Exam

Name________________________________

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

1) Which of the following statements is false? 1) ________

A) A private method cannot be accessed by a class in a different package.
B) A protected method can be accessed by a subclass in a different package.
C) A method with no visibility modifier can be accessed by a class in a different package.
D) A public class can be accessed by a class from a different package.

2) Analyze the following code. 2) ________

```
// Program 1:
public class Test {
  public static void main(String[ ] args) {
    Object a1 = new A();
    Object a2 = new A();
    System.out.println(a1.equals(a2));
  }
}

class A {
  int x;

  public boolean equals(A a) {
    return this.x == a.x;
  }
}

// Program 2:
public class Test {
  public static void main(String[ ] args) {
    A a1 = new A();
    A a2 = new A();
    System.out.println(a1.equals(a2));
  }
}

class A {
  int x;

  public boolean equals(A a) {
    return this.x == a.x;
  }
}
```

A) Program 1 displays true and Program 2 displays false
B) Program 1 displays false and Program 2 displays false
C) Program 1 displays false and Program 2 displays true
D) Program 1 displays true and Program 2 displays true

3) The getValue() method is overridden in two ways. Which one is correct? 3) ________

I:

```
public class Test {
  public static void main(String[ ] args) {
    A a = new A();
    System.out.println(a.getValue());
  }
}

class B {
  public String getValue() {
    return "Any object";
  }
}

class A extends B {
  public Object getValue() {
    return "A string";
  }
}
```

II:

```
public class Test {
  public static void main(String[ ] args) {
    A a = new A();
    System.out.println(a.getValue());
  }
}

class B {
  public Object getValue() {
    return "Any object";
  }
}

class A extends B {
  public String getValue() {
    return "A string";
  }
}
```

A) I B) II C) Both I and II D) Neither

4) Polymorphism means ________. 4) ________

A) that data fields should be declared private
B) that a class can contain another class
C) that a class can extend another class
D) that a variable of supertype can refer to a subtype object

5) Object-oriented programming allows you to derive new classes from existing classes. This is called ________. 5) ________

A) inheritance B) encapsulation C) generalization D) abstraction

6) You can assign ________ to a variable of Object[ ] type. (Choose all that apply.) 6) ________

A) new java.util.Date[100]
B) new int[100]
C) new char[100]
D) new String[100]
E) new double[100]

7) Analyze the following code: 7) ________

```
Cylinder cy = new Cylinder(1, 1);
Circle c = cy;
```

A) The code has a runtime error.
B) The code is fine.
C) The code has a compile error.

8) Given the following code, find the compile error. (Choose all that apply.) 8) ________

```
public class Test {
  public static void main(String[ ] args) {
    m(new GraduateStudent());
    m(new Student());
    m(new Person());
    m(new Object());
  }

  public static void m(Student x) {
    System.out.println(x.toString());
  }
}

class GraduateStudent extends Student {
}

class Student extends Person {
  public String toString() {
    return "Student";
  }
}

class Person extends Object {
  public String toString() {
    return "Person";
  }
}
```

A) m(new Object()) causes an error
B) m(new Person()) causes an error
C) m(new Student()) causes an error
D) m(new GraduateStudent()) causes an error

9) The visibility of these modifiers increases in this order: 9) ________
A) private, protected, none (if no modifier is used), and public.
B) private, none (if no modifier is used), protected, and public.
C) none (if no modifier is used), protected, private, and public.
D) none (if no modifier is used), private, protected, and public.

10) A class design requires that a particular member variable must be accessible by any subclasses of this class, but otherwise not by classes which are not members of the same package. What should be done to achieve this? 10) _______
A) The variable should be marked public.
B) The variable should be marked private and an accessor method provided.
C) The variable should be marked private.
D) The variable should have no special access modifier.
E) The variable should be marked protected.

11) What modifier should you use on the members of a class so that they are not accessible to another class in a different package, but are accessible to any subclasses in any package? 11) _______

A) private B) public

C) protected D) Use the default modifier.

12) Analyze the following code: 12) _______

```
Circle c = new Circle (5);
Cylinder c = cy;
```

A) The code has a compile error.

B) The code is fine.

C) The code has a runtime error.

13) Analyze the following code: (Choose all that apply.) 13) _______

```
public class Test extends A {
  public static void main(String[ ] args) {
    Test t = new Test();
    t.print();
  }
}

class A {
  String s;

  A(String s) {
    this.s = s;
  }

  public void print() {
    System.out.println(s);
  }
}
```

A) The program compiles, but it has a runtime error due to the conflict on the method name print.

B) The program would compile if a default constructor A(){ } is added to class A explicitly.

