Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 40440

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Third/Fourth Semester

Electronics and Communication Engineering

EC 8393 – FUNDAMENTALS OF DATA STRUCTURES IN C

(Common to B.E. Biomedical Engineering/
B.E. Electronics and Telecommunication Engineering /
B.E. Medical Electronics)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. State the rules for naming a variable in C language.

2. List differences between while and do-while loop.

3. List some of pointer manipulations allowed in C language.

4. Give example for recursion function and write on how it suits the task.

5. State the overflow condition while performing push ( ) operation.

6. Write various operations that can be performed in Queue ADT.

7. State the properties of Binary Search Tree.

8. Write down various applications of trees.

9. How collision is handled in Hash table. Give example.

10. State the use of pivot in Quick sort.

PART B — (5 × 13 = 65 marks)

11. (a) Explain different operations on string (atleast 4) with suitable examples in 'C'. (13)

Or

(b) Write programs in 'C' to perform matrix addition and matrix multiplication. (6+ 7)

12. (a) (i) Discuss pass by value and pass by reference techniques in C using suitable examples. (8)

(ii) Explain the concept of using structure within a structure. Give suitable example. (5)

Or

(b) (i) Demonstrate different storage classes with suitable examples. (8)

(ii) Demonstrate pre-processor directives with suitable examples. (5)

13. (a) (i) Convert the expression (a+b) *(c.d) into postfix expression using stack. (8)

(ii) Evaluate the resultant postfix expression when a = 1, b = 2, c = 3, d = 4. (5)

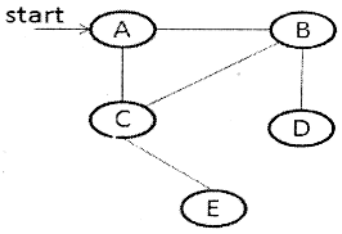
Or

(b) Write suitable procedure to evaluate two Polynomials P1 and P2 using Linked list. Demonstrate using diagrammatic notation.

14. (a) Write suitable procedure(s) to insert the following keys into Binary Search Tree and Elaborate on the logic to find the largest value among them. 23, 18, 42, 56, 78, 15, 7, 17, 89, 34.

Or

(b) Traverse the Graph using BFS arid DFS. Write procedures to perform these searches.



15. (a) Perform linear search and binary search for the following numbers:

55, 75, 15, 60, 35, 45, 25, 95, 85. Write suitable procedure(s).

Analyze the number of comparisons needed for searching the following key values: 75, 50.

Or

(b) Sort the following numbers 34, 17, 27, 97, 43, 15, 36 using Bubble sort and insertion sort. Write suitable procedure(s). Determine the position of all numbers during the 3rd iteration of both sorting techniques.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Explain Union and Find operations in Set data structures. (5)

(ii) Discuss how do these set operations help to detect a cycle in an undirected graph. Write suitable procedure(s). Illustrate with an example. (10)

Or

(b) (i) Discuss how does Divide and Conquer strategy help in sorting the numbers: 13, 8, 2, 4, 10, 16, 20, 32. (5+5)

(ii) Write suitable procedure. Analyze the time complexity. (5)

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