Programming in C++: Examination Paper

Total Marks : 80

August 31, 2017

I Objective – From Slides (16 Questions of 1 mark each)

Question 1

What will be the output of the following program?   *MCQ, Marks 1*

```cpp
#include<iostream>
using namespace std;

int main() {

    int i = 2;

    switch (i) {
        case 1: cout << "In case 1";
                break;
        case 2: cout << "In case 2 ";
        default: cout << "Lost some where";
    }
    return 0;
}
```

a) In case 2

b) Lost some where

c) In case 2 Lost some where

d) In case 1

Answer: c)

1

Question 2

Which of the following is / are correct declaration/s for a vector of size 10 in C++?

MSQ, Marks 1

a) `vector<int> arr[10];`

b) `vector<int> arr(10);`

c) `vector int arr<10>;`

d) `vector<int> arr; arr.resize(10);`

Answer: b), d)

Question 3

What will be the output of the following program? *MCQ, Marks 1*

```cpp
#include <iostream>
using namespace std;

int main(){

    int x = 2, y = 1, z = 5;
    cout << ++x + y-- * --z / 4 % 2 - (-1) << endl;

    return 0;
}
```

a) 3

b) 5

c) 4

d) 6

Answer: b)

Question 4

Consider the code snippet below. Choose the correct answer to fill-in the blank to compile successfully. MCQ *Marks 1*

```
#include <iostream>
#include <string>
#include <cstring>
using namespace std;

int main() {

    string str1 = "WORLD ";
    string str2 = "HELLO";

    if (_____) {
        cout << "str1 is greater than str2" << endl;
    }

    return 0;
}
```

a) str1 > str2

b) strcmp(str1,str2) > 0

c) strcmp(str1.c_str, str2.c_str) > 0

d) None of the above

   Answer: a)

Question 5

Consider the code snippet below. For the successful key search given in the program, the arguments to the `binary_search` function should be: *MCQ, Marks 1*

```cpp
#include <iostream>
#include <algorithm>
using namespace std;

int main() {
    int data[] = {1, 2, 3, 4, 5};
    int key = 5;
    if (binary_search(_____))
        cout << "found!\n";
    else
        cout << "not found.\n";
    return 0;
}
```

a) `data, data+5`

b) `data, data+4, key`

c) `data, data+5, key`

d) `data, data+4`

Answer: c)

Question 6

What will be the content of the stack **s** at the end of the code segment given below? Note: Leftmost end is the top of the stack.

MCQ, Marks 1

```
char str[10]= "ABCDE";
stack<char> s;
int i;

for(i = 0; i < strlen(str)-1; i++)
    s.push(str[i]);

for(i = 0; i < 3; i++)
    s.pop();

s.push(str[1]);
s.push(str[2]);
s.push(str[3]);
```

a) E D C B

b) D C B

c) D C B A

d) E D C

Answer: c)

Question 7

Consider the declarations:

```
const int m = 4;
const int n = 5;
const int * const p = &n;
```

Identify the correct statement/s.   *MSQ, Marks 1*

a) `n = 6;` is a valid assignment

b) `*p = 7;` is a valid assignment

c) `p = &m;` is a valid assignment

d) None of the above assignments is valid

Answer: d)

Question 8

Identify the correct statement about the output of the following code.

```
#include <iostream>
using namespace std;

int Function_Return_By_Val(int& x) {
    cout << "&x " << &x <<endl;      // Output 2
    return (x);
}

int main() {
    int a = 10;
    cout << "&a " << &a << endl;     // Output 1

    const int& b = Function_Return_By_Val(a);

    cout << "&b " << &b <<endl;      // Output 3

    return 0;
}
```

a) Output 1, Output 2 and Output 3 all are same

b) Output 1 and Output 2 are same, but Output 3 is different

c) Output 1 and Output 3 are same, but Output 2 is different

d) Output 1, Output 2 and Output 3 all are different

Answer: b)

Question 9

Identify the correct function prototypes. *MSQ, Marks 1*

a) `void fun(int, double = 10.0, char *);`

b) `void fun(int, double = 10.0, char * = NULL);`

c) `void fun(int, double, char *);`

d) `void fun(int = 10, double, char * = NULL);`

Answer: b) and c)

