

# HOLIDAY HOMEWORK – COMPUTER APPLICATIONS

Class: IX (ICSE)

## Instructions

Write neatly in your computer notebook  
Show proper steps  
Practice programs on computer

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## Section A – Multiple Choice Questions (MCQs)

Tick (✓) the correct option:

- Java is a \_\_\_\_\_ language.
    - platform dependent
    - platform independent
    - machine dependent
    - none
  - Which of the following is used to create objects?
    - dot operator
    - new operator
    - class
    - method
  - Which data type is used to store decimal numbers?
    - int
    - char
    - double
    - boolean
  - What is the output of  $5 \% 2$ ?
    - 2
    - 1
    - 0
    - 5
  - Which method returns square root?
    - Math.pow()
    - Math.sqrt()
    - Math.max()
    - Math.random()
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## Section B – Fill in the blanks

- Java was developed by \_\_\_\_\_.
  - A class is a \_\_\_\_\_ for objects.
  - \_\_\_\_\_ data types are user-defined.
  - The operator “++” is called \_\_\_\_\_ operator.
  - Math.pow(2,3) = \_\_\_\_\_
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## Section C – Short Answer Questions

- What is a class?
- What is an object?
- Define operator.
- Write the difference between int and double.
- What is Math.random()?

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## Section D – Programs

Write the following programs using `main()` method:

1. Write a program to add three numbers.
  2. Write a program to find the area of a circle.
  3. Write a program to swap two numbers.
  4. Write a program to find the maximum of two numbers.
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## Section E – Application Based Questions

1. Write the Java expression for:  
 $\sqrt{a^2 + b^2}$
2. If  $a = 5$  and  $b = 3$ , find the output of:  
`a++ + ++b`
3. Write the difference between prefix and postfix operators.

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# HOLIDAY HOMEWORK – COMPUTER APPLICATIONS Class: X (ICSE)

## Instructions (For Students)

- Write neatly in your notebook
  - Practice all programs in BlueJ
  - Revise concepts properly
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## Section A – Multiple Choice Questions (MCQs)

Tick (✓) the correct option:

1. Java is a \_\_\_\_\_ programming language.
  - a. platform dependent
  - b. platform independent
  - c. machine dependent
  - d. none
2. Which keyword is used to create an object?
  - a. class
  - b. new
  - c. void
  - d. static
3. Which of the following is a valid data type?
  - a. int
  - b. number
  - c. decimal
  - d. real
4. Which operator gives remainder?
  - a. /
  - b. %

- c. \*
  - d. +
5. Which method is used to find square root?
    - a. Math.pow()
    - b. Math.sqrt()
    - c. Math.max()
    - d. Math.random()
  6. Which loop is used when number of iterations is known?
    - a. while
    - b. do-while
    - c. for
    - d. switch
  7. Which statement is used for multiple conditions?
    - a. if
    - b. for
    - c. switch
    - d. break
  8. Which of the following is a relational operator?
    - a. &&
    - b. ==
    - c. +
    - d. %
  9. Which data type is used for true/false?
    - a. int
    - b. char
    - c. boolean
    - d. float
  10. Which statement is used to exit loop?
    - a. continue
    - b. break
    - c. exit
    - d. stop

## ➡ Section B – Fill in the blanks

1. Java was developed by \_\_\_\_\_.
2. A class is a \_\_\_\_\_ for creating objects.
3. The \_\_\_\_\_ operator is used to compare values.
4. \_\_\_\_\_ loop executes at least once.
5. The \_\_\_\_\_ statement is used for decision making.
6. \_\_\_\_\_ is used to select one option from many.
7. The result of  $10 \% 3$  is \_\_\_\_\_.
8. \_\_\_\_\_ function is used to generate random numbers.

## □ Section C – Short Answer Questions

1. Define class and object.
2. What is a loop? Name its types.
3. What is the difference between while and do-while loop?
4. Define numeric handling.
5. What is an if statement?
6. What is switch case statement?
7. What is Math.random()?
8. What is the use of break statement?

## 📄 Section D – Programs (Very Important)

Write Java programs using `main()` method:

1. Write a program to add three numbers.
2. Write a program to check whether a number is even or odd using if statement.
3. Write a program to find the largest of two numbers using if-else.
4. Write a program to print numbers from 1 to 10 using for loop.
5. Write a program to print multiplication table of a number.
6. Write a program to find sum of first 10 natural numbers using loop.
7. Write a program to check whether a number is positive, negative or zero.
8. Write a program using switch case to display day name (1–7).




## 🔢 Section E – Numeric Handling Programs

1. Write a program to reverse a number.
2. Write a program to check whether a number is palindrome.
3. Write a program to find sum of digits of a number.
4. Write a program to count number of digits in a number.
5. Write a program to check whether a number is Armstrong number.

## 🎯 Section F – Application Based Questions

1. Write Java expression for:  
 $\sqrt{a^2 + b^2}$
2. If  $a = 5$  and  $b = 3$ , find the output of:  
`a++ + ++b`
3. Write the difference between prefix and postfix operators.
4. Write difference between if and switch statement.

