



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Diploma in Computer Science & Engineering

Course Name – Data Structures & Algorithm

Course Code - DCSE203

(Semester II)

Time allotted : 1 Hrs.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 omega notation represents
 - a) Upper bound
 - b) Lower bound
 - c) Tight bound
 - d) No bound
- (4) 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
- (5) is pictorial representation of an algorithm.
 - a) Program
 - b) Diagram
 - c) Picture
 - d) Flowchart
- (6) $O(n)$ mean
 - a) Time is constant
 - b) Time is quadratic
 - c) Time is linear
 - d) Time is logarithm
- (7) $O(1)$ mean
 - a) Time is constant
 - b) Time is quadratic
 - c) Time is linear
 - d) Time is logarithm

- (8) $O(\log n)$ mean
- a) Time is constant
 - b) Time is quadratic
 - c) Time is linear
 - d) Time is logarithm
- (9) Row major order is a method to arrange elements sequentially
- a) Column wise
 - b) Row wise
 - c) Table wise
 - d) Linear wise
- (10) In sparse matrix, most elements are
- a) 0
 - b) empty
 - c) 1
 - d) 2
- (11) Array is a collection of
- a) Homogenous elements
 - b) Heterogeneous elements
 - c) Both (a) & (b)
 - d) None of these
- (12) Elements of an array are stored in
- a) Linear manner
 - b) Random manner
 - c) Contiguous manner
 - d) Top to bottom manner
- (13) follow FIFO method.
- a) Stack
 - b) Queue
 - c) Linked List
 - d) Circular Linked List
- (14) Which of the following is not a type of Linked list?
- a) Singly Linked List
 - b) Doubly Linked List
 - c) Straight Linked List
 - d) Circular Linked List
- (15) memory allocation is used in Linked list.
- a) static
 - b) dynamic
 - c) linear
 - d) random
- (16) Each data-address pair in Linked list is called
- a) Node
 - b) Head
 - c) Pointer
 - d) Data
- (17) In circular Linked list, the last pointer holds the address of
- a) Previous node
 - b) First node
 - c) Next node
 - d) Null
- (18) Traversing back is not possible in which type of Linked list?
- a) Singly Linked List
 - b) Doubly Linked List
 - c) Straight Linked List
 - d) Circular Linked List
- (19) is used to hold the first element on stack.
- a) Top
 - b) Next
 - c) Bottom
 - d) Previous
- (20) Insertion operation in stack is called
- a) Pop
 - b) Push
 - c) Insert
 - d) Delete
- (21) The value of top (tos) when stack is empty
- a) 0
 - b) -1
 - c) 1
 - d) 2

- (22) Which of the following is used to calculate postfix expression?
- a) Stack
b) Linked list
c) Queue
d) Graph
- (23) The postfix representation of $A*B+C$
- a) $AB*C+$
b) $A*B+C$
c) $ABC*+$
d) $BC+A*$
- (24) Which of the following is used to calculate prefix expression?
- a) Stack
b) Linked list
c) Queue
d) Tree
- (25) How many end/s are used in queue data structure?
- a) 1
b) 2
c) 3
d) 4
- (26) Deletion in queue is done through end.
- a) front
b) rear
c) back
d) last
- (27) Enqueue is a process of
- a) Insertion
b) Searching
c) Deletion
d) Traversal
- (28) LIFO mean
- a) Last in first out
b) Last input first out
c) Last in first output
d) Last input first output
- (29) If an element is deleted in a queue, the value of is incremented by 1.
- a) Rear
b) Front
c) First
d) Last
- (30) Which of the following is a non linear data structure?
- a) Array
b) Linked list
c) Stack
d) Tree
- (31) Which of the following is used to define a node in Linked list?
- a) Structure
b) Variable
c) Array
d) All of these
- (32) The postfix expression of $a+b*c-d$
- a) $ab*c+-d$
b) $ab+c*d-$
c) $-+a*bcd$
d) $abc*+d-$
- (33) Node in Linked list is created at
- a) Compile time
b) Statically
c) Runtime
d) Any time
- (34) Pop operation in Stack give error when
- a) Stack is empty
b) When stack is partially filled
c) Stack is full
d) Never gives error
- (35) The address of the first element of an array is generally called
- a) First address
b) Base address
c) Start address
d) Last address

- (36) Index of an array starts with
- a) 0
 - b) 2
 - c) 1
 - d) -1
- (37) The numbers of elements of a 2D array can be obtained using
- a) Row * Column
 - b) Row - Column
 - c) Row + Column
 - d) Row / Column
- (38) is not a type of queue.
- a) Circular queue
 - b) Double ended queue
 - c) Ordinary queue
 - d) Priority queue
- (39) When the start pointer of Linked list is Null, it is called as
- a) Underflow
 - b) Empty
 - c) Overflow
 - d) Full
- (40) Pointer is used in singly Linked list to point to the
- a) Null
 - b) Next node
 - c) Start of the node
 - d) Last node
- (41) 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
- (42) Which of the following is correct evaluation of postfix of $D + (E * F)$
- a) EFD*+
 - b) EF*D+
 - c) DEF*+
 - d) DEF+*
- (43) Priority queue works on the principle of
- a) LIFO
 - b) PRIORITY
 - c) FIFO
 - d) None of these
- (44) Insertion operation, if the capacity of stack is full gives
- a) Stack overflow
 - b) Stack no flow
 - c) Stack underflow
 - d) None of these
- (45) Which of the following is easiest to implement?
- a) Linear data structure
 - b) Two dimensional array
 - c) Non linear data structure
 - d) Multi dimensional array
- (46) 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
- (47) First node in Linked list is also called
- a) head
 - b) initiate
 - c) tail
 - d) end
- (48) Structure defined to create a node in Linked list is
- a) homogenous
 - b) heterogeneous
 - c) Both (a) &(b)
 - d) None of these
- (49) The time complexity of insertion sort is
- a) $O(n^2)$
 - b) $O(n)$

- c) $O(1)$ d) $O(n \log n)$
- (50) The average case time complexity of merge sort is
a) $O(n^2)$ b) $O(n)$
c) $O(\log n)$ d) $O(n \log n)$
- (51) The worst case time complexity of quick sort is
a) $O(n^2)$ b) $O(n)$
c) $O(1)$ d) $O(n \log n)$
- (52) The average case time complexity of quick sort is
a) $O(n^2)$ b) $O(n)$
c) $O(1)$ d) $O(n \log n)$
- (53) Which of the following sorting work best on almost sorted array?
a) Insertion b) Merge
c) Quick d) Heap
- (54) data structure is useful in implementation of quick sort.
a) BST b) Stack
c) List d) Queue
- (55) The number of iterations in selection sort (ascending order) of an array = $\{3,4,5,2,1\}$ are
a) 3 b) 2
c) 4 d) 5
- (56) Quick sort follows
a) Divide & conquer b) Brute force technique
c) Greedy algorithm d) Dynamic programming
- (57) The sorting where adjacent elements are swapped is
a) Bubble sort b) Merge sort
c) Heap sort d) Quick sort
- (58) 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
- (59) The sorting where an element is selected as a pivot and the array is partitioned based on it is
a) Bubble sort b) Insertion sort
c) Selection sort d) Quick sort
- (60) The process of finding a desired element out of many elements is called
a) arranging b) inserting
c) sorting d) searching