Question 10

In the context of integer variables `x` and `y`, identify unambiguous calls to the following function prototypes.   *MSQ, Marks 1*

```
int f();
int f(int = 0);
int f(int, int, double = 10.0);
```

a) `f();`

b) `f(x);`

c) `f(x, y);`

d) All calls are unambiguous

Answer: b) and c)

Question 11

Identify the operator/s that cannot be overloaded. *MSQ, Marks 1*

```
a) dot (.)
b) Scope Resolution ( :: )
c) Ternary (? :)
d) modulus (%)
```

Answer: a), b), c)

Question 12

Consider the program below. Fill-in the blank with an appropriate option given below to create an array of 3 objects dynamically to produce the following output: *MCQ, Marks 1*

```
Constructor
Constructor
Constructor
Destructor
Destructor
Destructor
```

```cpp
#include <iostream>
using namespace std;

class Test {
public:
    Test() {
        cout << "Constructor" <<endl;
    }

    ~Test() {
        cout << "Destructor" <<endl;
    }
};

int main() {

    _____ // Create an array of 3 objects dynamically

    delete [] myTest;

    return 0;
}
```

a) `Test myTest = new Test[3];`

b) `Test* myTest = Test[3];`

c) `Test* myTest = new Test[3];`

d) `Test myTest = Test[3];`

Answer: c)

Question 13

Fill in the blanks with correct access specifiers. *Marks 1*

```cpp
#include <iostream>
using namespace std;

class Point { _____:
    int x; int y;
};

class Rect { _____:
    Point TL;
    Point BR;
};

int main() {

    Rect r = {{0,2}, {5,7}};

    cout <<  r.TL.x << " " << r.TL.y << " , " << r.BR.x << " " << r.BR.y << endl;

    return 0;
}
```

a) `private, private`

b) `public, private`

c) `private, public`

d) `public, public`

Answer: d)

Question 14

What will be the output of the following code ?   *MCQ, Marks 1*

```cpp
#include <iostream>
using namespace std;

class code { int id;
    public:
        code() {}
        code(int a): id(a) {}
        code(code& x): id(x.id) {}

        void print() { cout << id << " "; }
};

int main(){

    code A(100);
    code B(A);
    code C = A;

    A.print();
    B.print();
    C.print();

    return 0;
}
```

a) Compilation error: Cannot initialize data members

b) 100

c) Run time error: Cannot allocate memory

d) 100 100 100

Answer: d)

Question 15

Consider the class definition given below: *MSQ, Marks 1*

```cpp
class MyClass {
    int myPriMember;
public:
    int myPubMember;
    MyClass(int mPri, int mPub) : myPriMember(mPri), myPubMember(mPub) {}

    int getMember() const { return myPriMember; }
    void setMember(int i) { myPriMember = i; }

    void print() const {
        cout << myPriMember << ", " << myPubMember << endl;
    }
};
```

If an object for `MyClass` is created as `const MyClass myConstObj(5, 6)`, then which of the following class member invocations are valid

a) `myConstObj.getMember()`

b) `myConstObj.setMember(7);`

c) `myConstObj.myPubMember = 8;`

d) `myConstObj.print();`

Answer: a) and d)

Question 16

Write the output of the following code: *MCQ, Marks 1*

```cpp
#include<iostream>
using namespace std;

class MyClass {
public: static int x;
public:
    void get() { x = 10; }

    void print() {
        x = x + 10;
        cout << x << " ";
    }
};

int main() {
    int MyClass::x = 0;

    MyClass obj1, obj2;
    obj1.get(); obj2.get();
    obj1.print(); obj2.print();

    return 0;
}
```

a) 20 30

b) 20 20

c) Compilation error: incorrect declaration

d) 30 20

Answer: c)

II Assignment (16 Questions of 2 marks each)

Question 1

The output of the following program will be: *MCQ, Marks 2*

```c
#include <stdio.h>

int sum(int a, int b, int c) {
    return a+b+c;
}

int main() {
    int (*function_pointer)(int, int, int);
    function_pointer = sum;

    printf("%d", function_pointer(2, 4.5, 5));

    return 0;
}
```

a) 11.5

b) Compilation Error: Error in function arguments

c) Compilation Error: Invalid assignment of sum

d) 11

Answer: d)

Question 2

The output of the following code will be: *MCQ, Marks 2*

```cpp
#include<iostream>
using namespace std;

int main() {

    typedef union Complex {
        double re;
        double im;
     } Complex;

    const Complex c = {50} ;
    c.re = 59;
    cout << c.im;

    return 0;
}
```

a) 59

b) 50

c) Compilation Error: Cannot assign an integer value to a double variable

d) Compilation Error: `c.re` is a read only object

Answer: d)

