1. Given:

```
public class Mutant {
public static void main(String[] args) {
StringBuilder sb = new StringBuilder("abc");
String s = "abc";
sb.reverse().append("d");
s.toUpperCase().concat("d");
System.out.println("." + sb + ". ." + s + ".");
}
}
```

Which two substrings will be included in the result? (Choose two.)
A. .abc.
B. .ABCd.
C. .ABCD.
D. .cbad.
E. .dcba.

2. Given:

```
public class Hilltop {
public static void main(String[] args) {
String[] horses = new String[5];
horses[4] = null;
for(int i = 0; i < horses.length; i++) {
if(i < args.length)
horses[i] = args[i];
System.out.print(horses[i].toUpperCase() + " ");
}
}
}
```

And, if the code compiles, the command line:
java Hilltop eyra vafi draumur kara
What is the result?
A. EYRA VAFI DRAUMUR KARA
B. EYRA VAFI DRAUMUR KARA null
C. An exception is thrown with no other output
D. EYRA VAFI DRAUMUR KARA, and then a NullPointerException
E. EYRA VAFI DRAUMUR KARA, and then an ArrayIndexOutOfBoundsException
F. Compilation fails

3. Given:

```
public class Actors {
public static void main(String[] args) {
char[] ca = {0x4e, \u004e, 78};
System.out.println((ca[0] == ca[1]) + " " + (ca[0] == ca[2]));
}
}
```

What is the result?

A. true true
B. true false
C. false true
D. false false
E. Compilation fails

4. Given:

```
1. class Dims {
2. public static void main(String[] args) {
3. int[][] a = {{1,2}, {3,4}};
4. int[] b = (int[]) a[1];
5. Object o1 = a;
6. int[][] a2 = (int[][]) o1;
7. int[] b2 = (int[]) o1;
8. System.out.println(b[1]);
9. } }
```

What is the output ?

```
5. public class Tailor {
public static void main(String[] args) {
byte[][] ba = {{1,2,3,4}, {1,2,3}};
System.out.println(ba[1].length + " " + ba.length);
}
}
```

What is the result?

A. 2 4
B. 2 7
C. 3 2

D. 3 7
E. 4 2
F. 4 7
G. Compilation fails

6. Given:
3. public class Theory {
4. public static void main(String[] args) {
5. String s1 = "abc";
6. String s2 = s1;
7. s1 += "d";
8. System.out.println(s1 + " " + s2 + " " + (s1==s2));
9.
10. StringBuilder sb1 = new StringBuilder("abc");
11. StringBuilder sb2 = sb1;
12. sb1.append("d");
13. System.out.println(sb1 + " " + sb2 + " " + (sb1==sb2));
14. }
15. }
What is the output?

7. Given:
public class Mounds {
public static void main(String[] args) {
StringBuilder sb = new StringBuilder();
String s = new String();
for(int i = 0; i < 1000; i++) {
s = " " + i;
sb.append(s);
}
// done with loop
}
}
If the garbage collector does NOT run while this code is executing, approximately how many
objects will exist in memory when the loop is done?
A. Less than 10
B. About 1000
C. About 2000
D. About 3000

E. About 4000

8.Given:
public abstract interface Frobnicate { public void twiddle(String s); }
Which is a correct class? (Choose all that apply.)
A. public abstract class Frob implements Frobnicate {
public abstract void twiddle(String s) { }
}
B. public abstract class Frob implements Frobnicate { }
C. public class Frob extends Frobnicate {
public void twiddle(Integer i) { }
}
D. public class Frob implements Frobnicate {
public void twiddle(Integer i) { }
}
E. public class Frob implements Frobnicate {
public void twiddle(String i) { }
public void twiddle(Integer s) { }
}

9. Given:
class Top {
public Top(String s) { System.out.print("B"); }
}
public class Bottom2 extends Top {
public Bottom2(String s) { System.out.print("D"); }
public static void main(String [] args) {
new Bottom2("C");
System.out.println(" ");
}
}
What is the result?
A. BD
B. DB
C. BDC
D. DBC
E. Compilation fails

10. Given:

```
class Clidder {
private final void flipper() { System.out.println("Clidder"); }
}
public class Clidlet extends Clidder {
public final void flipper() { System.out.println("Clidlet"); }
public static void main(String [] args) {
new Clidlet().flipper();
}
}
```

What is the result?

A. Clidlet
B. Clidder
C. Clidder
Clidlet
D. Clidlet
Clidder
E. Compilation fails

11. Given:

```
class Bird {
{ System.out.print("b1 "); }
public Bird() { System.out.print("b2 "); }
}
class Raptor extends Bird {
static { System.out.print("r1 "); }
public Raptor() { System.out.print("r2 "); }
{ System.out.print("r3 "); }
static { System.out.print("r4 "); }
}
class Hawk extends Raptor {
public static void main(String[] args) {
System.out.print("pre ");
new Hawk();
System.out.println("hawk ");
}
}
```

What is the result?

