QP CODE: 25020270

25020270

Reg No : .....

Name : .....

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

Fourth Semester

B.Sc Psychology Model I

Complementary Course - ST4CMT24 - STATISTICS -STATISTICAL INFERENCE

2017 Admission Onwards

09C1ECAB

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. Explain simple hypothesis with an example.
2. What is power in a statistical hypothesis testing?
3. What do you mean by one tailed test?
4. What is the standard error for testing the equality of means of two populations based on large samples when the standard deviations are known?
5. What is the test statistic for testing a hypothesis concerning the mean of the large sample population when S.D is known.
6. Give the test statistics for testing the equality of means of two large sample populations when (i) S.D s are known (ii) S.D s are unknown and not equal (iii) S.D s are unknown and equal.
7. What do you mean by Chi-square test of independence?
8. Give the statistic under the null hypothesis of testing of mean of a population has a specified value for small sample, when σ known.
9. Give the statistic under the null hypothesis of testing the difference of means of two normal populations for small sample, when σ known.
10. Define the test statistic for testing equality of proportions in two populations based on large sample.
11. Give the test statistic for testing the equality of means based on paired observations.
12. Give the test statistic for binomial test for proportion.

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. What do you understand by the terms testing of hypothesis and level of significance?

14. Explain the procedure involved in testing of hypothesis.

15. Define statistical test.

16. How do you determine the critical region for testing H0: μ=μ $\mu = \mu$0 using large sample tests. What modifications will you make depending on the alternative hypothesis?

17. The height of students studying in college classes is believed to be distributed with S.D 10 cm. A sample of 100 students have their mean heights 168.8 cm. Can we accept the hypothesis that the mean height of the students is 170 cm. (significance level = 0.05)

18. Describe the uses of Chi-square test.

19. Researchers wish to test the efficacy of a program intended to reduce the length of labor in childbirth. The accepted mean labor time in the birth of a first child is 15.3 hours. The mean length of the labors of 13 first-time mothers in a pilot program was 8.8 hours with standard deviation 3.1 hours. Assuming a normal distribution of times of labor, test at the 10% level of significance test whether the mean labor time for all women following this program is less than 15.3 hours.

20. Discuss briefly the different applications of Chi- square as a test statistic.

21. Explain small sample tests. Give their application roles with illustration

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. In two colleges affiliated to a university, 46 out of 200 and 48 out of 250 candidates failed in an examination. If the percentage of failure in the university is 18%, examine whether the colleges differ significantly.

23. 300 digits were chosen at random and found to give the following distribution :

Digits	0	1	2	3	4	5	6	7	8	9
Frequency	18	32	28	34	42	50	17	23	27	29

Test the hypothesis that the digits were distributed in equal numbers in the table form which the data were collected. [Given, the value of $\chi 2$ for 9 d.f. = 16.92]

24. The following figures give the prices in rupees of a certain commodity in a sample of shops selected at random from a city A. Assuming the distribution of prices to be normal, examine whether the standard deviation of prices is 0.3.

7.41, 7.77, 7.44, 7.40, 7.38, 7.93, 7.58, 8.28, 7.23, 7.52, 7.82, 7.71, 7.84, 7.63, 7.68

25. Explain small sample tests with example. Give their application roles with illustration.

(2×15=30)