1) If the sequence of operations - push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop are performed on a stack, the sequence of popped out values are ?

1. 2, 2, 1, 1, 2
2. 2, 2, 1, 2, 2
3. 2, 1, 2, 2, 1
4. 2, 1, 2, 2, 2

Explanation: The elements are popped from the top of the stack.

2) Queue can be used to implement ?

1. radix sort
2. quick sort
3. recursion
4. depth first search

3) The postfix equivalent of the prefix \* + ab - cd is ?

1. ab + cd - \*
2. abcd + - \*
3. ab + cd \* -
4. ab + - cd \*

4) The terms PUSH and POP are related to ?

1. Arrays
2. Stacks
3. Linked List
4. None

5) Minimum number of queues needed to implement the priority queue?

1. four
2. three
3. two
4. one

6) The data structure required to evaluate a postfix expression is

(A) queue

(B) stack

(C) array

(D) linked-list

7) What data structure would you mostly likely see in a nonrecursive implementation of a recursive algorithm?

(A) Stack

(B) Linked list

(C) Queue

(D) Trees

8) Let the following circular queue can accommodate maximum six elements with the

following data

front = 2 rear = 4

queue = \_\_\_\_\_\_\_; L, M, N, \_\_\_, \_\_\_

What will happen after ADD O operation takes place?

(A) front = 2 rear = 5

queue = \_\_\_\_\_\_; L, M, N, O, \_\_\_

(B) front = 3 rear = 5

queue = L, M, N, O, \_\_\_

(C) front = 3 rear = 4

queue = \_\_\_\_\_\_; L, M, N, O, \_\_\_

(D) front = 2 rear = 4

queue = L, M, N, O, \_\_\_

9) A queue is a,

(A) FIFO (First In First Out) list

. (B) LIFO (Last In First Out) list.

(C) Ordered array.

(D) Linear tree

10) What is the result of the following operation

Top (Push (S, X))

(A) X

(B) null

(C) S

(D) None of these.

11) Which data structure is used for implementing recursion?

(A) Queue.

(B) Stack.

(C) Arrays.

(D) List.

12) The process of accessing data stored in a serial access memory is similar to manipulating data on a ------?  
  
a) Heap  
b) Binary Tree  
c) Array  
d) Stack

13) Consider the linked list implementation of a stack. Which of the following node is considered as Top of the stack?  
  
a) First node  
b) Last node  
c) Any node  
d) Middle node

14) Consider the following operation performed on a stack of size 5.  
Push(1);  
Pop();  
Push(2);  
Push(3);  
Pop();  
Push(4);  
Pop();  
Pop();  
Push(5);  
  
After the completion of all operation, the no of element present on stack are

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

15) Which of the following is not an inherent application of stack?  
  
a) Reversing a string  
b) Evaluation of postfix expression  
c) Implementation of recursion  
d) Job scheduling

16) Consider the following array implementation of stack:  
  
#define MAX 10  
Struct STACK  
{  
Int arr [MAX];  
Int top = -1;  
}  
  
If the array index starts with 0, the maximum value of top which does not cause stack overflow is?  
  
a) 8  
b) 9  
c) 10  
d) 11

17) What is the minimum number of stacks of size n required to implement a queue of size n?  
  
a) One  
b) Two  
c) Three  
d) Four

18) If the elements “A”, “B”, “C” and “D” are placed in a stack and are deleted one at a time, in what order will they be removed?  
  
a) ABCD  
b) DCBA  
c) DCAB  
d) ABDC

19) A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a ?  
  
a) Queue   
b) Stack  
c) Tree  
d) Linked list

20) The data structure required for Breadth First Traversal on a graph is?  
  
a) Stack  
b) Array  
c) Queue   
d) Tree

21) In linked list implementation of a queue, where does a new element be inserted?  
  
a) At the head of link list  
b) At the tail of the link list   
c) At the centre position in the link list  
d) None

22) In the array implementation of circular queue, which of the following operation take worst case linear time?  
  
a) Insertion  
b) Deletion  
c) To empty a queue  
d) None

23) In linked list implementation of queue, if only front pointer is maintained, which of the following operation take worst case linear time?  
  
a) Insertion  
b) Deletion  
c) To empty a queue  
d) Both a) and c)

24) If the MAX\_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue?  
  
a) rear=(rear%1)+MAX\_SIZE  
b) rear=rear%(MAX\_SIZE+1)  
c) rear=(rear+1)%MAX\_SIZE   
d) rear=rear+(1%MAX\_SIZE)

25) If the MAX\_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is FULL?  
  
a) Front=rear= -1  
b) Front=(rear+1)%MAX\_SIZE   
c) Rear=front+1  
d) Rear=(front+1)%MAX\_SIZE

