

## Sample Questions

**Q1. Choose the correct word from the table to fill in each of the following gaps:**

(Note: there are more words than you need but each word can ONLY be used ONCE) [10]

break	class	address	default
variable	byte code	executable code	public
data	behavior	java.lang	data type
floor	round	interface	java.util

- 1) Java source code is compiled into \_\_\_ *byte code* \_\_\_.
- 2) Objects are units of encapsulation of \_\_\_ *data* \_\_\_ and \_\_\_ *behavior* \_\_\_.
- 3) The Scanner class is in \_\_\_ *java.util* \_\_\_ package
- 4) String is a \_\_\_ *class* \_\_\_.
- 5) \_\_\_ *java.lang* \_\_\_ package is automatically imported by the Java system.
- 6) A \_\_\_ *break* \_\_\_ statement in a loop will cause the program to immediately exit the loop.
- 7) A \_\_\_ *default* \_\_\_ class in a package cannot be accessed by the classes outside the package?
- 8) The name of the array is the \_\_\_ *address* \_\_\_ of the first element of the array.
- 9) The method \_\_\_ *floor* \_\_\_ in the Math class returns the nearest whole number that is equal to or less than its argument.

**Q. 2 For each of the following statements, answer with (True) or (False):**

[10]

All variables must be declared before they can be used.	<i>T</i>
A character variable may contain up to seven letters.	<i>F</i>
The method toLowerCase() changes all lowercase letters to uppercase and all uppercase letters to lowercase.	<i>F</i>
The result of the call "Mississippi".replace('p', 's') is Mippippi	<i>F</i>
JFrame and JLabel both are classes and are available in java.swing package	<i>T</i>
All data stored in an array must be the same type.	<i>T</i>
values.length() is used to find the length of an array named 'values'.	<i>F</i>
Constructor use name of the class and have no return type	<i>T</i>
It is not necessary that each try block to be followed by catch block.	<i>T</i>
The value of the expression (x > 3)    (y < 3) is true if x has the value 1 and y has the value 5?	<i>F</i>

**Q. 3 Give short answers to the following questions.**

[10]

- a) Differentiate between Overloading and Overriding .  
*Overloading - Similar Signature but different definition , like function overloading.*  
*Overriding - Overriding the Definition of base class in the derived class.*
- b) Explain the use of "this" and "super" .

*super -is used to access members of the base class.*

*this - is used to represent an instance of the class in which it appears*

- c) What is the purpose of default constructor?

*Default constructor provides the default values to the object like 0, null etc. depending on the type.*

- d) Why main method is static?

*because object is not required to call static method if it were non-static method, jvm creates object first then call main() method that will lead the problem of extra memory allocation.*

- e) What is Swing?

*Swing is a library of GUI controls. Classes in swing are not OS dependent.*

*They don't create peer components, so they are light weight unlike AWT.*

*They don't take the look and feel of the target platform so they have a consistent appearance*

**Q. 4. Write the output (if any) for the following programs**

[5x2]

**Q. 4. (a)** class BoolTest

```
{
    public static void main(String [] args)
    {
        boolean b1 = true;
        boolean b2 = false;
        boolean b3 = true;
        if ( b1 & b2 | b2 & b3 | b2 )
            System.out.print("ok ");
        if ( b1 & b2 | b2 & b3 | b2 | b1 )
            System.out.println("dokey");
    }
}
```

*Answer: dokey*

**Q.4. (b)**

```
class ExceptionHandling {
    public static void main(String args[]) {
        try {
            System.out.print("Hello" + " " + 1 / 0);
        }
    }
}
```

```
    }  
    finally {  
        System.out.print("World");  
    }  
}  
}
```

*Answer:*

*Exception in thread "main" java.lang.ArithmeticException: / by zero  
World*

**Q. 5 (a) Identify and correct the error in the following code**

[3+3]

```
class A {  
    final public int calculate(int a, int b) { return 1; }  
}  
class B extends A {  
    public int calculate(int a, int b) { return 2; }  
}  
public class output {  
    public static void main(String args[])  
    {  
        B object = new B();  
        System.out.print("b is " + b.calculate(0, 1));  
    }  
}
```

