PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MCA DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch - COMPUTER APPLICATIONS

DATA STRUCTURES **&** ALGORITHM

Time: Three Hours Maximum: 75 Marks

SECTION-A tlO Marks!
Answer ALL questions
ALL questions carry EQUAL marks (1 0 x 1 = 10)

1 In data structure the insertion and deletion takes pace at the same end.
(i) List (ii) Queue
(iii) Stack (iv) Array

2 The quick sort algorithm follows_____ technique.
(i) Back tracking (ii) Linear sorting
(iii) random (iv) divide and conquer

3 The left node value will be smaller than the root node in_____ tree.
(i) Binary search tree (ii) Balanced tree
(iii) Red-Black tree (iv) AVL tree

4 The inorder traversal of the pre ordered notation 'abcdefg' is_____ .
(i) bcdefga (ii) dcbagfe
(iii) cbdafeg (iv) adbcgef

5 A sequence of edges between the two vertices is called as_____ .
(i) Cycle (ii) Adjacenecy
(iii) Loop (iv) Path

6 _____algorithm finds a minimum spanning tree for a weighted undirected graph.
(i) Prim's (ii) searching
(iii) dijkstra (iv) Travelling salesman

7 _____can be solved using back tracking algorithm.
(i) Sorting (ii) Searching
(iii) 8-Queens (iv) Magic Square

8 _____is the lossless data compression algorithm.
(i) Greedy algorithm (ii) huffman coding
(iii) Prims algorithm (iv) Kruskal algorithm

9 A technique to convert a range of Key values into a range of indexes is
(i) Slicing (ii) Hashing
(iii) Probing (iv) Indexing

10 To handle collisions_____ method is used.
(i) Hashing (ii) Probing
(iii) Separate chaining (iv) Indexing

SECTION - B (25 Marks!
Answer ALL questions
ALL questions carry EQUAL Marks (5 x 5 = 25)

11 a Discuss on stack ADT.

OR

b Illustrate Insertion sort with an example.

12 a Create a AVL tree and explain the concept.

OR

b Produce a binary search tree with the nodes {5,3,7,2,1,8,9,4} and explain the traveling techniques.

13 a Determine the algorithm for finding the shortest path in a graph.

OR

b State Prim's algorithm and unite the Pseudocode.

14 a Justify the Greedy algorithm suitable for optimal solution.

OR

b Show that the divide and conquer algorithms are best suited for solving problems using recursion technique.

15 a Discuss on Hashing.

OR

b Explain about Separate Chaining.

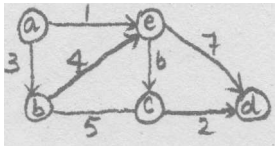
SECTION -C (40 Marks!

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

Question no. 16 is compulsory

16 Elucidate on minimal spanning tree at weighted directed graph. Consider a graph and apply Kruskal's algorithm and find a minimal spanning tree.



17 a Consider the sequence:
3,4,8,12,2,11,7,9.
Sort the sequence using Quick sort and explain the logic with an algorithm.

OR

b Sort the above sequence with heap sort and explain the concept with an algorithm.

18 a Design and develop an algorithm for splay trees.

OR

b Analyse Binary tree and BST.

19 a Give a survey on Back tracking Algorithm.

OR

b i) Develop an algorithm to solve scheduling problem,
ii) Elucidate on Huffman codes.

20 a Enumerate the importance of Dynamic Programming.

OR

b Give an assessment on (i) Rehashing (ii) Extendible handing.

Z-Z-Z END