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Reg. No. :

Code No. : 21031

Sub. Code : GACA 31

B.C.A. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2014.

Third Semester

Computer Applications — Allied

DATA STRUCTURES

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL questions

Choose the correct answer :

1. Which of the following ADT can be used to represent a many to many relation.
(a) Tree (b) Graph
(c) Queue (d) All of these
2. For merging two sorted lists of sizes m and n into a sorted list of size $m + n$, we require comparisons of
(a) $O(m)$ (b) $O(n)$
(c) $O(m + n)$ (d) None of these

3. A linked list where the last node points the header node is called the _____ linked list.
(a) Doubly (b) Single
(c) Circular (d) All of these
4. Sparse matrices have many _____ entries
(a) Zero (b) Non-zero
(c) negative (d) None of these
5. In _____ both insertion and deletion operations can be made at either end of the structure.
(a) Queue (b) circular queue
(c) Dequeue (d) None of these.
6. Which of the following is essential for converting an infix expression to the postfix form efficiently
(a) An operator stack (b) An operand stack
(c) Both (a) and (b) (d) Parse tree



7. The number of possible binary trees with four nodes is

- (a) 12 (b) 13
(c) 14 (d) 15

8. The maximum number of nodes that is possible in a path starting from the root node to a leaf node is called the _____ of a tree.

- (a) Level (b) Degree
(c) Height (d) Link

9. The way a card game player arranges his cards as he picks them up one by one, is an example of _____ sort.

- (a) Bubble (b) Selection
(c) Insertion (d) Merge

10. Preorder is same as _____ order.

- (a) Depth-first (b) Breadth-first
(c) Topological (d) Linear.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the concept of data structures.

Or

(b) Explain the model for an ADT.

12. (a) Write about linked list structure.

Or

(b) Write about circular linked list.

13. (a) Explain the linked representation of queue.

Or

(b) Explain the basic queue operations.

14. (a) Write about tree structure.

Or

(b) Explain the binary search tree.

15. (a) Write about external sort.

Or

(b) Write about networks.



PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should exceed 600 words.

16. (a) Discuss algorithm efficiency in detail.

Or

- (b) Describe about list searches with examples.

17. (a) Explain the following operations on linked list

- (i) Merge
- (ii) Traverse.

Or

- (b) Discuss the applications of linked list.

18. (a) Describe the stack linked list implementation.

Or

- (b) Describe the queue linked list design.

19. (a) Describe about binary tree traversals.

Or

- (b) Explain the basic heap algorithm.

20. (a) Discuss quick sort.

Or

- (b) Explain the operations on graph.

