

(6 pages)

Reg. No. :

Code No. : 21001

Sub. Code : GACS 31/
GASE 31

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2014.

Third Semester

Computer Science — Allied

DATA STRUCTURE

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The complexity can be measured in _____ ways.
- | | |
|-------|-------|
| (a) 2 | (b) 3 |
| (c) 4 | (d) 5 |

2. Array is
- | | |
|----------------------------|-------------------------------|
| (a) linear data structure | (b) non linear data structure |
| (c) complex data structure | (d) none of these |
3. The node which does not have a predecessor is _____.
- | | |
|----------|--------------|
| (a) leaf | (b) sublings |
| (c) root | (d) branch |
4. Double linked list is a
- | | |
|-------------------|---------------------|
| (a) one-way list | (b) two-way list |
| (c) circular list | (d) non-linear list |
5. A _____ is a LIFO list.
- | | |
|-----------|-----------|
| (a) stack | (b) queue |
| (c) rear | (d) front |
6. Rear is a pointer associated with
- | | |
|-----------|-----------|
| (a) stack | (b) queue |
| (c) list | (d) tree |



7. The depth of a complete tree T , when $n = 100000$ nodes is _____.

- (a) 20 (b) 21
(c) 22 (d) 23

8. A linked representation of binary tree has _____ fields.

- (a) 2 (b) 3
(c) 4 (d) none

9. A self-edge is also known as _____.

- (a) edge (b) vertex
(c) loop (d) node

10. G is _____ iff there is a path between every pair of vertices in G .

- (a) graph (b) directed
(c) connected (d) none

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Write the procedure to insert an item into the linear array.

Or

(b) Explain sparse matrix and how they are represented in memory.

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12. (a) Explain how linked lists are used in polynomial representations.

Or

(b) Explain the procedure to traverse a linked list. Give example.

13. (a) Explain stack with an example.

Or

(b) Explain dequeues.

14. (a) Describe the operations on tree.

Or

(b) Explain with an example how binary trees are represented.

15. (a) Analyse quick sort algorithms.

Or

(b) Explain the two types of graphs with suitable examples.

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PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain in detail about the abstract data types.

Or

- (b) Explain the memory representations for multidimensional arrays.

17. (a) Write and explain the algorithm to insert and delete a node in a linked list.

Or

- (b) Explain the properties and operations of double circular doubly linked lists.

18. (a) Explain the applications of stack in detail with examples.

Or

- (b) Explain any two operations in queue with procedure.

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19. (a) Explain searching in binary search trees with algorithm and example.

Or

- (b) How insertion and deletion takes place in AVL search tree?

20. (a) How a graph can be represented through linked lists? Discuss the operations on graphs.

Or

- (b) Write and explain the algorithm to insert a node in a graph.
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