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   **HOLIDAY HOMEWORK –**  
**Computer Science**  
**Class: XI**

**Topic: Number Conversion**

 **Instructions for Students**

- Show all steps clearly
- Use proper method (division / multiplication)
- Practice neatly in notebook

 **Section A – Without Decimal Point (Integers)**

1. Convert the following Decimal numbers to Binary:
  - a. 25
  - b. 56
2. Convert the following Decimal numbers to Octal:
  - a. 78
  - b. 145
3. Convert the following Decimal numbers to Hexadecimal:
  - a. 255
  - b. 512
4. Convert the following Binary numbers to Decimal:
  - a. 10101
  - b. 110110
5. Convert the following Binary numbers to Octal:
  - a. 101110
  - b. 111001
6. Convert the following Binary numbers to Hexadecimal:
  - a. 11010110
  - b. 10101111
7. Convert the following Octal numbers to Decimal:
  - a. 157
  - b. 234
8. Convert the following Octal numbers to Binary:
  - a. 45
  - b. 76
9. Convert the following Hexadecimal numbers to Decimal:
  - a. A3
  - b. 1F
10. Convert the following Hexadecimal numbers to Binary:
  - a. B4
  - b. 9E

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 **Section B – With Decimal Point (Fractions)**

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1. Convert the following Decimal numbers to Binary:
  - a. 10.25
  - b. 5.75
2. Convert the following Decimal numbers to Octal:
  - a. 18.625
  - b. 9.375

3. Convert the following Decimal numbers to Hexadecimal:
  - a. 26.5
  - b. 45.25
4. Convert the following Binary numbers to Decimal:
  - a. 101.101
  - b. 110.011
5. Convert the following Binary numbers to Octal:
  - a. 1101.101
  - b. 1011.011
6. Convert the following Binary numbers to Hexadecimal:
  - a. 101110.101
  - b. 111001.011
7. Convert the following Octal numbers to Decimal:
  - a. 17.3
  - b. 25.6
8. Convert the following Octal numbers to Binary:
  - a. 34.5
  - b. 76.2
9. Convert the following Hexadecimal numbers to Decimal:
  - a. A.F
  - b. 2.B
10. Convert the following Hexadecimal numbers to Binary:
  - a. B.4
  - b. 9.E

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**HOLIDAY HOMEWORK –**  
**Computer Science**  
**Class: XII**

**BOOLEAN ALGEBRA & K-MAP – WORKSHEET**

**✂ Instructions for Students**

- Draw diagrams **neatly with labels**
- Use correct **logic symbols (AND, OR, NOT, XOR)**
- Show **inputs and outputs clearly**
- For K-Map, use **proper grouping**

**✦ Section A – Boolean Algebra**

1. Simplify the following expression:  
 $A + \bar{A}B$
2. Simplify using Boolean laws:  
 $(A + B)(A + \bar{B})$
3. Simplify:  
 $A + AB$
4. Simplify:  
 $(A + B)(\bar{A} + B)$
5. Simplify:  
 $AB + \bar{A}B$

6. Simplify:  
 $(A + B + C)(A + B)$
7. Simplify using De Morgan's Theorem:  
 $(AB)'$
8. Simplify using De Morgan's Theorem:  
 $(A + B)'$
9. Prove using Boolean laws:  
 $A + \bar{A} = 1$
10. Prove:  
 $A(A + B) = A$

## ✦✦ Section B – Truth Tables

11. Construct the truth table for:  $A' + (A.B)'$   
 $A + B$
12. Construct the truth table for:  $A.B + A'B'$
13. Construct the truth table for:  $(A + B)'$
14. Construct the truth table for:  $A \oplus B$  (XOR)
15. Construct the truth table for:  $A \oplus B \oplus C$

## ✦✦ Section C – K-Map (4 Variable – SOP Form)

16. Simplify using K-Map (SOP):  $F(A,B,C,D) = \Sigma(0,2,5,7,8,10,13,15)$   
Simplify using K-Map (SOP):  $F(A,B,C,D) = \Sigma(1,3,4,6,9,11,12,14)$
  17. Simplify using K-Map (SOP):  $F(A,B,C,D) = \Sigma(0,1,2,3,8,9,10,11)$
  18. Simplify using K-Map (SOP):  $F(A,B,C,D) = \Sigma(4,5,6,7,12,13,14,15)$
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## ✦✦ Section D – K-Map (4 Variable – POS Form)

20. Simplify using K-Map (POS):  $F(A,B,C,D) = \Pi(0,2,5,7,8,10,13,15)$   
Simplify using K-Map (POS):  $F(A,B,C,D) = \Pi(1,3,4,6,9,11,12,14)$
  21. Simplify using K-Map (POS):  $F(A,B,C,D) = \Pi(0,1,2,3,8,9,10,11)$
  22. Simplify using K-Map (POS):  $F(A,B,C,D) = \Pi(4,5,6,7,12,13,14,15)$
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## ✦✦ Section E – Logic Circuits (Drawing Questions)

24. Draw the logic circuit diagram of a **Half Adder**. Also label inputs and outputs.
25. Draw the logic circuit diagram of a **Full Adder**. Show Sum and Carry outputs clearly.
26. Draw a **2-to-4 Encoder** with proper inputs and outputs.
27. Draw a **3-to-8 Decoder** with labelled inputs and outputs.
28. Draw a **4-to-1 Multiplexer (MUX)** using logic gates.

29. Draw a **1-to-4 Demultiplexer (DEMUX)**.

## ✦ **Section F – Application / Conceptual**

30. Write the difference between **Half Adder and Full Adder**.

31. Write the difference between **Encoder and Decoder**.

32. What is the function of a **Multiplexer**?

33. What is the function of a **DE multiplexer**?

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