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.25 Min.   **Full Marks : 70**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)   1 x 70=70

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
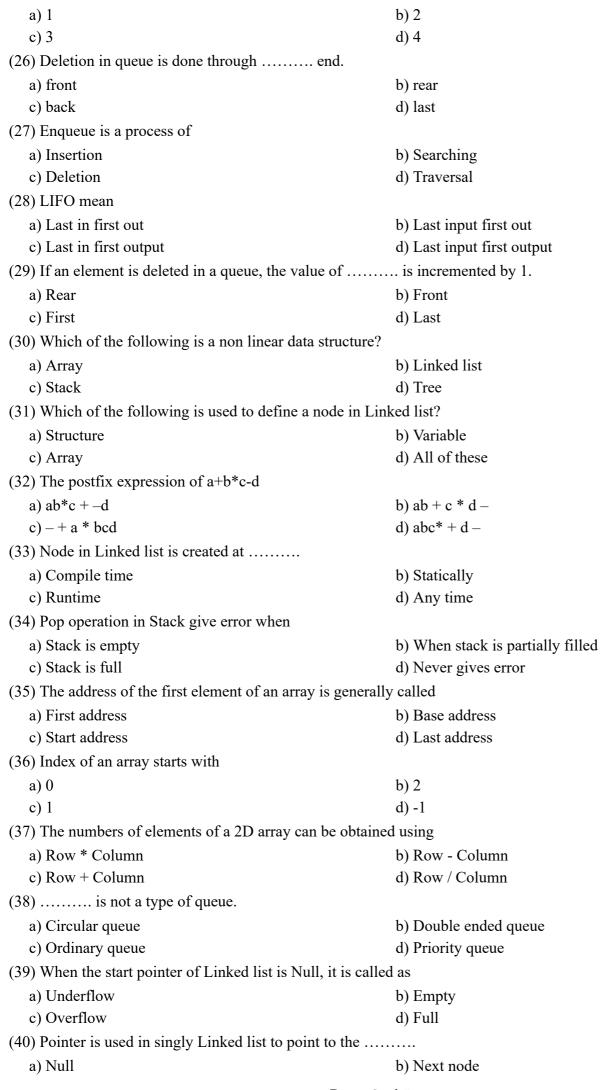 a) Time is constant
  b) Time is quadratic
  c) Time is linear
  d) Time is logarithm

(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(n2)   b) O(n)

     c) O(1)   d) O(n log n)

(50) The average case time complexity of merge sort is

     a) O(n2)   b) O(n)

     c) O(log n)   d) O(n log n)

(51) The worst case time complexity of quick sort is

     a) O(n2)   b) O(n)

     c) O(1)   d) O(n log n)

(52) The average case time complexity of quick sort is

     a) O(n2)   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

(61) Searching in a linear manner is called

 a) Linear searching   b) Binary searching

 c) Line searching   d) Non linear searching

(62) The best case complexity of hashing for searching is

 a) O(n2)   b) O(1)

 c) O(log n)   d) O(n log n)

(63) The complexity of binary search is

 a) O(1)   b) O(n)

 c) O(log n)   d) O(n log n)

(64) The fastest way to store and search data is

 a) Sorting   b) Hashing

 c) Both (a) & (b)   d) Indexing

(65) Function used in hashing data structure is called

 a) Linear function   b) Hash function

 c) Non linear function   d) None of these

(66) The use of hashing is to search that takes

 a) O(1) time   b) O(n) time

 c) O(log n) time   d) O(n log n) time

(67) The process where elements are competing for the same bucket is

 a) Collision   b) Diffusion

 c) Duplication   d) Replication

(68) The element (1256) will be placed at position ………. using division method provided size of hash table is 10 and indexing start with 1.

 a) 17   b) 7

 c) 16   d) 6

(69) Key-value pairs is visible in

 a) Heaps   b) Hash table

 c) Both (a) & (b)   d) Skip list

(70) A tree is a ………. data structure.

 a) Linear   b) Line

 c) Non Linear   d) Consecutive