**A1032**

Name.....

Register No.....

# NAIPUNNYA INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY (AUTONOMOUS)

**FIRST SEMESTER (FYUG) DEGREE EXAMINATION NOVEMBER 2025**

**COMPUTER APPLICATION**

**BCA1CJ103 - DISCRETE STRUCTURES FOR COMPUTER APPLICATIONS**

Time: Two Hours Maximum:70 marks

## Section A

Answer all questions.

Each question carries 3 marks. Ceiling 24 marks

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|---|---|
| 1.What is mean by logical equivalence? | CO1 |
| 2. Define truth table. Draw the truth table for disjunction operator. | CO1 |
| 3. Write a brief note on null graph with example. | CO3 |
| 4. Define trail with example. | CO3 |
| 5. Describe pendent vertex. | CO4 |
| 6. Define Graph. | CO3 |
| 7. List all types of binary tree. | CO4 |
| 8. Briefly explain about Venn diagrams. | CO2 |
| 9. Explain the terms siblings, parent node and leaf node. | CO4 |
| 10. Define cardinality of a set. | CO2 |

## Section B

Answer all questions.

Each question carries 6 marks. Ceiling 36 marks

| | |
|---|---|
| 11. Differentiate between regular graph and complete graph. | CO3 |
| 12. Is p → q ∧ q → r → p → r tautology? | CO1 |
| 13. Show that $(p \wedge q) \rightarrow (p \rightarrow q)$. is a tautology. | CO1 |
| 14. Discuss about incidence matrix representation of graph. | CO3 |
| 15. Explain kruskal's algorithm to find spanning tree of a given graph. | CO4 |
| 16. Explain Breadth First Search and Depth First Search. | CO4 |
| 17. Draw and explain bipartite graph. | CO3 |
| 18. Prove that any connected graph G with n vertices and (n-1) edges is a tree. | CO4 |

Turn Over

## Section C

Answer any one question
The question carries 10 marks.

19. (a) Define set, finite set, infinite set, and null set with examples

(b) If $A=\{1,2,3,4\}$ and $B=\{3,4,5,6\}$ find: 1) $A \cup B$ 2) $A \cap B$ 3) $A-B$ 4) $B-A$ 5) $A \Delta B$. CO1

20. Write in detail about the various types of functions. CO3

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