*Answer: The code will not compile because the method calculate() in class A is final and so cannot be overridden by method of class b. remove final keyword from class A's calculate method*

**Q. 5.(b) Find the output of the following code**

[4]

```
public class Test
```

```
{
    private static float[] f = new float[2];
    public static void main (String[] args)
    {
        System.out.println("f[0] = " + f[0]);
    }
}
```

*Answer: f[0] = 0.0*

Q-6 Multiple choice questions:

6.1): The .class extension on a file means that the file:

- a. Contains java source code
- b. Contains HTML
- c. is produced by the Java compiler (javac).
- d. None of the above.

*ANS: c. Is produced by the Java compiler (javac).*

6.2): The command \_\_\_\_\_ executes a Java application.

- a. run
- b. javac
- c. java
- d. None of the above

*ANS: c. java.*

6.3): End-of-line comments that should be ignored by the compiler are denoted using

- a. Two forward slashes ( // ).
- b. Three forward slashes ( /// ).
- c. A slash and a star ( /\* ).
- d. A slash and two stars ( /\*\* ).

*ANS: a. Two forward slashes ( // ).*

6.4): Which of the following statement displays **Hello World**?

- a. `System.out.printf( "%2s", "Hello " "World" );`
- b. `System.out.printf( "%s %s", "Hello", "World" );`
- c. `System.out.printf( "%s%s", "Hello, World" );`
- d. `System.out.printf( "s% s%", "Hello", "World" );`

**ANS: b. `System.out.printf( "%s %s", "Hello", "World" );`**

6.5): A(n) \_\_\_\_\_ enables a program to read data from the user.

- a. `printf`.
- b. import declaration.
- c. Scanner.
- d. `main`.

**ANS: c. Scanner.**

6.6): Each of the following is a relational or equality operator except:

- a. `<=`
- b. `!=`
- c. `==`
- d. `>`

**ANS: b. `!=`**

6.7): What do the following statements do?

```
double[] array;  
array = new double[ 14 ];
```

- a. Create a **double** array containing 13 elements.
- b. Create a **double** array containing 14 elements.
- c. Create a **double** array containing 15 elements.
- d. Declare but do not create a **double** array.

**ANS: b. Create a double array containing 14 elements.**

6.8): Which expression adds 1 to the element of array **arrayName** at index **i**?

- a. `++arrayName[ i ]`.
- b. `arrayName++[ i ]`.

c. `arrayName[ i++ ]`.

d. None of the above.

**ANS: a. `++arrayName[ i ]`.**

6.9): Which of the following keywords allows a subclass to access a superclass method even when the subclass has overridden the superclass method?

a. `base`.

b. `this`.

c. `public`.

d. `super`.

**ANS: d. `super`.**

6.10): Overriding a method differs from overloading a method because:

a. Overloaded methods have the same signature.

b. Overridden methods have the same signature.

c. Both of the above.

d. Neither of the above.

**ANS: b. Overridden methods have the same signature.**

6.11): Which of the following is *not* a control structure:

a. Sequence structure.

b. Selection structure.

c. Repetition structure.

d. Declaration structure.

**ANS: d. Declaration structure.**

6.12): Which of the following is *not* a primitive type?

a. `char`

b. `float`

c. `String`

d. `int`

**ANS: c. `String`**

6.13): Keyword \_\_\_\_\_ indicates the inheritance relationship.

- a. extends
- b. inherits
- c. super
- d. parent

ANS: a. extends

Q-7) Write the following mathematical expressions in Java.

$$s = s_0 + v_0 t + \frac{1}{2} g t^2$$

ANS: double s = s0 + v0 \* t + g \* t \* t / 2.0;

$$G = 4\pi^2 \frac{a^3}{P^2 (m_1 + m_2)}$$

ANS: double G = 4 \* Math.PI \* Math.PI \* Math.pow(a, 3) / ( P \* P \* (m1 + m2));

$$dm = m \left( \frac{\sqrt{1 + \frac{v}{c}}}{\sqrt{1 - \frac{v}{c}}} - 1 \right)$$

