

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Computer Science — Core

DATA STRUCTURES

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A _____ is a collection of objects and a set of operations that act on those object.

- (a) Variable (b) Constant
- (c) Datatype (d) None

6. _____ are frequently used to implement priority queues.

- (a) AVL tree (b) Heaps
- (c) Both (a) and (b) (d) None

7. A graph with weighted edges is called _____

- (a) Subgraph (b) Multigraph
- (c) Network (d) None

8. BFS stands for _____

- (a) Breadth First Search
- (b) Breadth Frequent Search
- (c) Binary First Search
- (d) None

9. _____ : time until the right sector of the track is under the read/write head.

- (a) Seek time (b) Latency time
- (c) Transmission time (d) None

10. Arranging the numbers in order is called _____

- (a) searching (b) traversing
- (c) sorting (d) none

2. The _____ complexity of a program is the amount of memory that it needs to run to completion.

- (a) space (b) time
- (c) both (a) and (b) (d) none

3. _____ is a pile in which items are added at one end and removed from other end.

- (a) Stack (b) Queue
- (c) Both (a) and (b) (d) None

4. How to represent the infix notation $a*b|c$ into its postfix notation?

- (a) $abc*/$ (b) $abc/*$
- (c) $*/abc$ (d) $ab*c/$

5. What are the operations will be done on Binary tree?

- (a) copying binary trees
- (b) testing equality
- (c) the satisfiability problem
- (d) all the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) What do you mean by recursive algorithm?

Or

(b) Define and give a brief note on array in C.

12. (a) Give a brief note on stack and queue.

Or

(b) How to represent chains in 'C'?

13. (a) What is binary search tree?

Or

(b) How to transform a forest into a binary tree?

14. (a) Expand and explain DFS.

Or

(b) List out the observation of generating the paths in non decreasing order of length.

15. (a) Write a code for quick sort.

Or

(b) What is hash function? Give a note on division in hash function.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) What is data abstraction? Explain it in detail.

Or

(b) What is polynomial? How do you represent and add polynomial?

17. (a) How to evaluate an expression? Describe an algorithm for infix to postfix expression.

Or

(b) How to represent sparse matrix? Explain.

18. (a) What is binary tree traversal? Explain inorder and post order traversal in detail.

Or

(b) Explain in detail about heaps.

19. (a) What do you mean by graph? How to represent graph?

Or

(b) What is the use of Kruskal's algorithm? Explain with an example.

20. (a) What is sorting? Explain merge sort in detail.

Or

(b) Explain Hash tables in static hashing in detail.
