Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

MCA (Sem.–1)

ADVANCED DATA STRUCTURES

Subject Code : PGCA-1952

M.Code : 79037

Date of Examination : 20-05-2023

Time : 3 Hrs. Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION- A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each .
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

a) What is the importance of Red Black tree?

b) Explain Rehashing methods.

c) Draw the single rotation for AVL tree.

d) List out the properties of Red-Black trees.

e) What is the main advantage of hashing?

f) What are the applications of minimal spanning trees?

g) What are the properties of B-Trees?

h) Name the various algorithms for string matching.

i) What are the ways to represent a graph in the memory of a computer system?

j) What is working principle of Quick sort?

SECTION-B

2. What is an AVL tree? What are the types of rotations that may be performed on a AVL tree?

3. Write the properties of BST, AVL tree, B-Tree and Red-black tree.

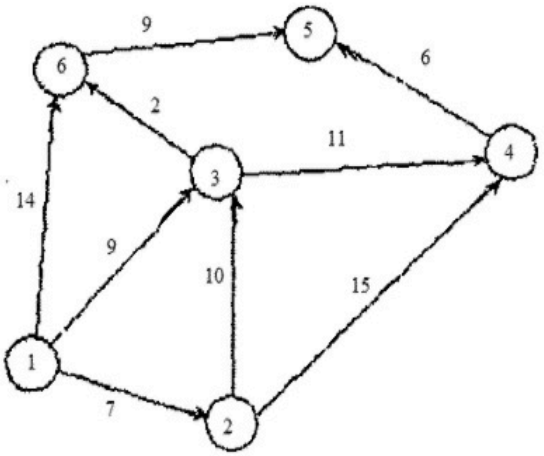
4. Develop a max heap from the following sequence of nodes and apply heap sort. Show all the intermediate steps.

   10 36 12 18 54 50 73 51 43 23 44

5. What is the concept of Hashing? Explain various techniques used for hashing. collisions are handled while addressing?

SECTION-C

6. Apply Dijkstra's algorithm on the following directed weighted graph with source1.



7. Explain the Knuth-Morris-Pratt algorithm for string searching through an illustrativ example.

8. Modify Dijkastra's algorithm to solve APSP problem.

9. What are minimal spanning trees? Compare the Kruskal's and Prim's algorithms finding the Minimal Spanning tree from a graph.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.