C++

Session No. 1

Session Topic: Functions

Q. No. 1

Question:

What is the "signature" of a function?

Answer Choices

A: The binary pattern it forms when converted to assembler

B: A technical term for the unique name of the function

C: A technical term for the unique combination of the name and parameter types of a function

D: A technical term for the unique combination of the name, parameter types, and return type of a function

Correct Answer : __C__

Session No. 1

Session Topic: Functions

Q. No. 2

Question:

What constraints does the compiler put on a const member function?

Answer Choices

A: It cannot be overloaded, or declared virtual

B: It cannot change any mutable data member of the object on which it is called

C: It cannot change any non-mutable data member of the object on which it is called

D: It cannot call any other non-const member function of the object on which it is called

Correct Answer : __D__

Session No. 2

Session Topic: Pointers

Q. No. 3

Question:

What is false about ‘this’ pointer?

Answer Choices

A: It is created implicitly

B: It is created for every member function call.

C: this points to the called object

D: this is passed as a hidden argument to static member function.

Correct Answer : __C__

Session No. 2

Session Topic: Pointers

Q. No. 4

Question:

Which operators carry out accessing and de-referencing simultaneously?

Answer Choices

A: & :: , .*

B: ::* , ->*

C: ->*, ::

D: . , ->*

Correct Answer : __C__

Session No. 3

Session Topic: Structures

Q. No. 5

Question:

Let p be the queue of integers defined as follows:

```
  # define MAXQ 500
  struct  queue {
        int items [MAXQ];
        int front ,rear;
  }q;
```

to insert an element in the queue, we may write operation

Answer Choices

A: ++q.items[qrear]=x;

B: q.items[q.rear]++=x;

C: q.items[++q.rear]=x;

D: None of the above

Correct Answer : __C__

Session No. 3

Session Topic: Structures and Unions

Q. No. 6

Question:

Which of the following statements is false?

Answer Choices

A: Structure is a collection of elements of different data types.

B: We cannot initialise Union.

C: We can initialise static or global structure.

D: We can use typedef with structure.

Correct Answer : _A___

Session No. 4

Session Topic: Inline functions

Q. No. 7

Question:

Which of the following statements are true about inline functions in C++.

Answer Choices

A: Inline function has function overheads.

B: Inline function increases execution speed.

C: Inline function increases exe file size.

D: Inline function is preferred over macros.

Correct Answer : __B__

Session No. 4

Session Topic: Destructors

Q. No. 8

Question:

Which of the following are true?

Answer Choices

A: Destructors return 0 to the system.

B: Destructors are implicitly called by default.

C: Destructors are called implicitly only if new and delete operators were used.

D: Destructors are called implicitly only if new was actually used to allocate memory

Correct Answer : __B__

Session No. 4

Session Topic: Objects

Q. No. 9

Question:

An Object has _____.

Answer Choices

A: State

B: Behaviour

C: Identity

D: All of them

Correct Answer : __D__

Session No. 5

Session Topic: Friend

Q. No. 11

Question:

static member functions and friend functions are similar in _____

Answer Choices

A: They do not receive this pointer

B: They have direct access to private members.

C: Both A and B are true.

D: None of above.

Correct Answer : __C__

Session No. 5

Session Topic: Inheritance

Q. No. 12

Question:

A HAS A relationship between classes represents ____ and an “is a” relationship between classes represent ___.

Answer Choices

A: overloading, overriding

B: encapsulation, data hiding

C: containment, inheritance

D: None of the above

Correct Answer : __C__

Session No. 5

Session Topic: Inheritance

Q. No. 13

Question:

In protected inheritance:

Answer Choices

A: The public members of the base class become public.

B: The public members of the base class become protected.

C: The protected members of the base class become private.

D: The public members of the base class become inaccessible.

Correct Answer : __B__

Session No. 6

Session Topic: Polymorphism

Q. No. 14

Question:

_____ in function is a primitive form of Polymorphism.

Answer Choices

A: Name Reuse

B: Code Reuse

C: Virtual

D: Abstract

Correct Answer : __C__

Session No. 6

Session Topic: Copy Constructor

Q. No. 15

Question:

In case of a copy constructor, which of the following is true?

Answer Choices

A: Used to instantiate an object from another existing object

B: To copy one object to another existing object.

C: Can be a substitute for a '=' operator.

D: All of the above.

