

Syllabus of Online Entrance Examination M.A./M.Sc.Statistics-2023

PART A: 20 Questions, 1 marks for correct answers and -1/4 for wrong

Topics: Quantitative Reasoning (Elementary Mathematics and Statistics), Verbal Reasoning, Non-Verbal Reasoning, Logical Reasoning

PART B: 40 Questions, 2 marks for correct answers and -1/2 for wrong

Topics: Mathematics, Theoretical Statistics, Applied Statistics

Unit 1: Mathematics, 16 questions

Elementary set theory, finite, countable and uncountable sets, functions of one and two variables, integers, real, and complex numbers, polynomials, limits, continuity, differentiation, integration, analytical geometry of two dimensions, sequence and series of real numbers, vector space, subspaces, linear dependence, basis, dimensions, algebra of matrices, rank and determinant of matrices, eigen value, eigen vectors, system of linear equations.

Unit 2: Theoretical Statistics, 16 questions

Population and sample, presentation of data, measures of central tendency, measure of dispersion, moments, skewness and kurtosis, correlation, multiple and partial correlation coefficient, theory of attributes, sample space and events, probability, conditional probability, independence, pairwise and mutual independence discrete and continuous random variables, univariate probability distributions (pmf, pdf, cdf) expectation, moment and probability generating functions, bivariate probability distributions, marginal and conditional distributions, independence of random variables, point estimation, confidence intervals, sampling distribution, method of moments, unbiasedness, method of maximum likelihood, testing of hypothesis, small sample tests based on chi-square, t and F distri-

butions, Z-test

Unit 3: Applied Statistics, 8 questions

Simple linear regression, multiple linear regression, randomized experiment, design of experiment, CRD, RBD, LSD, testing of hypothesis, index numbers, sampling, systematic sampling, stratified sampling, elementary time series, basics of computing

Sample Questions:

1. It was Tuesday on March 1, 2016. What would be the day of the week on March 1, 2024?
A. Saturday B. Wednesday C. Thursday D. Friday

2. What can be said about the limiting behaviour of the following series?

$$\sum_{n=1}^{\infty} \frac{(\log \log 2)^n}{n!}$$

- A. Divergent
 - B. Converges to a number between 0 and 1
 - C. Converges to a number greater than 1.
 - D. Converges to a negative number.
3. A tea shop sells tea and coffee, 65% customer choose tea and 35% choose coffee. What is the probability that two customer among next three will order tea?
A. 0.2388 B. 0.1478 C. 0.4436 D. 0.3333
 4. The value of the uniformly minimum variance unbiased estimator (UMVUE) of θ based on a random sample of size 3 from a uniform distribution on $(0, \theta)$ is 12. The value of the maximum likelihood estimator (MLE) of θ is
A. 12 B. 6 C. 9 D. 16