

**Syllabus for Bachelor of Computer Application (BCA) Programme**  
(Effective for Students Admitted in Academic Session 2018-2019)

**Paper: Mathematics for Computing**

**Code : BMN-301**

**Contacts Hours / Week : 4L+1CE**

**Credits : 3**

**1. Module I: Propositional Logic (8L)**

Construction of truth table, Tautology, Contradiction, Contingency, Logical equivalence, Generating functions, Recurrence relations

**2. Module II: Graph Theory (16L)**

Graphs, Digraphs, Weighted graph, Connected and disconnected graphs, Bipartite graph, Degree of a graph, Theorems on graph, Complement of a graph, Regular graph, Complete graph, Sub-graph, Walks, Paths, Circuits, Hamiltonian and Euler Graph, Cut sets and cut vertices, Adjacency and incidence matrices of a graph, Graph isomorphism, Dijkstra's Algorithm for shortest path problem, Definition and properties of tree, Binary tree, Spanning tree of a graph, Minimal spanning tree, Algorithms: DFS, BFS, Kruskal's and Prim's algorithms

**3. Module III: Probability Theory (10L)**

Basics of Probability Theory: Axiomatic definition of probability. Conditional probability, Independent events and related problems, Bay's theorem (Statement only) & its application, One dimensional random variable, Probability distributions-discrete and continuous, Expectation, Binomial, Poisson, Uniform, Exponential, Normal distributions

**4. Module IV: Frequency Distribution (6L)**

Collection of data, Charts and diagram, Measure of central tendency, Measure of dispersion

**Suggested Readings:**

1. Discrete Structure & Graph Theory, Rathore, EPH.
2. Discrete Mathematical Structure, G.S. Rao, New Age International
3. Fundamental of Statistics, Goon, Gupta and Dasgupta
4. Mathematical Probability, Banerjee, Dey and Sen, U N Dhar Pvt. Ltd.
5. Engineering Mathematics, Vol. 1 & 2, Sastry, PHI