Correct Answer : __D__

Session No. 6

Session Topic: Overloading Operator

Q. No. 16

Question:

If both MyClass::operator+ and MyClass::operator= are overloaded, what is the effect on MyClass::operator+=?

Answer Choices

A: None. The three operators are completely independent.

B: MyClass::operator+= will automatically be overloaded to call MyClass::operator+ and then MyClass::operator=.

C: MyClass::operator+= will automatically be overloaded to call MyClass::operator= and then MyClass::operator+.

D: MyClass::operator+= will automatically be made invalid, and the error message will suggest that the user use MyClass::operator+ and MyClass::operator= instead.

Correct Answer : __A__

Session No. 7

Session Topic: Virtual Function

Q. No. 17

Question:

Virtual Functions allows you to

Answer Choices

A: Created an array of type pointer to base class that can hold pointers to derived class.

B: Create functions that have no body.

C: Use the same function call to execute member functions from different classes.

D: Group objects of different classes so they can be accessed by the same functions code.

Correct Answer : __C__

Session No. 7

Session Topic: Polymorphism

Q. No. 18

Question:

How does polymorphism relate to abstraction?

Answer Choices

A: All forms of abstraction are polymorphic.

B: There is no relation between polymorphism and abstraction.

C: Polymorphism is a mechanism for abstraction of functionality.

D: Polymorphism is a mechanism for abstraction of structure.

Correct Answer : __C__

Session No. 8

Session Topic: Function Template

Q. No. 19

Question:

What is the primary purpose of template functions?

Answer Choices

A: To allow a single function to be used with varying types of arguments

B: To hide the name of the function from the linker (preventing duplicate symbols)

C: To implement container classes

D: To permit the use of the debugger without the -gstabs flag

Correct Answer : __A__

Session No. 8

Session Topic: Exception Handling

Q. No. 20

Question:

____ is an object that is passed from the area of code where a problem occurs to the point of the code that is going to handle the problem.

Answer Choices

A: A bug

B: A logic error

C: An exception

D: A syntax error

Correct Answer : __C__

Session No. 8

Session Topic: Exception Handling

Q. No. 21

Question:

As an exception propagates it:

Answer Choices

A: destructs any locally-declared objects created in any function through which it

passes.

B: destructs any dynamically-allocated objects created in any function through which it passes.

C: destructs any locally-declared or dynamically-allocated objects created in any function through which it passes.

D: only destructs objects declared in the try block which eventually catches it.

Correct Answer : __D__

Session No. 8

Session Topic: Exception Handling

Q. No. 22

Question:

The new operator throws a _____ when heap is exhausted.

Answer Choices

A: compile time exception

B: runtime exception

C: linking error

D: stack overflow

Correct Answer : __B__

Session No. 9

Session Topic: File Handling

Q. No. 23

Question:

Explicitly closing each file as soon as it is know that the program will not reference the file again will _____.

Answer Choices

A: Reduce resource usage in the program

B: Improve program clarity

C: Both a & b

D: None of the above

Correct Answer : __A__

Session No. 9
Session Topic: STL
Q. No. 24
Question:
An STL container allows us to
Answer Choices
A: hold objects of class employee.
B: store elements in a way that makes them quickly accessible.
C:compile C++ programs.
D: organize the way objects are stored in memory
Correct Answer : __D__

Session No. 10
Session Topic: STL
Q. No. 25
Question:
What is the output of this program?

```
#include <iostream>
#include <vector>
using namespace std;
int main ()
{
    vector<int> myvector (3);
    for (unsigned i = 0; i < myvector.size(); i++)
    myvector.at(i) = i;
    for (unsigned i = 0; i < myvector.size(); i++)
    cout << ' ' << myvector.at(i);
    return 0;
}
```

Answer Choices

A: 1 2 3

B: 0 1 2

C: 1 2 3 4

D: None of Above

Correct Answer : __B__

Session No. 11

Session Topic: Advanced Typecasting

Q. No. 26

Question:

Taking the address of a derived class object and treating it as the address of the base class object is called as _____.

Answer Choices

A: Up-casting

B: Down-casting

C: Type conversion

D: Type checking

Correct Answer : __A__

Session No. 12

Session Topic: Space Complexity

Q. No. 27

Question:

```
int sum(int a[], int n)
{
        int r = 0;
        for(int I = 0; I < n; ++i)
        {
                r += a[i];
        }
```

```
        return r;
}
```

What is the space complexity for above program?

