.
15. Define simple and composite hypotheses. Give examples.
16. A die is thrown 9000 times and a throw of 3 or 4 was observed 3240 times. Show that the die cannot be regarded as an unbiased one.
17. Give the formula of  $F$  statistic
18. Distinguish between large and small sample tests.
19. Write down the statistic for a  $2 \times 2$  chi- square contingency table.
20. What is the difference between paired and unpaired  $t$  tests?
21. Give the assumptions of  $t$  test.
22. Give the assumptions of chi square tests.

(8 × 2 = 16 Marks)

## SECTION – C

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

23. Explain chi-square test of variance.
24. Explain  $F$  test of equality of two variances.

25. Use sign test to determine whether the median of the following set of observations is 30.

28,27,32,30,32,27,24,29,31,34,35,36,30,36,33,34,22.

26. If 60 out of a group of 1000 insured persons died within a year examine whether the assumption that only less than 4% are likely to die within a year is justifiable.
27. The following observations have taken from a normal population.

34,44,30,32,33,33,34,36,36,38,41.

Test the hypothesis that the population variance is greater than 4.

28. The number of automobile accidents per week in a certain community was as follows:

12,8,20,3,15,10,16

Are these frequencies in agreement with the belief that accident conditions were the same during the 7 days of the week?

29. Describe chi-square test of goodness of fit. What are the conditions to be satisfied before applying Chi-square test?
30. Ten individuals are chosen at random from a normal population and their heights in inches are found to be 63, 63, 66, 67, 68, 69, 70, 71, 71 and 71 inches. Discuss the suggestion that the mean height of the population is 66 inches.
31. A random sample of 900 members is found to have a mean of 3.4 cms. Can it be considered as coming from a large population with mean = 3.25 cms and  $\sigma = 2.61$  cms.

**(6 × 4 = 24 Marks)**

## SECTION – D

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

32. (a) In random samples of 600 and 1000 men from 2 cities, 400 and 600 men are found to be literate. Do the data indicate that populations are significantly different in percentage of literacy?

- (b) Two samples taken from normal populations gave the following results.

Sample Size    Mean    S.D.

12            1050    68

10            980     74

Do the samples come from the same population given  $\sigma_1 = \sigma_2$

33. (a) Explain a one sample sign test and a two sample sign test.

- (b) An oil company has explored three different areas for possible oil reserves. The results are given below. Do the three areas have the same potential at 10 % level of significance.

	Area			
	A	B	C	Total
Potential 1	7	10	8	25
Potential 2	10	18	9	37
Total	17	28	17	62

34. Give a detailed description about parametric and non parametric tests by comparing their advantages and disadvantages.

35. (a) Explain Mc-Nemu Test.

- (b) Explain the test procedure for testing the significance of difference between proportions.

**(2 × 15 = 30 Marks)**