F–1733

Sub. Code
7BITA3

U.G. DEGREE EXAMINATION, APRIL 2019

Information Technology

Allied – DISCRETE MATHEMATICS

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Disjunction?

2. Define Well-formed Formula.

3. Specify the purpose of Normal Forms.

4. What is quantifier?

5. Define Isomorphism.

6. Write any two applications of graph theory.

7. Write the characteristics of a Tree.

8. Define Spanning tree.

9. What is meant by Lattice?

10. Mention the use of Posets.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe propositional logic with an example.

Or

(b) Distinguish between Atomic and Compound Statements.

12. (a) Write the principles of normal forms.

Or

(b) What are the rules of Inference? Explicate them with examples.

13. (a) How to find the degree of vertex for Directed Graph? Explain with examples.

Or

(b) Give a brief note on Bipartite graph.

14. (a) Elaborate the procedures of Kruskal's algorithm.

Or

(b) Explicate the concepts of Eulerian-Hamiltonian graph.

15. (a) Define Sub lattices. What are the properties of Sub-lattices?

Or

(b) What is meant by Boolean algebra? Illustrate any two Boolean functions.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Define Tautology. Describe its implementation with TT in detail.

17. Discuss about theory of interference for predicate calculus.

18. What is Graph? Illustrate the various types of graphs.

19. Prove the following theorems:

    (a) In every tree $T = (V, E)$, $|V| = |E| + 1$.

    (b) For every tree $T = (V, E)$, if $|v| \geq 2$ then T has atleast two pendent vertices.

    (c) For a loop-free undirected graph $G = (V, E)$.

20. Illustrate the properties of Boolean algebra.

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