

5238-09.

S.E. (IT) Sem III (R)
(REVISED COURSE)

12/12/09

SP-7436

2:30 to 5:30

[Total Marks : 100]

(3 Hours)

Data Structure & Algorithms

- N.B. (1) Question No. 1 is compulsory
(2) Attempt any four questions from remaining six questions
(3) All questions carry equal marks

- Q.1 (a) What is abstract data type? Write a program in Java to create 'Single Linked List' abstract data type. ADT should support the following functions:-
i. Create Linked List
ii. Insert Node in middle
iii. To display List (10)
(b) Differentiate between (10)
i. Functions and Macros
ii. Structure and Union
- Q.2 (a) Write a program to implement Quick sort (10)
(b) Define O notation. Computer space and time complexity of Binary search Technique (10)
- Q.3 (a) Write a program to create 'STACK' Abstract Data Type (ADT) using Linked List implementation – ADT should support the following operations
1. Create Stack 2. Push Stack 3. Pop Stack 4. Destroy Stack. (10)
(b) Discuss Circular and Priority Queues (10)
- Q.4 (a) Write a program in java to implement DFS and BFS traversal of graph Using adjacency matrix (10)
(b) Discuss Threaded Binary Tree in detail (10)
- Q.5 (a) Explain Huffman coding algorithm with example (10)
(b) What is Hashing? What is meant by Collision? Hash the following in table of size 10. Use any two collision resolution techniques.
99 33 23 44 56 43 19 (10)
- Q.6 (a) Write a program to create a binary tree & in order, preorder and post order Traversal of the tree. (10)
(b) Given a 'PREFIX' expression ,Write a program to convert it to its postfix form. (10)
- Q.7 (a) Write Short Notes on any four of following (20)
i) AVL Trees
ii) B-Trees
iii) Shortest Path Algorithm
iv) Comparison of sorting algorithms
v) Expression & realization of ADT's in JAVA