

SET-1

Class: IX

Subject: Computer Applications

Full Marks: 100

Time: 2 Hours

Answers to this Paper must be written on the paper provided separately.

*You will **not** be allowed to write during the first **15** minutes.*

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

*This Paper is divided into **two** Sections.*

*Attempt **all** questions from **Section A** and **any four** questions from **Section B**.*

The intended marks for questions or parts of questions are given in brackets[].

SECTION A

*(Attempt **all** questions from this **Section**.)*

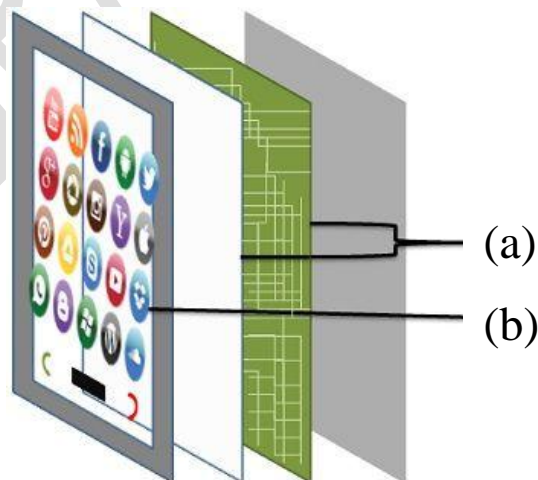
Question 1

[20]

Choose the correct answers to the questions from the given options.

(Do not copy the question, write the correct answers only.)

(i)



Name the feature of java depicted in the above picture.

- (a) Encapsulation and Abstraction
 - (b) Inheritance and Abstraction
 - (c) Abstraction and Encapsulation
 - (d) Polymorphism and Encapsulation
- (ii) A girl wanted to calculate the sum of two numbers stored as a and b multiplied by 7. Select the appropriate Java expression.
- (a) $a+b*7$ (b) $7*a+b$ (c) $(a+b)*7$ (d) $a+7*b$
- (iii) Identify which of the following leads to an infinite loop.
- (a) `for(i=10;i!=0;i- -)`
(b) `for(i=3;i<=30;i+=3)`
(c) `for(i=1;i>=1;i++)`
(d) `for(i=1;i>=0;i- -)`
- (iv) Which loop construct in Java best suits when the number of iterations is known?
- (a) `for` (b) `while` (c) `do-while` (d) all of these
- (v) What is the purpose of the `continue` statement in a loop?
- (a) To exit the loop immediately
(b) To skip the current iteration and move to the next iteration
(c) To terminate the program
(d) To execute a specific block of code
- (vi) What is the key difference between a `while` loop and a `do-while` loop in Java?
- (a) The syntax used to define the loop
(b) The number of iterations performed
(c) The condition check timing
(d) The ability to use the `break` statement
- (vii) The What is the output of the following code snippet?

```
int i = 0;
for(i = 0 ; i < 5; i++){    }
System.out.println(i);
```

- (a) 5 (b) 0 (c) 0 (d) Compilation Error
- (viii) The output of the statement `Math.ceil(89.9) + Math.floor(90.5)` is:
- (a) 0.0 (b) 180 (c) 180.0 (d) 180.4
- (ix) Evaluate the following Java expression, if $x=3$, $y=5$, and $z=10$: `++z + y - y + z + x++`
- (a) 20 (b) 23 (c) 24 (d) 25
- (x) IPR expands to
- (a) Individual Property Rights
(b) Individual Performance Right
(c) Intellectual Property Rights
(d) Intellectual Performance Rights
- (xi) Which keyword is used for accessing the features of a package?
- (a) package (b) import (c) extends (d) export
- (xii) Which of the following loop is known as exit control loop?
- (a) for (b) do-while (c) while (d) All of these
- (xiii) Assertion: If-else statements are more suitable than switch statements when comparing multiple conditions with complex logical expressions.
Reason: Switch statements are limited to comparing a single variable against multiple constant values.
- (a) Both the assertion and reason are correct, and the reason is the correct explanation of the assertion.
(b) Both the assertion and reason are correct, but the reason is not the correct explanation of the assertion.
(c) The assertion is correct, but the reason is incorrect.
(d) The assertion is incorrect, but the reason is correct.

- (xiv) Name the data types in order from top, given in the below picture.

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- (a) int, char, double, String
(b) int, String, char, double
(c) char, double, int, String
(d) int, double, char, String
- (xv) Which of the following is a valid statement to print the following sentence:

Raj said "Good morning"

- (a) System.out.println("Raj said "Good morning");
(b) System.out.println("Raj said \\Good morning\\");
(c) System.out.println("Raj said \"Good morning\" ");
(d) System.out.println("Raj said Good morning");
- (xvi) Default initial value to float:
- (a) 0.0 (b) 0.0f (c) 0f (d) 0

- (vii) Assertion(A): The do-while loop is guaranteed to execute its body at least once.

