052 BCA 011—Sep. 2022—5173

SECOND SEMESTER B.C.A. DEGREE EXAMINATION, SEPTEMBER 2022

(NEP)

DATA STRUCTURES

Time : Two Hours

Maximum : 60 Marks

Part A : Answer any **five** questions each carries 2 marks.
Part B : Answer any **four** questions each carries 5 marks.
Part C : Answer any **three** questions each carries 10 marks.

Part A

Question number 1-6 carries 2 marks each.
Answer any **five** questions.

1. What is data structure ?

2. Write a structure syntax.

3. Define Sorting.

4. What is stack ? List the operations of stack.

5. List the linear type data structures.

6. What is singly linked list ?

(5 × 2 = 10 marks)

Part B

Question number 7-11 carries 5 marks each.
Answer any **four** questions.

7. Explain the classification of data structures.

8. Write an algorithm for binary search.

9. What is queue ? Write a program for ordinary queue.

10. Convert following infix expression into prefix expression :

    i) $(a + b)/c + d * e - f$.

    ii) $(a * b + c)/d - e * f + g$.

11. Compare array with linked list.

(4 × 5 = 20 marks)

Turn over

Part C

Question number 12-15 carries 10 marks each.

Answer any **three** *questions.*

12. Explain dynamic memory allocation functions with syntax and example.

13. Write a program to sort array of elements using quick sort technique.

14. Write an algorithm for :

     i)   Stack.

     ii)   Priority queue.

15. Explain the following with example :

     i)   Singly linked list.

     ii)   Complete binary tree.

$(3 \times 10 = 30 \text{ marks})$