C) The program does not compile because Test does not have a default constructor Test().

D) The program has an implicit default constructor Test(), but it cannot be compiled, because its super class does not have a default constructor. The program would compile if the constructor in the class A were removed.

14) Which of the following statements are true? (Choose all that apply.) 14) _______

A) It is a compilation error if two methods differ only in return type in the same class.
B) Overloading a method is to provide more than one method with the same name but with different signatures to distinguish them.
C) A static method cannot be overridden. If a static method defined in the superclass is redefined in a subclass, the method defined in the superclass is hidden.
D) A private method cannot be overridden. If a method defined in a subclass is private in its superclass, the two methods are completely unrelated.
E) To override a method, the method must be defined in the subclass using the same signature and compatible return type as in its superclass.

15) Given the following classes and their objects: 15) _______

```
class C1 {};
class C2 extends C1 {};
class C3 extends C1 {};

C2 c2 = new C2();
C3 c3 = new C3();
```

Analyze the following statement:

```
c2 = (C2)((C1)c3);
```

A) The statement is correct.
B) c3 is cast into c2 successfully.
C) You will get a runtime error because you cannot cast objects from sibling classes.
D) You will get a runtime error because the Java runtime system cannot perform multiple casting in nested form.

16) Analyze the following code: 16) _______

```
public class Test {
  public static void main(String[ ] args) {
    String s = new String("Welcome to Java");
    Object o = s;
    String d = (String)o;
  }
}
```

A) When assigning s to o in Object o = s, a new object is created.
B) s, o, and d reference the same String object.
C) When casting o to s in String d = (String)o, the contents of o is changed.
D) When casting o to s in String d = (String)o, a new object is created.

17) Analyze the following code: (Choose all that apply.) 17) _______

```
public class Test {
  public static void main(String[ ] args) {
    Object a1 = new A();
    Object a2 = new Object();
    System.out.println(a1);
    System.out.println(a2);
  }
}

class A {
  int x;
  public String toString() {
    return "A's x is " + x;
  }
}
```

A) When executing System.out.println(a1), the toString() method in the A class is invoked.
B) When executing System.out.println(a2), the toString() method in the Object class is invoked.
C) The program cannot be compiled, because System.out.println(a1) is wrong and it should be replaced by System.out.println(a1.toString());
D) When executing System.out.println(a1), the toString() method in the Object class is invoked.

18) The equals method is defined in the Object class. Which of the following is correct to override it in the String class? 18) _______

A) public boolean equals(Object other)
B) public static boolean equals(String other)
C) public boolean equals(String other)
D) public static boolean equals(Object other)

19) Which of the following are Java keywords? 19) _______

A) cast B) instanceOf C) casting D) instanceof

20) Which of the following classes cannot be extended? 20) _______

A) class A { private A();} B) final class A { }
C) class A { } D) class A { protected A();}

21) Swing components that don't rely on native GUI are referred to as ________. 21) _______

A) GUI components B) non–GUI components
C) heavyweight components D) lightweight components

22) Can you use the setToolTip method to set a tool tip for ________? (Choose all that apply.) 22) _______

A) JButton
B) JLabel
C) Component
D) JComponent
E) Container

23) ________ creates a color object. (Choose all that apply.) 23) _______

A) new Color(255, 255, 255) B) new Color(1, 2, 3)
C) new Color(0, 266, 0) D) new Color(0, 0, 0)

24) Analyze the following code: 24) _______

```
import javax.swing.*;

public class Test extends JFrame  {
  private JButton jbtOK = new JButton("OK");

  public static void main(String[ ] args) {
    // Create a frame and set its properties
    JFrame frame = new Test();
    frame.setTitle("Logic Error");
    frame.setSize(200, 100);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
  }

  public Test() {
    jbtOK.setToolTipText("This is a button");
    add(new JButton("OK"));
  }
}
```

A) The tool tip text is displayed when you move the mouse on the button.
B) The tool tip text will be displayed if you replace add(new JButton("OK")) with add(jbtOK = new JButton("OK")).
C) The tool tip text will be displayed if you swap the two lines in the Test constructor.
D) The tool tip text will be displayed if you replace add(new JButton("OK")) with add(jbtOK).

