

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted from the academic year 2006- 07 & thereafter)**

**SUBJECT CODE : MT/PC/AG24**

**M. Sc. DEGREE EXAMINATION, APRIL 2008**  
**BIOINFORMATICS**  
**SECOND SEMESTER**

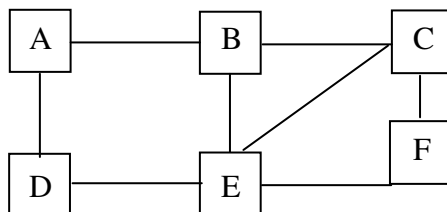
**COURSE : CORE**  
**PAPER : ALGORITHMS**  
**TIME : 3 HOURS**

**MAX. MARKS : 100**

**ANSWER ANY SIX QUESTIONS ONLY:**

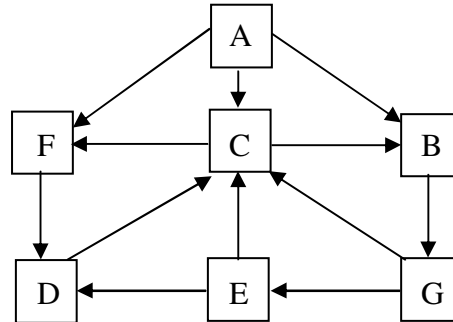
**(6 X 17)**

1. a) Define graph, subgraph, multi graph and directed graph with one example each. (8)
- b) For the following graph
  - (i) Find all simple path from A to C. (3)
  - (ii) Find all cycles that include vertex A. (2)
  - (iii) Find the degree of all vertices. (3)
  - (iv) Find the diameter of the graph. (1)

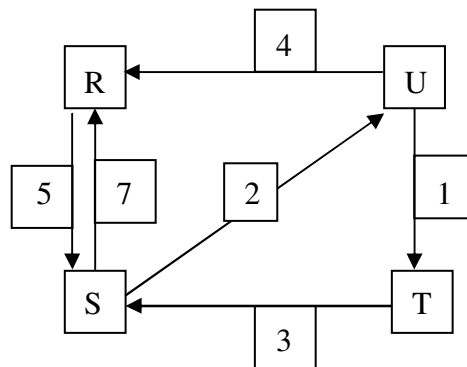


2. a) Define connected graph, cut points, regular graph, bridges, trees with example. (10)
- b) Draw the graph  $K_{2,5}$ . (3)
- c) Draw the complete graph having 5 vertices. How many edges are there? (4)
3. a) List characteristics of a database. (8)
- b) Discuss about the operators used in a database. (9)
4. a) Explain selection sort algorithm with suitable example. (11)
- b) Analyse the same for worst, best and average cases. (6)
5. a) Write binary search algorithm. (9)
- b) Trace the same when 67 is searched in the following set of numbers. (8)  
23, 24, 45, 67, 69, 75, 76, 89, 90, 100
6. a) Write and explain Boyer – Moore algorithm. (13)
- b) Explain how this algorithm is helpful in Biology. (4)

7. a) Discuss how graph is stored in computer memory. (6)  
 b) Write depth first search algorithm. (8)  
 c) Give output if the following graph is traveled using DFS starting from A. (3)



8. a) Write the shortest path algorithm. (8)  
 b) Find the shortest path from R to all the vertices in the following graph. (9)



9. a) What is spanning tree? (2)  
 b) Write the algorithm to find the spanning for any graph and explain with example. (10+5)
10. Write short notes on any three  
 a) heap tree  
 b) priority queue  
 c) recurrence relation  
 d) indexing techniques

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