19U119 (Pages: 2) Name: ……………………..

Reg. No…...……………….

FIRST SEMESTER BCA. DEGREE EXAMINATION, NOVEMBER 2019
(CUCBCSS-UG)
CC19U BCA1 C02 - DISCRETE MATHEMATICS
(Mathematics - Complementary Course)
(2019 Admission Regular)

Time: Two Hours

Maximum : 60 Marks

Credit: 3

PART A (Short answer type questions)
Each question carries 2 marks.

1. Define Implication with the truth table.

2. Construct a truth table for $\neg P \cap \neg Q$

3. Define the isomorphism of two graphs.

4. Show that any graph, the number of vertices of odd degree is always even.

5. State and prove De Morgan's law.

6. Find the negation of statement "Jane is rich and happy".

7. Define a Binary tree.

8. Draw any graph of 5 vertices and 10 edges.

9. What is called the equivalance relation?

10. What is planar graph?

11. Which are the two Kuratowski's graph?

12. Define Adjacency and Incident matrix.

(Ceiling 20 Marks)

PART B (Short essay type questions)
Each question carries 5 marks.

13. State and prove the max-flow min-cut theorem.

14. Explain the Travelling salesman problem.

15. Draw the Hasse diagram for the following data D_n where 'n' is the positive integer and D_n be the set of all positive divisors of N.

  a) N = 20   b) N = 30

16. Give the truth table for data $(P \cap Q) \leftrightarrow (R \cap S)$

17. Prove that every tree is a bipartite graph?

18. Define Operation of the graph with example.

  a) Fusion   b) Deletion   c) Ring Sum

19. Every tree has either one or two centers.

(Ceiling 30 Marks)

20. Show that G is Euler if and only if every vertex of G is even.

21. a) Define partially ordered relation.

    b) S = {1, 2, 3} and Relation R is the inclusion of all power set of S, write the relation
        and also find maximal and minimal element with help of Hasse diagram.

(1 x 10 = 10 Marks)

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