

**Questions collected by -
Sumaya Rahman / 2CF / C233479**

International Islamic University Chittagong

Department of Computer Science & Engineering

B.Sc. in CSE, Mid Term Examination, Spring 2019

Course Code: CSE-1221 Course Title: Computer Programming II

Total Marks: 30 Time: 1 hours 30 minutes

Answer any three of the following questions. Figures in the right hand margin indicate full marks

9

a) Define object and class? Write down the relations between Classes, Structures and unions. 1+3

b) What are the difference between object oriented programming and structure programming? Explain with appropriate examples. 3

c) What is the output of the following program? 1

```
#include <iostream>
#include <string>
using namespace std;
void demo()
{
    static int count = 0;
    cout << count << " ";

    count++;
}
int main()
{
    for (int i=0; i<5; i++){
        demo();
    }
    return 0;
}
```

d) In C, we have fabs, abs and labs functions to find out the absolute value of different data types. Which characteristic of OOP enables us to do this task with a single function? Explain with example. 2

e) Define constructor and Parameterized Constructor. What is the output of the following program? 1+3

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

class Line {
public:
    void setLength( double len );
    double getLength( void );
    Line();
    ~Line();
private:
    double length;
};

Line::Line(void) {
    cout << "Object created" << endl;
}

Line::~~Line(void) {
    cout << "Object is being deleted" << endl;
}

void Line::setLength( double len ) {
    length = len;
}

double Line::getLength( void ) {
    return length;
}

int main() {
    Line line;
    line.setLength(6.0);
    cout << "Length of line : "
    << line.getLength() << endl;

    return 0;
}
```

(b) What is inline function? How the compiler will execute the following program using inline?

```
#include <iostream>
using namespace std;
inline int max(int a, int b)
{
    return a>b ? a : b;
}
int main()
{
    cout << max(10, 20);
    cout << " " << max(99, 88);
    return 0;
}
```

(c) What is friend function? Write suitable program by using friend function.

- 3 (a) Define function overloading. How a compiler can distinguish an overloaded function? Explain with program example.
 (b) Define default argument with example. Find error(s) of following codes, write the error message or output:

Ⓐ

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

class printData {
public:
    void print(int i) {
        cout << i << endl;
    }
    void print(double f) {
        cout << f << endl;
    }
    void print(char* c) {
        cout << c << endl;
    }
};

int main() {
    printData pd;
    pd.print(500.263);
    pd.print(5);
    pd.print("Hello C++");
    return 0;
}
```

Ⓑ

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

class amb{
public:
    int i, j;
    amb(int x, int y){ i = x; j = y; }
    void func(amb a, amb &b){
        cout << a.i << endl;
    }
    void func(amb a, amb b){
        cout << b.j << endl;
    }
}

int main(){
    amb ob1(12, 13), ob2(14, 15);
    func(ob1, ob2);
    return 0;
}
```

c) What are the purposes of overloading a constructor function? The following program misses the constructor function(s). Complete the program so that each of the statements of the main function is supported and it is error free. You can use any variable name of your choice, if required.

```
#include <iostream>
using namespace std;
class OC
{
    int i;
public:
    void display() { cout << i << endl; }
};

int main()
```



International Islamic University Chittagong
Department of Computer Science & Engineering
B.Sc. in CSE, Mid Term Examination, Autumn 2023
Course Code: CSE-1221 Course Title: Computer Programming II
Total Marks: 30 Time: 90 minutes

- a) Define OOP? Write down the brief description of the characteristics of OOP. 3
b) What is the difference between object-oriented programming and structure programming? 2
c) What is the output of the following programs? 3

```
#include <iostream>
#include <string>
using namespace std;
void demo()
```

```
    static int count = 0;
    cout << count << " ";
```

```
    count++;
```

```
int main()
```

```
    for (int i=0; i<5; i++){
        demo();
    }
    return 0;
```

```
#include<iostream>
using namespace std;
class MyClass{
public:
    MyClass(){cout<<"Constructing"<<endl; }
    ~ MyClass(){cout<<"Destructing"<<endl; }
};
```