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

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

- (xviii) Read the following text, and choose the correct answer:
Java is a popular programming language known for its platform independence and extensive library of reusable code. It follows the object-oriented programming paradigm, which emphasises the use of classes and objects. Java programs are executed using the Java Virtual Machine (JVM), which interprets the compiled Java bytecode. Additionally, Java provides automatic memory management through garbage collection, relieving developers from manual memory deallocation.
Which of the following statements about Java is true based on the passage?
- (a) Java is a platform-dependent programming language.
 - (b) Java programs are compiled directly into machine code
 - (c) Java programs are executed by the Java Compiler.
 - (d) Java provides automatic memory management through garbage collection.
- (xix) Assertion(A): java is an object-oriented programming language.
Reason(R): Without creating an object, we can run the Java program in blueJ.
- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)
 - (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not a correct explanation of Assertion (A)
 - (c) Assertion (A) is false and Reason (R) is true
 - (d) Assertion (A) is true and Reason (R) is false
- (xx) What Will be the output for:

System.out.print(9-3 == 9);
(a) 0 (b) 1 (c) false (d) true

Question 2

- (i) Write the Java expression for $\frac{(p+q)^2}{|4x \times 2y|}$ [2]
- (ii) Evaluate the expression when the value of $x = 5$: [2]
 $x *= x ++ + x ++ - x ++ \% 4$
- (iii) Give the output of the following program segment: [2]
for(r=1;r<6;r+=2)
{
 for(c=1;c<=r;c++)
 { System.out. print(r+ “,”); }
}
- (iv) Rewrite the following using ternary operator. [2]
if(income<=10000)
tax=0;
else
tax=20;
- (v) How many times the given loop is executed? Give the output of the same. [2]
for(k=10;k<=25;k+=4)
{
 System.out.println(k);
 if(k%3==0) continue;
}
- (vi) How many times will the following loop execute? What value will be returned?
int x=2;
int y=50;
do{

```
++x;  
y-=x++;  
}while(x<=10);  
return y;
```

- (vii) What is the significance of default in switch case? [2]
- (viii) A Student executes the given program segment and it results in 1.0, irrespective of the value of n. State the type of the error, write the correct statement: [2]
- ```
void solve(int n)
{ double power=Math. pow(n, 2/3);
System. out. println(power);
}
```
- (ix) Difference between logical error and syntax error. [2]
- (x) Explain Hacking. Write any two major ethical issues. [2]

## SECTION B

*(Answer **any four** questions from this **Section**.)*

*The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base.*

*Each program should be written using variable description / mnemonic codes so that the logic of the program is clearly depicted. Flowcharts and algorithms are not required.*

### Question 3

[15]

Define a class with the following specifications:

**Class name:** employee

**Member variables:**

eno-employee number

ename-name of the employee

age-age of the employee

basic-basic salary

net- net salary

[Declare the variables using appropriate data types]

**Member methods:**

void calculate ( )-to accept the details using scanner class and calculate the net salary as per the given specifications:

net salary=basic + hra + da – pf

| Basic salary           | Charge               |
|------------------------|----------------------|
| Below Rs. 15000        | hra = 18.5% of basic |
| Rs. 15001 to Rs. 30000 | hra = 15.5% of basic |
| Above Rs. 30000        | hra = 12.5% of basic |

da = 17.45% of basic

pf = 8.1% of basic

Print the following details: eno, ename, age, basic and net.

**Question 4**

[15]

Design a class to with a function Find( ) with one integer argument (N) to accept a four-digit number and check if it is a USHWA number or not. The number is said to be USHWA Accept a four digit number .

If: Sum of all digits=  $2 \times$  ( sum of first and last)

**Example 1:** n =1234

Sum of first and last =  $1+4=5$

Sum of all digits = $1+2+3+4=10$

**Example 2:** If the input value is not four digits, then an error message should be given as the number has not 4 digits.



### Question 5

[15]

The equivalent resistance of a series and a parallel connection of two resistances are given by the formula:

$$R_1 = r_1 + r_2 \quad R_2 = \frac{r_1 \cdot r_2}{r_1 + r_2}$$

Write a program to input the value of  $r_1$  and  $r_2$ . Calculate and display the output of the equivalent resistance as per user's choice.

### Question 6

[15]

Define a class called MoBike with the following description:

**Instance variables /data members:**

int bno — to store the bike's number

int phno — to store the phone number of the customer

String name — to store the name of the customer

int days — to store the number of days the bike is taken on rent

int charge — to calculate and store the rental charge

**Member methods:**

void compute( ) — to input and store the detail of the customer  
compute the rental charge.

The rent for a bike is charged on the following basis:

First five days                      Rs. 500 per day.

Next five days                      Rs. 400 per day.

Rest of the days                      Rs. 200 per day.

Display the bike's number, customer name and rental charge

### Question 7

[15]

Write a menu driven program to do the following depending on the user choosing 1 or 2: (use switch-case).

(i) To print the sum of the following series:

$$\text{sum} = 1 + (1 \times 2) + (1 \times 2 \times 3) + \dots (1 \times 2 \times 3 \dots \times 20)$$

(ii) To print the following pattern where value of n not more then 26.

N=5                    A  
                          B C  
                          D E F  
                          G H I J  
                          K L M N O

### Question 8

[15]

A special two-digit number is such when the sum of its digits is added to the product of its digits, the result is equal to the original two-digit number.

**Example:** Consider the number 59.

Sum of digits =  $5 + 9 = 14$

Product of digits =  $5 * 9 = 45$

Sum of the sum of digits and product of digits =  $14 + 45 = 59$

Write a program to accept a two-digit number. Add the sum of its digits to the product of its digits. If the value is equal to the number input, then display the message "Special 2 — digit number" otherwise, display the message "Not a special two-digit number".