25) The method ________ sets the foreground color to yellow in JFrame f. (Choose all that apply.) 25) _______

A) f.setForeground(Color.YELLOW)
B) setForeground(Color.YELLOW)
C) setForeground(Color.yellow)
D) f.setForeGround(Color.yellow)
E) f.setForeground(Color.yellow)

26) Can you use the setBorder method to set a border for ________? (Choose all that apply.) 26) _______

A) Container
B) JComponent
C) JButton
D) JLabel
E) Component

27) You can use methods ________ on any instance of java.awt.Component. (Choose all that apply.) 27) _______

A) setBackground
B) setBorder
C) getHeight
D) getBackground
E) getWidth

28) Suppose a JFrame uses the GridLayout(2, 2). If you add six buttons to the frame, how many columns are displayed? 28) _______

A) 4 B) 2 C) 3 D) 1

29) Analyze the following code. 29) _______

```
import java.awt.*;
import javax.swing.*;

public class Test  {
  public static void main(String[ ] args) {
    Component c = new JButton("OK");
    JFrame frame = new JFrame("My Frame");
    frame.add(c);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
  }
}
```

A) You cannot add a Swing component directly to a JFrame using add(c) prior to JDK 1.4, but it is OK in JDK 1.5.
B) You can only add c to a container because c's type is Component.
C) You cannot assign a JButton to a variable of java.awt.Component.
D) You cannot create a JFrame using new JFrame("My Frame").

30) What layout manager should you use so that every component occupies the same size in the container? 30) _______

A) any layout B) a BorderLayout
C) a FlowLayout D) a GridLayout

31) To specify a font to be bold and italic, use the font style value ________. 31) _______

A) Font.ITALIC B) Font.PLAIN
C) Font.BOLD + Font.ITALIC D) Font.BOLD

32) What is best to describe the relationship between Component and Font? 32) _______

A) Aggregation B) Composition C) Association D) Inheritance

33) To add a component c to a JPanel p, use ________. 33) _______

A) p.add(c) B) p.append(c)
C) p.insert(c) D) p.getContentPane(c)

34) Suppose a JFrame uses the GridLayout(0, 2). If you add six buttons to the frame, how many columns are displayed? 34) _______

A) 1 B) 4 C) 3 D) 2

35) Which of the following classes is a heavyweight component? 35) _______

A) JTextField B) JFrame C) JButton D) JPanel

36) The default layout out of a contentPane in a JFrame is ________. 36) _______

A) BorderLayout B) GridLayout C) None D) FlowLayout

37) What is displayed on the console when running the following program? 37) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      method();
      System.out.println("After the method call");
    }
    catch (RuntimeException ex) {
      System.out.println("RuntimeException");
    }
    catch (Exception ex) {
      System.out.println("Exception");
    }
  }

  static void method() throws Exception {
    try {
      String s = "5.6";
      Integer.parseInt(s); // Cause a NumberFormatException

      int i = 0;
      int y = 2 / i;
      System.out.println("Welcome to Java");
    }
    catch (NumberFormatException ex) {
      System.out.println("NumberFormatException");
      throw ex;
    }
    catch (RuntimeException ex) {
      System.out.println("RuntimeException");
    }
  }
}
```

A) The program displays NumberFormatException followed by RuntimeException.
B) The program displays NumberFormatException followed by After the method call.
C) The program displays NumberFormatException twice.
D) The program has a compilation error.

38) Analyze the following code: 38) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      int zero = 0;
      int y = 2/zero;
      try {
        String s = "5.6";
        Integer.parseInt(s); // Cause a NumberFormatException
      }
      catch(Exception e) {
      }
    }
    catch(RuntimeException e) {
      System.out.println(e);
    }
  }
}
```

A) A try-catch block cannot be embedded inside another try-catch block.
B) The program has a compilation error because Exception appears before RuntimeException.
C) A good programming practice is to avoid nesting try-catch blocks, because nesting makes programs difficult to read. You can rewrite the program using only one try-catch block.
D) None of the above.

39) Analyze the following code: 39) _______

```
class Test {
  public static void main(String[ ] args)
    throws MyException {
    System.out.println("Welcome to Java");
  }
}

class MyException extends Error {
}
```

A) You should not declare a class that extends Error, because Error raises a fatal error that terminates the program.
B) You cannot declare an exception in the main method.
C) The program has a compilation error.
D) You declared an exception in the main method, but you did not throw it.

