



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Diploma in Electrical Engineering
Course Name – Data Structure and Algorithm
Course Code - DEE304
(Semester III)

Time : 1 Hr.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) Algorithm is
 - a) Step by step process to solve a problem
 - b) Pictorial representation to solve a problem
 - c) Solving a problem anyhow
 - d) All of these
- (2) The big O notation represents
 - a) Upper bound
 - b) Lower bound
 - c) Tight bound
 - d) No bound
- (3) The theta notation represents
 - a) Upper bound
 - b) Lower bound
 - c) Tight bound
 - d) No bound
- (4) The omega notation represents
 - a) Upper bound
 - b) Lower bound
 - c) Tight bound
 - d) No bound
- (5) What does it mean when we say that an algorithm X is asymptotically more efficient than Y?
 - a) X will always be a better choice for small inputs
 - b) X will always be a better choice for large inputs
 - c) Y will always be a better choice for small inputs
 - d) X will always be a better choice for all inputs
- (6) Two factors that defines the efficiency of an algorithm are
 - a) Time and space
 - b) Space and complexity
 - c) Time and complexity
 - d) Time and data
- (7) is pictorial representation of an algorithm.

- a) Program
c) Picture
- b) Diagram
d) Flowchart
- (8) $O(n)$ mean
a) Time is constant
c) Time is linear
- b) Time is quadratic
d) Time is logarithm
- (9) $O(1)$ mean
a) Time is constant
c) Time is linear
- b) Time is quadratic
d) Time is logarithm
- (10) $O(n^2)$ mean
a) Time is constant
c) Time is linear
- b) Time is quadratic
d) Time is logarithm
- (11) $O(\log n)$ mean
a) Time is constant
c) Time is linear
- b) Time is quadratic
d) Time is logarithm
- (12) Which is not associated with defining complexity?
a) Worst case
c) Best case
- b) Null case
d) Average case
- (13) Row major order is a method to arrange elements sequentially
a) Column wise
c) Table wise
- b) Row wise
d) Linear wise
- (14) Array is a collection of
a) Homogenous elements
c) Both Homogenous elements & Heterogeneous elements
- b) Heterogeneous elements
d) None of these
- (15) Matrix with maximum numbers of 0 elements but not all is
a) Zero matrix
c) Sparse matrix
- b) Identity matrix
d) Null matrix
- (16) follow LIFO method
a) Stack
c) Linked List
- b) Queue
d) Circular Linked List
- (17) memory allocation is used in Linked list.
a) static
c) linear
- b) dynamic
d) random
- (18) Each data-address pair in Linked list is called
a) Node
c) Pointer
- b) Head
d) Data
- (19) In circular Linked list, the last pointer holds the address of
a) Previous node
c) Next node
- b) First node
d) Null
- (20) Traversing back is not possible in which type of Linked list?
a) Singly Linked List
c) Straight Linked List
- b) Doubly Linked List
d) Circular Linked List

- (21) Traversal in Linked list always begins with
- a) Second node
 - b) Last node
 - c) First node
 - d) Third node
- (22) Insertion operation in stack is called
- a) Pop
 - b) Push
 - c) Insert
 - d) Delete
- (23) How many end/s are used in stack data structure?
- a) 1
 - b) 2
 - c) 3
 - d) 4
- (24) Which of the following is used to calculate postfix expression?
- a) Stack
 - b) Linked list
 - c) Queue
 - d) Graph
- (25) The postfix representation of $A*B+C$
- a) $AB*C+$
 - b) $A*B+C$
 - c) $ABC*+$
 - d) $BC+A*$
- (26) How many end/s are used in queue data structure?
- a) 1
 - b) 2
 - c) 3
 - d) 4
- (27) Deletion in queue is done through end.
- a) front
 - b) rear
 - c) back
 - d) last
- (28) The value of rear is incremented by 1 when data element is
- a) Inserted
 - b) Searched
 - c) Deleted
 - d) None of these
- (29) Enqueue is a process of
- a) Insertion
 - b) Searching
 - c) Deletion
 - d) Traversal
- (30) What is the value of front when queue is empty?
- a) 0
 - b) 1
 - c) -1
 - d) 2
- (31) FIFO mean
- a) First in first out
 - b) First input first out
 - c) Free in free out
 - d) First in first output
- (32) In circular queue, the value of rear is where MAX is the size of queue.
- a) $Rear = rear + 1$
 - b) $Rear = (rear + 1) \% MAX$
 - c) $Rear = rear - 1$
 - d) $Rear = (rear - 1) \% MAX$
- (33) If an element is deleted in a queue, the value of is incremented by 1.
- a) Rear
 - b) Front
 - c) First
 - d) Last
- (34) Which of the following is a non linear data structure?
- a) Array
 - b) Linked list
 - c) Stack
 - d) Tree

