2023
120

Air University
(Mid-Term Examination: Spring 2024)
Department of Cyber Security

Subject: OOPS
Course Code: CS112
Class: BSCYS-Fall 23
Section: A&B

Total Marks: 50
Date: -03-2024
Duration: 2 Hours
Instructor: Dr. Kashif Kifayat

Dean's Signature:_____

FM Signature:_____

Section A: **[5]**

Q1: Please select one option

A class must have a constructer
a) True b) False

2. Class level variable can be accessed without class object.
a) True b) False

3. A class object consist of
a) Private/public members b) Attributes and functions
c) Either a or b d) one of them

4. Encapsulation refers to the combining of data and code into a
a) Class b) Program
c) Object d) None of them

5. If class has only parameterize constructer. Then what will be its default constructer?
a) Same parameterize constructer b) A constructer which takes no parameter c) No default constructer. d) None of them.

Section B: What is the output of the following programs. [4]

What is output for the following programs?

A

```
1float x=5.999;
2float *y,*z;
3y=&x;
4z=y;
5cout<<x<<","<<*(&x)<<","<<*y<<","<<*z<<"\n";
```

B

```
 1 int track[]={10,20,30,40},*striker;
 2 striker=track;
 3 track[1]+=30;
 4 cout<<"Striker>"<<*striker<<endl;
 5 *striker-=10;
 6 striker++;
 7
 8 cout<<"Next@"<<*striker<<endl;
 9 striker+=2;
10cout<<"Last@"<<*striker<<endl;
   cout<<"Reset To"<<track[0]<<endl;
```

C

```
1int a=32,*ptr=&a;
2char ch='A',&cho=ch;
3cho+=a;
4*ptr+=ch;
5cout<<a<<","<<ch<<endl;
6return 0;
```

D

```
1const int i=20;
2const int
3
4 *const ptr=&i;
5(*ptr)++;
  int j=15;
  ptr=&j;
```

cout << ptr ;

cout << *ptr;

Section C: Attempt all questions:

Q3: What is operator overloading? Why we use operator overloading? Differentiate between the followings;

1. Function overloading and function overriding
2. Constructor overloading and operator overloading

[6]

Q4: What is polymorphism? Write a program using polymorphism in which user enters the number if the number is positive and the number is also even, then print the cube of the number and if the number is odd and negative then print the square of the number.

[10]

Q5: Write a program using multi-level inheritance in which user enter a number, the program will show the table of the given number from 1 to 10.

[5]

Q6: Write one programming example of constructor overloading and function overloading.

[5]

Q7: What are single and multiple inheritances. Write a program to find the grades of a student using multiple inheritances according to the following rules;

Grade A if marks are > 80
Grade B if marks are >70 and < 80
Grade C if marks are > 50 and <70
Grade F if marks are < 40

[5]

Q8: What is Multilevel inheritance? Write a program using multi-level inheritance in which the user enters the number, calculates the cube of the number, if the cube of the number is greater than 150 then print the square of the resultant cube, otherwise show the message "sorry".

[10]