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SECOND SEMESTER B.Sc. DEGREE EXAMINATION, SEPTEMBER 2022

(NEP—DSCC)

Computer Science

DATA STRUCTURES

Time : Two Hours Maximum : 60 Marks

Answer **all** *the questions as per the internal choices.*

I. Answer any *five* of the following. 2 marks each :

1 What is data structure ? Mention its types.

2 Define static and dynamic memory allocation.

3 What do you mean by stack ? List out the applications of stacks.

4 Define double-ended queue.

5 What are the advantages of sorting techniques ?

6 Define singly Linked List. Write an example.

(5 × 2 = 10 marks)

II. Answer any *four* of the following. 5 marks each :

7 What is a pointer ? Explain how to declare and initialize pointers. Give example.

8 Describe bubble sort technique with algorithm and example.

9 Discuss the operations on stack with an appropriate example.

10 With an example explain insert operations on singly linked list.

11 Write a C program to implement stack data structure.

(4 × 5 = 20 marks)

III. Answer any *three* of the following. 10 marks each :

12 (a) Explain structure and union. State the difference between the two. (5 marks)

(b) Write a C program to swap two numbers using pointers. (5 marks)

Turn over

13 (a) Describe binary search algorithm with a proper example. (5 marks)

(b) Discuss insertion sorting technique. Write its advantages. (5 marks)

14 (a) Convert the following infix expressions to postfix :

(i) A^B*C+D−E/F

(ii) P*Q+R−(S+T)*U (5 marks)

(b) Explain the operations on simple queue. (5 marks)

15 Discuss any ten tree-terminologies with example to each. (10 marks)

[3 × 10 = 30 marks]