ORANGE

WORKSHEET 1

Name: _____

Roll No: _____

Class: _____ Section: _____ Date: _____

TOUCHPAD
CA with BlueJ

Unit-1

CLASS 10

INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING CONCEPTS

A. Tick (✓) the correct option.

1. Which of the following is NOT a principle of Object-Oriented Programming (OOP)?
   (a) Polymorphism ☐ (b) Inheritance ☐
   (c) Procedures ☐ (d) Encapsulation ☐
2. What is the main element of object-oriented programming?
   (a) Object ☐ (b) Method ☐
   (c) Class ☐ (d) None of these ☐
3. Engine of a car is an example of:
   (a) Inheritance ☐ (b) Data abstraction ☐
   (c) Polymorphism ☐ (d) Class ☐

B. Fill in the blanks.

1. A ..... is a way of programming.
2. Java is an example of a ..... programming language.
3. A ..... programming language is machine-dependent.
4. The concept of ..... is useful for avoiding data redundancy.

C. Write 'T' for true and 'F' for false.

1. Polymorphism allows objects to take multiple forms. .....
2. Procedural programming organizes code into classes and objects. .....
3. Encapsulation hides implementation details from users. .....

D. Short Answer Questions.

1. What is the use of inheritance?
2. Define polymorphism with a real-life example.
3. What are the disadvantages of procedure-oriented programming?
4. What are the differences between POP and OOP?

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ORANGE

WORKSHEET 2

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TOUCHPAD
CA with BlueJ

Unit-1

CLASS 10

INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING CONCEPTS

A. Tick (✓) the correct option.

1. Which OOP principle allows reusability?
   (a) Polymorphism ☐ (b) Interface ☐
   (c) Inheritance ☐ (d) Encapsulation ☐
2. What splits the program into smaller parts in procedural programming?
   (a) Classes ☐ (b) Objects ☐
   (c) Procedures ☐ (d) Methods ☐
3. Which programming approach does NOT support object-oriented principles?
   (a) Java ☐ (b) Python ☐
   (c) C++ ☐ (d) C ☐

B. Fill in the blanks.

1. ..... hides the internal workings of an object.
2. ..... allows a function to perform different tasks based on inputs.
3. A ..... language is machine-independent.

C. Write 'T' for true and 'F' for false.

1. Inheritance allows a class to inherit properties from another class. .....
2. Data abstraction and encapsulation are the same concepts. .....
3. Object-oriented programming uses functions instead of objects. .....
4. In OOP, classes contain attributes and behaviors. .....

D. Short Answer Questions.

1. What does POP stand for?
2. Explain the difference between encapsulation and data abstraction.
3. How does polymorphism improve code efficiency?
4. Why is OOP considered better than procedural programming?

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ORANGE

WORKSHEET 1

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TOUCHPAD
CA with BlueJ

Unit-2

CLASS 10

ELEMENTARY CONCEPT OF OBJECTS AND CLASSES

A. Tick (✓) the correct option.

1. Which of the following can be defined as a user-defined data type?
   (a) Class ☐ (b) Integer ☐
   (c) Float ☐ (d) Boolean ☐
2. Which keyword is used to define a class in Java?
   (a) define ☐ (b) class ☐
   (c) public ☐ (d) object ☐
3. Which of the following represents the constructor of the "ABC" class?
   (a) ABC() ☐ (b) ABCConstructor() ☐
   (c) new ABC() ☐ (d) None of these ☐

B. Fill in the blanks.

1. A ..... is a blueprint for creating objects.
2. Objects are created from a .....
3. The ..... keyword is used to define a class in Java.
4. A ..... is a special method used to initialize objects of a class.

C. Write 'T' for true and 'F' for false.

1. A class is an instance of an object. .....
2. Objects of a class share common characteristics and behaviors. .....
3. The "this" keyword in Java refers to the instance of a class. .....
4. A constructor is used to destroy objects in Java. .....

D. Short Answer Questions.

1. What is a class?
2. What is an object?
3. What is the purpose of a constructor in Java?
4. How does the "this" keyword work in Java?

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ELEMENTARY CONCEPT OF OBJECTS AND CLASSES

A. Tick (✓) the correct option.

1. What is the process of creating instances of a class called?
   (a) Instantiation ☐ (b) Inheritance ☐
   (c) Polymorphism ☐ (d) Encapsulation ☐
2. Which of the following is true about constructors?
   (a) A constructor is used to create objects ☐
   (b) A constructor must have the same name as the class ☐
   (c) A constructor initializes an object ☐
   (d) All of the above ☐
3. The "this" keyword in Java is used for:
   (a) Referring to the current object instance ☐
   (b) Defining a class ☐
   (c) Destroying an object ☐
   (d) Creating a new class ☐

B. Fill in the blanks.

1. The process of creating instances of a class is called ..... .
2. A constructor has the same ..... as the class.
3. The "this" keyword is used to refer to the ..... of a class.

C. Write 'T' for true and 'F' for false.

1. A constructor must return a value. .....
2. An object must always have a constructor. .....
3. An instance of a class is called an object. .....

D. Short Answer Questions.

1. What are the characteristics of a constructor?
2. How do you create an object in Java?
3. Explain the difference between a constructor and a method.

