Reg. No. : ....

Name : ....

Third Semester B.C.A. Degree (CBCSS – OBE – Regular/Supplementary/
Improvement) Examination, November 2022
(2019 Admission Onwards)
GENERAL AWARENESS COURSE
3A12BCA : Data Structures

Time : 3 Hours

Max. Marks : 40

PART – A
(Short Answer)

Answer **all** questions.

(6×1=6)

1. Name the data structure used to implement recursion.

2. List any two applications of binary tree.

3. Evaluate the postfix expression : 2 4 + 4 6 + *

4. Define full binary tree.

5. What is the time complexity to search an element in a singly linked list ?

6. The linked list in which none of the nodes contains the NULL pointer is _____.

PART – B
(Short Essay)

Answer **any 6** questions.

(6×2=12)

7. Differentiate between linear and non-linear data structures.

8. What do you mean by priority queue ?

9. Differentiate between linear and binary search.

10. List the advantages of linked list over arrays.

11. Differentiate between linear and circular queue.

12. What are the advantages of a doubly linked list ?

13. Discuss the array representation of binary tree.

14. What is the time complexity to search a key in a binary search tree ? Justify
your answer.

P.T.O.

PART – C
(Essay)

Answer **any 4** questions. (4×3=12)

15. Discuss the representation of a two-dimensional array in memory.

16. Explain binary search algorithm with its complexity.

17. Discuss any three applications of stack.

18. What do you mean by singly linked list ? Write an algorithm to reverse any given linked list.

19. Create a binary search tree for the following numbers start from an empty binary search tree. 45, 26, 10, 60, 70, 30, 40 Delete keys 10, 60 and 45 one after the other and show the trees at each stage.

20. Discuss Huffman tree with its application.

PART – D
(Long Essay)

Answer **any 2** questions. (2×5=10)

21. What do you mean by sparse matrix ? Write an algorithm to add two sparse matrices.

22. Explain quick-sort algorithm with an example.

23. Detail on linked representation of queue with algorithms for its primitive operations.

24. Discuss in detail, stack data structure and implement the same using array.

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