



**DELHI PUBLIC SCHOOL NEWTOWN**  
**SESSION 2024-25**  
**FINAL EXAMINATION**

**CLASS: IX**  
**SUBJECT: COMPUTER APPLICATIONS [SET A]**

**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 consists of six printed pages. 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(40 Marks)**

*(Attempt all questions from this Section)*

**Question 1**

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

[20]



i.

Name the **feature of Java** depicted in the picture.

- |                  |                 |
|------------------|-----------------|
| a. Encapsulation | c. Inheritance  |
| b. Abstraction   | d. Polymorphism |

ii.

Which expression will **result in integer** datatype?

- |  |  |
|--|--|
| a. <code>char*float/ int</code>          | c. <code>(char)(double + byte)/ int</code> |
| b. <code>(int)(char-double)/float</code> | d. Both option (b) and (c)                 |

iii.

What will be the **output** for

**`System.out.println('P'+32);`**

- |        |        |                 |      |
|--------|--------|-----------------|------|
| a. P32 | b. 112 | c. Syntax Error | d. p |
|--------|--------|-----------------|------|

iv.

Which package is loaded **by default** when a Java program is created?

- |                           |                           |
|---------------------------|---------------------------|
| a. <code>java.awt</code>  | c. <code>java.lang</code> |
| b. <code>java.util</code> | d. Both 'a' and 'c'       |

v.

Correct statement to **create an object** 'letters' of a user defined class 'Abc':

- |  |   |
|--|---|
| a. <code>class Abc=new letters();</code> | c. <code>Abc obj=new Abc();</code>      |
| b. <code>letters=new Abc();</code>       | d. <code>Abc letters= new Abc();</code> |

vi.

This **loop will execute once** before exiting the iterative structure:

- |  |   |
|--|---|
| a. <code>for( int s=10;s&lt;0; s++)</code>       | c. <code>for(int k=20;k&gt;10;k++)</code> |
| b. <code>for(int b=200;b%10&lt;=0;b/=100)</code> | d. <code>for(int i=1;;i++)</code>         |

- vii. What will be the **output** for the below code:
- ```
System.out.println("\Data\""+\"\\n \\t Information");
```
- Data + Information
  - “Data”
  - “Data”  
“Information”
  - “Data”  
“Information”  
Information
- viii. It is a **user defined data type**.
- String
  - class
  - Array
  - byte
- ix. Assertion(A): A message is a request to an object to perform a behavior.  
Reasoning(R): Message passing means sending a message from one object to another.
- Both (A) and (R) are true and (R) is the correct explanation of (A).
  - Both (A) and (R) are true but (R) is not an explanation of (A).
  - (A) is true and (R) is false.
  - (A) is false and (R) is true.
- x. Which keyword declares a variable constant so that the **value** of the variable **cannot** change?
- final
  - const
  - import
  - new
- xi. What is the **default value** of Boolean data type?
- true
  - false
  - on
  - both option (a) and (c)
- xii. How to call a **class watch** from its **parent class wrist** present in **accessories package**?
- import wrist.watch.accessories;
  - import accessories.wrist.watch;
  - import accessories.watch.wrist;
  - import watch.wrist.accessories;
- xiii. What will be the **result** of the following statements
- ```
int x=10,y=23;
System.out.print((++x + y-- > x++ + --y) + " ");
System.out.print(--y*--x);
```
- true 220
  - true 230
  - false 220
  - false 230
- xiv. What value will be returned for **Math.sqrt(25-34.0)** ?
- Syntax Error
  - Semantic Error
  - Runtime Error
  - NaN
- xv. Identify which statement listed below is **method invocation** statement?
- float cost=50.0f;
  - cost;
  - System.out.print(cost);
  - cost=true?cost\*1/10:cost\*2/10;
- xvi. Which of the following is a **token**?
- Bytecode
  - byte
  - Curly Brackets{ }
  - Both b & c
- xvii. What will be the **correct output** for the Java statement:
- ```
System.out.println(Math.ceil(-4.89+Math.min(Math.abs(-12.26),-0.83)));
```
- 6.0
  - 5.0
  - 16.0
  - 17.0
- xviii. Which of the following is an **invalid** Scanner class **function**?
- next()
  - nextInt()
  - nextBoolean()
  - nextString()
- xix. Identify the **type of loop** statement: for(int x=1;x<20;x++);
- Empty loop
  - Null loop
  - Infinite loop
  - Both b & c
- xx. What is the memory **byte size** required for **85.065f** literal?
- 1
  - 2
  - 4
  - 8