40) An instance of ________ describes system errors. If this type of error occurs, there is little you can do beyond notifying the user and trying to terminate the program gracefully. 40) _______

A) Error
B) NumberFormatException
C) Exception
D) Throwable
E) RuntimeException

41) What is displayed on the console when running the following program? 41) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      method();
      System.out.println("After the method call");
    }
    catch (NumberFormatException ex) {
      System.out.println("NumberFormatException");
    }
    catch (RuntimeException ex) {
      System.out.println("RuntimeException");
    }
  }

  static void method() {
    String s = "5.6";
    Integer.parseInt(s); // Cause a NumberFormatException

    int i = 0;
    int y = 2 / i;
    System.out.println("Welcome to Java");
  }
}
```

A) The program displays NumberFormatException followed by After the method call.
B) The program displays NumberFormatException.
C) The program displays NumberFormatException followed by RuntimeException.
D) The program has a compilation error.
E) The program displays RuntimeException.

42) The following code causes Java to throw ________. 42) _______
int number = Integer.MAX_VALUE + 1;
A) Exception
B) RuntimeException
C) Throwable
D) Error
E) no exceptions

43) What exception type does the following program throw? 43) _______

```
public class Test {
  public static void main(String[ ] args) {
    Object o = new Object();
    String d = (String)o;
  }
}
```

A) ArithmeticException
B) StringIndexOutOfBoundsException
C) ArrayIndexOutOfBoundsException
D) No exception
E) ClassCastException

44) Which of the following is not an advantage of Java exception handling? 44) _______

A) Java separates exception handling from normal processing tasks.
B) Exception handling makes it possible for the caller's caller to handle the exception.
C) Exception handling improves performance.
D) Exception handling simplifies programming because the error-reporting and error-handling code can be placed at the catch block.

45) What exception type does the following program throw? 45) _______

```
public class Test {
  public static void main(String[ ] args) {
    Object o = null;
    System.out.println(o);
  }
}
```

A) NullPointerException
B) ArrayIndexOutOfBoundsException
C) ArithmeticException
D) StringIndexOutOfBoundsException
E) No exception

46) What exception type does the following program throw? 46) _______

```
public class Test {
  public static void main(String[ ] args) {
    Object o = null;
    System.out.println(o.toString());
  }
}
```

A) ClassCastException
B) NullPointerException
C) ArithmeticException
D) ArrayIndexOutOfBoundsException
E) StringIndexOutOfBoundsException

47) Analyze the following program. 47) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      String s = "5.6";
      Integer.parseInt(s); // Cause a NumberFormatException

      int i = 0;
      int y = 2 / i;
      System.out.println("Welcome to Java");
    }
    catch (Exception ex) {
      System.out.println(ex);
    }
  }
}
```

A) The program compiles and runs without exceptions.
B) An exception is raised due to 2 / i;
C) An exception is raised due to Integer.parseInt(s);
D) The program has a compilation error.

48) What is displayed on the console when running the following program? 48) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      System.out.println("Welcome to Java");
      int i = 0;
      int y = 2/i;
      System.out.println("Welcome to HTML");
    }
    finally {
      System.out.println("The finally clause is executed");
    }
  }
}
```

A) The program displays three lines: Welcome to Java, Welcome to HTML, The finally clause is executed.
B) Welcome to Java followed by The finally clause is executed in the next line.
C) Welcome to Java.
D) None of the above.

49) Analyze the following code. 49) _______

```
1. public class Test  {
2.   public static void main(String[ ] args) {
3.     Fruit[ ] fruits = {new Fruit(2), new Fruit(3), new Fruit(1)};
4.     java.util.Arrays.sort(fruits);
5.   }
6. }

class Fruit {
  private double weight;

  public Fruit(double weight) {
    this.weight = weight;
  }
}
```

A) The program has a runtime error on Line 4 because the Fruit class does not implement the java.lang.Comparable interface and the Fruit objects are not comparable.
B) The program has a compile error because the Fruit class does not have a default constructor.
C) The program has a compile error on Line 4 because the Fruit class does not implement the java.lang.Comparable interface and the Fruit objects are not comparable.
D) The program has a runtime error on Line 3 because the Fruit class does not have a default constructor.

50) The GeometricObject and Circle classes are defined in Chapter 11. Analyze the following code. (Choose all that apply.) 50) _______

```
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) The program has a compile error because the clone() method is protected in the Object class.
B) To enable a Circle object to be cloned, the Circle class has to override the clone() method and implement the java.lang.Cloneable interface.
C) 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.
D) If GeometricObject implements Cloneable and Circle overrides the clone() method, the clone() method will work fine to clone Circle objects.

51) Which of the following classes are immutable? (Choose all that apply.) 51) _______

A) Double
B) String
C) BigInteger
D) Integer
E) BigDecimal

52) Which of the following statements will convert a string s into a double value d? 52) _______

A) d = Double.valueOf(s).doubleValue(); B) d = Double.parseDouble(s);
C) d = (new Double(s)).doubleValue(); D) All of the above.