```
MyClass aFunction(MyClass m){
    cout<<"In aFunction"<<endl;
    return m;
}
```

```
int main()
{
    cout<<"In Main"<<endl;
    MyClass ob;
    ob = aFunction(ob);
    cout<<"The End"<<endl;
    return 0;
}
```

- d) What is access specifier? Why should we make some members private in a class? Discuss with example. 2
e) Explain why you must be careful when returning objects from a function by proper examples.

- f) Define constructor and Parameterized Constructor. Is there any way that we can use same constructor with different parameter list in a class? Discuss with example. 3

g) In which situations copy constructor is essential? Write a program by using copy constructor to support your answer.

- h) What is automatic inline function? When should we use inline and when shouldn't? Give an example. 2
i) What is the output of the following codes: 3

Ⓐ

```
#include<iostream>
using namespace std;
int x = 10;
void fun(int x)
{
    cout << ::x << endl;
}
int main()
{
    fun(5);
    return 0;
}
```

Ⓑ

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

class Demo {
public:
    int i;
    Demo(int i) {
        this->i = i;
    }
};

main() {
    Demo m(5);
    cout<<m.i;
}
```

- (d) How to use private member variables of a class in a non-member function? Explain with an example.
- 3 (a) Define function overloading. How a compiler can distinguish an overloaded function? Explain with example.

(b) Define default argument with example.

Find error(s) of following codes, write the error message or the output:

Ⓐ

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

class printData {
public:
    void print(int i) {
        cout << i << endl;
    }
    void print(double f) {
        cout << f << endl;
    }
    void print(char* c) {
        cout << c << endl;
    }
};

int main() {
    printData pd;
    pd.print(500.263);
    pd.print(5);
    pd.print("Hello C++");
    return 0;
}
```

Ⓑ

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

class amb{
public:
    int i, j;
    amb(){}
    amb(int x, int y){ i = x; j = y; }
    amb(int x = 0){ i = x;}
};

void func(amb a, amb &b){
    cout << a.i << endl;
}

void func(amb a, amb b){
    cout << b.j << endl;
}

int main(){
    amb ob1(12, 13), ob2(14, 15), ob3;
    func(ob1, ob2);
    return 0;
}
```

(c) Write a program to calculate area of a rectangle by creating a class called "Rect", where length and width are private members. Make a function called "new_rect" to add two rectangles and return the new one to the function.

OR,

What issues arise when providing objects to a function using "Pass by value"? How do you fix it? Discuss with a suitable example.

DISMUKHAR KANMANIR KANIM
INTERNATIONAL ISLAMIC UNIVERSITY CHITTAGONG
Department of Computer Science & Engineering (CSE)
Mid-Term Examination, Spring-2016
Course Code: CSE-1201 Course Title: Structured Programming
Full Marks: 30 Time: 1 Hour 30 minutes

[Answer any three of the following questions (Figures at right margin illustrate marks)]

3*10=30

1. a) What is structured programming? Write down the basic structure of a C program. 2
- b) Write down the main purpose of following terms in c programming language. 2
 - i) main() ii) #define iii) keyword iv) #include
- c) What do you mean by C token? Identify the C tokens of following C program. 2

```
#include <stdio.h>
int main(){
    float radius=2.0, area;
    area=3.14159*radius*radius;
    printf("Area=%f", area);
    return 0;
}
```
- d) Determine which of the following are valid identifiers. If invalid, explain why? 2
 - i) CSE-1201 ii) inT iii) structure_programming
 - iv) mark\$ v) double vi) _abc vii) ab c viii) 2m
- e) Determine which of the following are valid constants. If invalid, explain why? 2
 - i) 698354L ii) .5,000 iii) '1' iv) 3.5e-5 v) 7.1e4
 - vi) -4.5e-2 vii) 1E+2.5 viii) "CSE"
2. a) What do you mean by operator precedence and associativity? Give the order of following operators higher to lower priority according to their precedence and associativity. 2
 - i) || ii) << iii) % iv) && v) >= vi) ++ vii) / viii) -- ix) * x) sizeof(type)
- b) Find the output of the following program segment: 1

```
int x = 3, y = 0, z, a, b;
z = x == y;
a = z++;
b = ++a;
printf("A = %d\n B = %d\n Z = %d\n", a, b, z);
```
- c) Show the exact output that the following statements will produce: 2
 - i) printf("%.5f", 5, 2, 12.7654);
 - ii) printf("%.5s", 3, "abcdef");
 - iii) printf("%.1f", 123.453);
 - iv) printf("%d", toupper('a'));
 - v) printf("%08d", 789);
 - vi) printf("%d%%", 100);
- d) Write a C program that input the time in seconds from keyboard and display the time in hours (h), minutes (m) and seconds (s) format as "hh:mm:ss". 3