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Class: _____ Section: _____ Date: _____

VALUES AND DATA TYPES

A. Tick (✓) the correct option.

1. To store character values, a corresponding numeric value is generated in:
   (a) Decimal form ☐ (b) Binary form ☐
   (c) ASCII ☐ (d) Unicode ☐
2. Which escape sequence is used to represent a tab in a string?
   (a) \n ☐ (b) \t ☐
   (c) \ ☐ (d) \b ☐
3. Which of the following can be used while creating an identifier?
   (a) Letters ☐ (b) Underscore (_) ☐
   (c) Digits ☐ (d) All of these ☐

B. Fill in the blanks.

1. Character set in Java consists of letters, digits, and ..... characters.
2. Implicit type conversion takes place when the two types are .....
3. Non-primitive data types are also called .....
4. The size of the "short" data type is ..... than the "long" data type.

C. Write 'T' for true and 'F' for false.

1. The ASCII character encoding standard consists of 512 symbols. .....
2. The final keyword in Java is used to declare a constant variable. .....
3. Primitive data types in Java are stored directly in memory. .....
4. The escape sequence \n is used to insert a backslash in a string. .....

D. Short Answer Questions.

1. Define String literals and Boolean literals.
2. What is the difference between declaration and initialization?
3. Name the various types of tokens used in Java.
4. Explain the difference between primitive and non-primitive data types in Java.

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VALUES AND DATA TYPES

A. Tick (✓) the correct option.

1. Which of the following is required for an explicit type conversion?
   (a) Assignment operator ☐ (b) Type casting ☐
   (c) Relational operator ☐ (d) Logical operator ☐
2. Which of the following statements correctly initializes a String variable?
   (a) String str = 'Hello'; ☐
   (b) String str = Hello; ☐
   (c) String str = "Hello"; ☐
   (d) String str = new String(Hello); ☐
3. Which escape sequence is used to insert a backslash (\) inside a string in Java?
   (a) \n ☐ (b) \\ ☐
   (c) \b ☐ (d) \t ☐

B. Fill in the blanks.

1. A special Java literal that represents a null value is .....
2. The escape sequence used to insert a horizontal tab in a string is .....
3. A variable declared using final in Java cannot be .....

C. Write 'T' for true and 'F' for false.

1. Non-primitive data types in Java include arrays and classes. .....
2. The = symbol is a relational operator in Java. .....
3. Identifiers in Java can start with a digit. .....

D. Short Answer Questions.

1. What is the difference between variables and identifiers?
2. What are escape sequences in Java? Give two examples.
3. How does type casting work in Java?
4. Explain the use of final keyword in Java with an example.

ORANGE

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TOUCHPAD
CA with BlueJ

Unit-4

CLASS 10

OPERATORS IN JAVA

A. Tick (✓) the correct option.

1. The <= operator is an example of:
   (a) Relational operator ☐ (b) Logical operator ☐
   (c) Arithmetic operator ☐ (d) Assignment operator ☐
2. Which operator is used to initialize all non-primitive data types in Java?
   (a) Dot (.) operator ☐ (b) new operator ☐
   (c) Ternary operator ☐ (d) Relational operator ☐
3. Which of these operators has the lowest precedence in Java?
   (a) Addition (+) ☐ (b) Multiplication (*) ☐
   (c) Assignment (=) ☐ (d) Logical OR (||) ☐

B. Fill in the blanks.

1. The equivalent Java expression for $(a+b)^2 + a^2+2ab+b^2$ is .....
2. The output of the expression a += a * a % a is ..... if a = 5.
3. The expression 10 % 9 % 3 will return .....
4. The operator used to allocate memory for objects in Java is .....

C. Write 'T' for true and 'F' for false.

1. The != operator checks whether two values are equal. .....
2. The ternary operator is written using ? : in Java. .....
3. In Java, ++a is a postfix increment operator. .....

D. Short Answer Questions.

1. What is the output of the following Java expression?
   int a = 10, b = 20;
   int result = (a > b) ? (a + b) : (a - b);
2. What is the difference between the ternary operator and the unary operator? Give an example of each.
3. How does the != operator work in Java?

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OPERATORS IN JAVA

A. Tick (✓) the correct option.

1. What will be the result of the following Boolean expression in Java? false || true
   (a) true ☐ (b) false ☐
   (c) null ☐ (d) undefined ☐
2. What kind of operator is & in Java?
   (a) Arithmetic operator ☐ (b) Logical operator ☐
   (c) Relational operator ☐ (d) Assignment operator ☐
3. Which of the following operators is used for checking equality in Java?
   (a) = ☐ (b) == ☐
   (c) != ☐ (d) <= ☐

B. Fill in the blanks.

1. The result of true || false in Java is .....
2. The logical AND operator in Java is written as .....
3. The expression (true) | (true) will return .....
4. The Java expression for (a + b) * (c - d) is .....

C. Write 'T' for true and 'F' for false.

1. The && operator in Java returns true if at least one condition is true. .....
2. The expression 10 > 5 ? "Yes" : "No" will return "Yes". .....
3. The & operator is used for bitwise AND operations in Java. .....
4. The || operator in Java performs logical OR operation. .....

