

PhD Entrance Syllabus

Structure of the PhD Entrance Test (100 Marks)

Section A: Aptitude and Reasoning – Common to all candidates (50 Marks)

Section B: Subject-Specific (CSE) (50 Marks)

Section A: APTITUDE & REASONING (Common to ALL)

Unit-1: Verbal Reasoning

Navigating Directions and Mastering Distances, Blood Relations, Logical Puzzles and Problem Solving- Floor Based, Month and Year Based. Seating Arrangements - Circular, Linear, Decoding the Code- Letter Coding, Number Coding, Letter and Number Coding.

Unit-2: Number System

Mastering Quick Calculations, BODMAS Simplified, Exploring Numbers and Division Rule, Unit Digits Decoded, Unlocking Divisibility and Counting Zeroes, "Mastering LCM and HCF: Foundations of Factorization, Uncovering Factors, Exploring Remainders.

Unit-3: Arithmetic Ability-1

Percentages - Fraction, Decimal, Percentage Change, Concept of 'By' and 'To', Product Constancy, All About Averages, Profit & Loss Essentials, Articles, False Weight, and Discount Insights - Discount, Simple Interest: Calculations and Applications, Compound Interest: Calculations and Applications, Relationship between SI and CI.

Unit-4: Arithmetic Ability-2

Ratio, Proportion, Partnership, Problems on Ages, Time and Work - Concept of Efficiency, Smart Work with Time and work, Negative Work, Chain Rule, Pipes and Cisterns, Time, Speed & Distance, Problems based on Trains, Problems based on Boats and Streams.

Unit-5: Critical Reasoning

Analogy and Classification, Sequence and Series Logic, Syllogisms - Types of statements, Venn diagrams using statements, Method to solve problems Two Statements and Two Conclusions, EITHER-OR Conclusions, Four Statements and Two Conclusions.



Department of Computer Science and Engineering School of Computer Science and Artificial Intelligence SR University, Warangal

Section: B CS&AI Syllabus for Ph.D. Admission Eligibility Test

1. Core Computer Science and Engineering Topics

Programming and Data Structures:

- Programming Concepts (C, C++, Java and Python): Control Structures, Functions, Pointers, Recursion.
- Data Structures: Arrays, Linked Lists, Stacks, Queues, Trees, Graphs, Heaps, Hash Tables.
- o Algorithms for Searching, Sorting and Traversal (E.G., DFS, BFS, Binary Search).

Operating Systems:

- Processes and Threads: Scheduling, Synchronization, Deadlocks, Memory Management.
- o File Systems, Virtual Memory, Paging, Segmentation.
- o Inter Process Communication, Concurrency Control.

• Computer Networks:

- OSI and TCP/IP Models, Layering.
- o Protocols: HTTP, TCP, UDP, IP, DNS, FTP, SMTP.
- Network Security: Encryption, Authentication, Firewalls.
- Congestion Control, Routing Algorithms.

Software Engineering:

- o Software Development Life Cycle (SDLC), Agile Methodologies.
- Design Patterns, UML, Testing Methodologies.
- o Requirements Analysis, Software Metrics.

• Artificial Intelligence and Machine Learning (often included in modern syllabus):

- o Basics of AI: Search Algorithms (A*, Heuristic Search), Knowledge Representation.
- Machine Learning: Supervised/Unsupervised Learning, Linear Regression, Decision Trees. Neural Networks.
- o Probability and Statistics for Ml, Bayesian Networks.