53) Which of the following statements are correct? (Choose all that apply.) 53) _______

A) Double i = 4.5; B) Integer i = 4.5;
C) Number i = 4.5; D) Object i = 4.5;

54) Assume Calendar calendar = new GregorianCalendar(). ________ returns the week of the year. 54) _______

A) calendar.get(Calendar.MONTH_OF_YEAR)
B) calendar.get(Calendar.MONTH)
C) calendar.get(Calendar.WEEK_OF_MONTH)
D) calendar.get(Calendar.WEEK_OF_YEAR)

55) Which of the following statements regarding abstract methods are true? (Choose all that apply.) 55) _______

A) An abstract class can be used as a data type.
B) An abstract class can have instances created using the constructor of the abstract class.
C) A subclass can override a concrete method in a superclass to declare it abstract.
D) An abstract class can be extended.
E) A subclass of a non–abstract superclass can be abstract.

56) In JDK 1.5, analyze the following code. (Choose all that apply.) 56) _______

```
Line 1: Integer[ ] intArray = {1, 2, 3};
Line 2: int i = intArray[0] + intArray[1];
Line 3: int j = i + intArray[2];
Line 4: double d = intArray[0];
```

A) Line 4 is OK. An int value from intArray[0] object is assigned to a double variable d.
B) It is OK to assign 1, 2, 3 to an array of Integer objects in JDK 1.5.
C) It is OK to mix an int value with an Integer object in an expression in Line 3.
D) It is OK to automatically convert an Integer object to an int value in Line 2.

57) The printout from the following code is ________. 57) _______

```
java.util.ArrayList list = new java.util.ArrayList();
list.add("New York");
java.util.ArrayList list1 = (java.util.ArrayList)(list.clone());
list.add("Atlanta");
list1.add("Dallas");
System.out.println(list1);
```

A) [New York, Dallas] B) [New York, Atlanta]
C) [New York] D) [New York, Atlanta, Dallas]

58) The printout from the following code is ________. 58) _______

```
java.util.ArrayList list = new java.util.ArrayList();
list.add("New York");
java.util.ArrayList list1 = list;
list.add("Atlanta");
list1.add("Dallas");
System.out.println(list1);
```

A) [New York, Dallas] B) [New York]
C) [New York, Atlanta] D) [New York, Atlanta, Dallas]

59) The header for the paintComponent method is ________. 59) _______

A) protected void paintComponent()
B) private void paintComponent(Graphics g)
C) protected void paintComponent(Graphics g)
D) public void paintComponent(Graphics g)

60) Analyze the following code. 60) _______

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class Test1 extends JFrame {
  public Test1() {
    add(new MyCanvas());
  }

  public static void main(String[ ] args) {
    JFrame frame = new Test1();
    frame.setSize(300, 300);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
  }
}

class MyCanvas extends JPanel {
  private String message;

  public void setMessage(String message) {
    this.message = message;
  }

  public void paintComponent(Graphics g) {
    super.paintComponent(g);

    g.drawString(message, 20, 20);
  }
}
```

A) The program has a NullPointerException since message is null when g.drawString(message, 20, 20) is executed.
B) The program runs fine and displays nothing since you have not set a string value.
C) The program has a compile error because new Test1() is assigned to frame.
D) The program would display Welcome to Java! if you replace new MyCanvas() by new MyCanvas("Welcome to Java!").

61) Invoking ________ returns the width of the string in a FontMetrics object fm. 61) _______

A) fm.stringWidth(s) B) getLength(s)
C) fm.getWidth(s) D) fm.getHeight(s)

62) Which of the following statements are true? (Choose all that apply.) 62) _______

A) Once a GUI component is visible, getGraphics() returns the object.
B) The Graphics object is automatically created for each visible GUI component.
C) If a GUI component is not visible, getGraphics() returns null.
D) Each GUI component contains a Graphics object that can be obtained using getGraphics() method.

63) To repaint graphics, invoke ________ on a Swing component. 63) _______

A) repaint()
B) update()
C) init()
D) paintComponent()

64) Analyze the following code. 64) _______

