

Mid-West University  
Examinations Management Office  
Final Examinations -2081

Level: Bachelors/ BIT /Semester: II

F. M: 60

Time: 3hrs.

P. M: 30

Subject: Data Structure and Algorithms (BIT425)

Candidates are required to give their answers in their own words as far as practicable. Figures in the margins indicate marks.

Group A

Very Short Answer Questions (Attempt all) [8 x 2 = 16]

1. Define data structure. Write its importance.
2. Define Big O and write its use.
3. Write the applications of stack data structure.
4. Explain how does bubble sort work.
5. How is dynamic programming different from divide and conquer algorithm?
6. Write the advantages of linked list over arrays.
7. Define AVL tree. Why is it needed?
8. Explain binary search algorithm.

Group B

Short Answer Questions (Attempt ANY FIVE) [5 x 4 = 20]

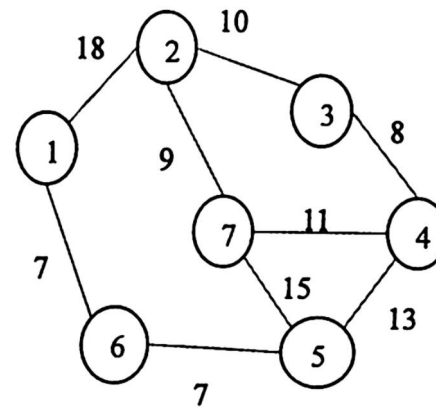
9. Write algorithms for pushing and popping elements in the stack.
10. How is circular queue different from linear queue? Write algorithm to insert an element in circular queue.

11. Explain tree traversals with example.
12. Explain adjacency matrix and adjacency list with example.
13. Explain different collision resolution techniques in hashing.
14. Sort the following data with selection sort: 10, 5, 18, 20, 15, 25, 50, 40, 30, 13

Group C

Long Answer Questions (Attempt ANY THREE) [3 x 8 = 24]

15. Explain singly linked list. Write functions to insert and delete nodes at the beginning and end of singly linked list.
16. Compare merge sort and quick sort in their partitioning strategy. Sort the following elements using merge sort: 10, 5, 16, 12, 20, 50, 60, 80, 45, 25
17. Define Binary Search Tree. Explain insertion and deletion of a node in BST with example.
18. Explain Kruskal algorithm. Apply Kruskal's algorithm to find MST from following graph



The End