Sample Input: Enter the in time in seconds:24000
Sample Output: Time in "hh:mm:ss" is: 06:40:00
- e) Compare between 2
 - i) gets(X); and scanf("%s", X); statements. Here X is character string.
 - ii) puts() and putchar() function.

3. a) Write a C program to determine whether a given number is "odd" or "even" by using
i) **if...else** and ii) **switch** statements.

- b) Find the output of the following code segment.

```
char y = 'B';  
switch (y) {  
    case 'A': printf("a");  
    case 'B': printf("b");  
    case 'C': printf("c");  
                break;  
    default : printf("error");  
}
```

- c) You have four integer variables namely a, b, c, and d. Write a C program to display the largest number of these four numbers using nested **if...else** statements.
- d) Write the purposes of **default** and **break** keywords in **switch** statement. "The default case is required in the **switch** statement" is it true?
- e) Write a C program to interchange two numbers without using third variable.

4. a) What will be the output of the following program?

```
#include<stdio.h>  
int main()  
{  
    int x=1, y=3;  
    y = x || y;  
    if(x == y){  
        printf("C\n");  
        return 0;  
    }  
    printf("C++\n");  
    return 0;  
}
```

- b) Write a C program to determine the letter and other character. If the input is letter then converts it into reverse case letter. Otherwise show the message "Other Character".

- c) Write a C program to read a year as an input and find whether it is leap year or not. [There is a leap year every year whose number is perfectly divisible by four and which are not divisible by 100 or divisible by 400]

- d) A C program contains the following declarations and initial assignments:

```
int    i = 12, j = 7, k;  
float  x = 10.25, y = -3.1, z;
```

Determine the value of each of the following assignment expression. Use the values originally assigned to the variables for each expression

- i) $x = (\text{int})x + y$ iv) $k = 2 + i / j$
ii) $z = i \% j$ v) $k = (j \neq 5) ? i++ : --j$
iii) $k = j \ \&\& \ j==2$ vi) $i /= (j > 0) ? j : i$
- e) Find errors, if any, in the following statements:
- i) $S > 10 \ \&\& \ a = b;$
ii) $\text{if}(s < 5) \ s = +2;$



- (a) Define OOP? Write down the brief description of the characteristics of OOP. 3
(b) What is the difference between object-oriented programming and structure programming? 2
(c) What is the output of the following programs? 3

```
#include <iostream>
#include <string>
using namespace std;
void demo()
{
    static int count = 0;
    cout << count << " ";

    count++;
}
int main()
{
    for (int i=0; i<5; i++){
        demo();
    }
    return 0;
}
```

```
#include<iostream>
using namespace std;
class MyClass{
public:
    MyClass(){cout<<"Constructing"<<endl; }
    ~ MyClass(){cout<<"Destructing"<<endl; }
};
MyClass aFunction(MyClass m){
    cout<<"In aFunction"<<endl;
    return m;
}
int main()
{
    cout<<"In Main"<<endl;
    MyClass ob;
    ob = aFunction(ob);
    cout<<"The End"<<endl;
    return 0;
}
```

- (d) What is access specifier? Why should we make some members private in a class? Discuss with example. 2

OR,
Explain why you must be careful when returning objects from a function by proper examples.

- (a) Define constructor and Parameterized Constructor. Is there any way that we can use same constructor with different parameter list in a class? Discuss with example.

OR,
In which situations copy constructor is essential? Write a program by using copy constructor to support your answer.

