2017~2018 学年秋冬学期《Java 应用技术》期末试卷

一、判断题 (1% × 10)

1. `JPanel` must be placed inside a container.
2. We can use `int a[][] = new int[2][]` to define array.
3. For `final int[] ar = new int[10]` we cannot modify the content of the array.
4. Interface methods can be static or final.
5. When an object can be written to a stream using `ObjectOutputStream`, we can also use `ObjectOutputStream` to write the object of its super class.
6. `Box` does not use the default layout `BorderLayout`.
7. A static method cannot refer to `this` or `super` keywords in anyway.
8. Private members of class can be inherited by a sub class, and become protected members in sub class.
9. If constructor of class `A` is made private, objects of class `A` can be instantiated only within the class where it is declared.
10. A thread that has called the `wait()` method of an object will release the lock of the object.

二、单选题 (2% × 30)

1. For object `o` and class `C`, which expression below is the right way to test if `o` is an object of `C`?
   A. `o instanceof C`
   B. `C.isInstance(o)`
   C. `o.getClass() == C`
   D. `o.class == C`
2. Which one below is true about the `StringBuffer` class?
   A. An object of `StringBuffer` can be initialized using the `=` operator.
   B. `StringBuffer` has `append()` method to form a larger string.
   C. An object of `StringBuffer` has a fixed size.
   D. `StringBuffer` inherits all the methods from `String`.
3. What will this code print?

```
String arr[] = new String[5];
System.out.print(arr[0]);
```

   A. null
   B. 0
   C. Class name@hashcode in hexadecimal form.

D. Exception thrown.

4. `wait()` and `notify()` are used to suspend and resume threads. They are defined as methods of:
   A. `Object`
   B. `Thread`
   C. `Runnable`
   D. `Synchronized`
5. What best describes the appearance of an application with the following code?

```
public class App extends JFrame {
    public static void main(String argv[]) {
        App app = new App();
        app.setLayout(new FlowLayout());
        app.pack();
        app.setVisible(true);
    }

    App() {
        add(new JButton("One"));
        add(new JButton("Two"));
        add(new JButton("Three"));
        add(new JButton("Four"));
    }
}
```

   A. A frame with buttons marked One to Four placed one by one.
   B. A frame with buttons marked One to Four placed in grids.
   C. A frame with buttons marked One to Four placed at each edge.
   D. A frame with one large button marked Four in the center.
6. Choose the best fill in the blanks.

```
class Hello2017 {
    public static void main(String[] args) {
        // __put the best here__
    }
}

class Century implements Runnable {
    String m = "Hello";

    Century(String m) {
        this.m = m;
    }

    public void run() {
        System.out.println(m);
    }
}
```

   A. `new Thread("Hello").start();`

B. `new Century(new Thread("Hello")).start();`
C. `new Century("Hello").start();`
D. `new Thread(new Century("Hello")).start();`

7. For code below:

```
public class Test {
    public static void main(String[] args) {
        try {
            throw new B();
        } catch (A a) {
            System.out.println("Exception A");
        } catch (B b) {
            System.out.println("Exception B");
        }
    }
}

class A extends Exception {
}

class B extends A {
}
```

It prints:

A. Exception B
B. Compile error
C. Exception A
D. Compiled but exception raises at run-time

8. For code

```
int x = 0x80000000;
System.out.println(Integer.toHexString(-x));
```

The result is:

A. overflow
B. -80000000
C. 80000000
D. error (compilation or run-time)

9. Which of the following is NOT correct?

A. Cannot create an instance of a generic type. (i.e., `new E()`).
B. Generic array creation is not allowed. (i.e., `new E[100]`).
C. A generic type parameter of a class is allowed in a static context.
D. Exception classes cannot be generic.

10. Which statement below is NOT correct?

A. A thread is an instance of `Thread` class.
B. A thread runs the `run()` method of the `Runnable` object.
C. A new born thread can run immediately when `start()` is called.