D. Short Answer Questions.

1. What will be the output of the following Java expression?
   int x = 5, y = 10;
   System.out.println((x != y) ? x+y : x-y);
2. What is the purpose of the && and || operators in Java?
3. Explain the difference between ++ and -- in Java with an example.

ORANGE

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TOUCHPAD
CA with BlueJ

Unit-5

CLASS 10

INPUT IN JAVA

A. Tick (✓) the correct option.

1. Which type of error will occur in the following code?

   for (int i = 1; i > 10; i++)

   (a) Syntax Error ☐ (b) Runtime Error ☐

   (c) Logical Error ☐ (d) Compilation Error ☐

2. Which of the following is NOT used to write a comment in Java?

   (a) /** ☐ (b) // ☐

   (c) /* ☐ (d) * ☐

3. Which package is required to use the Scanner class in Java?

   (a) java.io ☐ (b) java.util ☐

   (c) java.lang ☐ (d) java.net ☐

B. Fill in the blanks.

1. Forgetting to put a semicolon at the end of a statement is a type of ..... error.
2. Logical errors are also called ..... errors.
3. The Java method used to receive command-line arguments is .....

C. Write 'T' for true and 'F' for false.

1. The Scanner class in Java belongs to the java.lang package. .....
2. Comments in Java do not affect the execution of the program. .....
3. The java.lang package is automatically imported into every Java program. .....

D. Short Answer Questions.

1. What are the three types of errors in Java?
2. Define a logical error and provide an example.
3. Explain the difference between multiline comments and documentation comments in Java.

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INPUT IN JAVA

A. Tick (✓) the correct option.

1. Which of the following is the correct way to initialize an integer variable x with the value 10 in Java?
   (a) int x = 10; ☐ (b) int x := 10; ☐
   (c) let x = 10; ☐ (d) x = 10; ☐
2. What type of operator is != in Java?
   (a) Arithmetic Operator ☐ (b) Logical Operator ☐
   (c) Relational Operator ☐ (d) Assignment Operator ☐
3. Which of the following methods is used to input a float value using the Scanner class?
   (a) next() ☐ (b) nextInt() ☐
   (c) nextDouble() ☐ (d) nextFloat() ☐

B. Fill in the blanks.

1. The java.lang package contains fundamental classes such as ....., ..., and Math.
2. The Java method used to input a string value from the user is .....
3. A runtime error in Java is also known as a(n) .....

C. Write 'T' for true and 'F' for false.

1. The next() method of the Scanner class reads an entire line of input. .....
2. A syntax error occurs when a program tries to divide by zero. .....
3. The Scanner class belongs to the java.util package. .....

D. Short Answer Questions.

1. Write the syntax to input a short type value using the Scanner class.
2. Explain the difference between syntax errors and runtime errors.
3. What is the purpose of command-line arguments in Java?

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INPUT IN JAVA

A. Tick (✓) the correct option.

1. What is the output of Math.pow(Math.sqrt(4), 2)?
   (a) 2.0 ☐ (b) 4.0 ☐
   (c) 8.0 ☐ (d) None of these ☐
2. How many arguments are required for the Math.min() method?
   (a) 0 ☐ (b) 2 ☐
   (c) 3 ☐ (d) 4 ☐
3. Which of the following methods is used to find the absolute value of a number?
   (a) Math.pow() ☐ (b) Math.cbrt() ☐
   (c) Math.abs() ☐ (d) Math.min() ☐

B. Fill in the blanks.

1. The output of Math.max(4.5, 5) is .....
2. The return type of the Math.sqrt() method is .....
3. The result of Math.pow(2,3) + Math.sqrt(4) is .....
4. The method used to generate a random number between 0.0 and 1.0 is .....

C. Write 'T' for true and 'F' for false.

1. The Math.round() method returns a floating-point value. .....
2. The Math.sqrt() method returns the square root of a number. .....
3. Math.ceil() rounds a number down to the nearest integer. .....
4. The Math.pow() method is used to calculate the square root of a number. .....

D. Short Answer Questions.

1. What is the purpose of mathematical library methods in Java?
2. Define the Math.max() and Math.pow() methods.
3. How many arguments are required for the Math.sqrt() method?
4. Write a Java expression to calculate $(a + b)^3$.

ORANGE

WORKSHEET 2

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TOUCHPAD
CA with BlueJ

Unit-6

CLASS 10

INPUT IN JAVA

A. Tick (✓) the correct option.

1. What does the Math.sqrt() method do?
   (a) Returns the square of a number ☐
   (b) Returns the square root of a number ☐
   (c) Returns the cube of a number ☐
   (d) Returns the reciprocal of a number ☐
2. Which method would you use to generate a random number between 0.0 (inclusive) and 1.0 (exclusive)?
   (a) Math.random() ☐ (b) Math.rand() ☐
   (c) Math.randomNumber() ☐ (d) Math.randomize() ☐
3. What is the result of Math.ceil(Math.max(3.5,2.3))?
   (a) 2.0 ☐ (b) 3.5 ☐
   (c) 4.0 ☐ (d) 2.3 ☐

B. Fill in the blanks.

1. The Java expression for $(a + b)^3$ is .....
2. The output of Math.cbrt(27) is .....
3. The Math.round(2.4) method gives the output .....

