

**BIM / Fourth Semester / IT 218: Data Structure and Algorithm with JAVA**

*Candidates are required to answer all the questions in their own words as far as practicable.*

**Group "A"**

**Brief Answer Questions:**

**[10 × 1 = 10]**

1. What are rear and front in queue?
2. Define big Oh notation.
3. Define recursion.
4. Define skip list.
5. What is B-tree?
6. Define breadth first traversal.
7. What is Linked list?
8. Write the advantages of binary search over the linear search.
9. What is shortest path problem?
10. What is AVL tree?

**Group "B"**

**Exercise Problems:**

**[5 × 4 = 20]**

11. Write a java class to implement stack with push and pop functions.
12. Write a method to insert a node in circular doubly linked list at end. Also make appropriate assumptions.
13. Write a hash method to insert following data in a Hash Table, of size 10: 24, 20, 37, 84, 50, 47, 67, and 74.
14. Write java function or algorithm for finding the minimum spanning tree using Kruskal's algorithm.
15. Explain topological sort with example.

**Group "C"**

**Comprehensive Answer Questions:**

**[2 × 5 = 10]**

16. Is  $O(n^2)$  algorithm better than  $O(n \log n)$  algorithm? Explain with example.
17. Write limitation of binary search tree? Explain why concept of splaying is used in trees?