## Question 2

- i. Study the below code to answer the following questions: [4]
- ```
class Trade{
    int i, c;
    void intake(){
        i=500;c=35;
        double x=i/c;
        System.out.println(x);}
    }
```
- List all instance variables.
  - What is the byte size of variable x?
  - What are the punctuators and separators used in the code?
  - What is the output of the program?
- ii. **Predict the output :** [2]
- ```
class Time{
    static void band(){
        int er=234;
        do{
            er/=3;
            if(er%2==1)
                continue;
            if(er==2)
                break;
            System.out.print(er+"\n");}
        while(er>0);} }
```
- iii. Write the **equivalent java expression:**  $\frac{\sqrt[3]{n}}{\sqrt[2]{n^2 + 2n + 5}}$  [2]
- iv. **Convert to while loop:** [2]
- ```
for(int m=0,n=10;m<=(n+1)/2;n--){
    if(m%2==0) System.out.println(++m);
    else continue;}
```
- v. **Convert the given code to switch case statement:** [2]
- ```
void VehicleTypeChecker (char vehicle) {
    if (vehicle == 'C') {
        System.out.println("Four-wheeler");
    } else if (vehicle == 'B') {
        System.out.println("Two-wheeler");
    } else {
        System.out.println("Unknown vehicle type");
    } }
```
- vi. Predict the **output** and the **final value** stored in variable **num**. [2]
- ```
int num=8;
while(--num>3)
    System.out.print(num);
```
- vii. The program below is supposed to **read a character** from the user. Evaluate the **reverse of its ASCII code** and display its **character equivalent**. **Complete the missing codes.** [4]

```

Scanner sr=new Scanner(System.in);
char c=   i.  ;
int n=c, nn=0;
while(  ii.  ){
    nn=  iii.   ; n/=10;}
System.out.print(   iv.   );

```

viii. How is **syntax error** different from **run time error**? Give **examples**. [2]

### SECTION B (60 Marks)

(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]

Using the switch statement, write a **menu driven program** in Java to calculate the maturity amount of **class BankDeposit**. The user is given the following options:

1. Term Deposit
2. Recurring Deposit

For **first option** accept principal (p), rate of interest (i) and time period in years(y). Calculate and

**display the maturity amount** (A) receivable using the formula:  $A = p[1 + \frac{i}{100}]^y$

For the **second option** accept monthly installment (m), rate of interest (i) and time period in months (t). Calculate and **display the maturity amount** (A) receivable using the formula:

$$A = mt + m \frac{t(t+1)}{2} \times \frac{i}{100} \times \frac{1}{12}$$

For an incorrect option, an appropriate error message should be displayed.

#### Question 4

- i. Write a **program in Java** to read a number from the user. Check and display whether it is an **Abundant Number** or not. A number is said to be Abundant number when the **sum of its factors** ( exceeding the number itself) is **greater than the number**. [7]

For example, factors of number 12 are 1, 2, 3, 4, 6. Sum of factors 1+2+3+4+6=16. Since 16>12, we can say that 12 is an Abundant number.

- ii. Write a **Java program** that reads a **binary number** (a number containing only 0s and 1s) from the user and **converts** it into its **decimal equivalent**. The program should then display the decimal value. Input validation to ensure the entered number is a valid binary number is not required. [8]

For example, to convert the binary number 1010 to decimal:

The decimal equivalent of a binary number is found by multiplying each binary digit by its corresponding power of 2 and then summing up the results.

$$1 * 2^3 + 0 * 2^2 + 1 * 2^1 + 0 * 2^0 = 1 * 8 + 0 * 4 + 1 * 2 + 0 * 1 = 8 + 0 + 2 + 0 = 10$$

Thus, the decimal equivalent of 1010 is 10.

**Question 5****[15]**

Write a **Java program that simulates** the operation of a **UAV** (Unmanned Aerial Vehicle) engine and speed control based on user inputs. The program should follow these steps:

The user must **enter the character 's' to start the engine**.

Once the engine starts, **for every input of the character 'a', the speed increases by 10 units**.

For every input of the **character 'd', the speed decreases by 5 units**. However, the speed cannot go below 0. The program should keep running, accepting inputs, until the user enters the **character 's' again to stop** the engine. When the engine stops, the program should display the final speed of the UAV.

Sample Input and Output:

```
Enter command: s
The engine started! Enter commands:
a
Speed increased !
a
Speed increased !
d
Speed decreased !
s
The engine stopped ! Final speed: 15 units.
```

**Question 6**

Using a switch statement, **create a menu driven program** in Java to accept **choices A, B and C** to display the various series as per users' choice. **[15]**

**A. 0, 7, 26, 63, ..... n terms**

**B. 0, 1, 1, 2, 4, 7, 13, ..... 15 terms**

**C. Total= 2- 5+ 8- 11+ 14- ..... n terms**

For an incorrect option, an appropriate message should be displayed.

**Question 7**

Write **two separate programs** to display the two patterns mentioned below: **[8+7]**

<b>Pattern 1:</b>	A	<b>Pattern 2:</b>	15	14	13	12	11
	Z Y		10	9	8	7	
	B C D		6	5	4		
	X W V U		3	2			
	E F G H I		1				

**Question 8**

Write a **program in Java** to read a number and check if it is a **Strong Number** or not. A number is said to be Strong when the number equals the **sum of the factorial of its digits**. **[15]**

For example: 145 (**1! + 4! + 5! =145**)