Department of Statistics, M.D, University, Rohtak
Two Year PG Program in Statistics under NEP-2020
Syllabus for Entrance Test
(Session: 2025-26)

Duration: 1:15 Hours   **Max. Marks: 100 Marks**

Note: The Examiner is required to set 100 multiple choice questions each of mark one as per syllabus described below.

Linear Algebra (10 Questions)

Elements of Set Theory, Linear Independence and Dependence of Vectors, Vector Space and its Properties, Matrices: Rank & Determinant of a Matrix, Eigen Values and Eigen Vectors, Reduction to Normal Forms, Linear Homogeneous and Non-Homogeneous Equations. Cayley-Hamilton Theorem, De Moivre's Theorem

Calculus (10 Questions)

Functions and its Types, Derivative of Functions, Limit, Continuity & Differentiability of Functions, Successive Differentiation, Maxima and Minima of Functions, Leibnitz's Theorem, Partial Differentiation, Euler's Theorem on Homogeneous Functions, Integration and Properties of Definite Integrals

Differential Equations (08 Questions)

Linear Differential Equations with Constant Coefficients, Homogeneous Linear Ordinary Differential Equations, Separable Equations, Algebraic Properties of Solutions, Solution of Second Order Differential Equations, Ordinary Simultaneous Differential Equations and its Solutions

Real Analysis (08 Questions)

Topology of Real Numbers, Sequence and Series of Real Numbers with Convergence and Divergence Properties, Riemann Integration

Linear Programming (08 Questions)

Elementary Theory of Convex Sets, General Linear Programming Problems (LPP), Feasible Solution, Optimum Basic Feasible Solution, Graphical and Simplex Method (without Artificial Technique) of Solving LPP, Transportation Problems: Methods for Initial Basic Feasible Solutions, Assignment Problems

Numerical Methods (08 Questions)

Finite Differences Operators and their Relations, Interpolation with Equal and Unequal Intervals: Newton's Divided Difference, Lagrange's Interpolation Formulae, Gauss Forward and Backward Interpolation Formulae, Solutions of Algebraic and Transcendental Equations: Bisection Method, Regula-Falsi Method, Secant Method, Newton-Raphson's Method.

16/4/2025

Introduction to Computers (08 Questions)

History & Definition of Computers, Elements of Computer: CPU, Input Devices, Output Devices, Need of Computers in Statistics, Binary Number System, Machine, Language, Basic Commands to Operate a Computer, Ms- Office Tools, C-Language: Features, Data Types, Types of Variables and Operators

Statistical Methods (15 Questions)

Types of Data, Tabular & Graphical Presentation of Data, Measures of Central Tendency, Measures of Dispersion, Raw & Central Moments, Skewness and Kurtosis, Bivariate Data, Scatter Diagram, Correlation: Simple, Partial and Multiple Correlation, Spearman's Rank Correlations, Regression: Regression Lines, Regression Coefficients and their Properties, Principal of Least Squares: Fitting of 1st Degree Polynomial and Parabola.

Probability and Distributions (15 Questions)

Definitions of Probability, Random Experiment & Sample Space, Types of Events, Baye's Theorem and its Applications. Random Variables: Discrete and Continuous, Probability Mass Function, Probability Density Function, Expectation of a Random Variable and its Properties, Moment Generating Function and its Properties, Discrete Distributions: Uniform, Binomial, Poisson, Geometric, Continuous Distributions: Rectangular, Exponential, Normal

Applied Statistics (10 Questions)

Census: Types of Census, Essential Features and Utility of Censes, Objective of Census, Methods of Collections, Introduction to Indian Statistical System, Methods of Collection of Official Statistics, Reliability and Limitations of the Methods, Indexed Numbers: Types, Uses and Construction of Index Numbers, Measurement of Fertility: Crude Birth Rate, General Fertility Rate, Age Specific Fertility Rate, Total Fertility Rate, Measurement of Mortality; Crude Death Rate, Specific Death Rate, Standardized Death Rate, Infant Mortality Rate, Demand and Supply: Laws and Curves.

16/4/2025