C. Write 'T' for true and 'F' for false.

1. The Math.min() method returns the larger of two values. .....
2. The Math.log() method returns the base 10 logarithm of a value. .....
3. The Math.random() method generates values between 0.0 and 1.0. .....

D. Short Answer Questions.

1. What are the two types of methods used in Java?
2. Explain the Math.ceil() and Math.floor() methods.
3. Write a Java program to input principal amount, rate of interest, and time period to calculate the maturity amount using $A = p * (1 + r/100)^n$.

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CONDITIONAL CONSTRUCTS IN JAVA

A. Tick (✓) the correct option.

1. Which of the following is the correct syntax of the if statement in Java?
   (a) `if(condition);`
   (b) `if(condition) { /* statement */ }`
   (c) `if (true) else { /* statement */ }`
   (d) Both a and b

2. What will be the output of the following Java program?

```
int a = 15;
if (a == 15)
    System.out.println("Hello");
else
    System.out.println("Bye");
```

   (a) Hello
   (b) Bye
   (c) Syntax Error
   (d) None of these

B. Fill in the blanks.

1. The Java ternary operator is also called the ..... operator.
2. The absence of a break statement in a switch case leads to .....
3. The if...else statement always returns a ..... data type.

C. Write 'T' for true and 'F' for false.

1. The `if` statement in Java must always include an `else` block. .....
2. The `default` case in a `switch` statement must always be the last case. .....
3. The `switch` statement can work with integer, char, and String values. .....

D. Short Answer Questions.

1. What is the difference between `if` and `if...else` statements?
2. What is a fall-through situation in a `switch` statement?
3. What are compound statements in Java?

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CONDITIONAL CONSTRUCTS IN JAVA

A. Tick (✓) the correct option.

1. What will be the output of the following Java program?

```
int x = 5, y = 15;
if (x > 3 && y < 20)
    System.out.println("Condition met");
else
    System.out.println("Condition not met");
```

(a) Condition met
(b) Condition not met
(c) Compilation error
(d) Runtime error

2. Which of the following is NOT true about the switch statement?
   (a) It can be used inside an `if` statement
   (b) It cannot handle multiple conditions at once
   (c) It executes the matching case and then exits unless `break` is missing
   (d) It can have a `default` case

B. Fill in the blanks.

1. The if...else statement is used for ..... decision-making.
2. The break statement prevents ..... in a switch case.
3. A switch case must contain a valid ..... value.

C. Write 'T' for true and 'F' for false.

1. The `default` case in a `switch` statement is mandatory. .....
2. The `if` statement can have multiple else `if` conditions. .....
3. The `continue` statement can be used in a `switch` statement. .....

D. Short Answer Questions.

1. What are the different types of conditional statements in Java?
2. Explain the working of the `switch` statement with an example.
3. How does the `break` statement function in a `switch` statement?

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TOUCHPAD
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Unit-8

CLASS 10

ITERATIVE CONSTRUCTS IN JAVA

A. Tick (✓) the correct option.

1. Which of the following is not a loop in Java?
   (a) for ☐ (b) while ☐
   (c) do-while ☐ (d) switch ☐
2. How many times will the following loop execute?

```
int i = 2, j = 5;
while (i < j) {
    i = i / j;
    System.out.println(i);
}
```

   (a) 0 ☐ (b) 1 ☐
   (c) 5 ☐ (d) Infinite ☐

B. Fill in the blanks.

1. To find all even numbers from 2 to 20, the loop will execute for ..... times.
2. In a for loop, i <= 10 is known as the .....
3. The statement i++ in a while loop is known as .....
4. If i = 1, then the loop while(i < 5) (i++) will execute ..... times.

C. Write 'T' for true and 'F' for false.

1. The for loop is an entry-controlled loop in Java. .....
2. The break statement terminates a loop immediately. .....
3. The continue statement exits the loop completely. .....

D. Short Answer Questions.

1. What are the three types of loops in Java?
2. What is the purpose of the break and continue statements in loops?
3. How can an infinite loop occur in Java? Provide an example.

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ITERATIVE CONSTRUCTS IN JAVA

A. Tick (✓) the correct option.

1. What will be the output of the following code?

```
int i = 1;
while (i <= 10) {
    if (i % 5 == 0) {
        break;
    }
    System.out.print(i + " ");
    i += 2;
}
```

(a) 1 3 5 7 9 ☐ (b) 1 3 5 ☐

(c) 1 3 ☐ (d) 1 3 5 7 ☐

2. Which of the following is a null loop?

(a) while(i < 5) {} ☐ (b) for (i = 0; i <= 10; i++); ☐

(c) do { int x = 10; } while(x > 5); ☐ (d) None of these ☐

B. Fill in the blanks.

1. The condition in a for loop is evaluated ..... the loop executes.
2. A while loop is considered an ..... loop.
3. The scope of a loop variable declared inside a for loop is limited to .....

C. Write 'T' for true and 'F' for false.

1. The do-while loop never executes if the condition is initially false. .....
2. A for loop can also be used as an infinite loop. .....
3. The break statement skips an iteration inside a loop. .....