Answer Choices

A: O(1)

B: O(N)

C: $O(N^2)$

D: O(2N)

Correct Answer : B

Session No. 12

Session Topic: Time Complexity

Q. No. 28

Question:

The complexity of the average case of an algorithm is

Answer Choices

A: Sometimes more complicated and some other times simpler than that of worst case

B: Much more complicated to analyze than that of worst case

C: Much more simpler to analyze than that of worst case

D: None of above.

Correct Answer : __C__

Session No. 13

Session Topic: Stacks

Q. No. 29

Question:

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 ?

Answer Choices

A: 2, 2, 1, 1, 2

B: 2, 2, 1, 2, 2

C: 2, 1, 2, 2, 1

D: 2, 1, 2, 2, 2

Correct Answer : __A__

Session No. 13

Session Topic: Queues

Q. No. 30

Question:

Queue can be used to implement?

Answer Choices

A: radix sort

B: quick sort

C: recursion

D: depth first search

Correct Answer : __B__

Session No. 14

Session Topic: Singly List

Q. No. 31

Question:

```
struct node{
  int rollno, struct node *next;
};
```

Which statement creates a new node for linked list whose structure is defined as above?

Answer Choices

A: (int*) malloc (sizeof(struct node))

B: (struct node*) malloc (sizeof (struct node))

C: (void*) malloc (sizeof (struct node))

D: None of Above

Correct Answer : __C__

Session No. 14

Session Topic: Circular List

Q. No. 32

Question:

In a circularly linked list organization, insertion of a record involves the modification of

Answer Choices

A: no pointer

B: 1 pointer

C: 2 pointers

D: 3 pointers

Correct Answer : C

Session No. 15

Session Topic: Binary Tree

Q. No. 33

Question:

A binary tree in which every non-leaf node has non-empty left and right subtrees is called a strictly binary tree. Such a tree with 10 leaves

Answer Choices

A: can not have more than 19 nodes

B: has exactly 19 nodes

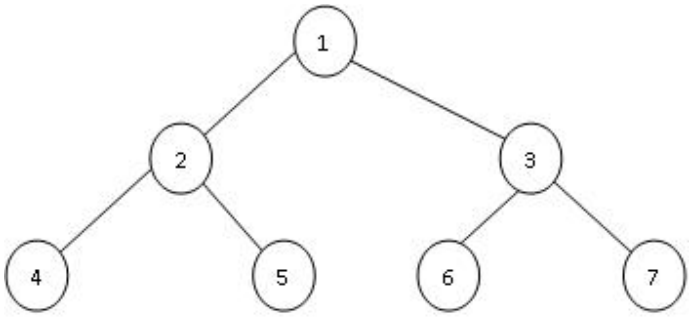
C: has exactly 17 nodes

D: can not have more than 17 nodes

Correct Answer : B

Session No. 15
Session Topic: Binary Tree
Q. No. 34
Question:
The number of binary trees with 3 nodes which when traversed in post order gives
The sequence A, B, C is?
A: 3
B: 9
C: 7
D: 5
Correct Answer : D

Session No. 16
Session Topic: Tree Traversals
Q. No. 35
Question:
Consider the following tree.



If this tree is used for sorting then a new number 8 is placed as the:
Answer Choices
A: left child of node labeled 30
B: right child of node labeled 5
C: right child of node labeled 30

D: left child of node labeled 10

Correct Answer : B

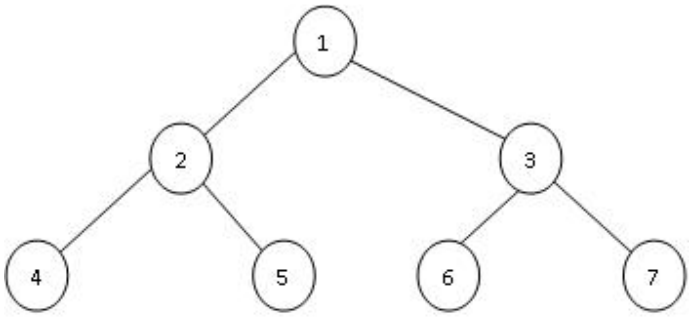
Session No. 16

Session Topic: Tree Traversals

Q. No. 36

Question:

Consider the following tree.



