Code No. E-15172/CBCS

FACULTY OF INFORMATICS

M.C.A. (2 Years Course) I- Semester (CBCS) (Main & Backlog) Examination, April/May 2023

Subject: Data Structures using "C"

Time: 3 Hours **Max. Marks: 70**

Note: I. Answer one question from each unit. All questions carry equal marks.
II. Missing data, if any, may be suitably assumed.

Unit-I

1. a) What is a operator? What do you mean by operator precedence? Explain the difference between conditional operator and relational operator.
   b) What do you understand by multidimensional Arrays? Write a program in C to search an element in an array?

(OR)

2. a) Write a C program for following output:

```
* * * * *
 * * * *
  * * *
   * *
    *
```

   b) What is a string? Explain any five string handling library function with suitable example.

Unit-II

3. a) Define function. What do you understand by call by value and call by reference? Explain with suitable example.
   b) Write a C program to demonstrate pointer to pointer.

(OR)

4. a) Write difference between structure and union.
   b) Explain Dynamic memory allocation function with suitable example program

Unit-III

5. a) Explain the procedure of converting from infix to postfix with the help of an expression tree.
   b) Write a complete program in C to create a singly linked list.

(OR)

6. a) How do you push and pop elements in a stack. Explain the application of stack?
   b) What are queues? Write down algorithm for inserting and deleting elements from a queue implemented using arrays.

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Unit-IV

7. a) Suppose the following list of letters is inserted in order into an empty binary search tree:

J, R, D, G, T, E, M, H, P, A, F, Q

(i) Find the final Tree T.

(ii) Find the preorder, inorder and post order traversal of T.

b) Define AVL tree. Discuss various applications and rotations of AVL with example.

(OR)

8. a) Show the result of inserting 3,1,4,6,9,2,5,7 into an initially empty binary search tree. Also show three result of deleting the root.

b) Explain sequential representation of graphs in memory. Explain DFS traversal algorithm.

Unit-V

9. a) Explain Quick sort with the help of suitable example.

b) Define Hashing. How do collision happen during hashing? Explain the different techniques resolving of collision.

(OR)

10. a) Write algorithm for Linear search. Explain with suitable example.

b) Write algorithm for insertion sort. Explain with suitable example.

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Code No. E- 15052 / CBCS

FACULTY OF INFORMATICS

M.C.A. (3 Years Course) I- Semester (CBCS) (Backlog) Examination, April/May 2023

Subject: Computer Programming & Problem Solving

Time: 3 Hours **Max. Marks: 70**

Note: I. Answer one question from each unit. All questions carry equal marks.
II. Missing data, if any, may be suitably assumed.

Unit – I

1. a) Explain the types of type conversions in C with examples?
   b) How to evaluate C expression? Explain with the help of an example Expression evaluation.

(OR)

2. a) Explain standard I/O functions in C ?
   b) List out the advantages and dis-advantages of algorithm.

Unit - II

3. a) How can we pass the whole Array to Functions? Explain with example program.
   b) How can we declare and initialize 2D arrays? Explain with examples.

(OR)

4. a) Write a program to perform matrix addition?
   b) What is Linear search? Explain the process of searching an element using linear search?

Unit - III

5. a) What is structured program ? Explain briefly.
   b) What is a function? Why we use functions in C language? Give an example.

(OR)

6. a) What are type qualifiers? Explain various types of type qualifiers in C.
   b) Write a program to find factorial of a number using recursion.

Unit - IV

7. a) What is Void pointer ?
   b) What are command line arguments? Explain with syntax and example.

(OR)

8. a) Explain about the concepts of C strings.
   b) Difference between string literal and character literal.

Unit - V

9. a) What is type def ? Explain it briefly.
   b) What are enumerate types? Give the Syntax to define it.

(OR)

10. a) What is a structure? Write the Syntax for structure declaration.
    b) What is an array of structures is used? Write syntax for array of structure.

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