D. Short Answer Questions.

1. What is a null loop in Java? Provide an example.
2. How does the continue statement work in loops?
3. Write a Java program to find the LCM of two numbers using a loop.

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NESTED LOOP

A. Tick (✓) the correct option.

1. A cake has 3 layers, and each layer has 4 flavors. How many times will the inner loop execute in total?

   (a) 3 ☐ (b) 4 ☐

   (c) 12 ☐ (d) 20 ☐

2. What will be the final value of totalSteps in the following code?

```
int layers = 4, stepsPerLayer = 5, totalSteps = 0;
for (int i = 1; i <= layers; i++) {
    for (int j = 1; j <= stepsPerLayer; j++) {
        totalSteps++;
    }
}
System.out.println("Total steps: " + totalSteps);
```

   (a) 3 ☐ (b) 5 ☐

   (c) 9 ☐ (d) 20 ☐

B. Fill in the blanks.

1. A loop inside another loop is called a ..... loop.
2. The System.out.println() inside an inner loop prints the output in a ..... manner.
3. In a nested loop, the ..... loop executes completely for each iteration of the outer loop.

C. Write 'T' for true and 'F' for false.

1. A for loop cannot be nested inside a while loop. .....
2. A do-while loop can also be nested inside another loop. .....

D. Short Answer Questions.

1. What are nested loops? Provide an example.
2. How does the break statement work inside a nested loop?

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NESTED LOOP

A. Tick (✓) the correct option.

1. Each stall has 2 participants, and each participant presents 3 projects. How many times will the innermost loop execute?
   (a) 3 ☐ (b) 6 ☐
   (c) 12 ☐ (d) 18 ☐
2. Which of the following numbers is a Neon Number?
   (a) 5 ☐ (b) 9 ☐
   (c) 10 ☐ (d) 15 ☐
3. A Twin Prime is a pair of prime numbers whose difference is:
   (a) 1 ☐ (b) 2 ☐
   (c) 3 ☐ (d) 5 ☐

B. Fill in the blanks.

1. The final sum of all Armstrong numbers in a given range depends on .....
2. A palindromic number remains the same when its digits are .....
3. A Magic Number is a number whose sum of digits reduces to .....
4. The condition i <= 10 in a loop is called the ..... condition.

C. Write 'T' for true and 'F' for false.

1. A Twin Prime consists of two numbers that are not prime. .....
2. A Neon Number is a number whose square's digits add up to the original number. .....
3. A Palindromic Number is always even. .....

D. Short Answer Questions.

1. Write a Java program to find all Neon Numbers between 1 and 100.
2. What is a Magic Number? Explain with an example.
3. Write a Java program to print all Palindromic Numbers between m and n.
4. How can you check whether two numbers form a Twin Prime?

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Unit-10

CLASS 10

USER-DEFINED METHODS

A. Tick (✓) the correct option.

1. What is the benefit of using user-defined methods in Java?
   (a) Reduces code duplication and increases reusability ☐
   (b) Increases complexity of the program ☐
   (c) Decreases execution speed ☐
   (d) Makes the program harder to understand ☐
2. What is the correct syntax for a method declaration in Java?
   (a) public static void myMethod() ☐ (b) static void myMethod() {} ☐
   (c) void myMethod(int x) {} ☐ (d) void int myMethod() {} ☐

B. Fill in the blanks.

1. Every method should be provided with a ..... so that it can be called from the same class or a different class.
2. By default, the return statement always returns a single value of ..... data type.
3. Only ..... data can be used in pass by value.

C. Write 'T' for true and 'F' for false.

1. A method in Java cannot call itself. .....
2. A method that does not return any value must have a void return type. .....
4. User-defined methods help in making a program more modular. .....

D. Short Answer Questions.

1. What is the difference between pure and impure methods?
2. Explain method overloading with an example.
3. What is the advantage of using user-defined methods in Java?
4. How does pass by value work in Java?

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USER-DEFINED METHODS

A. Tick (✓) the correct option.

1. Which of the following is true about method overloading?
   (a) It is not allowed in Java
   (b) Overloaded methods must have the same name
   (c) Parameters must be of the same type in overloaded methods
   (d) Only the return type can be different in overloaded methods
2. Can a method call itself in Java?
   (a) Yes, but only if it's a static method
   (b) No, it leads to a compilation error
   (c) Yes, it's called recursion
   (d) Yes, but only if it's a public method

B. Fill in the blanks.

1. A method that calls itself is known as ..... .
2. Method overloading allows multiple methods to have the same name but different ..... .
3. Pass by reference affects the ..... value of the variable in the calling method.
4. Recursion is useful for solving problems like ..... and ..... .

C. Write 'T' for true and 'F' for false.

1. A method can have multiple return types using method overloading. .....
2. Method overloading improves code readability and reusability. .....
3. Pass by value allows a method to modify the original value of a variable. .....

D. Short Answer Questions.

1. How does recursion work? Give an example.
2. Explain the difference between pass by value and pass by reference.
3. Write a simple Java program that demonstrates method overloading.

