



Reg. No. :

Name :



K19U 2275

V Semester B.Sc. Degree (CBCSS- Reg./Sup./Imp.)

Examination, November-2019

(2014 Admn. Onwards)

Core Course in Statistics

5B05STA : STATISTICAL INFERENCE - II

(Use of calculators and Statistical tables are permitted)

Time : 3 hrs

Max. Marks : 48

PART - A (Short answer)

Answer **all** the **6** questions.

(6×1=6)

1. What do you mean by p- value?
2. Give an example of a composite hypothesis.
3. What do you mean by a t-test?
4. Write down the test statistic for testing $H_0 : \sigma = \sigma_0$ using a sample of size n from a normal population assuming that the population mean is unknown.
5. Distinguish between a parametric test and a non-parametric test.
6. Write down the null hypothesis of a sign test.

PART - B (Short Essay)

Answer any **7** questions.

(7×2=14)

7. Distinguish between type I and type II errors.
8. What do you mean by most powerful test?
9. Define critical region and significance level.
10. A sample of 10 observations gives a mean equal to 38 and standard deviation 4. Can we conclude that the population mean is 40.
11. Explain the test of significance for the difference of standard deviations.

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12. Give an instance where test for proportions is suitable.
13. Give the test statistic for testing the discrepancy between the observed frequencies and expected frequencies.
14. Discuss the uses of F-test.
15. Explain Wald - Wolfowitz Run test.

PART - C (Essay)

Answer any 4 questions.

(4×4=16)

16. Let $X \sim B(10, p)$. Consider the following test for testing $H_0: p = \frac{1}{2}$ against $H_1: p = \frac{1}{4}$: "Reject H_0 if $X \leq 2$ ". Find the significance level and power of the test.
17. State Neymann Pearson lemma.
18. Distinguish between large sample and small sample tests illustrating with suitable examples.
19. Discuss the variance ratio test for testing the equality of variances of two normal populations.
20. A manufacturing process is expected to produce goods with a specified weight with variance less than 5 units. A random sample of 10 was found to have variance 6.2 units. Is there reason to suspect that the process variance has increased. ($\alpha = 0.05$).
21. Explain Median test.

PART - D (Long Essay)

Answer any 2 questions.

(2×6=12)

22. To test the hypothesis $H_0: p = \frac{1}{2}$ against $H_1: p > \frac{1}{2}$, where p is the probability of head turning up when a coin is tossed. The coin was tossed 8 times. It was decided to reject H_0 in case more than 6 heads turned up. Find the significance level of the test and its power if $H_1: p = 0.7$.



23. A Random sample of 27 pairs of observations from a normal population gave a correlation coefficient of 0.6. Is this significant of correlation in the population?
24. Explain the chisquare test of independence of two attributes. What is the null hypothesis tested?
25. Explain Mann-Whitney U test.