BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Diploma in Electrical Engineering

Course Name – Data Structure and Algorithm

Course Code - DEE304

Semester / Year - Semester III

Time allotted : 85 Minutes Full Marks : 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 70=70

1. *(Answer any Seventy)*

(i) 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

(ii) 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

(iii) 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

(iv) ..... is pictorial representation of an algorithm.

a) Program
b) Diagram
c) Picture
d) Flowchart

(v) O(1) mean

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

(vi) O(log n) mean
a) Time is constant
b) Time is quadratic
c) Time is linear
d) Time is logarithm

(vii) Column major order is a method to arrange elements sequentially …….
a) Column wise
b) Row wise
c) Table wise
d) Linear wise

(viii) In sparse matrix, most elements are
a) 0
b) empty
c) 1
d) 2

(ix) Elements of an array are stored in
a) Linear manner
b) Random manner
c) Contiguous manner
d) Top to bottom manner

(x) ……. follow FIFO method.
a) Stack
b) Queue
c) Linked List
d) Circular Linked List

(xi) 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

(xii) ……. memory allocation is used in Linked list.
a) static
b) dynamic
c) linear
d) random

(xiii) In singly Linked list, the pointer is pointing to the

a) Middle element
b) Next element
c) First element
d) Last element

(xiv) How many pointer/s needed to implement double Linked list?

a) 1
b) 3
c) 2
d) 4

(xv) 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

(xvi) Traversal in Linked list always begins with

a) Second node
b) Last node
c) First node
d) Third node

(xvii) Insertion operation in stack is called

a) Pop
b) Push
c) Insert
d) Delete

(xviii) The value of top (tos) when stack is empty

a) 0
b) -1
c) 1
d) 2

(xix) The postfix representation of A*B+C

a) AB*C+
b) A*B+C
c) ABC*+
d) BC+A*

(xx) Which of the following is used to calculate prefix expression?

a) Stack
b) Linked list

c) Queue d) Tree

(xxi) Insertion in queue is done through ……. end.

a) front b) rear

c) back d) last

(xxii) The value of front is incremented by 1 when data element is

a) Inserted b) Searched

c) Deleted d) None of these

(xxiii) Dequeue is a process of

a) Insertion b) Searching

c) Deletion d) Traversal

(xxiv) LIFO mean

a) Last in first out b) Last input first out

c) Last in first output d) Last input first output

(xxv) Which of the following is/are way/s of storing data?

a) Stack b) Linked list

c) Queue d) All of these

(xxvi) Which of the following is a linear data structure?

a) Array b) Linked list

c) Stack d) All of these

(xxvii) Which of the following is used to define a node in Linked list?

a) Structure b) Variable

c) Array d) All of these

(xxviii) What is the relationship between rear and front if queue is non empty?

a) Rear >front
b) Rear = front
c) Rear < front
d) No relation

(xxix) The address of the first element of an array is generally called

a) First address
b) Base address
c) Start address
d) Last address

(xxx) ……. is not a type of queue.

a) Circular queue
b) Double ended queue
c) Ordinary queue
d) Priority queue

(xxxi) Which of the following does not related to queue?

a) push
b) front
c) rear
d) circular

(xxxii) The queue where insertion and deletion can be performed from both ends is

a) Priority queue
b) Deque
c) Circular queue
d) Simple queue

(xxxiii) Traversing both way is possible in

a) Singly Linked list
b) Circular Linked list
c) Doubly Linked list
d) All of these

(xxxiv) Which of the following is correct evaluation of postfix of D + (E * F)

a) EFD*+
b) EF*D+
c) DEF*+
d) DEF+*

(xxxv) Output restricted queue is a type of which queue?

a) Priority queue
b) Double ended queue

c) Circular queue
d) Simple queue

(xxxvi) Deletion of an element is performed first in priority queue having

a) High priority
b) Same priority
c) Low priority
d) No priority

(xxxvii) Insertion operation, if the capacity of stack is full gives

a) Stack overflow
b) Stack no flow
c) Stack underflow
d) None of these

(xxxviii) 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

(xxxix) Which of the following is/are true about Linked list when compared with array?