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Unit-11

CLASS 10

CLASS AS THE BASIS OF ALL COMPUTATION

A. Tick (✓) the correct option.

1. Which keyword is used to define a class in Java?
   (a) def ☐ (b) class ☐
   (c) new ☐ (d) create ☐
2. Which of the following is NOT a feature of object-oriented programming?
   (a) Encapsulation ☐ (b) Polymorphism ☐
   (c) Abstraction ☐ (d) Compilation ☐
3. Which of the following best describes a constructor in Java?
   (a) A method for creating and initializing objects ☐
   (b) A method for destroying objects ☐
   (c) A method that can be called multiple times ☐
   (d) A method that prevents inheritance ☐

B. Fill in the blanks.

1. A constructor is automatically invoked when an ..... is created.
2. Polymorphism allows the same method to have different .....
3. Abstraction is used to hide ..... details from the user.

C. Write 'T' for true and 'F' for false.

1. A constructor is called explicitly using the new keyword. .....
2. Encapsulation ensures data security by restricting access to certain components. .....
3. A class can have multiple constructors with different parameters. .....
4. Polymorphism is a concept that applies only to variables. .....

D. Short Answer Questions.

1. What is the difference between Encapsulation and Abstraction?
2. Define Polymorphism with an example.
3. What is the role of a constructor in a class?

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Unit-11

CLASS 10

CLASS AS THE BASIS OF ALL COMPUTATION

A. Tick (✓) the correct option.

1. What is the correct way to declare an object of a class named Employee?
   (a) Employee e = Employee();
   (b) Employee e = new Employee();
   (c) Employee e = object Employee();
   (d) new Employee e();

2. What does the following Java statement do?
   private double salary;
   (a) Declares a public variable
   (b) Declares a private variable
   (c) Declares a protected variable
   (d) Declares a default variable

3. Which of the following correctly describes a getter method?
   (a) It is used to modify the value of a private variable
   (b) It is used to retrieve the value of a private variable
   (c) It is used to initialize an object
   (d) It is used to destroy an object

B. Fill in the blanks.

1. The default access modifier in Java is .....
2. A class acts as a blueprint for creating .....
3. A setter method is used to ..... the value of a private variable.

C. Write 'T' for true and 'F' for false.

1. A class in Java can have multiple instances. .....
2. Instance variables are shared among all objects of a class. .....
3. The this keyword in Java refers to the current object. .....

D. Short Answer Questions.

1. What is the difference between instance variables and static variables?
2. Explain the use of getter and setter methods in Java.

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Unit-12

CLASS 10

CONSTRUCTORS

A. Tick (✓) the correct option.

1. Which of the following does not have a return type?
   (a) Method ☐ (b) Constructor ☐
   (c) Both a and b ☐ (d) None of these ☐

2. What will be the output of the following Java program?

```
class Program {
    Program() {
        System.out.println("Default Constructor");
    }
    public static void main(String[] args) {
        Program obj = new Program();
    }
}
```

   (a) Compilation error ☐ (b) Default Constructor ☐
   (c) No output ☐ (d) Runtime error ☐

B. Fill in the blanks.

1. A constructor is a special method used to ..... an object.
2. A default constructor does not accept any .....
3. Parameterized constructors allow us to initialize objects with different .....

C. Write 'T' for true and 'F' for false.

1. A constructor can have a return type like int or void. .....
2. A constructor can be overloaded in Java. .....
3. A parameterized constructor can accept multiple arguments. .....

D. Short Answer Questions.

1. What is a default constructor? Give an example.
2. What is the difference between parameterized and non-parameterized constructors?
3. What happens if a constructor is not defined in a class?

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Unit-12

CLASS 10

CONSTRUCTORS

A. Tick (✓) the correct option.

1. What will happen if a class has a parameterized constructor, but no default constructor, and you try to create an object without passing arguments?
   (a) The object is created successfully. ☐
   (b) A compilation error occurs. ☐
   (c) A runtime error occurs. ☐
   (d) Java automatically creates a default constructor. ☐
2. Which keyword is used to call one constructor from another constructor in the same class?
   (a) super ☐ (b) this ☐
   (c) self ☐ (d) constructor ☐

B. Fill in the blanks.

1. Constructor overloading allows multiple constructors in the same class with different .....
2. The this keyword is used to call ..... from another constructor in the same class.
3. A parameterized constructor helps in initializing objects with different .....
4. A constructor cannot have a ..... type.

C. Write 'T' for true and 'F' for false.

1. A constructor must be explicitly called using the `new` keyword. .....
2. Overloaded constructors must have different names. .....
3. Java automatically provides a default constructor if none is defined. .....

D. Short Answer Questions.

1. What is constructor overloading? Give an example.
2. What is the purpose of the this() keyword in constructors?
3. What happens when an object is created in Java?
4. Write a Java program demonstrating constructor overloading.

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Unit-13

CLASS 10

LIBRARY CLASSES

A. Tick (✓) the correct option.

1. Which of the following methods checks if a character is a letter?
   (a) isDigit(char ch) ☐ (b) isWhitespace(char ch) ☐
   (c) isLetter(char ch) ☐ (d) isUpperCase(char ch) ☐
2. What is the return type of Double.parseDouble("3.5")?
   (a) int ☐ (b) float ☐
   (c) double ☐ (d) boolean ☐
3. Which method is used to convert a String to an Integer?
   (a) Integer.toString(String) ☐ (b) Integer.parseInt(String) ☐
   (c) Integer.valueOf(String) ☐ (d) Integer.toCharArray() ☐

B. Fill in the blanks.

1. The Character.toLowerCase('A') method returns .....
2. The Character.isLetter('7') method will return .....
3. Double.parseDouble("4.56") converts a String into a .....
4. To check if a character is whitespace, we use Character.....(char).