- (b) What is automatic inline function? When should we use inline and when shouldn't? Give an example.

- (c) What is the output of the following codes:

Ⓐ

```
#include<iostream>
using namespace std;
int x = 10;
void fun(int x)
{
    cout << ::x << endl;
}
int main()
{
    fun(5);
    return 0;
}
```

Ⓑ

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

class Demo {
public:
    int i;
    Demo(int i) {
        this->i = i;
    }
};

main() {
    Demo m(5);
    cout<<m.i;
}
```


(d) How to use private member variables of a class in a non-member function? Explain with an example.

3 (a) Define function overloading. How a compiler can distinguish an overloaded function? Explain with example

(b) Define default argument with example.

Find error(s) of following codes, write the error message or the output:

Ⓐ

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

class printData {
public:
    void print(int i) {
        cout << i << endl;
    }
    void print(double f) {
        cout << f << endl;
    }
    void print(char* c) {
        cout << c << endl;
    }
};
```

```
int main() {
    printData pd;
    pd.print(500.263);
    pd.print(5);
    pd.print("Hello C++");
    return 0;
}
```

Ⓑ

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

class amb{
public:
    int i, j;
    amb(){}
    amb(int x, int y){ i = x; j = y; }
    amb(int x = 0){ i = x;}
};

void func(amb a, amb &b){
    cout << a.i << endl;
}

void func(amb a, amb b){
    cout << b.j << endl;
}

}
```

```
int main(){
    amb ob1(12, 13), ob2(14, 15), ob3;
    func(ob1, ob2);
    return 0;
}
```

(c) Write a program to calculate area of a rectangle by creating a class called "Rect", where length and width are private members. Make a function called "new_rect" to add two rectangles and return the new one to the main function.

OR,

What issues arise when providing objects to a function using "Pass by value"? How do you fix it? Discuss with suitable example.

23

International Islamic University Chittagong
Department of Computer Science and Engineering
B. Sc. (Eng.) In CSE, Mid Term Examination, Spring-2015

Course Code: CSE1221

Course title: Computer programming 2

Time: 1 hour & 30 Minutes

Total Marks: 30

Answer any three of the following questions. Figures in the right hand margin indicate full marks.

1. Define Object Oriented Programming (OOP). Write the applications of Object Oriented Programming. 1+2
- a) Describe what problems associated with structured programming are solved by object oriented programming and how. 4
- b) What do you mean by object and class? 2
- c) What are the differences between public and private class members? Find out the error(s) in the following program (if any): 1+1

```
#include <iostream>

using namespace std;

class A{
    int i;
};

void set(A ob, int x){
    ob.i = x;
}

int main()
{
    A ob;

    set(ob, 8);

    return 0;
}
```

2. What are the purposes of friend function? Explain with a suitable program example. 1+4
- a) What do you mean by enumerated data type? What are the differences between C and C++? 2

- c) Write the difference between constructor and destructor function.
What is the wrong in the following fragment?

```
#include<iostream>
using namespace std;
class CSE{
    int a, b, c;
public:
    float CSE();
    ~CSE(int p) {cout<<"IIUC";}
};
```

- d) What is inline function? How the compiler will execute the following program using inline?

```
#include<iostream>

using namespace std;

inline int max(int a, int b){

    return a > b ? a : b;

}

int main()

{

    int m = max(1, 3);

    cout << m << endl;

    cout << max(10, 20) << endl;

    return 0;
```

3.

- Define function overloading. Explain it with a suitable program example.
- What is overloading ambiguity? Give example of overloading ambiguity introduced by type conversions and default arguments.
- What is the main purpose of copy constructor? Explain with a program example.
- Is the following function inline?
If not, why not?
void f1()
{
for(int i=0; i<5; i++) cout<<i<<endl;

- 4
- Why dynamic memory allocation is needed? Write the advantages of new operator over the malloc() function. 1+1
 - What is occurs if the sufficient memory is not available for allocation? Explain with a suitable program example. 2
 - What problem will arise if you pass an object of the following class by value as a function parameter? How passing object by reference can overcome this situation? Explain with example. 2

