

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

(2013 - 2016 Admn.)

Time : 3 Hours

Max. Marks : 80

Instruction : Use of Scientific calculator permitted. Graph paper shall be provided.

SECTION – I

Answer **all** questions. Each question carries **1** mark.

1. Define Type II error.
2. What do you mean by null hypothesis?
3. Write the use of two sample t test.
4. Write down the test statistic for testing significance of mean based on small samples when the population standard deviation is unknown.
5. Write any two uses of chi square tests.
6. What do you understand by testing significance of proportion?
7. Give an example of a 2×2 contingency table.

P.T.O.

8. What is the use of median test?
9. Find the number of runs in the sequence FMMFFMMMFF.
10. Find the value of the test statistic for testing $H_0: \mu = 20$ given a sample of size 64 with mean 18 and assume that population standard deviation is 4.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions. **Each** question carries **2** marks.

11. Explain two tailed test with an example.
12. Define significance level and power of the test.
13. Write down the test statistic for testing significance of difference between two means based on small samples.
14. What do you mean by testing significance of difference between proportions?
15. Write down the test statistic for chisquare test of goodness of fit.
16. Distinguish between independent samples t test and paired t test.
17. Write a short note on steps involved in testing of hypothesis.
18. What are the basic conditions for the application of chisquare test?
19. Explain Wilcoxon matched pairs signed rank test.
20. State the null hypothesis and test statistic for the median test.
21. A random sample of 400 members is found to have a mean of 4.45 cm. Can it be regarded a sample from large population whose mean is 5 cm. and whose variance is 4?

22. Five hundred students in a school were graded according to their intelligence and the economic conditions of their homes. Examine whether there is any association between economic conditions at home and intelligence:

Economic conditions	Intelligence		
	Good	Bad	Total
Rich	85	75	160
Poor	165	175	340
Total	250	250	500

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions. Each question carries **4** marks.

23. Explain the procedure for testing significance of mean of a population based on large sample.
24. Ten specimens of copper wires drawn from two large lots have the following breaking strengths (in kg.wt.):
578, 572, 570, 568, 512, 578, 570, 572, 569, 548. Test whether the mean breaking strength of the lot may be taken to be 578 kg. wt.
25. Explain Mc Nemer test.
26. Explain the procedure of testing independence of attributes.
27. Write down the test statistic and briefly explain the procedure for testing correlation coefficient.
28. Random samples of 400 men and 600 women were asked whether they would like to have a fly over near their residence. 200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women in favour of the proposal, are same against that they are not, at 5% level.
29. Define run. Also explain Wald-Wolfowitz run test.
30. Distinguish between parametric and nonparametric tests.
31. Find the value of t for testing $H_0: \mu = 25$, based on the sample values 24, 26, 30, 20, 20, 18.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions. **Each** question carries **15** marks.

32. The following figures show the distribution of digits in numbers chosen at random from a telephone directory:

Digits:	0	1	2	3	4	5	6	7	8	9	Total
Frequency:	1026	1107	997	966	1075	933	1107	972	964	853	10000

Test whether the digits may be taken to occur equally frequently in the directory.

33. Below are given the gain in weights (in lbs.) of pigs fed on two diets A and B.

Diet A: 25 32 30 34 24 14 32 24 30 31 35 25

Diet B: 44 34 22 10 47 31 40 30 32 35 18 21 35 29 22

Test, if the two diets differ significantly as regards their effect on increase in weight.

34. The following grade-point averages were collected over a period of 7 years to determine whether membership in a fraternity is beneficial or detrimental to grades:

	Year						
	1	2	3	4	5	6	7
Fraternity	2.4	2.0	2.3	2.1	2.1	2.0	2.0
No fraternity	2.4	2.2	2.5	2.4	2.3	1.8	1.9

Use sign test to test the hypothesis of no difference in grade-point averages.

35. The following data represent lifetimes (hours) of batteries for two different brands:

Brand A: 40 30 40 45 55 30

Brand B: 50 50 45 55 60 40

Use Median test to test whether the two samples come from the same population.

(2 × 15 = 30 Marks)