Question 3

Which function prototype does match the function call `func(45.2, 65)`?   *MSQ, Marks 2*

```
void func(int, int); // Proto 1
void func(int, double, int = 6); // Proto 2
void func(double, double, char = 'c'); // Proto 3
void func(double, char = 'd', char = 'c'); // Proto 4
```

a) Proto 1

b) Proto 2

c) Proto 3

d) Proto 4

Answer: a), b), c), d)

Question 4

What is the output of the following program, if `sizeof(int) = 4`?   *MCQ, Mark 2*

```
#include<iostream>
using namespace std;

class Test {
    int var;
    int arr[9];

    void display() { char a; }
};

int main() {
    char c;
    Test t;

    cout << sizeof(t) << " ";

    return 0;
}
```

a) 44

b) 40

c) Default size: 0

d) 41

Answer: b)

Question 5

What will be the output of the following code? *MCQ, Marks 2*

```cpp
#include<iostream>
using namespace std;

class Test {
    private:
        int _x;
        int _y;

    public:
        void func() {
            _x = _y = 1;
            cout << _x << " " << _y;
        }
};

int main() {

    Test t;
    t.func();
    return 0;

}
```

a) Compilation error: Constructor not defined

b) Compilation error: Illegal access of `func()`

c) `1 1`

d) Compilation error: Cannot access private member _x and _y

Answer: c)

Question 6

Consider a class `Test`. What are the permissible signatures for a Copy Constructor?

MSQ, Marks 2

```
a) Test(const Test t);
b) Test(const Test* t);
c) Test(const Test& t);
d) Test(Test& t);
```

Answer: c) and d)

Question 7

The output of the following program will be   *MCQ, Marks 2*

```cpp
#include <iostream>
#include <string>
using namespace std;

class Sample { string name;

    public:
        Sample(string s): name(s) {
            cout << name << " Created" << " ";
        }

        Sample(Sample &s) {
            name = s.name;
            cout << name << " Created" << " ";
        }

        ~Sample() {
            cout << name << " Destroyed" << " ";
        }
};

int main() {

    Sample s1("s1");
    Sample s2(s1);

    return 0;
}
```

a) s1 Created s1 Destroyed s1 Created s1 Destroyed

b) s1 Created s1 Created s2 Destroyed s2 Destroyed

c) s1 Created s2 Created s2 Destroyed s1 Destroyed

d) s1 Created s1 Created s1 Destroyed s1 Destroyed

Answer: d)

Question 8

The output of the program will be: *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class Sample{
private:
    int x;
public:
    void setx(int n) { x = n; cout << x;}
    int getx() { return x;}
};

class Experiment {
    void display(Sample &t) {
        t.setx(10);
    }
};

int main() {
    Sample t;
    Experiment e, f;

    e.display(t);
    f.display(t);

    return 0;
}
```

a) `10`

b) `10 10`

c) Compilation error: Cannot access private member

d) Run-time error

Answer: c)

Question 9

The output of the following program will be: *MCQ, Marks 2*

```
#include <iostream>
using namespace std;

namespace Ex { int x = 10; }
namespace Ex { int y = 10; }

int main(){
    Ex::x = Ex::y = 50;

    cout << Ex::x << " " << Ex::y;

    return 0;
}
```

a) 10 10

b) Compilation error: Ambiguous namespace

c) 50 50

d) Compilation error: Undefined variables

Answer: c)

Question 10

What will be the output of the following program if an `int` takes 4 bytes and a `double` takes 8 bytes? *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class Test {
    static int i;
    static double k;
    int j;

    void print() { cout << i << endl; }
};

int Test::i = 20;
double Test::k = 30;

int main() {
    cout << sizeof(Test);

    return 0;
}
```

a) 16

b) 4

c) 12

d) 8

Answer: b)

Question 11

Choose the right option to fill in the blank below. *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class sample {
public:
    int x, y;
    sample() {};
    sample(int, int);
    sample operator+(sample);
};

sample::sample(int a, int b) {
    x = a;
    y = b;
}


_____ {
    sample temp;

    temp.x = x + param.x;
    temp.y = y + param.y;

    return (temp);
}

int main () {

    sample a (4,1);
    sample b (3,2);
    sample c;

    c = a + b;
    cout << c.x << " " << c.y;

    return 0;
}
```

a) `sample sample::operator+(param)`

b) `sample operator+(sample param)`

c) `sample::operator+(param)`

d) `sample sample::operator+(sample param)`

Answer: d)

Question 12