ANS: dm = m \* ((Math.sqrt(1 + v / c) / Math.sqrt(1 - v / c)) - 1);

$$volume = \pi r^2 h$$

ANS: volume = Math.PI \* r \* r \* h;

$$volume = \frac{4\pi r^3}{3}$$

ANS: volume = 4 \* Math.PI \* Math.pow(r, 3) / 3;

Q-8) Find at least five *syntax* errors in the following program.

```
public class WarmUpSix
{ public static void main(String[] args)
  { System.out.print("This program adds two numbers. ),
    // " and ; are missing as indicated:
    x = 5; // x needs to be declared first
    int y = 3.5; // fractional part requires double or float
    System.out.print("The sum of " + x + " and " + y " is: ");
```

```

//      missing + above
System.out.println(x + y) // missing ;
}
}

```

Q-9) Find at least three *logic* errors in the following program.

```

public class WarmUpSeven
{ public static void main(String[] args)
{ ConsoleReader console = new ConsoleReader(System.in);
int total = 1; // should be 0
System.out.println("Please enter a number:");
int x1 = Integer.parseInt(console.readLine());
total = total + x1;
System.out.println("Please enter another number:");
int x2 = Integer.parseInt(console.readLine());
total = total + x1; // should be x2
double average = total / 2; // better divide by 2.0 to not lose 0.5
System.out.println("The average of two numbers is " + average);
}
}

```

Q-10). Write a program segment that adds up the even integers from 16 through 2000, inclusive.

Answer

```

int sum =0 , evenint = 16;
while ( evenint <= 2000)
{ sum += evenint;
  eventint += 2;
}

```

Q-11) What is the output of the following code fragment?

```

int x = 1;

```

```
while (x<5){
    System.out.println(x);
    if (x==3)
        x++;
    else
        x = x+2;
}
```

**Solution:**

1

3

4

Q-12) What is the output of the following code fragment?

```
for (int j=1; j<=5; j++){
    for (int i=1; i<=4; i++)
        System.out.print("x");
    System.out.println();
}
```

**Solution:**

xxxx

xxxx

xxxx

xxxx

xxxx

Q-13) What are the output after the following code fragment runs.?

```
public class Inher
{
    public static void main(String[] args)
    {
        Parent c = new Child();
    }
}
```

```

        c.doSomething();
    }
}

class Parent
{
    public void doSomething()
    {
        System.err.println("Parent called");
    }
}

class Child extends Parent
{
    public void doSomething()
    {
        super.doSomething();
        System.err.println("Child called");
    }
}

```

Answer:

```

Parent called
Child called

```

**Q. 14. What will be the output of the program?**

```

classPassA
{
    public static void main(String [] args)
    {
        PassA p = new PassA();
        p.start();
    }

    void start()
    {
        long [] a1 = {3,4,5};
        long [] a2 = fix(a1);
    }
}

```

```
System.out.print(a1[0] + a1[1] + a1[2] + " ");  
System.out.println(a2[0] + a2[1] + a2[2]);  
}
```

```
long [] fix(long [] a3)  
{  
a3[1] = 7;  
return a3;  
}
```

**Answer:**

Output: 15 15

The reference variables a1 and a3 refer to the same long array object. When the [1] element is updated in the fix() method, it is updating the array referred to by a1. The reference variable a2 refers to the same array object.

So Output: 3+7+5+" "3+7+5

Output: 15 15 Because Numeric values will be added

**Q. 15. Which four options describe the correct default values for array elements of the types indicated?**

1. int -> 0
2. String -> "null"
3. Dog -> null
4. char -> '\u0000'
5. float -> 0.0f
6. boolean -> true

(1), (3), (4), (5) are the correct statements.

(2) is wrong because the default value for a String (and any other object reference) is null, with no quotes.

(6) is wrong because the default value for boolean elements is false.

**Q. 16. What does the static keyword mean, and where can it be used?**

**Answer:** static can be used in four ways:

**static** variables are shared by the entire class, not a specific instance (unlike normal member variables)

**static** methods are also shared by the entire class

**static** classes are inner classes that aren't tied to their enclosing classes

**static** can be used around a block of code in a class to specify code that runs when the virtual machine is first started up, before instances of the class are created.