D 92912 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

BCA

BCA 3B 04—DATA STRUCTURES USING C

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What are the different applications of data structures ?
2. Briefly describe the notation of the space-time trade off of algorithm.
3. What is row major order ?
4. Define linked list.
5. Write formula to calculate address of elements in two-dimensional array. Explain with example.
6. What will happen in a C program when you assign a value to an array element whose subscripts exceed the size of array ? Explain with example.
7. Write an algorithm to perform pop operation
8. List the different applications of tree.
9. Write the following prefix notation to expression tree in step by step.

   +, *, 2, 6, /, 3, 8.
10. Define binary search.
11. What is undirected graph ? Explain.
12. Explain Folding Method in hashing.

(8 × 3 = 24 marks)

Section B (Short Essay Type Questions)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Write a menu driven program to concatenate two strings with and without using string functions.
14. Differentiate between linear and non-linear data structure.

Turn over

15. Write menu driven a program to implement singly linked list without using recursive function.

16. What is a Stack ? Write a program to insert more than one element into a stack. Check all validations and use user defined functions and pass parameters.

17. Write a menu driven program to implementation (operations) of queue using linked list.

18. Define Hashing. Explain the different hash functions.

19. Write a program to sort a list of numbers in descending order using Bubble. Explain.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any **one** *question.*
The question carries 11 *marks.*

20. Write a note on :
    (i) Data structure operations.
    (ii) Big-O notation.
    (iii) Parallel arrays and Applications of linked lists.
    (iv) Sequential searching.

21. (a) Write a program to sort a list of number using Exchange sort, use user defined functions and pass parameters. (6 marks)

    (b) Explain depth-first and breadth with example. (5 marks)

[1 × 11 = 11 marks]