Air University
Mid Semester Examination Fall 2023
Department of Cyber Security

Subject:- Programming Fundamental
Course Code: - CS111
Class:- BS CYB
Semester:- I
Section(s):- A, B

Total Marks:- 100
Date:- 4th November 2023
Time:- 9-11AM
Max Time Allowed: 2 Hrs.

FM(s) Name:- Dr. Kashif Kifayat
FM Signature:

Special Instructions:

- Calculators are allowed.
- All questions are to be solved on answer sheets.
- Closed notes and books.
- Minor syntax mistakes could be ignored.
- Opening and closing brackets should be strictly followed.

Section A: [CLO-4] [50 Marks]

1. What is the output of the following program.

```
#include "stdafx.h"
#include <iostream>
using namespace std;

      int main()
      {

      int a=15, b=25, c=35, z=0;

      if(a>5 && b>a && c<=30)
            a+=10;
      if(b>c && a>b)
            c+=30;
      if(a==10 || c>50)
            a+=30;
            b+=10;
```

```
        c+=10;
    z=a+b+c;
    cout<<z++<<endl;
    cout<<z<<endl;

    return 0;
    }
```

[5]

2. **What is the output of the following program.**

```
int main()
{
int a=15, b=25, c=30, z=0;

if(a>5 && b>a && c<=30)
    a+=10;
if(b>c && a>b)
{
    c+=30;
if(a==10 || c>50)
    a+=30;
    b+=10;
    c+=10;
}
z=a+b+c;
cout<<z;

return 0;
}
```

[5]

3. **Please select the output of the following program from below answers.**

```
int main()
{

int a=10, b=20, c=30, z=0;

for(a=0;a<b;a++)
    for(b=a;b<a;b++)
        z+=10;
cout<<z;

return 0;
```

2

```
}
```

Select Answer

a. 120
b. 0
c. 50
d. 100

[5]

4. Please select the output of the following program from below answers.

```
int main()
{
      int a=5,z=1;
      int i;

      for(i=1;i<a;i++)
            z*=i;

      cout<<z;

      return 0;
      }
```

Select Answer

a. 100
b. 24
c. 6
d. 200

[5]

5. Please select the output of the following program from below answers.

```
#include "stdafx.h"
#include <iostream>
#include <conio.h>

using namespace std;

int add();
int sub();
int mul();
int divd();
```

```
int main()
{
      cout<<add()+sub()-mul()*divd();

      return 0;
}

int add()
{
      int a=10, b=100,c;
      c=a+b;
      return(c);
}
int sub()
{
      int a=200, b=100,c;
      c=a-b;
      return(c);
}
int mul()
{
      int a=10, b=10,c;
      c=a*b;
      return(c);
}
int divd()
{
      int a=200, b=100,c;
      c=a/b;
      return(c);
}
```

Select

a. 350
b. 34
c. 10
d. 312

6. What is the output of the following program. **[10]**

```
Void add(void);
int sub();
int mul(int, int);
int divd(int, int);
```

4

```
int cub(int);
int sqr(int);
int _tmain(int argc, _TCHAR* argv[])
{

      cout<<cub(divd(mul(sub(),10),sub()))<<"-";
      cout<<divd(sqr(mul(5,5)),cub(5));

_getch();


}

void add()
{
      int a=10, b=100,c;
      c=a+b;
      cout<<c<<endl;
}
int sub()
{
      int a=200, b=100,c;
      c=a-b;
      return©;
}
int mul(int a, int b)
{
      int c;
      c=a*b;
      return©;
}
int divd(int a, int b)
{
      int c;
      c=a/b;
      return©;
}
int cub(int a)
{
      return(a*a*a);
}

int sqr(int a)
{
      return(a*a);
}
```

[10]

7. **What is the output of the following program.**

```
int _tmain(int argc, _TCHAR* argv[])
{

int a[5][5], z=2;
int b[5][5], k=5;
int c[5][5];

for(int i=0;i<5;i++)
{
      for(int j=0;j<5;j++)
            a[i][j]=z;
      z++;
}


for(int i=0;i<5;i++)
{
      for(int j=0;j<5;j++)
            b[i][j]=z;
      k++;
}

for(int i=0;i<5;i++)
      for(int j=0;j<5;j++)
            c[i][j]=a[i][j]+b[i][j];


for(int i=0;i<5;i++)
{
      for(int j=0;j<5;j++)
            cout<<c[i][j]<<"\t";
      cout<<"\n";
}
```

[10]

Section B: Attempt any two of the followings: [CLO1]
[30 Marks]

1. Please define why conditional statements are used e.g. if, if else, and switch. Please explain with examples.

[15]

2. Please describe why loops are used and how many times of loops are there. Explain each loop with example.

[15]

3. Please describe why array are used and how it works please explain with help of examples.

[15]

Section C: [CLO2]
[20 Marks]

4. Write user defined two functions to calculate the below diagonals. In this program you need to define 4x4 matrix, take user input then calculate:

[20]

(a) Left diagonal sum
(b) Right diagonal sum

Note: