CSC2340 Chapter 13 Practice Questions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which of the following class definitions defines a legal abstract class? 1) _____
   A) abstract class A { abstract void unfinished(); }
   B) public class abstract A { abstract void unfinished(); }
   C) class A { abstract void unfinished() { } }
   D) class A { abstract void unfinished(); }

2) Which of the following declares an abstract method in an abstract Java class? 2) _____
   A) public abstract void method();
   B) public abstract void method() {}
   C) public void abstract Method();
   D) public void method() {}
   E) public abstract method();

3) Which of the following statements regarding abstract methods are true? 3) _____
   A) An abstract class can have instances created using the constructor of the abstract class.
   B) An abstract class can be used as a data type.
   C) A subclass of a non–abstract superclass can be abstract.
   D) An abstract class can be extended.
   E) A subclass can override a concrete method in a superclass to declare it abstract.

4) Which of the following statements regarding abstract methods are true? 4) _____
   A) A class that contains abstract methods must be abstract.
   B) It is possible to declare an abstract class that contains no abstract methods.
   C) Abstract classes have constructors.
   D) A data field can be declared abstract.
   E) An abstract method cannot be contained in a nonabstract class.

5) Suppose A is an abstract class, B is a concrete subclass of A, and both A and B have a default constructor. Which of the following is correct? 5) _____
   A) A a = new B(); B) B b = new B(); C) B b = new A(); D) A a = new A();

6) What is the output of running class Test? 6) _____

```
public class Test {
  public static void main(String[] args) {
    new Circle9();
  }
}

public abstract class GeometricObject {
  protected GeometricObject() {
    System.out.print("A");
  }

  protected GeometricObject(String color, boolean filled) {
    System.out.print("B");
  }
}
```

```
public class Circle9 extends GeometricObject {
  /** Default constructor */
  public Circle9() {
    this(1.0);
    System.out.print("C");
  }

  /** Construct circle with a specified radius */
  public Circle9(double radius) {
    this(radius, "white", false);
    System.out.print("D");
  }

  /** Construct a circle with specified radius, filled, and color */
  public Circle9(double radius, String color, boolean filled) {
    super(color, filled);
    System.out.print("E");
  }
}
```

A) AEDC B) BEDC C) ABCD D) BACD E) CBAE

7) Analyze the following code. 7) _____

```
Number[] numberArray = new Integer[2];
numberArray[0] = new Double(1.5);
```

A) Since each element of numberArray is of the Number type, you cannot assign an Integer object to it.
B) At runtime, new Integer[2] is assigned to numberArray. This makes each element of numberArray an Integer object. So you cannot assign a Double object to it.
C) Since each element of numberArray is of the Number type, you cannot assign a Double object to it.
D) You cannot use Number as a data type since it is an abstract class.

8) Which of the following is a correct interface? 8) _____

A) interface A { void print();}
B) abstract interface A { abstract void print() { };}
C) abstract interface A { print(); }
D) interface A { void print() { }; }

9) Which of the following is incorrect? 9) _____

A) The constructors in an abstract class are private.
B) You may declare a final abstract class.
C) An interface may contain constructors.
D) An abstract class contains constructors.
E) The constructors in an abstract class should be protected.

10) _____ is a reference type. 10) _____

A) A primitive type B) An array type
C) A class type D) An interface type

11) Show the output of running the class Test in the following code lines: 11) _____

```
interface A {
}

class C {
}

class B extends D implements A {
}

public class Test {
  public static void main(String[] args) {
    B b = new B();
    if (b instanceof A)
      System.out.println("b is an instance of A");
    if (b instanceof C)
      System.out.println("b is an instance of C");
  }
}

class D extends C {
}
```

A) Nothing.
B) b is an instance of A followed by b is an instance of C.
C) b is an instance of A.
D) b is an instance of C.

12) Suppose A is an interface, B is a concrete class with a default constructor that implements A. 12) _____
Which of the following is correct?
A) A a = new B(); B) A a = new A(); C) B b = new A(); D) B b = new B();

13) Which of the following statements are true? 13) _____
A) The BigInteger class implements Comparable.
B) The String class implements Comparable.
C) The Double class implements Comparable.
D) The Date class implements Comparable.

14) The GeometricObject and Circle classes are defined in this chapter. Analyze the following code. 14) _____

```
public class Test {
  public static void main(String[] args) {
    GeometricObject x = new Circle(3);
    GeometricObject y = (Circle)(x.clone());
    System.out.println(x);
    System.out.println(y);
  }
}
```

A) To enable a Circle object to be cloned, the Circle class has to override the clone() method and implement the java.lang.Cloneable interface.
B) After you override the clone() method and make it public in the Circle class, the problem can compile and run just fine, but y is null if Circle does not implement the Cloneable interface.
C) The program has a compile error because the clone() method is protected in the Object class.
D) If GeometricObject implements Cloneable and Circle overrides the clone() method, the clone() method will work fine to clone Circle objects.

15) What is the best suitable relationship between Employee and Faculty? 15) _____
A) Aggregation B) Inheritance C) None D) Composition

16) Assume an employee can work for only one company. What is the best suitable relationship between Company and Employee? 16) _____
A) Inheritance B) None C) Aggregation D) Composition

17) The relationship between an interface and the class that implements it is _____. 17) _____
A) Aggregation B) None C) Composition D) Inheritance

18) You cannot create an instance of an abstract class using the new operator. 18) _____
A) true B) false

19) An abstract class can be extended. 19) _____
A) true B) false

20) A subclass of a non–abstract class must be non–abstract. 20) _____
A) true B) false

21) All methods in an interface are abstract. 21) _____
A) true B) false

22) An interface can extend any number of interfaces using the extends keyword. 22) _____
A) true B) false

23) A subclass cannot extend more than one class, but may implement any number of interfaces. 23) _____
A) true B) false

24) Suppose Integer x = new Integer(3); x holds _____. 24) _____

A) an integer value
B) value 3
C) a reference value to an Integer object

25) Which of the following statements are true about abstract classes? 25) _____

A) It is possible to declare an abstract class that contains no abstract methods.
B) An abstract class cannot be instantiated using the new operator.
C) If a subclass of an abstract superclass does not implement all the abstract methods, the subclass must be declared abstract.
D) An abstract method cannot be contained in a nonabstract class.
E) A subclass can be abstract even if its superclass is concrete.