K-18/2050
DATA AND FILE STRUCTURES -122
SEMESTER-II

TIME ALLOWED 2 Hrs   **M.M.70**

NOTE;   **Attempt any four questions. All questions carry equal marks.**

Q1.   Define data structures. List common operations which can be performed on data structures. What do you mean by algorithm complexity? How it can be measured. Discuss in brief time space tradeoff.

Q2.   What do you understand by a queue? Assuming a queue representation through circular array, give the algorithms for adding and deleting one element in a queue.

Q3.   What do you mean by doubly linked list? What are its advantages and disadvantages? How doubly linked lists are different from circular list? Explain with an example.

Q4.   What do you mean by height balanced tree? How a height balanced tree is different from a binary search tree? What do you mean by rebalancing of height balanced tree? Explain with an example.

Q5.   What do you mean by a graph? Discuss the sequential and linked representation of a graph giving merits and demerits of each.

Q6.   What do you mean by collision? What are various collision resolution techniques? Explain any two giving suitable examples.

Q7.   What do you mean by sorting? List various sorting algorithms. Discuss quick sort algorithm in detail.

Q8.   What do you mean by direct file organization? Discuss in detail.

Q9.   a)   Write short note on Big O notation.
      b)   What are sparse arrays? How sparse arrays are stored in memory?
      c)   Differentiate between stack and queue data structures.
      d)   What do mean by complete binary tree?
      e)   Differentiate between BFS and DFS traversal of graph.
      f)   Differentiate between DASD (Direct Address storage devices) and SASD (Sequential Access Storage devices).
      g)   What are the merits and demerits of indeed sequential file organization?