

AQ - 1011

- (ii) Explain different types of alternatives used in non - parameteric inference.
[8 + 8]

5. (A) (a) Define linear rank statistic and explain its application in Mann - Whitney wWilcoxon test.
- (b) Define Kernel with an example. Write its use in developing theory of U statistic. [8 + 8]

OR

- (B) (i) Explain linear rank statistic and obtain its variance.
- (ii) Define U statistic. Obtain V statistic for estimable parameter μ and σ^2 for normal distribution. [8 + 8]



Third Semester M. A. / M. Sc. (Part-II)
(CBCS Pattern) Examination

STATISTICS

Paper - IX (3 SCA - 1)
(Advanced Statistical Inference)

P. Pages : 4

Time : Three Hours]

[Max. Marks : 80

Note : Solve either [A] or [B] from each question.

1. (A) (a) Define

- (i) Risk function
- (ii) Uniformly minimum risk decision rule.
- (b) Explain point estimation as decision theory problem. For squared error loss function define its risk function.
- (c) Define non - randomized and randomized decision rule. [5 + 7 + 4]

OR

- (B) (i) Define

- (i) Frequentest risk

- (ii) Uniformly better decision rule.
- (ii) What is loss function ? Describe different types of loss function used in decision theory. Also throw light on use of loss function.
- (iii) Explain three basic elements of decision theory. [5 + 7 + 4]

2. (A) (a) Define

- (i) Admissible decision rule.
- (ii) Complete class of decision rule.
- (iii) Essentially complete class of decision rule.
- (b) Define Bayes and minimax decision rule. Also establish relationship between Bayes and minimax decision rule. [6 + 10]

OR

(B) (i) Define

- (a) Minimax estimator.
- (b) Bayes estimate.
- (c) Squared error loss function.

- (ii) Show that if minimal complete class exist it exactly consists of class of admissible decision rules. [6 + 10]

- 3. (A) (a) Explain test of randomness. Describe its use in statistical inference theory. Also explain run test for randomness.
- (b) Explain Wilcoxon paired sample signed rank test. [8 + 8]

OR

- (B) (i) What is test of goodness of fit ? Explain χ^2 test of goodness of fit with conditions of validity of the test.
- (ii) Explain advantages and disadvantages of non - parametric test. [10 + 6]

- 4. (A) (a) Explain median test for small and large sample.
- (b) Explain sign test for two sample. [8 + 8]

OR

- (B) (i) Explain Kolmogorov - Smirnov two sample test.