

**B. Sc. DEGREE END SEMESTER EXAMINATION – MARCH 2023****SEMESTER 4: STATISTICS FOR PSYCHOLOGY****COURSE: 19U4CPSTP04 – STATISTICAL INFERENCE – PAPER IV***(For Regular - 2021 Admission and Improvement / Supplementary - 2020 Admissions)*

Time: Three Hours

Max. Marks: 75

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

1. A .....is a statement about the parameters of a population distribution.
2. Significance level is the probability of .....
3. Standard error is the standard deviation of .....
4. The probability of rejecting the null hypothesis when it is false is called .....
5. In a test, the value of test statistic was obtained as 2.36 and the critical value for the selected level of significance was 1.65. Then the alternate hypothesis is .....
6. ....distribution is used for testing the equality of two population means using large samples with known population standard deviations.
7. The test statistic used for testing the hypothesis concerning variance of a population follows ..... distribution.
8. F test is used for testing the equality of two .....
9. The degrees of freedom for testing the independence of two attributes when the observed frequencies are in a table of m rows and n columns is .....
10. For testing the independence of two attributes using a 2 x 2 contingency table with observed frequencies a, b, c and d, the test statistic follows a chi-square distribution with .....degrees of freedom

(1 x 10 = 10)

**PART B*****Answer any eight of the following questions.******Each question carries 2 marks***

11. Define simple hypothesis
12. Define Type II error
13. Define test criterion.
14. Define rejection region.
15. A manufacturer of printer claims that the mean number of pages that can be printed using 250 gram printing ink is 1000 pages with a standard deviation of 40 pages. Formulate the hypothesis to test the claim of the manufacturer.

16. Out of 800 students, 640 are in favour of starting the class from 7 AM. Test whether proportion of students favouring this class timing is more than 75%. (Table value for 5% level of significance is 1.65)
17. Briefly explain paired sample t test.
18. What are the uses of t distribution in testing of hypothesis?
19. Define degrees of freedom.
20. Give the statistic used for testing equality of variances of two populations.

(2 x 8 = 16)

**PART C****Answer any five of the following questions****Each question carries five marks**

21. Distinguish between type I error and size of the test.
22. Briefly explain the steps involved in hypothesis testing.
23. Briefly explain how you will test the hypothesis concerning variance of a population.
24. The mean life of 25 batteries was found to be 36 months with a standard deviation of 3 months. Can it be regarded as a sample from a population having mean life of 40 months. (Assume significance level of 5%)
25. A sample of 800 students from College A and 500 students from College B were given a chance to participate in a remedial programme to improve their performance. After the programme, the mean score of students from College A was found to be 240 with a standard deviation of 30 while the mean score and standard deviation was 280 and 40 respectively for students from College B. Test whether students of both the Colleges are having same level of score at 5% level of significance.
26. In a random sample of 1600 men and 1700 women from a city 1400 and 1440 women are found to be in favour of expansion and widening of a road. Do the data indicate at 5% level of significance that the proportion of men and women differ significantly in their attitude towards expansion and widening of road?
27. The marks of 8 students are recorded below.  
120, 110, 101, 88, 83, 95, 107, 100,  
Do the data support the assumption that mean mark of students in the college is 100?

(5 x 5 = 25)

**PART D****Answer any two of the following questions****Each question carries 12 marks**

28. Explain how you will test the equality of two population means when
  - (a) The sample sizes are large and population variances are known
  - (b) The sample sizes are small and population variances are not known

29. The number of books available in the library of 8 teachers and 10 lawyers are given below. Test whether the average number of books with teachers is significantly lesser than that of lawyers.

Number of books in library									
Teachers:	170,	185,	190,	175,	180,	160,	165,	165	
Lawyers:	160,	190,	175,	190,	185,	210,	175,	205,	170, 160

30. A psychometric test was administered to 10 students to assess the mental strength before and after a training programme. The results are given below. Test whether the mental strength increased significantly after training.

I Q									
Before training:	46,	57,	49,	64,	50,	56,	42,	54,	60, 50,
After training:	49,	63,	45,	72,	54,	60,	48,	54,	56, 51

31. Explain how you will test the independence of two attributes.

(12 x 2 = 24)

\*\*\*\*\*