

END SEMESTER EXAMINATION - APRIL 2026**SEMESTER 2 - INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE - DATA SCIENCE****COURSE : 21UP2CPCMT04 - OBJECT ORIENTED PROGRAMMING USING C++***(For Regular - 2025 Admission and Improvement/Supplementary 2024/2023/2022/2021 Admissions)*

Time : Three Hours

Max. Weights : 30

PART A**Answer any 8**

1. Write the expression to declare a character constant in C++.
2. Define the term constructor in C++.
3. Identify the error(s) in the following code fragment, if any:

```
class X {  int x;
          static int ctr;
      public:
          void init(){ x = ctr = 0; }
          static void prn () { cout << ctr << x ; }
};
//remainder code
```
4. Define wild pointers in C++.
5. Find the output of the following code:

```
class base{
    int a;
    public: int b;
    void getdata() { cin >> a; }
    void putdata() { cout << a; }
};
class derived : public base{
    int p;
    public : int q; };
main(){
    derived obj;
    cout << sizeof (obj); }
```
6. If A, B and C are three classes such that C inherits A and B, then write the syntax of inheriting it.
7. Mention the effect of ignoring `break` statement inside `switch-case` construct.
8. Consider the given class declaration and calculate the memory required (in bytes) for the members:

```
class channel{
    public: int channel_id;
           char name[20];
           float base_charge;
};
```
9. Predict the output of the following code:

```
class Sample{
    public : int x;
           Sample(){ }
           valueofx(){ cout << x; }
};
main(){
    Sample S;
    S.valueofx();
}
```

10. A destructor is represented by ----- symbol.

(1 x 8 = 8 Weight)

PART B

Answer any 6 (2 marks each)

11. State any four advantages of the Object Oriented approach in programming.
12. Discuss the use of local classes.
13. Explain virtual functions in C++.
14. Predict the output of the following code:

```
class A{
    public: A() { cout<<"Constructor A \n"; }
           ~ A() { cout<<"Destructor A \n"; }
};
class B{
    public: B() { cout<<"Constructor B \n"; }
           ~ B() { cout<<"Destructor B \n"; }
};
class C {
    public: C() { cout<<"Constructor C \n"; }
           ~ C() { cout <<"Destructor C \n"; }
};
main(){
    C c;
    { A a; }
    B b;
}
```

15. Describe the mechanism of accessing the members of a class in the following cases:
- (a). Inside the `main()` function.
- (b). Inside the member function of the same class.
16. Discuss the need of `break` statement.
17. Explain briefly about `this` pointer.
18. State the advantages of constructors over member functions.

(2 x 6 = 12 Weight)

PART C

Answer any 2 (5 marks each)

19. With an example, examine the structure of a class. Also describe, how class elements are accessed.
20. Write a program to implement multilevel inheritance.
21. Write a C++ program that converts a class type variable to a basic type variable.
22. Explain the various programming paradigms.

(5 x 2 = 10 Weight)