

SAVITRIBAI PHULE PUNE UNIVERSITY
DEPARTMENT OF TECHNOLOGY

Syllabus for Online Entrance Examination (OEE) for M.Sc. Data
Science 2026

SECTION A: Numerical Analysis Aptitude & English Skills Assessment – 20 Marks

- Pattern Recognition
- Visual Sequences & Series
- Simple Mathematics
- Odd Image / Element Out
- Visual Memory and Details
- General English
- English Grammar

SECTION B:

Section I: Computer Science:

Basic programming concepts (variables, data types, operators), Control structures (if-else, loops), Functions and modular programming, Basic debugging and code reading, Arrays, Strings, Algorithms & Problem Solving.

Date Structures: Arrays, Stacks, Queues, linked Lists. Sorting techniques, Searching Techniques, Trees and Graph terminology and representation in memory, binary search tree, traversal techniques of graphs and Trees.

Database Management Systems: DBMS architecture, Data models, data independence, E-R model, normalization, Relational Model: concepts, constraints, languages. Data storage, indexing, query processing, design and programming SQL. Reading and writing data (CSV, basic file handling).

Operating Systems: Process management, Process States, Process Control Block, Process and Threads, CPU Scheduling, Scheduling algorithm, Process Synchronization and Deadlock, Memory management, Virtual memory concepts paging and segmentation File organization, Blocking and buffering, file descriptor, File and Directory structures, I/O Devices.

Section II: Basic Mathematics:

Arithmetic and Geometric Progressions, Arithmetic, Geometric and Harmonic Mean, Polynomials, Matrices (basic operations, inverse, transpose), Determinants, Functions (Domain, Range, Injective, Surjective, Bijective), Sets and Relations, Permutations and Combinations, Mathematical Induction, Boolean Logic and Truth Tables

Section III: Basic Statistics:

Types of data (categorical, numerical), Measures of central tendency: mean, median, mode,

Measures of dispersion: range, variance, standard deviation, Data visualization basics (histograms, bar charts, box plots), Frequency distributions, Percentiles and quartiles Basic probability concepts, Discrete vs continuous variables, Covariance and correlation, Sampling vs population

Typical Multiple Choice Question Example

Q. Let a pair of fair dice be thrown. What is the probability that the sum of scores will be 8?

Answer Choices:

- A. $4/36$
- B. $5/36$
- C. $1/36$
- D. $6/36$

Correct Answer: B