- (35) The postfix expression of $a+b*c-d$
- | | |
|------------------|-------------------|
| a) $ab*c + -d$ | b) $ab + c * d -$ |
| c) $- + a * bcd$ | d) $abc* + d -$ |
- (36) Node in Linked list is created at
- | | |
|-----------------|---------------|
| a) Compile time | b) Statically |
| c) Runtime | d) Any time |
- (37) The value of postfix expression $3574-2^{**}+$ is
- | | |
|-------|-------|
| a) 48 | b) 50 |
| c) 45 | d) 41 |
- (38) Index of an array starts with
- | | |
|------|-------|
| a) 0 | b) 2 |
| c) 1 | d) -1 |
- (39) The numbers of elements of a 2D array can be obtained using
- | | |
|-----------------|-----------------|
| a) Row * Column | b) Row - Column |
| c) Row + Column | d) Row / Column |
- (40) When the start pointer of Linked list is Null, it is called as
- | | |
|--------------|----------|
| a) Underflow | b) Empty |
| c) Overflow | d) Full |
- (41) The elements a, b, d, c, e are inserted in queue, the order of deletion is
- | | |
|----------|----------|
| a) abcde | b) adbce |
| c) abdce | d) abedc |
- (42) Pointer is used in singly Linked list to point to the
- | | |
|----------------------|--------------|
| a) Null | b) Next node |
| c) Start of the node | d) Last node |
- (43) Type of Linked list where the last node points to the first node rather than NULL -
- | | |
|-----------------------|-------------------------|
| a) Singly Linked list | b) Circular Linked list |
| c) Doubly Linked list | d) All of these |
- (44) Input restricted queue is a type of which queue?
- | | |
|-------------------|-----------------------|
| a) Priority queue | b) Double ended queue |
| c) Circular queue | d) Simple queue |
- (45) Priority queue works on the principle of
- | | |
|---------|------------------|
| a) LIFO | b) PRIORITY |
| c) FIFO | d) None of these |
- (46) Deletion of two elements in priority queue with same priority follows
- | | |
|---------|------------------|
| a) FIFO | b) Randomly |
| c) LIFO | d) None of these |
- (47) Deletion operation, if the capacity of stack is empty gives
- | | |
|--------------------|------------------|
| a) Stack overflow | b) Stack no flow |
| c) Stack underflow | d) None of these |
- (48) Students standing in a line, roll number wise is an example of
- | | |
|----------|----------|
| a) Stack | b) Graph |
| c) Queue | d) Tree |

- (49) How many elements are present in the stack if the variable Top pointing towards the topmost element -
- a) 0
b) Top +1
c) Top -1
d) 1
- (50) Structure defined to create a node in Linked list is
- a) homogenous
b) heterogeneous
c) Both homogenous & heterogeneous
d) None of these
- (51) The worst case time complexity of bubble sort is
- a) $O(n^2)$
b) $O(n)$
c) $O(1)$
d) $O(n \log n)$
- (52) The time complexity of insertion sort is
- a) $O(n^2)$
b) $O(n)$
c) $O(1)$
d) $O(n \log n)$
- (53) The time complexity of heap sort is
- a) $O(n^2)$
b) $O(n)$
c) $O(1)$
d) $O(n \log n)$
- (54) The average case time complexity of quick sort is
- a) $O(n^2)$
b) $O(n)$
c) $O(1)$
d) $O(n \log n)$
- (55) data structure is useful in implementation of quick sort.
- a) BST
b) Stack
c) List
d) Queue
- (56) The number of passes in bubble sort (ascending order) of an array = {3,4,5,2,1} are
- a) 3
b) 2
c) 4
d) 5
- (57) In max heap structure, greatest key is always associated with an element in the
- a) Leaf node
b) First node of left sub tree
c) Root node
d) First node of right sub tree
- (58) Quick sort divide the complete array into sub arrays.
- a) 2
b) 3
c) 4
d) 5
- (59) The sorting where adjacent elements are swapped is
- a) Bubble sort
b) Merge sort
c) Heap sort
d) Quick sort
- (60) The sorting (ascending order) in which the minimum value element is selected and placed at the beginning is
- a) Bubble sort
b) Insertion sort
c) Selection sort
d) Quick sort