D. Thread can access data of the `Runnable` object.

11. For `InputStream.read()`, the `read()` with no parameters, which statement below is correct?
    A. `read()` returns `char`, because it reads a char from the stream.
    B. `read()` returns `int`, because it has to return EOF to indicate the end of the file.
    C. `read()` returns `byte`, because it reads a byte from the stream.
    D. `read()` returns `int`, as the number of bytes it just read.
12. Implements `Comparable` needs a function, (__) is the one.

```
class Hello2016 implements Comparable {
    public static void main(String[] args) {
    }
    // __put the best here__
}
```

    A. `public int compareTo(Object b) {...}`
    B. `public int equals(Object b) {...}`
    C. `public int compare(Object b) {...}`
    D. Need nothing for `Comparable`.
13. For code below:

```
ArrayList<Integer> a = new ArrayList<Integer>();
ArrayList<Double> b = new ArrayList<Double>();
```

    Which statement below is NOT correct?
    A. `a.getClass() == b.getClass()` is true.
    B. `a instanceof ArrayList` is true.
    C. `a.getClass().equals(b.getClass())` is true.
    D. `a.getClass() == b.getClass()` is false.
14. What is the output of this program?

```
public class Output {
    public static void main(String args[]) {
        Integer i = new Integer(257);
        byte x = i.byteValue();
        System.out.print(x);
    }
}
```

    A. 1
    B. 0
    C. 256
    D. 257
15. Which of these method waits for the thread to terminate?
    A. `isAlive()`
    B. `sleep()`
    C. `join()`

D. `stop()`

16. Which of the following declares an array that can support two rows and a variable number of columns?

A. `int myArray[][] = new int[2][];`
B. `int myArray[][] = new int[][2];`
C. `int myArray[][] = new int[2][2];`
D. `int myArray[][] = new int[][];`

17. The program needs a thread, (__) is the one.

```
class Hello2016 {
    public static void main(String[] args) {
        // __put the best here__
    }
}
```

A. `new Runnable(() -> System.out.println("Hi, 2017")).start();`
B. `new Thread(() -> System.out.println("Hi, 2017")).start();`
C. `new Thread(() -> System.out.println("Hi, 2017")).run();`
D. `new Runnable(() -> System.out.println("Hi, 2017")).run();`

18. For code below, the result would be printed?

```
String s1 = new String("hello");
String s2 = new String("hello");
System.out.println(s1 == s2);
System.out.println(s1.equals(s2));
```

A. false, true
B. false, false
C. true, true
D. true, false

19. Given code below:

```
package his;
public class My {}
```

Which statement below is NOT correct?

A. It has to be in a directory named `his`.
B. It has to be in a file named `My.java`.
C. It can be in any file but with no any other class definitions in the same file.
D. Any non-public classes can be defined in the same source file as it is in.

20. What is the output of the following code?

```
public class Test {
    public static void main(String[] args) {
        LinkedList list = new LinkedList<Integer>();
        for (int i = -3; i < 3; i++) {
            list.add(i);
        }
        for (int i = 0; i < 3; i++) {
            list.remove(i);
        }
        System.out.println(list);
    }
}
```

A. [-2, 0, 2]
B. [-3, -2, -1]
C. [0, 1, 2]
D. [-1, 0, 1]

21. What is the output of this program?

```
public class Output {
    public static void main(String args[]) {
        StringBuffer sb = new StringBuffer("Hello");
        sb.replace(1, 3, "Java");
        System.out.println(sb);
    }
}
```

A. HJavaello
B. HJavalo
C. Hello
D. HJavao

22. Which one below is NOT a valid Java identifier?
A. goto
B. Int
C. 变量
D. $0

23. Which one below generates a random number in [1, 100]?
A. `x = (int) (101 * Math.random()) + 1;`
B. `x = (int) (100 * Math.random()) + 1;`
C. `x = (int) (100 * Math.random());`
D. `x = (int) (101 * Math.random());`

24. About inner class, which statement below is correct?
A. No static members are allowed in an inner class.
B. Inner class cannot be defined as private.
C. Objects of an inner class can be used in the outer class only.
D. Inner class can access every member of the outer class.