26) A circular queue is implemented using an array of size 10. The array index starts with 0, front is 6, and rear is 9. The insertion of next element takes place at the array index.  
  
a) 0   
b) 7  
c) 9  
d) 10

27) If the MAX\_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is EMPTY?  
  
a) Front=rear=0  
b) Front= rear=-1   
c) Front=rear+1  
d) Front=(rear+1)%MAX\_SIZE

28) A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?  
  
a) Queue  
b) Circular queue  
c) Dequeue   
d) Priority queue

29) In linked list implementation of a queue, front and rear pointers are tracked. Which of these pointers will change during an insertion into a NONEMPTY queue?  
  
a) Only front pointer  
b) Only rear pointer   
c) Both front and rear pointer  
d) None of the front and rear pointer

30) A normal queue, if implemented using an array of size MAX\_SIZE, gets full when  
  
a) Rear=MAX\_SIZE-1   
b) Front=(rear+1)mod MAX\_SIZE  
c) Front=rear+1  
d) Rear=front

31) In linked list implementation of a queue, front and rear pointers are tracked. Which of these pointers will change during an insertion into EMPTY queue?  
  
a) Only front pointer  
b) Only rear pointer  
c) Both front and rear pointer   
d) None

32) An array of size MAX\_SIZE is used to implement a circular queue. Front, Rear, and count are tracked. Suppose front is 0 and rear is MAX\_SIZE -1. How many elements are present in the queue?  
  
a) Zero  
b) One  
c) MAX\_SIZE-1  
d) MAX\_SIZE

33) Suppose a circular queue of capacity (n-1) elements is implemented with an array of n elements. Assume that the insertion and deletion operations are carried out using REAR and FRONT as array index variables, respectively. Initially REAR=FRONT=0. The conditions to detect queue full and queue is empty are?  
  
a) Full: (REAR+1)mod n == FRONT  
Empty: REAR==FRONT   
b) Full: (REAR+1)mod n == FRONT  
Empty: (FRONT+1) mod n == REAR  
c) Full: REAR==FRONT  
Empty: (REAR+1) mod n==FRONT  
d) Full: (FRONT+1)mod n==REAR  
Empty: REAR==FRONT

34) Which of the following is an application of stack?

A. finding factorial  
B. tower of Hanoi  
C. infix to postfix  
D. all of the above

35) Identify the data structure which allows deletions at both ends of the list but insertion at only one end.

1. A Stack
2. B Priority queues
3. C Output restricted qequeue
4. Input restricted dequeue

36) Which of the following data structure is non linear type?

1. Graph
2. B Stacks
3. C Lists
4. None

37) In a queue, the initial values of front pointer f rare pointer r should be …….. and ……….. respectively.

1. A 0 and 1
2. 0 and -1
3. C -1 and 0
4. D 1 and 0

38) There is an extra element at the head of the list called a .........

1. Sentinel
2. B Antinel
3. C List head
4. List header

39) When new data are to be inserted into a data structure, but there is not available space; this situation is usually called .

1. overflow
2. B Underflow
3. C housefull
4. D memoryfull

40) A data structure where elements can be added or removed at either end but not in the middle is called ......

1. A stacks
2. B queues
3. dequeue
4. D linked lists

41) Which of the following is not the type of queue?

1. A Priority queue
2. B Circular queue
3. C Ordinary queue
4. Single ended queue

42) Which one of the following is an application of Queue Data Structure?  
(A) When a resource is shared among multiple consumers.  
(B) When data is transferred asynchronously (data not necessarily received at same rate as sent) between two processes  
(C) Load Balancing  
(D) All of the above

43) How many stacks are needed to implement a queue. Consider the situation where no other data structure like arrays, linked list is available to you.  
(A) 1  
(B) 2  
(C) 3  
(D) 4

44) How many queues are needed to implement a stack. Consider the situation where no other data structure like arrays, linked list is available to you.  
(A) 1  
(B) 2  
(C) 3  
(D) 4

45) A priority queue can efficiently implemented using which of the following data structures? Assume that the number of insert and peek (operation to see the current highest priority item) and extraction (remove the highest priority item) operations are almost same.  
(A) Array  
(B) Linked List  
(C) Heap Data Structures like Binary Heap, Fibonacci Heap  
(D) None of the above

46) A Priority-Queue is implemented as a Max-Heap. Initially, it has 5 elements. The level-order traversal of the heap is given below:  
10, 8, 5, 3, 2  
Two new elements ”1‘ and ”7‘ are inserted in the heap in that order. The level-order traversal of the heap after the insertion of the elements is:  
(A) 10, 8, 7, 5, 3, 2, 1  
(B) 10, 8, 7, 2, 3, 1, 5  
(C) 10, 8, 7, 1, 2, 3, 5  
(D) 10, 8, 7, 3, 2, 1, 5