

Registration No:

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Total Number of Pages: 01

MCA
MCC103

1st Semester Back Examination 2017-18

DISCRETE MATHEMATICS

BRANCH : MCA

Time: 3 Hours

Max Marks: 70

Q.CODE : B914

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1** **Answer the following questions:** **(2 x 10)**
- a) Define tautology. Give one example of a statement which is tautology.
 - b) What do you mean by symmetric closure?
 - c) What do you mean by inference rule ?
 - d) Define equivalence class.
 - e) Define partial order relation.
 - f) Define Euler & Hamiltonians graph.
 - g) What do you mean by Preorder & postorder traversal?
 - h) Define group code.
 - i) If a tree has n vertices, how many edges it has?
 - j) Show that $(a.b)^{-1} = b^{-1} a^{-1}$.
- Q2** Shaw that $2^n > n^3$, $n \geq 10$ by Mathematical Induction. **(10)**
- Q3** Find the transitive closure of relation **(10)**
 $R = \{(a,b), (b,a), (b,c), (c,d), (b,b)\}$
- Q4** Solve the recurrence relations **(10)**
 $a_n = 4a_{n-1} + 5a_{n-2}$, $a_1 = 2$, $a_2 = 6$
- Q5** Describe kruskal Algorithms for minimal spanning tree . **(10)**
- Q6** Describe the single source shortest path by Dijkstra Algorithms. **(10)**
 Give example.
- Q7** Let L be a lattice. Then for any $a, b \in L$, show that; **(10)**
 (i) $a \cdot (a \cdot b) = a$
 (ii) $a \cdot (a \cdot b) = a$
- Q8** **Write notes about (TWO) :** **(5 x 2)**
- a) BFS & DFS.
 - b) Hasse diagram.
 - c) Coset.