25. Which component is used to compile, debug and execute java program?
    A. JVM
    B. JDK
    C. JIT
    D. JRE
26. Given the following code:

```
class Background extends Thread {
    public int run() {
        while (true) {
            System.out.println("hello");
        }
        return 0;
    }

    public static void main(String[] args) {
        new Thread(new Background()).start();
    }
}
```

    What will happen when you attempt to compile and run the code?(2分)
    A. It compiles and prints out nothing.
    B. It does not compile because of the function signature of `run()`.
    C. It compiles and prints out "hello" repeatedly.
    D. It does not compile because of the expression inside `main()`.
27. What is the output of this program?

```
public class Test {
    public static void main(String[] args) throws Exception {
        String str = "zju2018";
        Method m = str.getClass().getMethod("toUpperCase");
        m.invoke(str);
        System.out.println(str);
    }
}
```

    A. compilation error
    B. ZJU2018
    C. zju2018
    D. runtime error
28. What is the output of this program?

```
public class Hello2017 {
    public static void main(String args[]) {
        boolean b1 = true;
        if ((b1 == true) || place(true)) {
            System.out.print("Hello01, ");
        }
        System.out.println("HelloWorld.");
    }

    public static boolean place(Boolean location) {
        if (location == true) System.out.print("Hello02, ");
        if (location = true) System.out.print("Hello03, ");
        return location;
    }
}
```

A. HelloWorld.
B. Hello01, HelloWorld.
C. Hello02, Hello01, HelloWorld.
D. Hello02, Hello03, Hello01, HelloWorld.

29. Which of the following statements is NOT true?
    A. Strings can be initialized using the `=` operator with a string literal value.
    B. The `toString()` method can be used to return a `String` value from an object of any class.
    C. All strings are terminated with a null ('\0') character.
    D. It is impossible to change the contents of a `String` object.
30. Given code below:

```
List<String> ls = new ArrayList<String>();
List<Object> lo = ls;
lo.add(new Object());
String s = ls.get(0);
```

Which statement below is correct?
A. It compiles but exception raises at line 3
B. It does not compile
C. It compiles but exception raises at line 2
D. It compiles but exception raises at line 4

三、填空题 (3% × 10)

1. What will this code output?

```
public class Test {
    public static void main(String[] args) {
        Double a = new Double(127);
        Double b = 127d;
        Double c = Double.valueOf("127");

        System.out.println(a == b);  //1
        System.out.println(a == c);  //2
        System.out.println(b == c);  //3
    }
}
```

The output of //1 is: (1%)

The output of //2 is: (1%)

The output of //3 is: (1%)

2. The code below will print three lines.

```
class Pet {
}

class Dog extends Pet {
}

class Pug extends Dog {
}

class Cat extends Pet {
}

class Rodent extends Pet {
}

class Gerbil extends Rodent {
}

class Hamster extends Rodent {
}

class Main {
    static HashMap<Integer, Class<? extends Pet>> map =
            new HashMap<Integer, Class<? extends Pet>>();

    static {
        map.put(Pet.class.getName().length(), Pet.class);
        map.put(Dog.class.getName().length(), Dog.class);
        map.put(Pug.class.getName().length(), Pug.class);
        map.put(Cat.class.getName().length(), Cat.class);
        map.put(Rodent.class.getName().length(), Rodent.class);
        map.put(Gerbil.class.getName().length(), Gerbil.class);
        map.put(Hamster.class.getName().length(), Hamster.class);
    }

    public static void main(String[] args) {
        for (Integer i : map.keySet())
            System.out.println(map.get(i).getName());
    }
}
```

1st line: (1%)

2nd line: (1%)

3rd line: (1%)

3. What will this code output?

```
class M {
    void f(M m) {
        System.out.println("in M.f");
    }

    void g(M m) {
        System.out.println("in M.g");
    }
}

class C extends M {
    void f(C c) {
        System.out.println("in C.f");
    }

    void g(M c) {
        System.out.println("in C.g");
    }
}

class H extends C {
    void f(H h) {
        System.out.println("in H.f");
    }

    void g(M h) {
        System.out.println("in H.g");
    }
}

public class T {
    public static void main(String[] args) {
        M h = new H();
        C c = new H();
        c.f(h);  //1
        h.g(c);  //2
    }
}
```

The output of //1 is: (1%)

The output of //2 is: (2%)

