

## JAVA Programming Language Homework VIII: OO Review

ID:

Name:

1. Given the following Java code:

```
10. interface A { public int getValue();}
11. class B implements A {
12.     public int getValue() { return 1;}
13. }
14. class C extends B {
15.     // insert code here
16. }
```

What three code fragments individually at line 15, make use of polymorphism?  
(Choose three)

- (A) `public void add (C c) {c.getValue();}`
- (B) `public void add (B b) {b.getValue();}`
- (C) `public void add (A a) {a.getValue();}`
- (D) `public void add (A a, B b) {a.getValue();}`
- (E) `public void add (C c1, C c2) {c1.getValue();}`

**ANS:**

2. Given the following Java code:

```
1. class Test {
2.     static void alpha() { /* more code here */ }
3.     void beta(){ /* more code here */ }
4. }
```

Which two statements are true? (Choose two)

- (A) `Test.beta()` is a valid invocation of `beta()`
- (B) `Test.alpha()` is a valid invocation of `alpha()`
- (C) Method `beta()` can directly call method `alpha()`
- (D) Method `alpha()` can directly call method `beta()`

**ANS:**

3. Given the following Java code:

```
1. class D extends C {
2.     private int v1 = 3;
3.     String tmp = "D";
4.     void m( ) {
5.         System.out.print(tmp + ","");
6.         System.out.print(((C)this).tmp + ","");
7.         System.out.print(((B)this).tmp + ","");
8.         System.out.print(((A)this).tmp + ","");
9.     }
10.    public static void main ( String[ ] args) {
11.        new D( ).m( );
12.    }
13. }
14. class A {String tmp = "A";}
15. class B extends A {String tmp = "B";}
16. class C extends B {String tmp = "C";}
```

What is the result of attempting to compile and run the above program?

- (A) Prints: D,D,D,D
- (B) Prints: D,C,B,A
- (C) Compiler Error at 04.
- (D) Compiler Error at 06.
- (E) Compiler Error at 11.

**ANS:**

4. Given the following Java code:

```
1. class A {
2.     private int x = 1;
3.     A( ) throws Exception { }
4. }
5. class B extends A {
6.     B( ) throws Exception { }
7. }
```

```
8.      class C extends A {
9.          C() {}
10.     }
```

Which of the following statements are true? (Choose two)

- (A) Class A extends Object
- (B) Compiler error at 03.
- (C) Compiler error at 06..
- (D) Compiler error at 09.
- (E) Compiler error at 02.

**ANS:**

5. Given the following Java code:

```
1.      interface Data {public void load();}
2.      abstract class Info {public abstract void load();}
```

Which class correctly uses the Data interface and Info class?

- (A) 

```
public class Employee extends Info implements Data {
    public void load(){/* do something*/}
}
```
- (B) 

```
public class Employee implements Info extends Data {
    public void load(){/* do something*/}
}
```
- (C) 

```
public class Employee extends Info implements Data {
    public void load(){/* do something*/}
    public void Info.load(){/* do something*/}
}
```
- (D) 

```
public class Employee implements Info extends Data {
    public void Data.load(){/* do something*/}
    public void load(){/* do something*/}
}
```

**ANS:**

6. Given the following Java code:

```
1.     public abstract class Shape {
2.         int x ;
3.         int y ;
4.         public abstract void draw() ;
5.         public void setAnchor(int x, int y) {
6.             this.x = x;
7.             this.y = y;
8.         }
9.     }
```

Add a class Circle that extends and fully implements the Shape class. Which is correct?

- (A) Shape s = new Shape();  
s.setAnchor(10,10);  
s.draw();
- (B) Circle c = new Shape();  
s.setAnchor(10,10);  
s.draw();
- (C) Shape s = new Circle();  
s.setAnchor(10,10);  
s.draw();
- (D) Shape s = new Circle();  
s->setAnchor(10,10);  
s->draw();
- (E) Circle c = new Circle();  
s.Shape.setAnchor(10,10);  
s.Shape.draw();

**ANS:**

7. Which of the following are the valid ways to define a constructor for class Test?
- (A) public void Test () {}
  - (B) public Test () {}
  - (C) private Test () {}

- (D) public static Test ()
- (E) final Test () {}

**ANS:**

8. Given the following Java code:

```
1.      class B extends A {
2.          String m(short s) {return new String();}
3.          private void m(char c) {}
4.          protected void m(int i) {}
5.          void m(String s1) {}
6.          void m(boolean b) {}
7.          void m(byte b) throws Exception {}
8.      }
9.      class A {void m(String s1) {}}
```

What is the result of attempting to compile and run the above program?

- (A) Compiler Error at line 2.
- (B) Compiler Error at line 3.
- (C) Compiler Error at line 4.
- (D) Compiler Error at line 7.
- (E) None of the above.

**ANS:**

9. Given the following Java code:

```
1.      class A {
2.          void m(A a) {private int x = 1; System.out.print("A");}
3.      }
4.      class B extends A {
5.          void m(B b) {private int x = 1; System.out.print("B");}
6.      }
```

```
7.     class C  extends B {
8.         void m(C c) {private int x = 1; System.out.print("C");}
9.     }
10.    class D {
11.        public static void main(String[] args) {
12.            A c1 = new C();
13.            B c2 = new C();
14.            C c3 = new C();
15.            C c4 = new C();
16.            c4.m(c1);
17.            c4.m(c2);
18.            c4.m(c3);
19.            System.out.print("Done!");
20.        }
21.    }
```

What is the result of attempting to compile and run the above program?

- (A) Prints: AAADone!
- (B) Prints: ABCDone!
- (C) Prints: CCCDone!
- (D) Compiler Error
- (E) Run time Error

**ANS:**

10. Which of the following statements are true?

- (A) The body of a final method can be inline by a machine-code generator.
- (B) A final method is not allowed to be overridden by a sub-class.
- (C) All methods declared in a final class are implicitly final.
- (D) If a private method is declared final then it is a compile-time error.
- (E) The methods declared in a final class must be explicitly declared final or else Java compiler will raise error.

**ANS:**