

(6 pages)

Reg. No. :

Code No. : 21031

Sub. Code : GACA 31

B.C.A. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2015.

Third Semester

Computer Applications — Main

DATA STRUCTURES

(For those who joined in July 2012 and afterwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is not a data structure?
(a) Matrix (b) Linked list
(c) Tree (d) None of the above
2. Algorithm _____ as a function of number of elements to be processed
(a) efficiency (b) loop
(c) condition (d) all the above

3. Linked list contains _____ number of fields
(a) 1 (b) 3
(c) 2 (d) 4
4. Which of the following is the operation of linked list?
(a) Sorting (b) Stack
(c) Queue (d) Insertion
5. If top = null then stack is _____
(a) full (b) empty
(c) neither (a) or (b) (d) all the above
6. The _____ is an ordered list the insertion and deletion of element made at different place
(a) stack (b) queue
(c) linked list (d) all the above
7. Binary tree contains at most _____ number of children
(a) 1 (b) 3
(c) 2 (d) 4
8. The maximum number of nodes on level i, in binary tree is _____
(a) 2^i (b) 2^{i-1}
(c) 2^{i+1} (d) 2^{i+2}

Page 2

Code No. : 21031



9. The average computing time for quick sort is _____

- (a) $O(n)$ (b) $O(\log n)$
- (c) $O(n \log n)$ (d) $O(1)$

10. Graph is a collection of vertices and _____ set

- (a) node (b) points
- (c) edge (d) none of these

SECTION B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Explain Abstract data type and model for ADT.

Or

(b) Write short notes on the collision Resolution.

12. (a) What is the meaning of linear list? Explain with an example.

Or

(b) Explain the processing of linked list.

Page 3 Code No. : 21031

13. (a) Explain :

- (i) PUSH and
- (ii) POP operation in a stack.

Or

(b) Explain in detail about linked queue.

14. (a) Convert the following infix to postfix expression by using expression tree.

- (i) $A + B - C * D$
- (ii) $M / N * S + T - U$.

Or

(b) Explain any one heap algorithm to insert an element into heap tree.

15. (a) Explain operations of graphs with neat diagram.

Or

(b) Explain the concept of sorting with example.

Page 4 Code No. : 21031
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SECTION C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain :

- (i) Sequential search and
- (ii) Binary search.

Or

(b) Explain in detail about hashed list search.

17. (a) Explain the following :

- (i) Linked list
- (ii) Complex linked list.

Or

(b) Write an algorithm for

- (i) insertion of an element
- (ii) deletion of an element from linked list.

18. (a) Explain the algorithm for linked stack.

Or

(b) Write an algorithm for queue operation.

19. (a) Explain the following traversals :

- (i) inorder
- (ii) post order
- (iii) pre order.

Or

(b) Discuss about the heap data structure with suitable algorithm.

20. (a) Write an algorithm for quick sort. Explain.

Or

(b) Explain with an example the minimum spanning tree algorithm.

