



Assertion-Reason Based MCQs (Java – ICSE Class X)

Assertion-Reason-based questions are now part of the council's board paper for the Class X Computer Applications subject. Here are a few such questions for the students appearing for the ICSE board examination 2025

Instructions: Choose the correct option:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Question 1.

Assertion (A): Java supports both call by value and call by reference.

Reason (R): Java passes primitive data types by value and object references by reference.

Answer: (c)

Explanation: Java supports **only call by value**, even for objects (it passes the reference by value).

Question 2.

Assertion (A): `Math.pow(2, 3)` in Java returns 8.0

Reason (R): `Math.pow()` method raises the first argument to the power of the second argument.

Answer: (a)

Explanation: $2^3 = 8.0$ and `Math.pow(x, y)` returns x raised to the power y.

Question 3.

Assertion (A): A constructor has the same name as the class and has no return type.

Reason (R): A constructor is automatically called when an object is created.

Answer: (a)

Explanation: Both A and R are true, and R correctly explains A.

Question 4.

Assertion (A): A for loop can always be replaced with a while loop.

Reason (R): for loop is an entry-controlled loop, and all entry-controlled loops can be written using while.

Answer: (a)

Explanation: Functionally, for and while loops can achieve the same result; hence, R explains A.

Question 5.

Assertion (A): `System.out.println(10/0)`; will throw an `ArithmeticException`.

Reason (R): Division by zero is allowed in Java for integer values.

Answer: (c)

Explanation: A is true (exception is thrown), but R is false (division by zero is **not** allowed for integers).

Question 6.

Assertion (A): char data type in Java is internally stored using Unicode.

Reason (R): Java supports 16-bit characters which can represent all characters of the ASCII table only.

Answer: (c)

Explanation: A is true; Java uses Unicode. R is false because Java can represent more than just ASCII.



Question 7.

Assertion (A): In Java, the String class is immutable.

Reason (R): Once a String object is created, it can be changed using the + operator.

Answer: (c)

Explanation: Strings are immutable. The + operator creates a new object; it doesn't modify the existing one.

Question 8.

Assertion (A): A switch statement can be used with char, int, and String data types.

Reason (R): The switch statement is a control structure used to perform multiple condition checks.

Answer: (b)

Explanation: Both A and R are true, but R is a general explanation, not specific to A.

Question 9.

Assertion (A): The nextLine() method of Scanner reads input including spaces till the end of the line.

Reason (R): nextLine() reads until a newline character is encountered.

Answer: (a)

Explanation: Correct behavior of nextLine() is explained by R.

Question 10.

Assertion (A): Arrays in Java can hold only primitive types.

Reason (R): Java does not allow arrays of objects.

Answer: (d)

Explanation: Both A and R are false. Java arrays can store both primitive and object types.

Question 11.

Assertion (A): break statement is used to exit from a loop prematurely.

Reason (R): break statement forces the termination of a loop even if the loop condition is true.

Answer: (a)

Question 12.

Assertion (A): The equals() method is used to compare two strings in Java.

Reason (R): The == operator compares the content of two string objects.

Answer: (c)

Explanation: == compares **references**, not **content** in case of objects.

Question 13.

Assertion (A): A do-while loop will always execute at least once.

Reason (R): In do-while, the condition is checked after the loop body.

Answer: (a)

Question 14.

Assertion (A): Java is a platform-independent language.

Reason (R): Java code is compiled into bytecode which runs on the Java Virtual Machine (JVM).

Answer: (a)

Question 15.

Assertion (A): The length property is used to find the number of characters in a string.

Reason (R): The correct way to get the length of a string in Java is using the length() method.

Answer: (d)

Explanation: length is used for arrays; length() is used for strings.



Question 16.

Assertion (A): Constructors can be overloaded in Java.

Reason (R): Constructor overloading allows defining multiple constructors with the same name but different parameters.

Answer: (a)

Question 17.

Assertion (A): Arrays in Java are dynamic in size.

Reason (R): You can change the size of an array after it is created.

Answer: (d)

Explanation: Arrays in Java are **static** in size once created.

Question 18.

Assertion (A): The if-else if-else ladder can handle multiple conditions.

Reason (R): It executes only one true condition among all the given conditions.

Answer: (a)

Question 19.

Assertion (A): A method declared as void can return a value.

Reason (R): The void return type means the method returns no value.

Answer: (d)

Explanation: void means **no return**, so A is false and R is true.

Question 20.

Assertion (A): Java supports single inheritance only with classes.

Reason (R): Multiple inheritance using classes leads to ambiguity, so Java avoids it.

Answer: (a)

Question 21.

Assertion (A): The length of a String can be found using .length() method.

Reason (R): The length method is used to find the number of characters in a string, whereas length (without parentheses) is used for arrays.

Answer: (a)

Question 22.

Assertion (A): Strings in Java are mutable.

Reason (R): Methods like toUpperCase() and replace() directly modify the original string object.

Answer: (d)

Question 23.

Assertion (A): Accessing an array element outside its size throws an ArrayIndexOutOfBoundsException.

Reason (R): Java performs runtime bounds checking for arrays to prevent invalid memory access.

Answer: (a)

Question 24.

Assertion (A): The == operator compares the content of two strings.

Reason (R): == checks whether the two string references point to the same object, not their content.

Answer: (d)

Question 25: Array Declaration

Assertion (A): In Java, an array must be declared and initialized before it can be used.

Reason (R): Declaring an array without allocating memory will result in a NullPointerException if accessed.

Answer: (a)