```cpp
#include <iostream>
using namespace std;

class Base {
public:
    int var_;

    void func(int) {}
};

class Derived: public Base {
public:
    int varD_;

    void func(int) {}
};

int main() {

    Derived d;
    d.func(1);

    return 0;
}
```

Which of the following function will be invoked by `d.func(1)`?   *MCQ, Marks 2*

a) Both `Derived::func(int)` and `Base::func(int)`

b) None, as there will be Compilation Error

c) `Derived::func(int)`

d) `Base::func(int)`

Answer: c)

Question 13

Which of the following statements is true about the program given below?   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class B{
public:
    int base;

    B() {}
    ~B() {}
};

class D: public B {
public:
    int derived;

    D() {}
    ~D() {}
};

int main() {

    D d1;
    B b1;
    cout << &b1.base << " ";
    cout << &d1.base;

    return 0;
}
```

a) Compilation error

b) The displayed addresses will be same

c) The displayed addresses will be different

d) Invalid addresses will be displayed

Answer: c)

Question 14

If input `n = 10`, then the output of the following program will be: *MCQ, Marsk 2*

```cpp
#include <iostream>
using namespace std;

class Base {
public:
    virtual void show() = 0;
};

class Derived : public Base {
    int i;
public:
    Derived(int num = 0) : i(num) { i = i * 2; }

    void show() { cout << i; }
};

int main() {

    int n;
    cin >> n;

    Derived d(n);

    Base &b = d;
    b.show();

    return 0;
}
```

a) Compilation error: An object of `Derived` class cannot be assigned to an object of `Base` class

b) No output is produced

c) 20

d) 0

Answer: c)

Question 15

What is the output of the following program? *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

int fun(int* ptr) {
    return (*ptr + 10);
}

int main(void) {

    const int val = 10;
    const int *ptr = &val;
    int *ptr1 = const_cast<int *>(ptr);

    cout << fun(ptr1);

    return 0;
}
```

a) 10

b) 20

c) Compilation error: Illegal casting of constant variable

d) 0

Answer: b)

Question 16

What is the output of the following program?   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

void myFunction(int test) {
    try {
            if (test)
                throw test;
            else
                throw "Value is zero";
    }

    catch (int i) {
        cout << "CaughtOne ";
    }

    catch (const char *str) {
        cout << "CaughtString ";
    }
}

int main() {

    myFunction(1);
    myFunction(-22);
    myFunction(0);
    myFunction(3);

    return 0;
}
```

a) `CaughtOne CaughtOne CaughtString CaughtOne`

b) `CaughtOne CaughtString CaughtString CaughtOne`

c) `CaughtOne CaughtOne CaughtOne CaughtOne`

d) Compilation Error: Ambiguous declaration

Answer: a)

III   Unseen (16 Questions of 2 marks each)

Question 1

What is the output of the following program?   *MCQ, Marks 2*

```
#include <iostream>
using namespace std;

template <class T>
T Comp(T x, T y) {
    return x + y;
}

int main() {

    int a = 3.1, b = 5, iC;
    double c = 2, d = 3.7, dC;

    iC = Comp(a, b);
    cout << iC << " ";

    dC = Comp(c, d);
    cout << dC;

    return 0;
}
```

a) Compilation error: type T cannot be inferred from the type of parameters

b) 8 5

c) 8 5.7

d) 8.1 5.7

Answer: c)

Question 2

What is the output of the following code?   *MCQ, Marks 2*

```cpp
#include <iostream>
#include <cstdlib>
#include <string>
using namespace std;

namespace std {
    const char* evenOdd(int n) {
        if (n % 2 == 0)
            return "False";
        else
            return "True";
    }
}

namespace myNameSpace{
    const char* evenOdd(int n) {
        if (n % 2 == 0)
            return "True";
        else
            return "False";
    }
}

int main() {

    cout << std::evenOdd(-1) << " "
        << myNameSpace::evenOdd(2) << " "
        << evenOdd(-3) << endl;

    return 0;
}
```

a) `True True True`

b) Compilation Error: call to `evenOdd` is ambiguous in `main`

c) `True False True`

d) Compilation Error: `evenOdd` cannot be added to `std namespace`

Answer: a)

