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(Pages : 2)

Name.....

Reg. No.....

# FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION
## NOVEMBER 2019

(CBCSS—UG)

BCA

BCA 1C 02—DISCRETE MATHEMATICS

(2019 Admissions)

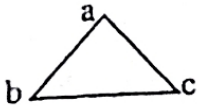
Maximum : 60 Marks

Time : Two Hours

## Section A (Short Answer Type Questions)

*Answer* **all** *questions, each correct answer carries a maximum of* 2 *marks. Ceiling* 20 *marks.*

1. Symbolize the statement "All men are giants".
2. Draw the truth table of biconditional statement .
3. Give an example of a relation which is both symmetric and antisymmetric.
4. Define greatest lower bound in Poset.
5. Write the least upperbound and gratest lower bound of the set {3, 5} in the poset $< Z - \{0\}, \leq >$ where $\leq$ is the divides relation.
6. Is the relation $R = \{< x, y > / x \geq y\}$ antisymmetric ? Justify.
7. Define a Hamiltonian Graph.
8. Briefly explain spanning tree.
9. What is mean by chromatic number of a graph ?
10. Define cut vertices and cut edge.
11. Write the matrix representation of the graph.




12. Write the definition of incidence matrix.

## Section B (Short Essay Type Questions)

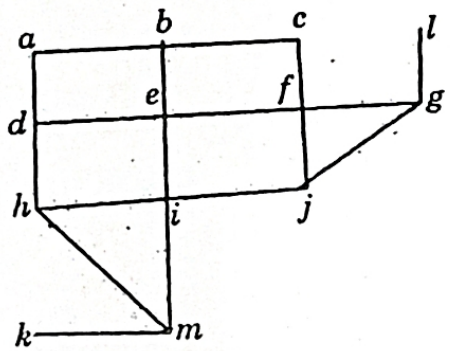
*Answer* **all** *questions, each correct answer carries a maximum of* 5 *marks. Ceiling* 30 *marks.*

13. Show that for any two sets A and B, $A - (A \cap B) = A - B$.
14. Explain set operations with Venn diagram.
15. Write the Boolean expression $x_1 \oplus x_2$ in an equivalent sum of products canonical form in three variables $x_1, x_2, x_3$.
16. Is the "divides" relation a partial ordering on the set of non zero integers ? Explain.
17. Define complete graph. Show that a complete graph with n nodes has the maximum number of edges $n\ (n-1)/2$.
18. Define planar graphs. Is $k_{3,3}$ a planer graph ? Justify.
19. Explain Depth-first search Algorithm for spanning tree.

## Section C (Essay Type Questions)

*Answer any* **one** *question, correct answer carries* 10 *marks.*

20. Show that $< B, *, \oplus, ' 0,1 >$ is a Boolean Algebra. AIso explain the properties.
21. Draw the breadth first search spanning tree of the following graph. Explain the algorithm with this example.




(1 × 10 = 10 marks)