C. Write 'T' for true and 'F' for false.

1. Character.isLetter('b') returns true. .....
2. Integer.parseInt("123") returns a String. .....
3. Double.toString(5.5) converts a double to a string. .....
4. Character.isLowerCase('G') returns true.. .....

D. Short Answer Questions.

1. What is the difference between parseInt() and toString()?
2. What is the use of Float.parseFloat(String)?
3. Define Autoboxing and Unboxing.
4. Give one example of a Wrapper class and explain its use.

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CLASS 10

LIBRARY CLASSES

A. Tick (✓) the correct option.

1. What will be the output of Character.isDigit('3')?
   (a) true ☐ (b) false ☐
   (c) null ☐ (d) None of the above ☐
2. Which method is used to convert a character to uppercase?
   (a) Character.toLowerCase(char ch) ☐
   (b) Character.toUpperCase(char ch) ☐
   (c) Character.toCharArray() ☐
   (d) Character.isUpperCase(char ch) ☐
3. What is autoboxing in Java?
   (a) Converting a primitive type to its corresponding wrapper class object ☐
   (b) Converting a wrapper class object to a primitive type ☐
   (c) Converting between different wrapper classes ☐
   (d) Converting between different primitive types ☐

B. Fill in the blanks.

1. Double.parseDouble("5.75") returns a value of type .....
2. To check if a character is uppercase, we use Character.....(char).
3. Integer.parseInt("100") converts a string into an .....

C. Write 'T' for true and 'F' for false.

1. Character.isWhitespace(' ') returns true. .....
2. Integer.parseInt("45.5") returns an integer. .....
3. Double.parseDouble("10.2") returns a float. .....
4. Character.toUpperCase('m') returns 'M'. .....

D. Short Answer Questions.

1. What is the purpose of Double.valueOf(String)?
2. What does Character.isWhitespace(char ch) check?
3. What is the role of Wrapper classes in Java?

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CLASS 10

LIBRARY CLASSES

A. Tick (✓) the correct option.

1. Which of the following terms is used to denote the class from which the data is inherited?
   (a) Base class ☐ (b) Derived class ☐
   (c) Subclass ☐ (d) None of these ☐
2. Which type of inheritance is used when more than one type of inheritance is coded together?
   (a) Single inheritance ☐ (b) Multiple inheritance ☐
   (c) Multilevel inheritance ☐ (d) Hybrid inheritance ☐
3. Which of the following variables can be accessed from anywhere?
   (a) Protected ☐ (b) Public ☐
   (c) Private ☐ (d) None of these ☐

B. Fill in the blanks.

1. The protected members of a class can be accessed outside the package by using the .....
2. A sequence of statements enclosed in curly brackets {} is known as a .....
3. The process of converting a primitive type to its corresponding wrapper class object is known as .....

C. Write 'T' for true and 'F' for false.

1. Public members of a class can be accessed only within the class. .....
2. Instance variables are also called local variables. .....
3. Multiple inheritance is allowed in Java. .....
4. A block of code in Java is always enclosed in curly brackets {}. .....

D. Short Answer Questions.

1. What is the difference between protected and private access modifiers?
2. Explain the concept of hybrid inheritance.
3. What is encapsulation in Java?

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LIBRARY CLASSES

A. Tick (✓) the correct option.

1. What is autoboxing in Java?
   (a) Converting a primitive type to its corresponding wrapper class object ☐
   (b) Converting a wrapper class object to a primitive type ☐
   (c) Converting between different wrapper classes ☐
   (d) None of these ☐
2. Which method is used to convert a character argument to lowercase?
   (a) toUpperCase(char ch) ☐ (b) toLowerCase(char ch) ☐
   (c) toCharArray() ☐ (d) isLowerCase(char ch) ☐
3. Which method is used to check whether a character is a letter?
   (a) isDigit(char ch) ☐ (b) isLetter(char ch) ☐
   (c) isWhitespace(char ch) ☐ (d) isUpperCase(char ch) ☐

B. Fill in the blanks.

1. The method Character.isDigit('5') returns .....
2. The method used to check if a character is uppercase is Character..... (char).
3. The method used to convert a String to an Integer is Integer.....(String).

C. Write 'T' for true and 'F' for false.

1. Character.isWhitespace(' ') returns true. .....
2. Integer.parseInt("45.5") returns an integer. .....
3. Double.parseDouble("10.2") returns a double. .....
4. Character.toUpperCase('m') returns 'M'. .....

D. Short Answer Questions.

1. What is the difference between Integer.parseInt() and Double.parseDouble()?
2. What does Character.isWhitespace(char ch) check?
3. Explain autoboxing and unboxing with an example.