Question 3

What is the output of the following program? *MCQ, Marks 2*

```cpp
#include <iostream>

class Test {
public:
    int i;
    void disp(int i){
        std::cout << i << " ";
    }
};

Test t;

int main()
{
    Test t;

    t.disp(10);
    ::t.disp(20);

    return 0;
}
```

a) Compilation Error: Two objects cannot have a same name

b) Compilation Error: In the line `::t.disp(20);`

c) `10 20`

d) `20`

Answer: c)

Question 4

Consider the following program.

```cpp
#include <iostream>
using namespace std;

class B {
    int id;
public:
    static int count;
    B() { count++; id = count; cout  << id << " "; }
    ~B() { cout << id << " "; }
};

class D : public B {
    int n;
public:
    D() { count++; n = count; cout << n << " "; }
    ~D() { cout << n << " "; }
};

int B::count = 0;

int main() {
    B *basePtr = new D[2];
    delete [] basePtr;

    return 0;
}
```

It outputs 1 2 3 4 2 1, in stead of expected 1 2 3 4 4 3 2 1. In this context, identify the correct statement/s.

a) Invocation of `delete []` operator slices the objects

b) The expected output can be obtained by replacing the `delete []` operator with the `delete` operator

c) The expected output can be obtained by making the destructor of the base class `virtual`

d) The output is wrong because `count` is a `static` member

Answer: a), c)

Question 5

Identify the correct option to fill-in the blank in the following program.   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class B;
class A {
    int a;
public:
    void show(A& x, B& y);
};

class B {
    int b;
public:
    friend void A::show(A& x, B& y);
};

_____ {
    x.a = 10;
    cout << x.a << " " << y.b;
}

int main() {
    A a;
    B b;

    a.show(a,b);

    return 0;
}
```

a) void B::show(A& x, B& y)

b) void A::show(A& x, B& y)

c) void A::show(int x, int y)

d) void B::show(int x, int y)

Answer: b)

Question 6

What will be the behavior of the following program?   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class A {
    A() { cout << "Construction" << endl; }
public:
    ~A() { cout << "Destructor" << endl; }
};

int main() {
    A *pa = new A[100];

    return 0;
}
```

a) Prints `Construction` 100 times followed by `Destructor` 100 times.

b) Compilation Error: Cannot access private members

c) Prints `Construction` 100 times.

d) Compilation Error: Cannot assign array of objects to a pointer

Answer: b)

Question 7

What will be the output of the following code ?   *MCQ, Marks 2*

```cpp
#include<iostream>
using namespace std;

class Test {
private:
    int x;
    int y;
    Test(int x = 0, int y = 0) { }

public:
    static void fun() { cout << "Inside fun"; }
};

int main() {
    Test :: fun();

    return 0;
}
```

a) Compilation Error: Object not created for a class

b) Compilation Error: Cannot access a static function without object

c) Prints `Inside fun`

d) Compilation Error: No object can be constructed as the constructor is private

Answer: c)

Question 8

The output from the following program is: Joseph 22. From the options below, fill in the blank with an appropriate call to the member function. *MSQ, Marks 2*

```cpp
#include <iostream>
#include <string>
using namespace std;

class person {
        string name; unsigned int age;
    public:
        person(string s, unsigned int a) {
            name = s;
            age = a;
        }

        person& greater(person &x) {
            if(x.age > age)
                return x;
            else
              return *this;
        }

        void display() {
            cout << name << " " << age;
        }
};

int main() {

    person P1("John", 21);
    person P2("Joseph", 22);

    ------------------------
    P.display();

    return 0;
}
```

a) `person P = P1.greater(P2);`

b) `person P = P2.greater(P1);`

c) `person P = greater(P1, P2);`

d) `person P = P1.greater(P1);`

Answer: a), b)

Question 9

What will be the output of the following program?   *SA, Marks 2*

```cpp
#include <iostream>
#include <cmath>
using namespace std;

class Complex {
    private:
        double re_, im_;
    public:
        Complex(double r = 0.0, double i = 0.0) : re_(r), im_(i) {}
        ~Complex() {}
        double norm() { return sqrt(re_*re_ + im_*im_); }
        void print() { cout << re_ << "+j" << im_ << "=" << norm() ; }
};

int main() {

    Complex c(3, 4);
    c.print();

    return 0;

}
```

Note: Fill in the box given below with the out put as it should appear on the output screen. Don't use any unwanted/extra character (even space) before or after the answer.
Answer: 3+j4=5
QS creator Note: The answer is of alphanumeric type, newline and space are strictly prohibited.