4. What will this code output?

```
public class Test {
    public static void main(String[] args) {
        String s1 = "ZJU";
        String s2 = new String("ZJU");
        String s3 = "ZJ";
        s3 += "U";
        String s4 = s2.intern();

        System.out.println(s1 == s2);  //1
        System.out.println(s1 == s3);  //2
        System.out.println(s1 == s4);  //3
    }
}
```

The output of //1 is: (1%)

The output of //2 is: (1%)

The output of //3 is: (1%)

5. The value of the expression below is:

```
IntStream.range(2, 20)
            .filter(x -> IntStream.range(2, x).filter(k -> x % k == 0).sum() > 0)
            .sum()
```

6. For the code segment below, after all the lines here, the value of sum is:

```
Integer[] a = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
for (int k : a) {
    k++;
}
int sum = 0;
for (int k : a) {
    sum += k;
}
```

7. The output of the code below is:

```
enum A {
    JAN(31), FEB(28) {
        public int getDays(int year) {
            return (year % 400 == 0 || (year % 4 == 0 && year % 100 != 0)) ? 29 : 28;
        }
    }, MAR(31), APR(30), MAY(31), JUN(30), JUL(31), AUG(31), SEP(30), OCT(31),
    NOV(30), DEC(31);

    A(int d) {
        days = d;
    }

    private int days;

    public int getDays(int year) {
        return days;
    }

    public static void main(String[] args) {
        int sum = 0;
        for (A e : A.values()) {
            sum += e.getDays(2018);
        }
        System.out.println(sum);
    }
}
```

8. The code below will print three lines, they are:

```
package hello;

class A {
    public int data = 5;
    private int pd = 6;

    public void print() {
        System.out.println(data + pd);
        f();
    }

    protected void f() {
        System.out.println("A::f()");
    }
}

class B extends A {
    public int data = 2;
    private int pd = 3;

    public void print() {
        super.print();
        System.out.println(data + pd);
    }

    protected void f() {
        System.out.println("B::f()");
    }
}

public class TestAB {
    public static void main(String[] args) {
        A a = new B();
        a.print();
    }
}
```

1st line: (1%)

2nd line: (1%)

3rd line: (1%)

9. For code below, the output should be:

```
static void f() throws Exception {
    throw new RuntimeException();
}

public static void main(String[] args) {
    try {
        f();
        System.out.print("A");
    } catch (RuntimeException ex) {
        System.out.print("B");
    } catch (Exception ex1) {
        System.out.print("C");
    } finally {
        System.out.print("D");
    }
    System.out.print("E");
}
```

10. What will this code output?

```
public class Test {
    public static void main(String[] args) {
        CloneT c = new CloneT();
        CloneT c1 = (CloneT) c.clone();
        c1.b.setA(3);
        c1.ii = 3;
        System.out.println(c1 == c);                        //1
        System.out.println(c1.b == c.b);                    //2
        System.out.println(c.toString() + c1.toString());   //3
    }
}

class Base implements Cloneable {
    int a = 1;

    public String toString() {
        return String.valueOf(a);
    }

    public void setA(int a) {
        this.a = a;
    }

    public int getA() {
        return a;
    }
}

class CloneT implements Cloneable {
    transient int i;
    private int pi;
    static int num;
    Integer ii = new Integer(1);
    transient Base b = new Base();

    public CloneT() {
        num++;
    }

    public Object clone() {
        try {
            return super.clone();
        } catch (CloneNotSupportedException e) {
            System.out.println("clone not supported!");
            return null;
        }
    }

    public String toString() {
        return (
                String.valueOf(i) + String.valueOf(pi) + String.valueOf(num) +
                String.valueOf(ii) + String.valueOf(b.getA())
        );
```

```
    }
}
```

The output of //1 is: (1%)
The output of //2 is: (1%)
The output of //3 is: (1%)

答案

一、TTFFF TTFTT

二、ABAAA DBCCC BADAC ABACA BABDB BCBCB

三、（每空答案以 / 分隔）

1. false / false / false
2. Cat / Gerbil / Hamster
3. in M.f / in H.g
4. false / false / true
5. 112
6. 55
7. 365
8. 11 / B::f() / 5
9. BDE
10. false / true / 0011300133