

CBCS SCHEME

USN

16/17MCA11

First Semester MCA Degree Examination, June/July 2018 Data Structures using C

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain any two control structures with appropriate examples. (08 Marks)
b. Write a C program to display Fibonacci series for n numbers. (08 Marks)

OR

- 2 a. Define function. Write a C program to demonstrate call by value and call by reference. (08 Marks)
b. Write a C program to find and display the sum of elements of a single dimensional array. (04 Marks)
c. Discuss about the process of passing arrays to functions. (04 Marks)

Module-2

- 3 a. List out the advantages of pointers. Exemplify the process of initialization of pointer variables. (08 Marks)
b. What are the three ways to access members of a structure? Give examples. (04 Marks)
c. Classify the data structures. (04 Marks)

OR

- 4 a. Write a C program to search an element in a single dimensional array using linear search method. (08 Marks)
b. Explain any 4 string-handling functions with examples. (08 Marks)

Module-3

- 5 a. Represent stack as an Abstract Data Type (ADT). (08 Marks)
b. Convert the following expression to prefix and postfix expression:
(i) $(A + B \wedge C) / D \cdot E$ (ii) $A * B \cdot C + (B \cdot C) * D$ (08 Marks)

OR

- 6 a. Write a short note on Towers of Hanoi and give an example. (08 Marks)
b. Define circular Queue. Explain its advantages over the ordinary queue. Write a function to demonstrate insert operation on circular queue. (08 Marks)

Module-4

- 7 a. Discuss about different types of memory management functions. (09 Marks)
b. Write a function for each of the following operations on Linked List:
 - Insertion of node at the beginning
 - Insertion of node at the end
 - Insertion of node at a given position(07 Marks)

OR

- 8 a. Write a C program to insert an element at a given position in the circular Linked List. (08 Mark)
- b. Demonstrate application of Linked Lists as Stacks and Queues. (08 Mark)

Module-5

- 9 a. Explain about the following :
- Level of a tree
 - Complete Binary Tree
 - Strictly Binary Tree
 - Skewed Binary Tree
- (08 Mark)
- b. Construct Binary Search tree for the following numbers and perform Inorder, Preorder and Postorder traversals:
- 27 5 36 47 19 52 21 44
- (08 Mark)

OR

- 10 a. Write a C program to perform insertion sort on an unordered list of numbers. Trace the steps of the sorting process. (08 Mark)
- b. Discuss the methods for resolving hash-collisions with suitable examples. (08 Mark)

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