B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E.   Semester: V
Branch: Electronics and Communication Engineering   Duration: 3 hrs.
Course Code: 19EC5PE1OP   Max Marks: 100
Course: Object Oriented Programing Using C++

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
　　　　　　　　2. Missing data, if any, may be suitably assumed.
　　　　　　　　3. **ALL CODES NEED TO BE SUPPORTED BY MEANINGFUL COMMENTS AND SAMPLE OUTPUT**

UNIT - I

1 a) Write a program that has a macro to find area of a square.   **05**

b) Develop a program to support the following function prototype   **05**
void func(int a1,int *a2, int &a3).
The function should add the two variables a1, a2 and result is stored in a3.
The result should be displayed in the main function

c)   **05**

```cpp
#include <iostream>

using namespace std;
enum demo
{
  a = 2, b = 3.56
};
enum demo s;
int main ()
{
  cout << s.a << s.b;
}
```

```cpp
#include <iostream>
using namespace std;
enum hi{a,b,c};
enum hello{c,d,e};
main()
{
    enum hi h;
    h=b;
    cout<<h;
    return 0;
}
```

What will be the output of the above code justify your answer.

d)   **05**

```cpp
#include <iostream>
using namespace std;
char a = 'm';
int main() {
    char a = 's';

    cout <<a<<endl;
    cout <<::a<<endl;
    {
        char a='f';
        cout<<a<<endl;
        cout<<::a<<endl;
    }
    cout<<a<<endl;
    cout<<::a<<endl;
    return 0;
}
```

What will be the output of the code. Justify your answer

UNIT - II

2 a) Develop a program to multiply private variables of two different classes using a nonmember function. **05**

   b) class Train **05**
```
       {
               int Train_id;
               char Train_Name[];
               char source_city[];
              char destination_city[];

               float ticket price;
       };
```
Write default, parameterized copy constructors and destructors for the given class. Also demonstrate overloading of constructors.

   c) Class time1 **05**
```
   {
     int hr,mi,sec;
   ….
   }
   int main()
   {
    time1 t1,t2,t3
   ….
      T3.add(t1,t2);
     add(t1,t2,t3);
   ....
   }
```
Complete the given code with appropriate functions to read display and add two time objects that supports the function call given in main.

   d) Write a program to create a class demo which has 2d array as member variable. Allocate memory and initialize the 2d array using dynamic constructors. Write destructors to free the memory. **05**

OR

3 a) Develop a program that has a function definitions in such a way that it supports the following function calls: Function1(); **06**
                         Function1(4,"hello");
                         Function1(5);
Name the concept that is to be used to facilitate the same.

   b) **08**

Details of Bank Account			
Account no	**Name**	**Credit**	**Debit**
101	Dayanand	20000	45000
102	Sagar	3000	51000
103	Samarth	5000	47000
104	Geetha	25000	67890

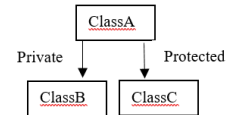Develop a class with relevant member functions to obtain the above output.

   c) Create a vehicle having a non-static data member registration number and a static data member count. Non-static member functions setregno() and getregno() are used to get and set the registration number. A static member **06**

function getVehiclecount() is used to return the number of vehicles in the garage. Use a constructor to increment the vehicle count when a vehicle is created and the destructor to decrement the count when the vehicle is destroyed.

UNIT - III

4   a)   List the operators which cannot be overloaded.   **04**

    b)   Create a class weight which has kg and gms as member variables. Write member functions to input and display the values and to add two weight objects by overloading + operator.   **06**

    c)   Develop classes according to the diagram and outline the effect of private and protected specifier.   **10**

OR

5   a)   Write a Program to design a student class representing student roll no. and a test class (derived class of student) representing the scores of the student in various subjects and sports class representing the score in sports. The sports and test class should be inherited by a result class having the functionality to add the scores and display the final result for a student.   **05**

    b)   **05**

i).predict the output	ii. Predict the output

```
i).predict the output
using namespace std;
  class A
{
public:
   void print() { cout <<
"A::print()"; }
};

class B : private A
{
public:
   void print() { cout <<
"B::print()"; }
};

class C : public B
{
public:
   void print() { A::print(); }
};

int main()
{
   C b;
   b.print();
}
```

```
ii.      Predict the output
#include <iostream>
using namespace std;
 class Base1 {
 public:
    ~Base1()  { cout << " Base1's
destructor" << endl; }
};

class Base2 {
 public:
    ~Base2()  { cout << " Base2's
destructor" << endl; }
};

class Derived: public Base1, public
Base2 {
  public:
    ~Derived()  { cout << " Derived's
destructor" << endl; }
};

int main()
{
   Derived d;
   return 0;
}
```

c) Create a class city with two member variables char * name and int len. The class should have a constructor and member methods setname () and display(). Write a driver function that creates array of 10 pointers and stores ten objects of cities. **10**

UNIT - IV

6 a) Develop function template for finding minimum value contained in an array. **05**

b) Develop a class template to implement a stack. Demonstrate the stack operation for at least two datatypes. **10**

c) Predict the output **05**

i)	ii)
| ```cpp
#iinclude <iostream>
using namespace std;
int main()
{
  int x = -1;
  try {
    cout << "Inside try n";
    if (x < 0)
    {
      throw x;
      cout << "After throw n";
    }
  }
  catch (int x ) {
    cout << "Exception Caught n";
  }

  cout << "After catch n";
  return 0;
}
``` | ```cpp
#include <iostream>
using namespace std;

int main()
{
  try
  {
    throw 'a';
  }
  catch (int param)
  {
    cout << "int exceptionn";
  }
  catch (...)
  {
    cout << "default exceptionn";
  }
  cout << "After Exception";
  return 0;
}
``` |

UNIT - V

7 a) Develop a program to copy content of one file to another file. **10**

b) Explain any two input stream and any two output stream functions with examples. **10**

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