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CLASS 10

ARRAYS

A. Tick (✓) the correct option.

1. Which of the following operations can be performed on arrays?
   (a) Insertion ☐ (b) Deletion ☐
   (c) Sorting ☐ (d) All of these ☐
2. What is the correct way to declare a 2D array of size 3x4?
   (a) int[][] arr = new int(3,4); ☐ (b) int[][] arr = new int[3][4]; ☐
   (c) int arr = new int(3,4); ☐ (d) int arr = new int[3][4]; ☐
3. What is the value of arr.length if int arr[] = {1, 3, 5, 7, 5};?
   (a) 4 ☐ (b) 5 ☐
   (c) 6 ☐ (d) 7 ☐

B. Fill in the blanks.

1. The method used to find the length of an array in Java is .....
2. A 2D array in Java is also known as an .....
3. The first index of an array in Java is .....
4. The process of arranging elements in ascending or descending order is called .....

C. Write 'T' for true and 'F' for false.

1 A Java array can store multiple data types in a single array. .....
2. The last subscript of an N element array is N-1. .....
3. A 2D array can be created using int[][] arrayName = new int[3][3];. .....
4. The method getSize() is used to find the length of an array in Java. .....

D. Short Answer Questions.

1. What is an array in Java?
2. How do you initialize a 1D array with values {10, 20, 30, 40, 50}?
3. What happens if we try to access an invalid index in an array?
4. What is the difference between a 1D and a 2D array?

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CLASS 10

ARRAYS

A. Tick (✓) the correct option.

1. What is the syntax to initialize a 2D array of size 3x3 in Java?
   (a) int[][] myArray = new int(); ☐
   (b) int[][] myArray = new int[3][3]; ☐
   (c) int[][] myArray = {(1, 2), (3, 4)}; ☐
   (d) int[][] myArray = new int[2][3]; ☐
2. Which method is used to find the length of a 1D array?
   (a) size() ☐ (b) length ☐
   (c) getSize() ☐ (d) getLength() ☐
3. What will happen if we do not initialize an array in Java?
   (a) It throws a compile-time error ☐ (b) It throws a runtime error ☐
   (c) It initializes with default values ☐ (d) It remains empty ☐

B. Fill in the blanks.

1. Arrays in Java are stored in ..... memory.
2. The default value of an integer array element in Java is .....
3. A single-dimensional array is also known as a ..... array.
4. The method used to sort an array in Java is .....

C. Write 'T' for true and 'F' for false.

1 A 2D array can be created using int arr[][] = new int[2][3];. .....
2. An array index always starts from 1. .....
3. Java allows dynamic resizing of arrays. .....
4. The default value of a boolean array element is false. .....

D. Short Answer Questions.

1. How do you find the length of an array in Java?
2. Explain the concept of a jagged array.
3. How can you initialize a 2D array in Java?

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Unit-16

CLASS 10

STRING HANDLING

A. Tick (✓) the correct option.

1. Which of the following operators is used to concatenate two or more strings in Java?
   (a) & ☐ (b) + ☐
   (c) * ☐ d) - ☐
2. What is the correct way to declare a String in Java?
   (a) String str = new String("Hello"); ☐ (b) str = "Hello"; ☐
   (c) String = "Hello"; ☐ (d) All of the above ☐
3. Which method is used to convert a string to uppercase?
   (a) toUpper() ☐ (b) toUpperCase() ☐
   (c) convertToUpper() ☐ (d) toUppercase() ☐

B. Fill in the blanks.

1. The method used to remove leading and trailing whitespaces from a string is .....
2. The process of combining two strings is known as .....
3. The return type of the replace() method of the String class is .....
4. The ..... method is used to compare two strings for equality.

C. Write 'T' for true and 'F' for false.

1 The charAt() method returns the ASCII value of a character. .....
2. The trim() method removes whitespace from both ends of a string. .....
3. The startsWith() method checks if a string begins with a specific sequence of characters. .....
4. The equals() method is used to compare two strings for equality. .....

D. Short Answer Questions.

1. Write a Java program to input a sentence and print it in uppercase.
2. Explain the difference between equals() and == when comparing strings in Java.
3. How do you extract a specific character from a string in Java?

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CLASS 10

STRING HANDLING

A. Tick (✓) the correct option.

1. What is the output of the following code?

```
String s1 = "aaa";
System.out.println(s1.indexOf('a'));
```

(a) 0 ☐ (b) 1 ☐

(c) -1 ☐ (d) 3 ☐

2. Which method is used to check if two strings are equal?

(a) equals() ☐ (b) compareTo() ☐

(c) isequal() ☐ (d) All of the above ☐

3. Which method is used to replace characters in a string?

(a) replace() ☐ (b) swap() ☐

(c) substitute() ☐ (d) change() ☐

B. Fill in the blanks.

1. A string in Java is a sequence of characters enclosed within .....
2. The method used to concatenate strings is .....
3. The ..... method converts all characters of a string to lowercase.

C. Write 'T' for true and 'F' for false.

1 The replace() method modifies the original string. .....
2. The toLowerCase() method converts a string to lowercase. .....
3. The indexOf() method returns the last occurrence of a character. .....
4. The concat() method is used to add one string to another. .....

D. Short Answer Questions.

1. Write a Java program to count the number of vowels in a given string.
2. Write a Java program to reverse a string.
3. Describe the difference between the substring() and replace() methods.

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