

B.E. (Computer Engineering) Semester Third (C.B.S.)
Programming Methodology & Data Structures Paper - IV

P. Pages : 2

Time : Three Hours



KNT/KW/16/7250

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.

1. a) Explain Taxonomy of Computer programming languages. 7
b) Explain program execution process in detail. 6

OR
2. a) Write a program to check whether entered number is prime No. or not. 5
b) Explain how 1-D and 2-D arrays are represented in memory. 5
c) Define and explain in brief "flowchart". 3
3. a) What are different storage classes available in 'C' ? Explain each with its features using suitable example. 8
b) Write a C program to calculate average of marks of 'n' subjects using pointers. 6

OR
4. a) Define a structure of book containing book name, number of pages and the price of book as data members. Write a program to scan information of 10 books from the user and display the structure of book having maximum price. 9
b) State the difference between structure and union with suitable example. 5
5. a) Write short note on Collision resolution policies. 6
b) Suppose array A contains 8 elements as follows. 7
7, 3, 44, 11, 2, 65, 5, 9
Sort array A using Bubble sort in ascending order. Show position of elements in memory after each iteration.

OR
6. a) Write a C program to search an element using Binary Search. 7
b) Write short note on Merge Sort. 6
7. a) Explain concept of stack. Write PUSH and POP functions related with stack operation. 7
b) Evaluate given expression by using stack. 6
 $(300 + 23) * (43 - 41) / (84 + 7) * (20 - 4).$

OR

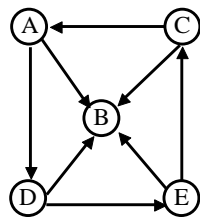
8. a) What do you mean by circular queue ? Give array implementation of it and write Insert function to insert an element in circular queue. 7
- b) Write short note on: 6
- i) Priority Queue ii) Application of stack.
9. a) Write a C program to perform the following operations on singly linked list. 4
- a) To create singly linked list. 3
- b) To add a node on the end. 3
- c) To delete a node from beginning. 3
- d) To Display the list. 3

OR

10. a) What are different types of Linked List ? Explain advantages and disadvantage of Linked List. 7
- b) Write an algorithm to insert a node. 6
- i) At the beginning ii) At the end of doubly linked list
11. a) What is a Binary Search Tree (BST) Make a BST for the following sequence of numbers. 7
- 55, 36, 70, 23, 89, 100, 58, 39, 41, 60, 65, 25
- Write Preorder, Inorder and Postorder Traversal of this tree.
- b) Write non-recursive procedure for traversing a binary tree in preorder and explain its working with example. 7

OR

12. a) Obtain the following for the given graph. 8
- i) Indegree and outdegree of each node. ii) Adjacency list.
- iii) Adjacency matrix. iv) Adjacency Multi List.



- b) Construct minimum cost spanning tree (MST) of the following graph using Prim's algorithm. 6