```
import java.awt.*;
import javax.swing.*;

public class Test extends JFrame  {
  public Test() {
    add(new MyDrawing("Welcome to Java!"));
  }

  public static void main(String[ ] args) {
    JFrame frame = new JFrame();
    frame.setSize(300, 300);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
  }
}

class MyDrawing extends JPanel {
  String message;

  public MyDrawing(String message) {
    this.message = message;
  }

  public void paintComponent(Graphics g) {
    super.paintComponent(g);

    g.drawString(message, 20 ,20);
  }
}
```

A) The program would display Welcome to Java! if new JFrame() is replaced by Test().
B) The program would display Welcome to Java! if new JFrame() is replaced by new Test("My Frame").
C) The program runs fine and displays Welcome to Java!
D) The program would display Welcome to Java! if new JFrame() is replaced by new Test().

65) Which of the following statements are true? (Choose all that apply.) 65) _______

A) You can create a FontMetric using new FontMetrics().
B) You can obtain the leading, ascent, descent, and height for a font from a FontMetrics object.
C) A font determines the font metrics.
D) You can obtain a FontMetrics from a Font object using the getFontMetrics() method.

66) The following are the methods to obtain font properties in a FontMetrics object fm. (Choose all that apply.) 66) _______

A) fm.getAscent()
B) fm.getHeight()
C) fm.getLeading()
D) fm.getDescent()

67) Inheritance means ________. 67) _______

A) that a variable of supertype can refer to a subtype object
B) that data fields should be declared private
C) that a class can extend another class
D) that a class can contain another class

68) What modifier should you use on a class so that a class in the same package can access it but a class in a different package cannot access it? 68) _______

A) private
B) public
C) protected
D) Use the default modifier.

69) Suppose ArrayList x contains two strings [Beijing, Singapore]. Which of the following methods will cause the list to become [Beijing, Chicago, Singapore]? 69) _______

A) x.add(0, "Chicago")
B) x.add("Chicago")
C) x.add(2, "Chicago")
D) x.add(1, "Chicago")

70) Suppose ArrayList x contains two strings [Beijing, Singapore]. Which of the following method will cause the list to become [Beijing]? (Choose all that apply.) 70) _______

A) x.remove(0)
B) x.remove(2)
C) x.remove(1)
D) x.remove("Singapore")

71) What is the output of the following code: 71) _______

```
public class Test {
  public static void main(String[ ] args) {
    String s1 = new String("Java");
    String s2 = new String("Java");
    System.out.print((s1 == s2) + " " + (s1.equals(s2)));
  }
}
```

A) false true
B) true true
C) false false
D) true false

72) What is the output of running class C? 72) _______

```
class A {
  public A() {
    System.out.println(
      "The default constructor of A is invoked");
  }
}

class B extends A {
  public B() {
    System.out.println(
      "The default constructor of B is invoked");
  }
}

public class C  {
  public static void main(String[ ] args) {
    B b = new B();
  }
}
```

A) "The default constructor of A is invoked""The default constructor of B is invoked"
B) "The default constructor of B is invoked""The default constructor of A is invoked"
C) "The default constructor of B is invoked"
D) "The default constructor of A is invoked"
E) Nothing displayed

73) ________ are referred to as heavyweight components. 73) _______

A) GUI components
B) AWT components
C) Swing components
D) Non-GUI components

74) Which of the following statements is for placing the frame's upper left corner to (200, 100)? 74) _______

A) frame.setLocation(200, 200)
B) frame.setLocation(100, 200)
C) frame.setLocation(200, 100)
D) frame.setLocation(100, 100)

75) Which of the following are subclasses of java.awt.Component? (Choose all that apply.) 75) _______

A) Container classes
B) Layout managers
C) Helper classes such as Color and Font
D) Swing user interface classes

76) What should you use to position a Button within an application Frame so that the size of the Button is NOT affected by the Frame size? 76) _______

A) the North or South area of a BorderLayout
B) the East or West area of a BorderLayout
C) a GridLayout
D) a FlowLayout
E) the center area of a BorderLayout

77) How many frames are displayed? 77) _______

```
import javax.swing.*;

public class Test extends JFrame {
  public static void main(String[ ] args) {
    JFrame f1 = new Test();
    JFrame f2 = new Test();
    JFrame f3 = new Test();
    f1.setVisible(true);
    f2.setVisible(true);
    f3.setVisible(true);
  }
}
```

A) 0. B) 1. C) 2. D) 3.

78) What is displayed on the console when running the following program? 78) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      method();
      System.out.println("After the method call");
    }
    catch (RuntimeException ex) {
      System.out.println("RuntimeException");
    }
    catch (Exception ex) {
      System.out.println("Exception");
    }
  }

  static void method() throws Exception {
    try {
      String s = "5.6";
      Integer.parseInt(s); // Cause a NumberFormatException

      int i = 0;
      int y = 2 / i;
      System.out.println("Welcome to Java");
    }
    catch (RuntimeException ex) {
      System.out.println("RuntimeException");
    }
    catch (Exception ex) {
      System.out.println("Exception");
    }
  }
}
```

A) The program displays Exception followed by RuntimeException.
B) The program displays RuntimeException twice.
C) The program displays RuntimeException followed by After the method call.
D) The program displays Exception twice.
E) The program has a compilation error.

