C 80869 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2020

Computer Science

BCS 4C 04—DATA STRUCTURE USING C PROGRAMMING

(2017 Admissions)

Time : Three Hours Maximum : 64 Marks

Section A

Answer **all** *the questions.*
Each question carries 1 *mark.*

1. Define Abstract Data Type.
2. The matrix with zeros as its dominating elements is called ————————.
3. A ———————— with insertion and deletion done at either ends or may be appropriate restricted at one of the ends.
4. List out limitation of linear queue.
5. Explain logical representation of linked list.
6. Node is collection of ————————.
7. The availability of two links ———————— and ———————— permit forward and backward movement during the processing of the list.
8. The complexity of quick sort algorithm is ————————.
9. What is time complexity ?

(9 × 1 = 9 marks)

Section B

Answer **all** *the questions.*
Each question carries 2 *marks.*

10. List out areas in which data structures are applied.
11. What will happen in a C program when you assign a value to an array element whose subscripts exceed the size of array ?
12. What is column major order ? Explain.

Turn over

13. How to represent a linked list in C program ? Explain.

14. How to sort a list of numbers in ascending order using Bubble. Explain with algorithm and example.

(5 × 2 = 10 marks)

Section C

Answer any **five** *questions (short essay type).*
Each question carries 5 *marks.*

15. What are the different classifications of data structure ? Explain each.

16. Explain the steps for the development of algorithm. Write an algorithm to find average numbers from a list of number.

17. What are the benefits of the sparse matrix ? Write a program to multiply two matrices.

18. Explain the operation performed on Queue. How it is implemented in C programming.

19. Write algorithm for push/pop operation on a linked stack.

20. Define ordered linear search explain with algorithm and example.

21. Write short note on merge sort with algorithm

22. Write a program to find prime numbers from a list of numbers.

(5 × 5 = 25 marks)

Section D

Answer any **two** *questions (long essay type) out of three questions.*
Each question carries 10 *marks.*

23. Write a program to implement singly linked list, using recursive functions. Explain with example.

24. What do you mean by polynomials ? How singly linked list representation of polynomials ? Write an algorithm to add two polynomials.

25. Trace quick sort on the list L = {11, 34, 67, 78, 78, 78, 99}. What are your observations ? Explain with algorithm.

(2 × 10 = 20 marks)