a) The size of array has to be pre-decided, linked lists can change their size any time
b) Random access is not allowed in implementation of Linked Lists
c) It is easy to insert and delete elements in Linked List
d) All of these

(xl) First node in Linked list is also called

a) head
b) initiate
c) tail
d) end

(xli) Sorting means …….data elements in some order.

a) arranging
b) inserting
c) deleting
d) searching

(xlii) The worst case time complexity of selection sort is

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

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

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

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

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

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

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

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

(xlv) Which of the following sorting work best on almost sorted array?

a) Insertion b) Merge

c) Quick d) Heap

(xlvi) 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

(xlvii) Quick sort follows

a) Divide & conquer b) Brute force technique

c) Greedy algorithm d) Dynamic programming

(xlviii) Merge sort works on the principle of

a) Divide & conquer b) Brute force technique

c) Greedy algorithm d) Dynamic programming

(xlix) In first iteration, the merge sort algorithm divides the array into ……. sub arrays.

a) 5 b) 2

c) 3 d) 4

(l) The sorting (ascending order) in which the last element is sorted in first pass is

a) Bubble sort
b) Insertion sort
c) Heap sort
d) Quick sort

(li) 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

(lii) Searching process will be easy if elements are

a) Sorted
b) Same for all
c) Not sorted
d) Not determined

(liii) Searching in a linear manner is called

a) Linear searching
b) Binary searching
c) Line searching
d) Non linear searching

(liv) In ……. search, elements are checked from the beginning to end of the list.

a) Linear
b) Straight
c) Binary
d) Non linear

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

a) Sorting
b) Hashing
c) Both Sorting & Hashing
d) Indexing

(lvi) 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

(lvii) Which of the following is not a collision resolution strategy for open

addressing?

a) Quadratic probing
b) Linear probing
c) Rehashing
d) All of these

(lviii) 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

(lix) Which of the following is used in making hash tables?

a) Linked list
b) Queue
c) Stack
d) None of these

(lx) Which of the following operations is/are performed in a hash table?

a) Insertion
b) Searching
c) Both Insertion & Searching
d) Replacing

(lxi) The starting node of a tree is called

a) Root node
b) Right node
c) Left node
d) Middle node

(lxii) BST is a process of

a) Sorting
b) Searching
c) Adding
d) Deleting

(lxiii) The nodes with zero child node is called

a) Root node
b) Right node
c) Left node
d) Terminal node

(lxiv) Which of the following represents in-order traversal?

a) Root ? Left sub tree ? Right sub tree
b) Left sub tree ? Root ? Right sub tree

c) Root ? Right sub tree ? Left sub tree
d) Right sub tree ? Root ? Left sub tree

(lxv) Which of the following represents post-order traversal?

a) Root ? Left sub tree ? Right sub tree
b) Left sub tree ? Right sub tree ?Root
c) Root ? Right sub tree ? Left sub tree
d) Right sub tree ? Root ? Left sub tree

(lxvi) A binary tree where each node has either 0 or 2 children

a) Binary search tree
b) Complete binary tree
c) Extended binary tree
d) Threaded binary tree

(lxvii) Full binary tree is

a) Each node has 0, 1 or 2 children
b) All leaves are at the same level
c) Each node has exactly two children except leaf node
d) Each node has 1 or 2 children

(lxviii) A binary search tree where height of left sub tree and right sub tree differs by maximum 1 is

a) Binary tree
b) AVL tree
c) B-tree
d) Normal tree

(lxix) Which of the following is not a tree traversal method?

a) Preorder
b) Shiftorder
c) Postorder
d) Inorder

(lxx) In binary search tree, the nodes on the left side of root have values ……. than root.

a) less
b) not explicitly defined
c) greater
d) can be placed any side