```
class Arr{
    int *a;
public:
    Arr(int n){
        a = (int *) malloc(n * sizeof(int));
    }
    ~Arr(){
        free(a);
    }
};
```

- What do you mean by *this* pointer?
Write a program where function returning an object via *this* pointer. 1+

International Islamic University Chittagong

Department of Computer Science & Engineering

B.Sc. in CSE, Mid Term Examination, Spring 2019

Course Code: CSE-1221 Course Title: Computer Programming II

Total Marks: 30 Time: 1 hours 30 minutes

9

Answer any three of the following questions. Figures in the right hand margin indicate full marks

a) Define object and class? Write down the relations between Classes, Structures and unions. 1+3

b) What are the difference between object oriented programming and structure programming? Explain with appropriate examples. 3

c) What is the output of the following program? 1

```
#include <iostream>
#include <string>
using namespace std;
void demo()
{
    static int count = 0;
    cout << count << " ";

    count++;
}
int main()
{
    for (int i=0; i<5; i++){
        demo();
    }
    return 0;
}
```

0 1 2 3 4
0 1 2 3 4

(d) In C, we have fabs, abs and labs functions to find out the absolute value of different data types. Which characteristic of OOP enables us to do this task with a single function? Explain with example. 2

(a) Define constructor and Parameterized Constructor. What is the output of the following program?

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

```
class Line {
public:
    void setLength( double len );
    double getLength( void );
    Line();
    ~Line();
private:
    double length;
};

Line::Line(void) {
    cout << "Object created" << endl;
}

Line::~~Line(void) {
    cout << "Object is being deleted" <<
endl;
}
```

```
void Line::setLength( double len ) {
    length = len;
}

double Line::getLength( void ) {
    return length;
}

int main() {
    Line line;
    line.setLength(6.0);
    cout << "Length of line : "
<< line.getLength() << endl;

    return 0;
}
```

(b) What is inline function? How the compiler will execute the following program using inline?

```
#include <iostream>
using namespace std;
inline int max(int a, int b)
{
    return a > b ? a : b;
}
int main()
{
    cout << max(10, 20);
    cout << " " << max(99, 88);
    return 0;
}
```

(c) What is friend function? Write suitable program by using friend function.

- 3 (a) Define function overloading. How a compiler can distinguish an overloaded function? Explain with a program example.
 (b) Define default argument with example. Find error(s) of following codes, write the error message or the output:

Ⓐ

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

class printData {
public:
    void print(int i) {
        cout << i << endl;
    }
    void print(double f) {
        cout << f << endl;
    }
    void print(char* c) {
        cout << c << endl;
    }
};
```

```
int main() {
    printData pd;
    pd.print(500.263);
    pd.print(5);
    pd.print("Hello C++");
    return 0;
}
```

Ⓑ

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

class amb {
public:
    int i, j;
    amb(int x, int y) { i = x; j = y; }
};

void func(amb a, amb &b) {
    cout << a.i << endl;
}

void func(amb a, amb b) {
    cout << b.j << endl;
}
```

```
int main() {
    amb ob1(12, 13), ob2(14, 15);
    func(ob1, ob2);
    return 0;
}
```

- c) What are the purposes of overloading a constructor function? The following program misses the constructor function(s). Complete the program so that each of the statements of the main function is supported and it runs error free. You can use any variable name of your choice, if required.

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

class OC
{
    int i;
public:
    void display() { cout << i << endl; }
};

int main()
```

```

{
    OC A(4);
    OC B = A;
    OC C;
    cout<< "id of A : "; A.display();
    cout<< "id of B : "; B.display();
    cout<< "id of C : "; C.display();
    return 0;
}

```

(a) In which situations copy constructor is called? Write a simple program that uses copy constructor.

1

(b) What is the purpose of using *new* operator?

1

Create a class named Book which contains the following:

Private members: title, price **Public members:** setInfo()

Which takes two parameters to set values to the private data and showInfo() to show information regarding a book. Now make two objects of this class and use the public functions through these objects.

c) What is pointer to object? How can we invoke a member function of a class using the pointer to object?