79) What is displayed on the console when running the following program? 79) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      System.out.println("Welcome to Java");
      int i = 0;
      int y = 2/i;
      System.out.println("Welcome to Java");
    }
    catch (RuntimeException ex) {
      System.out.println("Welcome to Java");
    }
    finally {
      System.out.println("End of the block");
    }
  }
}
```

A) The program displays Welcome to Java three times.
B) The program displays Welcome to Java two times.
C) The program displays Welcome to Java three times followed by End of the block.
D) The program displays Welcome to Java two times followed by End of the block.

80) What is displayed on the console when running the following program? 80) _______

```
class Test {
  public static void main(String[ ] args) {
    try {
      System.out.println("Welcome to Java");
      int i = 0;
      double y = 2.0 / i;
      System.out.println("Welcome to HTML");
    }
    finally {
      System.out.println("The finally clause is executed");
    }
  }
}
```

A) Welcome to Java.
B) The program displays three lines: Welcome to Java, Welcome to HTML, The finally clause is executed.
C) Welcome to Java followed by The finally clause is executed in the next line.
D) None of the above.

81) An instance of ________ describes the errors caused by your program and external circumstances. These errors can be caught and handled by your program. 81) _______

A) NumberFormatException
B) Error
C) Exception
D) Throwable
E) RuntimeException

82) What is the output of running class Test? 82) _______

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

83) Analyze the following code. 83) _______

```
public class Test {
 public static void main(String[ ] args) {
  Number x = new Integer(3);
  System.out.println(x.intValue());
  System.out.println((Integer)x.compareTo(new Integer(4)));
 }
}
```

A) The program has a compile error because intValue is an abstract method in Number.
B) The program compiles and runs fine.
C) The program has a compile error because x cannot be cast into Integer.
D) The program has a compile error because an Integer instance cannot be assigned to a Number variable.
E) The program has a compile error because the member access operator (.) is executed before the casting operator.

84) Which of the following statements will convert a string s into i of int type? (Choose all that apply.) 84) _______
A) i = Integer.parseInt(s);
B) i = (new Integer(s)).intValue();
C) i = (int)(Double.parseDouble(s));
D) i = Integer.valueOf(s);
E) i = Integer.valueOf(s).intValue();

85) Which of the following statements are correct? (Choose all that apply.) 85) _______
A) You can set an image on a button, but the image is not resizable.
B) You can draw an image on a GUI component using the drawImage method in the Graphics object. This image is resizable.
C) You can set an image on a label, but the image is not resizable.

86) You should override the ________ method to draw things on a Swing component. 86) _______

A) init()
B) update()
C) repaint()
D) paintComponent()

87) To draw graphics, it is better to declare a class that extends ________ and override the paintComponent method. 87) _______

A) JPanel
B) JButton
C) JLabel
D) JComponent

88) What is the output of the following code: 88) _______

```
public class Test {
  public static void main(String[ ] args) {
    Object o1 = new Object();
    Object o2 = new Object();
    System.out.print((o1 == o2) + " " + (o1.equals(o2)));
  }
}
```

A) false false
B) true true
C) true false
D) false true

89) Which of the statements regarding the super keyword is incorrect? 89) _______

A) You can use super.super.p to invoke a method in superclass's parent class.
B) You can use super to invoke a super class method.
C) You can use super to invoke a super class constructor.
D) You cannot invoke a method in superclass's parent class.

90) Analyze the following code. 90) _______

```
import java.awt.*;
import javax.swing.*;

public class Test  {
  public static void main(String[ ] args) {
    JFrame frame = new JFrame("My Frame");
    frame.add(new JButton("OK"));
    frame.add(new JButton("Cancel"));
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setSize(200, 200);
    frame.setVisible(true);
  }
}
```

A) Both button OK and button Cancel are displayed and button OK is displayed on the right side of button OK.
B) Both button OK and button Cancel are displayed and button OK is displayed on the left side of button OK.
C) Only button OK is displayed.
D) Only button Cancel is displayed.

91) What is best to describe the relationship between Component and Color? 91) _______

A) Composition B) Inheritance C) Aggregation D) Association

92) A Java exception is an instance of ________. 92) _______

A) RuntimeException
B) Throwable
C) Exception
D) Error
E) NumberFormatException

93) The java.lang.Comparable interface is introduced in Chapter 11. Analyze the following code: (Choose all that apply.) 93) _______