Question 10

In the context of `sizeof(double) = 8` and `sizeof(void*) = 8`, what will be the output of the following program? *SA, Marks 2*

```cpp
#include<iostream>
using namespace std;

class base {
    double arr[5];
};

class base1 : public base {
    public:
        virtual ~base1() {}
};

class base2: public base { };

class derived: public base1, public base2 {};

int main() {
    cout << sizeof(derived);

    return 0;
}
```

Note: Fill in the box given below with the out put, as it should appear on the output screen. Don't use any unwanted/extra character (even space) before or after the answer.
Answer: 88
QS creator Note: Answer is numeric type, newline and space are strictly prohibited.

Question 11

What is the output of the following program ?   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class MyClass {
        int data;
    public:
        MyClass(int d) : data(d) { }

        MyClass& operator++() {
            ++data; // Operate and return the operated object
            return *this;
        }

        MyClass operator++(int) {
            MyClass t(data);
            ++data;
            return t;
        }

        void disp() { cout << "Data = " << data << " "; }
};

int main() {

    MyClass obj1(8);
    MyClass obj2 = obj1++;

    obj2.disp();
    obj1.disp();
    obj2 = ++obj1;
    obj2.disp();
    obj1.disp();

    return 0;
}
```

a) Data = 8 Data = 8 Data = 10 Data = 10

b) Data = 8 Data = 9 Data = 9 Data = 10

c) Data = 8 Data = 9 Data = 10 Data = 10

d) Data = 8 Data = 9 Data = 10 Data = 11

Answer: c)

Question 12

What will be the output of the following program?   *MCQ, Marks 2*

```
#include <iostream>
using namespace std;

int Myfun(int = 10, int = 1);

int main() {

    cout << Myfun;

    return 0;
}

int Myfun(int x, int y) { return (x*y); }
```

a) Address of `Myfunc` function

b) 10

c) Compilation Error: Undefined variable `Myfun`

d) Compilation Error: Wrong prototyping in `Myfun`

Answer: a)

Question 13

What will be the output of the following program?   *MCQ, Marks 2*

```cpp
#include<iostream>
using namespace std;

class Base {
    protected:
        int var;
    public:
        Base (int i): var(i) { }
        void print() { cout << 2 * var; }
};

class Derived : protected Base {
    public:
        Derived (int i): Base(i) { }
        void print() { cout << var; }
};

int main() {
    Derived d(20);
    d.print();

    return 0;
}
```

a) Compilation Error: Redefinition of `print()`

b) 20

c) Compilation Error: Cannot initialize protected member in derived class

d) 40

Answer: b)

Question 14

What will be the output of the following program? *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

class B {
    public:
    virtual void f() { cout << "B::f()" << " "; }
};

class D : public B {
    public:
    virtual void f() { cout << "D::f()";}
};

int main() {

    B b;
    D d;

    B *p;
    p = &b;
    p->f();

    p = &d;
    p->f();

    return 0;
}
```

a) B::f() D::f()

b) D::f() B::f()

c) B::f() B::f()

d) D::f() D::f()

Answer: a)

Question 15

Identify the function call/s for which function overloading cannot be resolved. *MCQ, Marks 2*

```
int f();
int f(char = 'A');
int f(char, char);

int main() {

    char x = 'B' , y = 'C';
    f();          // call-1
    f(x);         // call-2
    f(x, y);      // call-3

    return 0;
}
```

a) call-1

b) call-2

c) call-3

d) call-1, call-2

Answer: a)

Question 16

The output of the following code will be   *MCQ, Marks 2*

```cpp
#include <iostream>
using namespace std;

template<class T=int, class U=int>
class Test {
    T x; U y;
public:
    Test(T t, U u): x(t), y(u) { }
    void display() { cout << x << "," << y << endl;}
};

int main() {

    Test<char, char> b('a', 'b');
    Test<> c('a', 12.9);

    b.display();
    c.display();

    return 0;
}
```

a) Compilation Error: Template data type is not defined

b) `a,b`
   `a,12.9`

c) `a,b`
   `a,12`

d) `a,b`
   `97,12`

Answer: d)