If the post order travesal gives ab –cd * + then the label of the nodes 1, 2, 3, ….. will be

Answer Choices

A: +, -, *, a, b, c, d

B: a, -, b, +, c, *, d

C: a, b, c, d, -, *, +

D: -, a, b, +, *, c, d

Correct Answer : A

Session No. 17

Session Topic: B - Tree

Q. No. 37

Question:

What does “B” in B – Tree means?

Answer Choices

A: Better

B: Balanced

C: Binary

D: Byte

Correct Answer : _B_

Session No. 17

Session Topic: B - Tree

Q. No. 38

Question:

Each node of a B+ Tree contains a _____ and the associated search – key value?

Answer Choices

A: Pointer

B: Address

C: Chain

D: None of Above

Correct Answer : __

Session No. 18

Session Topic: AVL Trees

Q. No. 39

Question:

An AVL tree is _____

Answer Choices

A: Binary search tree with property that each node has equal difference between Left and right sub tree

B: A tree having finite member of nodes

C: A tree having single node

D: None of Above

Correct Answer : _A_

Session No. 19

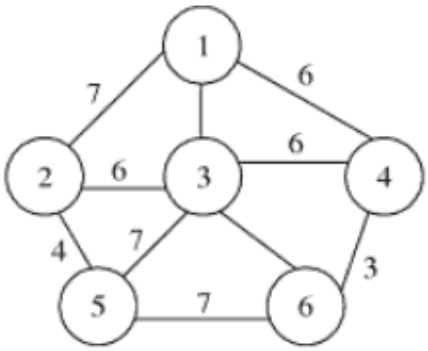
Session Topic: Graphs Terminology

Q. No. 40

Question:
Number of edges in a regular graph of tree d and n vertices is
Answer Choices
A: Maximum of n, d
B: n + d
C: nd
D: nd / 2
Correct Answer : __

Session No. 19
Session Topic: Graphs
Q. No. 41
Question:
A null graph is defined as
Answer Choices
A: A graph having only isolated node
B: A graph having no node
C: Graph having no edge
D: None of the above
Correct Answer : __C__

Session No. 20
Session Topic: Spanning Tree
Q. No. 42
Question:
In the following graph, minimum cost spanning tree has the cost



Answer Choices

A: 18

B: 20

C: 22

D: 24

Correct Answer : ___B___

Session No. 21

Session Topic: Hash Table

Q. No. 43

Question:

A hash table with 10 buckets with one slot per bucket is depicted in following diagram. Symbols S1 to S7 are initially entered using a hashing function with linear probing. Maximum number of comparisons needed in searching an item that is not present is

0	S7
1	S1
2	
3	S4
4	S2
5	
6	S5
7	S6
8	S3

9	

Answer Choices

A: 4

B: 5

C: 6

D: 3

Correct Answer : __C__

Session No. 22

Session Topic: Analysis of Sorting Algorithms

Q. No. 44

Question:

The average number of comparisons performed by merge sort algorithm in merging two-sorted list of length 2 is

Answer Choices

A: 8/3

B: 8/5

C: 11/7

D: 11/6

Correct Answer : __

Session No. 22

Session Topic: Analysis of Sorting Algorithms

Q. No. 45

Question:

Number of swapping operations need to sort numbers 8, 22, 7, 9, 31, 19, 5, 13 in ascending order using bubble sort

Answer Choices

A: 11

B: 12

C: 13

D: 14

Correct Answer : __

Session No. 23

Session Topic: Binary Search

Q. No. 46

Question:

Average successful search time taken by binary search on sorted array of 10 items is

Answer Choices

A: 2.6

B: 2.7

C: 2.8

D: 2.9

Correct Answer : __

Session No. 23

Session Topic: Quick Sort

Q. No. 47

Question:

Quick sort algorithm uses which technique

Answer Choices

A: Dynamic Programming

B: Bactracking

C: Greedy Method

D: Divide and conquer

Correct Answer : __

Session No. 23

Session Topic: Sequential Search

Q. No. 48

Question:

Average successful search time for sequential search on ‘n’ item is

Answer Choices

A: n/2

B: (n - 1) / 2

C: (n + 1)/2

D: log(n) + 1

Correct Answer : __

Session No. 24

Session Topic: Analysis of sorting and searching algorithms

Q. No. 49

Question:

There are 4 different algorithms A1, A2, A3, A4 to solve a given problem with the order log (n), loglog (n), nlog (n), n/log (n) respectively. Which is the best algorithm?

Answer Choices

A: A1

B: A2

C: A4

D: A3

Correct Answer : __