```
public class Test1  {
  public Object max(Object o1, Object o2) {
    if ((Comparable)o1.compareTo(o2) >= 0) {
      return o1;
    }
    else {
      return o2;
    }
  }
}
```

A) The program has a compile error because you cannot cast an Object instance o1 into Comparable.
B) The program would compile if ((Comparable)o1.compareTo(o2) >= 0) is replaced by (((Comparable)o1).compareTo(o2) >= 0).
C) The program has a compile error because o1 is an Object instance and it does not have the compareTo method.
D) The program has a compile error because Test1 does not have a main method.

94) Given a Graphics object g, to draw a filled arc with radius 20 centered at (50, 50) and start angle 0 and spanning angle 90, you use ________. 94) _______

A) g.fillArc(50, 50, 40, 40, 0, 90)
B) g.fillArc(30, 30, 40, 40, 0, Math.toRadian(90))
C) g.fillArc(50, 50, 20, 20, 0, 90)
D) g.fillArc(30, 30, 40, 40, 0, 90)
E) g.fillArc(50, 50, 40, 40, 0, Math.toRadian(90))

95) Composition means ________. 95) _______

A) that a class can contain another class
B) that data fields should be declared private
C) that a class can extend another class
D) that a variable of supertype can refer to a subtype object

96) What is best to describe the relationship between a container and a layout manager? 96) _______

A) Inheritance B) Aggregation C) Association D) Composition

97) What exception type does the following program throw? 97) _______

```
public class Test {
  public static void main(String[ ] args) {
    String s = "abc";
    System.out.println(s.charAt(3));
  }
}
```

A) ClassCastException
B) ArrayIndexOutOfBoundsException
C) StringIndexOutOfBoundsException
D) No exception
E) ArithmeticException

98) Analyze the following code. 98) _______

```
public class Test {
  public static void main(String[ ] args) {
    Number x = new Integer(3);
    System.out.println(x.intValue());
    System.out.println(x.compareTo(new Integer(4)));
  }
}
```

A) The program has a compile error because an Integer instance cannot be assigned to a Number variable.
B) The program compiles and runs fine.
C) The program has a compile error because x does not have the compareTo method.
D) The program has a compile error because intValue is an abstract method in Number.

99) Analyze the following code. 99) _______

```
import java.awt.*;
import javax.swing.*;

public class Test  {
  public static void main(String[ ] args) {
    JFrame frame = new JFrame("My Frame");
    frame.add(new MyDrawing("Welcome to Java!"));
    frame.setSize(300, 300);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
    frame.setVisible(true);
  }
}

class MyDrawing extends JPanel {
  String message;

  public MyDrawing(String message) {
    this.message = message;
  }

  public void paintcomponent(Graphics g) {
    super.paintComponent(g);

    g.drawString(message, 20 ,20);
  }
}
```

A) The program runs fine and displays Welcome to Java!
B) The program has a compile error because the paintcomponent should be spelled as paintComponent.
C) It is a runtime error to invoke the setVisible(true) twice.
D) The program runs, but it does not display the message.
E) The program has a runtime error because the paintcomponent should be spelled as paintComponent.

100) Which of the following statements are true? (Choose all that apply.) 100) ______

A) Dynamic binding can apply to instance methods.
B) You can always pass an instance of a subclass to a parameter of its superclass type. This feature is known as polymorphism.
C) The compiler finds a matching method according to parameter type, number of parameters, and order of the parameters at compilation time.
D) A method may be implemented in several subclasses. The Java Virtual Machine dynamically binds the implementation of the method at runtime.
E) Dynamic binding can apply to static methods.

Answer Key
Testname: QUIZ3

1) C
2) C
3) B
4) D
5) A
6) A, D
7) B
8) A, B
9) B
10) E
11) C
12) A
13) B, D
14) A, B, C, D, E
15) C
16) B
17) A, B
18) A
19) D
20) B
21) D
22) A, B, D
23) A, B, D
24) D
25) A, E
26) B, C, D
27) A, C, D, E
28) C
29) A
30) D
31) C
32) C
33) A
34) D
35) B
36) A
37) A
38) C
39) A
40) A
41) B
42) E
43) E
44) C
45) E
46) B
47) C
48) B
49) A
50) A, B, C, D
51) A, B, C, D, E
52) D
53) A, C, D
54) D
55) A, C, D, E
56) A, B, C, D
57) A
58) D
59) C
60) A
61) A
62) A, B, C, D
63) A
64) D
65) B, C, D
66) A, B, C, D
67) C
68) D
69) D
70) C, D
71) A
72) A
73) B
74) C
75) A, D
76) D
77) D
78) C
79) D
80) B
81) C
82) D
83) E
84) A, B, C, E
85) A, B, C
86) D
87) A
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89) A
90) D
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99) D
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