SVKM's NMIMS University

Mukesh Patel School of Technology Management & Engineering, Mumbai

Department of Data Science Engineering

Syllabus for PhD Entrance Test

Effective from May, 2026

SECTION- A

Section A will include 25 compulsory objective-type questions, each carrying 2 marks. It will be focused on research aptitude. The section will be general in nature and aims to evaluate the candidate's research aptitude, with emphasis on reasoning ability, data interpretation, and quantitative skills.

SECTION-B

Section B will comprise 25 compulsory objective-type questions, each carrying 2 marks, based on the following syllabus:

UNIT I- Statistical Learning Fundamentals

Descriptive & Inferential Statistics: Measures of central tendency, standard deviation, and basic hypothesis testing (t-tests, p-values)

Probability Theory: Basics of conditional probability and common distributions (Normal and Binomial)

Linear Algebra: Concepts of Matrices, Vectors, and Dimensionality Reduction (PCA)

UNIT II- Machine & Deep Learning Concepts

Supervised Learning: Core logic of Linear Regression, Logistic Regression, and Decision Trees

Unsupervised Learning: Basics of K-Means Clustering and Association Rules

Deep Learning: Structure of a Neural Network, activation functions, and the concept of Backpropagation

UNIT III: Programming & Data Handling (Python)

Python Essentials: Basic syntax, data structures (Lists, Dictionaries), and functions

Data Libraries: Essential operations in NumPy (arrays) and Pandas (data cleaning/filtering)

Visualization: Basic plotting using Matplotlib or Seaborn for data interpretation

UNIT IV: Data Engineering & Emerging Trends

Database Fundamentals: Basic SQL queries and the difference between SQL and NoSQL

Big Data Basics: The "5 Vs" of Big Data and the fundamental concept of MapReduce

Ethics & AI: Awareness of data privacy and bias in automated systems