

- (vii) What is abstract class? Ans: A class with _____
(a) abstract keyword (b) no functions in it
(c) at least one pure virtual function (d) with nothing in its body.
- (viii) What is output of the following code snippet?
**int a=10;
int b,c;
b = a++;
c = a;
cout<<a<<b<<c;**
(a) 111111 (b) 111011 (c) 101010 (d) 101011
- (ix) _____ is / are used for generic programming.
(a) classes (b) templates
(c) generic keyword (d) pointers.
- (x) How can we restrict a function to throw certain exceptions?
(a) Defining multiple try and catch block inside a function
(b) Defining function within catch block
(c) Defining function with throw clause
(d) It is not possible in C++ to restrict a function.

Group – B

2. (a) Write the differences between OOP and procedural programming.
(b) Express the following ternary operators using if.....else:
 $m = (n1 > n2) ? (n1 > n3 ? n1 : n3) : (n2 > n3 ? n2 : n3);$
(c) Write a function with two parameters viz, *pi* and *radius of circle* that returns *the area of a circle*. Parameter *pi* is assigned a default value of 3.1415926. Write the driver program to call the function twice such that:
(i) the default value is used, and
(ii) the default value is superseded.
$$3 + 3 + (3 + 3) = 12$$
3. (a) Write the advantages of OOP over method oriented programming.
(b) Define: inheritance, encapsulation, and polymorphism.
(c) Write a program in C++ to divide an integer by 2 without using any arithmetic operator.
(d) What will be the output of the following code: 3

```
#include <iostream>
using namespace std;
int main()
{
    int arr[] = { 4, 5, 6, 7 };
    int *p = arr;
```

```
p++;  
cout << *p + 10;  
return 0;  
}
```

$$3 + 3 + 3 + 3 = 12$$

Group – C

4. (a) What is destructor? What is the purpose of using a destructor in C++?
- (b) Write a program in C++ to create a class STUDENT with the following specifications:
Data members: Name, Roll No. and Marks.
Member functions: ReadData & WriteData.
Use the above specifications to read information of five students and print details of those students who scored more than average marks.

$$3 + 9 = 12$$

5. (a) What is constructor? What is the purpose of using constructor in C++?
- (b) Name different types of constructor C++. Give example of each of them.

$$(1 + 2) + 9 = 12$$

Group – D

6. (a) Write a C++ program to illustrate multilevel inheritance.
- (b) Explain the need for virtual base class.
- (c) Differentiate function overloading and function overriding.
7. (a) Write a C++ program to illustrate multiple inheritance.
- (b) What are virtual function and pure virtual function?
- (c) Explain runtime polymorphism.

$$5 + 3 + 4 = 12$$

$$6 + 4 + 2 = 12$$

Group – E

8. The formula to find the real roots of a quadratic equation $ax^2 + bx + c = 0$ is

$$roots = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

where a , b , and c are real.

There are two possibilities that the formula may fail to produce real roots:

- (i) If a is zero, and
(ii) If $b^2 - 4ac$ is negative.

B.TECH/ECE/6TH SEM/CSEN 3004 (BACKLOG)/2021

Write a program in C++ to find the real roots of a quadratic equation and use the concept of exception handling to print proper messages in the events where the formula may fail to produce real roots.

12

9. (a) Create a generic function max that gives the maximum value of three generic type arguments that are passed to it. Then test this function by calling it with char, int and float type.
- (b) What do you understand by namespace? Explain with example.

9 + 3 = 12

Department & Section	Submission Link
ECE	https://classroom.google.com/u/1/w/MzY3NjExNTI2OTY0/tc/MzY3NjEyMzc5NTgy