

M. Sc. DEGREE EXAMINATION, APRIL 2007
BIOINFORMATICS
SECOND SEMESTER

COURSE : CORE
PAPER : ALGORITHMS
TIME : 3 HOURS

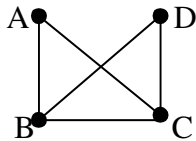
MAX. MARKS : 100

SECTION – A

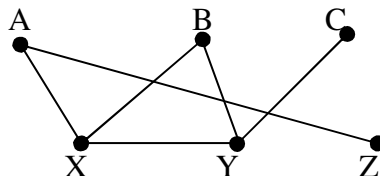
ANSWER ANY SIX QUESTIONS ONLY:

(6 X 17)

1. For the following graph find
- a) (i) all the simple paths from A to D (3)
 - (ii) the distance from A to D (2)
 - (iii) diameter of G (2)
 - (iv) all the cycles which include the vertex 'A' (2)
 - (v) all the cycles of G (2)

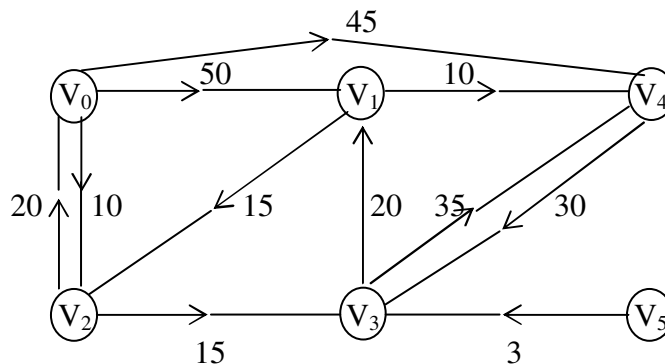


- b) Define and give one example (6)
 - (i) Graph
 - (ii) path
 - (iii) complete graph
2. (i) What is a regular graph? (1)
Draw a 3-regular graph with 6 vertices. (2)
- (ii) Define bipartite graph. (1)
Find the number of edges in $K_{3,3}$ (3)
- (iii) What is a tree? (1)
Find the number of edges in a tree having n vertices. (2)
- (iv) Find the cut points, bridges and adjacency matrix for the following graph. (3+2+3)



3. Explain about storage and data structure used in DBMS. (9+8)
4. a) Write an algorithm to search for an element using sequential search. (11)
b) Analyse your algorithm for the best case and worst case. (6)

5. Explain Boyer-Moore Algorithm with the Reuivistics involved in it and compare the same with K.M.P matcher and real string matcher. (12+5)
6. a) What is a heap? Write an algorithm to sort elements using heap. (7)
 b) Trace your algorithm for arranging the following elements in order. (10)
 42, 23, 74, 11, 65, 58, 94, 36, 99, 87.
7. a) Write binary search algorithm. (11)
 b) Compare binary and sequential search. (6)
8. Write short notes on any 3
 (i) Dynamic programming
 (ii) Priority queues
 (iii) Biconnected components
 (iv) Binary Trees
9. a) What is a spanning tree? (2)
 b) Write the Dijishtra Prim's algorithm to find the minimum cost spanning tree. (7)
 c) Explain depth first traversal algorithm with an example. (8)
10. Explain shortest path algorithm to find the shortest distance from single source to all destination. (9)
 Trace your algorithm for the following graph to find shortest path from V_0 to all other vertices. (8)



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