3. Operators

1. Which operator is used for addition in Java?
   a) ++
   b) +
   c) +=
   d) &
   Answer: b

2. What does the == operator check?
   a) Assigns a value
   b) Compares references
   c) Compares values
   d) Adds values
   Answer: c

3. Which is a logical AND operator?
   a) &
   b) &&
   c) ||
   d) !
   Answer: b

4. What is the result of 10 % 3?
   a) 3
   b) 1
   c) 0
   d) 10
   Answer: b

5. Which operator is used for ternary conditionals?
   a) if-else
   b) ?:
   c) ==
   d) &&
   Answer: b

🧠 **Scenario-Based Questions**

6. You want to increase a variable by 1. Which is the best option?
   a) x = x + 1
   b) x++
   c) ++x
   d) All of the above
   Answer: d

7. You need to check if two conditions are both true. Use:
   a) ||
   b) &&

c) &
d) !
Answer: b

8. To check if a number is odd, which expression is correct?
   a) num % 2 == 0
   b) num / 2 == 1
   c) num % 2 != 0
   d) num * 2 == 1
   Answer: c

9. In a situation where **x = 5**, what is the value of **x++**?
   a) 5
   b) 6
   c) 4
   d) Error
   Answer: a

10. You want to assign **10** if a condition is true, else assign **20**. Use:
    a) if(condition) x = 10; else x = 20;
    b) x = (condition) ? 10 : 20;
    c) x = 10 && 20;
    d) x = 10 || 20;
    Answer: b

4. String Concatenation

✅ Direct Questions

1. Which operator is used for string concatenation in Java?
   a) &
   b) +
   c) &&
   d) ||
   Answer: b

2. What will **"Java" + 10 + 20** result in?
   a) Java30
   b) Java1020
   c) 30Java
   d) Error
   Answer: b

3. Which method joins strings efficiently in loops?
   a) concat()
   b) toString()
   c) append()
   d) +
   Answer: c

4. What is the output of `"Hi" + " " + "there"`?
   a) Hi there
   b) HiThere
   c) Hithere
   d) Error
   Answer: a

5. Which of the following is immutable?
   a) String
   b) StringBuilder
   c) StringBuffer
   d) None
   Answer: a

🧠 **Scenario-Based Questions**

6. You want to create a greeting: "Hello, John". Use:
   a) "Hello" + ", " + name
   b) "Hello, ".concat(name)
   c) new StringBuilder("Hello, ").append(name)
   d) All of the above
   Answer: d

7. For concatenating 1000 strings in a loop, best performance is with:
   a) String
   b) StringBuilder
   c) StringBuffer
   d) + operator
   Answer: b

8. `"Result: " + (10 + 5)` returns:
   a) Result: 105
   b) Result: 15
   c) 10 + 5
   d) Result:10+5
   Answer: b

9. You mistakenly use + for numerical addition and string concat. What helps you identify the error?
   a) Type error
   b) Compilation error
   c) Parentheses
   d) Warning
   Answer: c

10. You want to insert a newline between two strings. Use:
    a) "\n"
    b) newline()
    c) break
    d) \t
    Answer: a