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Head

Annexure-I to the Minutes of Departmental Committee Meetings held on 8th April, 2026

(Item-I)

Entrance Examination Syllabus for the year 2027 and onwards for 5-year Integrated Masters Programme in Data Science & Artificial Intelligence (FYIMP in DS & AI)

Note: There shall be sixty questions, each carrying one mark. Weightage to be given to each section is indicated in parentheses. Paper setters are required to set the required number of multiple-choice questions with only one correct or most appropriate answer, separately for each section, ensuring uniform representation of the entire syllabus.

Unit I: Logical Reasoning (04)

Analogies, Syllogisms, Statement and conclusions, Statement and arguments, Blood relations, Direction sense tests, Seating arrangement (linear and circular), Puzzles (based on arrangements, comparisons, etc.), Venn diagrams, Coding and decoding, Arithmetic number series.

Unit II: English Language and Comprehension (04)

Vocabulary, Spot the Error, filling in blanks with appropriate words, Synonyms/Homonyms, Antonyms, Spellings/Detecting misspelt words, Idioms & Phrases, One-word substitution, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Reading Comprehension.

Unit III: Sets, Relations and Functions (04)

Sets, Relations and Functions – Definition and types of sets, Operations on sets, Types of relations and functions, Domain, range, and codomain, Composite functions and inverse functions.

Unit IV: Calculus (04)

Limits and Continuity – Concept of limits and continuity of functions, Differentiation, Application of derivatives, Integration and Differential Equations.

Unit V: Statistics and Probability (04)

Probability concepts and statistical data handling, Conditional probability, Introduction to random variables and distributions. Data; Representation of data through graphs and diagrams, advantages of graphical presentation, and construction of bar charts, multiple bar diagrams, sub-divided bar charts, pie charts, histograms, frequency polygons, and cumulative frequency curves (ogives). Concept of central tendency and its measures including Mean, Median, Mode, Geometric Mean, and Harmonic Mean; computation of these measures for discrete and continuous data; essentials of a good average, along with merits and demerits of different measures of central tendency. Combined Mean and Weighted Mean.

Unit VI: Algebra (04)

Quadratic equations and roots, Sequences and series, Matrices and determinants – properties and applications.

Unit VII: Computer Networks (04)

Types of networks – LAN, MAN, WAN, PAN, and other network types, Topologies and network structures, Basics of IP addressing, Overview of the Internet and web communication, Web browsers and their functions, Email, messaging, and other online communication tools.

Unit VIII: Programming Concepts (04)

Basic programming concepts and introduction to algorithms, Data types, Control structures (if, for, while), Functions, Recursion.

Unit IX: Data Structures and Data Handling (04)

Data types/objects/structures, Data structures and its types, Representation and implementation. Linear Data Structures: Array representation, operations, applications and limitations of linear arrays, 2-dimensional arrays, matrices, common operations of matrices, special matrices, array representation of Sparse matrices. One dimensional array: Traversal, Searching (Linear search, Binary search, Sorting (Bubble sort). Stack: Definition of a stack, Operations on stack (Push and Pop). Queue: Definition of a queue, Operations on queue (Enqueue and Dequeue)

Unit X: Boolean Algebra (04)

Boolean algebra and logic gates – Basics of Boolean algebra, Common logic gates (AND, OR, NOT, XOR), Simple circuit design and truth tables.

Unit XI: Object-Oriented Programming basics (04)

Introduction to Object Oriented Programming, Comparison of Procedural Programming and OOP, Benefits of OOP, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C and C++.
Elements of C++ Language: Tokens and identifiers, Variables and Constants, Reference variables, Basic data types in C++, Streams in C++. Types of operators in C++. Decision and Control Structures: if statement, if-else statement, switch statement, Loop: while, do-while, for. Break and continue.

Unit XII: Operating System Basics (04)

Operating System, Types of Operating System: Batch Operating System Multitasking/Time Sharing, Operating System, Multiprocessing Operating System, Real Time Operating System, Distributed Operating System, Network Operating System, Mobile Operating System. Functions of Operating System: Processor Management, Memory Management, File Management, Device Management. 32-Bit and 64-Bit Operating System. Introduction to Firmware. Introduction to Microsoft Windows Operating System, Features of Windows Operating System, Versions of Windows Operating System, File structure of Windows Operating System.
Introduction: Goals & Structure of Operating System, Basic functions & Modes, Types of Operating System (Batch, Multiprogramming, Multitasking, Time Sharing, Parallel, Distributed & Real-Time O.S.), Windows, Android, macOS, Linux, GUI, Kernel.

Unit XIII: Python Programming Basics (04)

Introduction to Python: Overview of features, history, and applications in web development, data science, and automation, Basic Syntax, Variables & Data Types, Operators.

Unit XIV: Computer Fundamentals (04)

Number system, Logic Gates: Binary, Octal, Decimal, Hexadecimal; Conversion of Number System; Binary Arithmetic, Complement. Data Representation: positive, negative, maximum and minimum number representation, real number representation, underflow, overflow, range and accuracy of numbers.

Unit XV: Introduction to Emerging Technologies (04)

Big Data, Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive Technologies (Augmented Reality, Virtual Reality), Robotics, Internet of Things (IoT), Cloud Computing and Types of Cloud Services.