K25U 3075

Reg. No. : .....

Name : .....

III Semester B.Sc. Degree (CBCSS – OBE – Supplementary/Improvement) Examination, November 2025
(2023 Admission)
GENERAL AWARENESS COURSE IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
3A02 AIML : Data Structures

Time : 3 Hours Max. Marks : 40

PART – A
(Short Answer)

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

1. Define a graph data structure.
2. What is a level of a tree data structure ?
3. What is a hash table ?
4. Write any two examples for a non-primitive data structure.
5. Expand DFS.
6. Write any two applications of stack. **(6×1=6)**

PART – B
(Short Essay)

Answer **any six** questions. **Each** question carries **2** marks.

7. What are the different ways of representing a graph data structure ?
8. What do you call the maximum level of any node in a tree ?
9. Define a queue. What is the difference between a queue and a circular queue ?

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10. What is the height of a binary tree, and how is it calculated ?
11. What is linear search, and in what scenarios is it used ?
12. Define a graph and explain the difference between directed and undirected graphs.
13. What is a minimum spanning tree ?
14. What is a complete binary tree ? **(6×2=12)**

PART – C
(Essay)

Answer **any 4** questions. **Each** question carries **3** marks.

15. Explain Prim's algorithm with an example.
16. What are the operations on stacks ?
17. Write any three applications of linked list.
18. What is bubble sort ?
19. Explain a binary search tree with an example.
20. Sort 25, 15, 30, 9, 99, 20, 26 using insertion sort. **(4×3=12)**

PART – D
(Long Essay)

Answer **any two** questions. **Each** question carries **5** marks.

21. Explain Dijkstra's algorithm.
22. Explain hashing functions mid square, division and folding.
23. Explain how a stack is implemented using linked list.
24. Explain breadth first searching in graphs. **(2×5=10)**