SYLLABUS

Panjab University, Chandigarh

B.C.A. 5th Semester

DISCRETE MATHEMATICAL STRUCTURE

L T P Cr
6 1 – 3

External Marks : 65
Internal Marks : 10

Objective : The objective of the course is to :

- Offer knowledge about computer network related hardware and software using a layered architecture.
- Provide good understanding of the concepts of network security, wireless and various emerging network technologies.

Note :

(i) The Question Paper will consist of Four Sections.

(ii) Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt **ONE** question from each Section and the Compulsory question.

(iv) All questions carry equal marks unless specified.

Objectives : In this paper, Students will learn and be able to acquire the knowledge of Logic, Relations and Functions. Algebric Functions and Graph Theory will also be discussed in this paper.

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SECTION–A

Set Theory : Relations and Functions : Set Notation and Description, subset, basic set operations, Venn Diagrams, laws of set theory, partitions of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations : injective, surjective and bijective functions, compositions.

SECTION–B

Recurrence : Recurrence Relations and Recursive Algorithms – Linear-Recurrence Relations with Constant Coefficients ; Homogeneous Solutions : Particular Solution, Total Solution, Solution by the Method of Generating functions.

SECTION–C

Graph Theory : Graph and planar graphs – Basic Terminology, Multi-graphs, Weighted Graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and Circuits. Travelling Salesman Problem, Planar Graphs.

SECTION–D

Automata Theory : Finite State Machines–Equivalent Machines, Finite State Machines as language Recognizers ; Analysis of Algorithms – Time Complexity, Complexity of Problems.