A. pre b1 b2 r3 r2 hawk
B. pre b2 b1 r2 r3 hawk

C. pre b2 b1 r2 r3 hawk r1 r4
D. r1 r4 pre b1 b2 r3 r2 hawk
E. r1 r4 pre b2 b1 r2 r3 hawk
F. pre r1 r4 b1 b2 r3 r2 hawk
G. pre r1 r4 b2 b1 r2 r3 hawk
H. The order of output cannot be predicted
I. Compilation fails

12. Given the following:
1. class X { void do1() { } }
2. class Y extends X { void do2() { } }
3.
4. class Chrome {
5. public static void main(String [] args) {
6. X x1 = new X();
7. X x2 = new Y();
8. Y y1 = new Y();
9. // insert code here
10. } }
Which of the following, inserted at line 9, will compile? (Choose all that apply.)
A. x2.do2();
B. (Y)x2.do2();
C. ((Y)x2).do2();
D. None of the above statements will compile

13. Given:
```
public class Locomotive {
Locomotive() { main("hi"); }
public static void main(String[] args) {
System.out.print("2 ");
}
public static void main(String args) {
System.out.print("3 " + args);
}
}
```
What is the result? (Choose all that apply.)
A. 2 will be included in the output
B. 3 will be included in the output
C. hi will be included in the output

D. Compilation fails
E. An exception is thrown at runtime

14. Given:
3. class Dog {
4. public void bark() { System.out.print("woof "); }
5. }
6. class Hound extends Dog {
7. public void sniff() { System.out.print("sniff "); }
8. public void bark() { System.out.print("howl "); }
9. }
10. public class DogShow {
11. public static void main(String[] args) { new DogShow().go(); }
12. void go() {
13. new Hound().bark();
14. ((Dog) new Hound()).bark();
15. ((Dog) new Hound()).sniff();
16. }
17. }
What is the result? (Choose all that apply.)
A. howl howl sniff
B. howl woof sniff
C. howl howl followed by an exception
D. howl woof followed by an exception
E. Compilation fails with an error at line 14
F. Compilation fails with an error at line 15

15. Given:
3. class Mammal {
4. String name = "furry ";
5. String makeNoise() { return "generic noise"; }
6. }
7. class Zebra extends Mammal {
8. String name = "stripes ";
9. String makeNoise() { return "bray"; }
10. }
11. public class ZooKeeper {
12. public static void main(String[] args) { new ZooKeeper().go(); }
13. void go() {

14. Mammal m = new Zebra();
15. System.out.println(m.name + m.makeNoise());
16. }
17. }
What is the result?
A. furry bray
B. stripes bray
C. furry generic noise
D. stripes generic noise
E. Compilation fails
F. An exception is thrown at runtime

16. What is the output of below code

```
public class Prg4 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		String[] table = {"aa", "bb", "cc"};
		for (String ss: table) {
		int i = 0;
		while (i < table.length) {
		System.out.println(ss + ", " + i);
		i++;
		}
		}




	}

}
```

17. Write the output

```
public class Prg2 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

		int[] nums= new int[6];
		int [] [] array2D = {{0, 1, 2}, {3, 4, 5, 6}};
		System.out.print (array2D[0].length+ "" );
		System.out.print(array2D[1].getClass(). isArray() + "");
		System.out.println (array2D[0][1]);

}
}
```

18. Given the code fragment:

```
int b = 3; if ( !(b > 3)) {
System.out.println("square");
 }
{
System.out.println("circle");
}
System.out.println("...");
```

What is the result?

A. square...
B. circle...
C. squarecircle...
D. Compilation fails.

19. What is the proper way to defined a method that take two int values and returns their sum as an int value?

A. int sum(int first, int second) { first + second; }
B. int sum(int first, second) { return first + second; }
C. sum(int first, int second) { return first + second; }
D. int sum(int first, int second) { return first + second; }
E. void sum (int first, int second) { return first + second; }

20. Which two are Java Exception classes?
A. SercurityException
B. DuplicatePathException
C. IllegalArgumentException
D. TooManyArgumentsException

21. Given the for loop construct:
for (expr1 ; expr2 ; expr3) {
statement; }
Which two statements are true?
A. This is not the only valid for loop construct; there exits another form of for loop constructor.
B. The expression expr1 is optional. it initializes the loop and is evaluated once, as the loop begin.
C. When expr2 evaluates to false, the loop terminates. It is evaluated only after each iteration through the loop.
D. The expression expr3 must be present. It is evaluated after each iteration through the loop.

22. What is the result?
public class StringReplace {
public static void main(String[] args) {
String message = "Hi everyone!";
System.out.println("message = " + message.replace("e", "X")); } }
A. message = Hi everyone!
B. message = Hi XvXryonX!
C. A compile time error is produced.
D. A runtime error is produced.
E. message =
F. message = Hi Xveryone!

23. Which two statements are true for a two-dimensional array?
A. It is implemented as an array of the specified element type.
B. Using a row by column convention, each row of a two-dimensional array must be of the same size
C. At declaration time, the number of elements of the array in each dimension must be specified

D. All methods of the class Object may be invoked on the two-dimensional array.

24. Which three statements are benefits of encapsulation?
A. allows a class implementation to change without changing t he clients
B. protects confidential data from leaking out of the objects
C. prevents code from causing exceptions
D. enables the class implementation to protect its invariants
E. permits classes to be combined into the same package
F. enables multiple instances of the same class to be created safely

25. Given the code fragment:
1. ArrayList list = new ArrayList<>(1);
2. list.add(1001);
3. list.add(1002);
4. System.out.println(list.get(list.size())); What is the result?
A. Compilation fails due to an error on line 1.
B. An exception is thrown at run time due to error on line 3
C. An exception is thrown at run time due to error on line 4
D. 1002 A