

(6 pages)

Reg. No. :

Code No. : 10329 E Sub. Code : AMCS 41

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Fourth Semester

Computer Science — Core

DATA STRUCTURES

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. _____ is not the component of data structure.
(a) Operations (b) Storage structures
(c) Algorithm (d) None
2. A function calls itself is called _____.
(a) procedure (b) recursion
(c) both (a) and (b) (d) none

8. DES stands for _____.
(a) Depth First Search
(b) Direct First Search
(c) Divine First Search
(d) None
9. _____ : time taken to position the read/write heads to the correct cylinder .
(a) Latency time
(b) Seek time
(c) Transmission time
(d) None
10. Insert a new record into a sorted sequence of i records in such a way that the resulting sequence of size $i + 1$ is also ordered, is called _____.
(a) Merge sort
(b) Quick sort
(c) Heap sort
(d) Insertion sort

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3. Inserting an item into the stack when stack is not full is called _____ operation.
(a) Push (b) Pop
(c) Add data (d) None
4. How to represent in fix notation $a * b + 5$ into its postfix form?
(a) $ab5 + *$ (b) $+ * ab5$
(c) $ab5 * +$ (d) $ab * 5 +$
5. _____ traversal, visit a node, traverse left and continue.
(a) Inorder (b) Postorder
(c) Preorder (d) None
6. Heaps are frequently used to implement _____.
(a) AVL Tree (b) Stack
(c) Priority Queues (d) None
7. A _____ of G is a graph G^1 such that $V(G^1) \subseteq V(G)$ and $E(G^1) \subseteq E(G)$.
(a) Sub Graph (b) Euler Graph
(c) Both (a) and (b) (d) None

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the steps involved in Binary search?
Or
(b) Define the terms Datatype and Abstract Datatype.
12. (a) Give a brief note on Queue.
Or
(b) What do you mean by infix and postfix notation?
13. (a) What is Tree? Describe list representation of tree.
Or
(b) Write short note on Forest.
14. (a) Define Graph. Explain any one representation of Graph.
Or
(b) What is Recursion? Give a brief note on it.

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[P.T.O.]

15. (a) Write a code for Merge Sort.

Or

(b) Give a short note on Hash table.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) How do you judge a program? Explain space and time complexity in detail.

Or

(b) Define the term array. How do you represent multidimensional array? How it differs from one dimensional array?

17. (a) What is stack? What are the functions involved in stack?

Or

(b) How to implement Doubly linked list?

18. (a) What is Binary tree? List out and explain the properties of Binary tree.

Or

(b) What is binary tree traversal? Explain preorder and post order traversal in detail.

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19. (a) Define minimum cost spanning tree. What is the use of Prim's algorithm?

Or

(b) Explain all pairs shortest paths in detail.

20. (a) What is sorting? Explain Quick Sort in detail.

Or

(b) List out and explain the different types of Hash function available in Data structure.

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