

Scheme - G

Sample Test Paper-I

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Third

Subject Title : Data Structure using 'C'

Marks : 25

17330

Hours: 1 Hrs.

Q.1: Attempt any THREE.

09 Marks

- a. Give a brief description of
 - i) Searching
 - ii) Sorting
 - iii) Traversing
- b. State the use of 'Big O' Notation, in the analysis of an algorithm.
- c. Differentiate between the Bubble Sort and Selection Sort methods.
- d. How can a Stack be used as an Abstract Data type?

Q.2: Attempt any TWO.

08 Marks

- a. Describe Algorithm analysis in terms of Time Complexity and Space Complexity.
- b. Write an algorithm for the implementation of Quick Sort.
- c. State the different approaches to design an algorithm and describe any one in brief.

Q.3: Attempt any TWO.

08 Marks

- a. Write a c program to implement Non recursive implementation of Binary search.
- b. Write in brief about the POLISH Notation.
- c. Write the Push & POP functions in C simulating Push and Pop operations of STACK implemented using an array of integers.

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Sample Test Paper-II

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Third

Subject Title : Data Structure using 'C'

Marks : 25

17330

Hours: 1 Hrs.

Q.1: Attempt any THREE.

09 Marks

- State how a Queue can be used as an abstract data type.
- Describe linked list.
- Describe linked representation of a Binary tree.
- State the differences between the Depth First Search (DFS) and the Breadth- First Search (BFS) methods.

Q.2: Attempt any TWO.

08 Marks

- Translate following infix expression into its equivalent Postfix expression:
 $(a+b) + (c+d) - e * f$
- Write in Short about the types of Queues.
- Write a 'c' program to delete the first node, which contains the integer item 'item50', in the info field of a singly linked list.

Q.3 Attempt any TWO.

08 Marks

- Construct a binary tree to represent following infix expression.
 $(a+b) + (c+d) - e$
- Describe the collision resolution techniques.
- Elaborate on the linked list representation of a graph.

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Sample Question Paper-II

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Third

Subject Title : Data Structure using 'C'

Marks : 100

17330

Hours: 3 Hrs.

Q.1 A) Attempt any SIX.

12 Marks

- a) State the limitations of the 'Big-O' Notation.
- b) Elaborate on the Space Complexity of an algorithm.
- c) List the various Sorting Techniques.
- d) State the applications of Stack.
- e) Define a complete binary Tree.
- f) Define Directed edge of a Tree
- g) Differentiate between the Radix Sort and Shell Sort methods.
- h) Define Connected Graph.

Q.1 b) Attempt any TWO.

08 Marks

- a) Describe the different approaches to design an algorithm
- b) Write a program for sorting the array of 10 elements using the Bubble Sort method.
- c) Describe Priority Queue with its advantages.

Q.2 Attempt any FOUR.

16 Marks

- a) Describe linear search with an example.
- b) Find out infix equivalent of the following postfix expression
 - i. $AB+C*D$ –
 - ii. $ABC* + D$ -
- c) Write a program to print the number of non-zero elements in the list.
- d) Describe concept of Binary Tree and its applications.
- e) Write a program to calculate the number of items in a Queue.
- f) Write a program for Linear Search of an array.

Q.3 Attempt any FOUR.

16 Marks

- a) Write a program to convert an infix expression into a Postfix expression.
- b) Describe concept of circular queue. How it is better than linear Queue.
- c) Describe doubly linked list with an example
- d) Write a function to traverse a node of a Binary Tree.
- e) Describe Expression Tree with an example.
- f) Describe the concept of hashing with it's applications.

Q.4 Attempt any FOUR.

16 Marks

- a) Write a program to sort 10 integers using an array of pointers.
- b) Write a program to print 'Fibonacci series', using recursion.
- c) Describe Queue as an abstract data type.
- d) Write a program to delete the first node from a linked list.
- e) Describe Stack using Linked List.
- f) Describe the Pre-Order Binary tree traversal algorithm.

Q.5 Attempt any TWO.

16 Marks

- a) Write a program for Selection Sort with its complexity.
- b) Convert the following infix expression into a post fix expression.
 $(A-2*(B+C)/D*E)+F$
- c) Describe the collision resolution techniques in hashing with an example.

Q.6 Attempt any TWO.

16 Marks

- a) Write a program to read an integer number. Print the reverse of this number using recursion (ex. 345 to 543).
- b) Write a program to count the number of nodes in a Binary search tree.
- c) Describe the Breadth First search traversal of a Graph