



K26U 1178

Reg. No. :

Name :

IV Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Supplementary/
Improvement) Examination, April 2026
(2023 Admission)

COMPLEMENTARY ELECTIVE COURSE IN ARTIFICIAL INTELLIGENCE
AND MACHINE LEARNING
4C04 STA-AIML : Inferential Statistics

Time : 3 Hours

Max. Marks : 40

PART – A
(Short Answer)

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

(6×1=6)

1. Define point estimation.
2. What is the Cramer-Rao inequality ?
3. Define null and alternative hypotheses.
4. What is the significance of the chi-square test ?
5. What is the Kruskal-Wallis test used for ?
6. State one desirable property of a good estimator.

PART – B
(Short Essay)

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

(6×2=12)

7. Explain the method of moments for estimation.
8. What are the types of errors in hypothesis testing ?
9. Define critical region and power of a test.

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10. Describe the Mann-Whitney U test.
11. What are simple and composite hypotheses ?
12. Explain the concept of ANOVA and its importance.
13. State Neyman-Pearson lemma.
14. Explain the purpose of F-test in statistics.

PART – C
(Essay)

Answer **any four** questions. **Each** question carries **3** marks. **(4×3=12)**

15. Discuss the method of Maximum Likelihood Estimation (MLE).
16. How do you construct a confidence interval for mean and proportion ?
17. Describe the steps involved in conducting a chi-square test for independence.
18. Explain the difference between large and small sample tests with examples.
19. What is the difference between one-way and two-way ANOVA ?
20. Explain the application of hypothesis testing in real-world problems.

PART – D
(Long Essay)

Answer **any two** questions. **Each** question carries **5** marks. **(2×5=10)**

21. Explain in detail the concept of interval estimation with examples.
 22. Describe the process of conducting an F-test with an example.
 23. Discuss the ANOVA table and how it is used to analyze variance in data ?
 24. Explain the various methods of estimation and compare their effectiveness.
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