

St. Mary's Convent Inter College, Allahabad
First Terminal Examination 2025 - 26

Time : 2 Hrs

Class 10

M.M. : 100

Computer Applications

Name : Roll No. Date :

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(40 marks)

(Attempt all questions from this Section.)

Question 1:

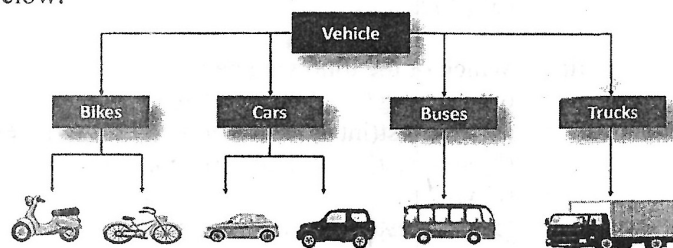
[20×1=20]

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

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

i) What is the concept depicted by the image below:

- (a) Abstraction
- (b) Inheritance
- (c) Polymorphism
- (d) Encapsulation



ii) Math class methods are found in the package called:

- (a) java.util
- (b) java.lang
- (c) java.awt
- (d) java.io

iii) System.out.println('Z' + 32); will display:

- (a) z
- (b) Z
- (c) 122
- (d) 154

iv) The output of $42 / 6 \% 2$ is:

- (a) 1
- (b) 10
- (c) 2
- (d) 0

v) Which of the following is user-defined data type?

1. array	3. class
2. double	4. boolean

- (a) only 1
- (b) 1 and 3
- (c) only 2
- (d) only 4

vi) Select the infinite loop:

- (a) for(int i = 1; i <= 10; i++)
- (b) for(int i = 2; i != 0; i -= 3)
- (c) for(int i = 5; i <= 5; i++)
- (d) for(int i = 1; i >= 1; i--)

vii) The output of Math.max(-7, Math.min(-5, -4)) is:

- (a) -5
- (b) -4
- (c) -7
- (d) error

viii) Which of the following is true for the given object creation statement?

Game cricket = new Game();

- (a) Game is an object of cricket class
- (b) New keyword creates object Game
- (c) Game is a class and cricket is an object
- (d) Game and cricket are objects

ix) Post Office is an example for _____ access specifier.

- (a) public
- (b) local
- (c) protected
- (d) private

x) Assertion (A): In switch case, break statement avoids fall through.

Reason (R): break statement helps to execute only one case at a time.

- (a) Both (A) and (R) are true and (R) is a correct explanation of (A).
- (b) Both (A) and (R) are true and (R) is not a correct explanation of (A).

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- (c) (A) is true and (R) is false.
 (d) (A) is false and (R) is true.

- xi) A physical education teacher asks the students to do the side stretch as shown below, 10 times. Which programming construct the teacher uses?

- (a) if
 (b) switch
 (c) for
 (d) if else if



- xii) Assertion (A): A clock is a real-life example of nested loops.
 Reason (R): The hour hand moves through 12 positions, while the minute hand moves through 60 positions within each hour.
 (a) Both (A) and (R) are true and (R) is a correct explanation of (A).
 (b) Both (A) and (R) are true and (R) is not a correct explanation of (A).
 (c) (A) is true and (R) is false.
 (d) (A) is false and (R) is true.

- xiii) Which of the following pairs of methods will cause a compile-time error due to incorrect method overloading?
 (a) void test(int a, int b) and void test(double a, double b)
 (b) void test(int a, double b) and void test(double a, int b)
 (c) void test(int a, double b) and void test(int a)
 (d) void test(int a) and int test(int a)

- xiv) Consider the program segment:

```
int p = 0;
for(p = 4; p > 0; p -= 2);
System.out.print(p);
System.out.println(p);
```

The above statement will display:

- (a) 42 (b) 4200 (c) 0 (d) 00
 0

- xv) `System.out.println("I said, \"It's wise to obey elders.\");`

The output of the above statement is:

- (a) I said, 'It is wise to obey elders.'
 (b) I said, "It's wise to obey elders."
 (c) I said, It's wise to elders.
 (d) ""It's wise to obey elders.""

- xvi) Consider the following program segment in which the statements are jumbled.
 Choose the correct order of statements to calculate and return the factorial of 4.

```
for(k = 1; k <= 4; k++) → 1
return fa; → 2
long fa = 1, k; → 3
fa *= k; → 4
```

- (a) 1, 2, 3, 4 (b) 3, 1, 4, 2 (c) 3, 1, 2, 4 (d) 1, 3, 2, 4

- xvii) Method which reverses a given number is:

- a) Destructor b) Constructor c) Impure Method d) Pure Method

- xviii) Invoking a method by passing the objects of a class is termed as:

- a) Call by reference b) Call by value c) Call by object d) Call by constructor

- xix) Assertion (A): An argument is a value that is passed to a method when it is called.

Reason (R) : Variables which are declared in a method prototype to receive values are called actual parameters

- a) Both Assertion A and Reason R are true and Reason R is the correct explanation of the Assertion A
 b) Both Assertion A and Reason R are true and Reason R is not the correct explanation of the Assertion A
 c) Assertion A is true and Reason R is false
 d) Assertion A is false and Reason R is true

xx) State the output of the following if st = 'D' :

```
switch( st )
{
default : System.out.print("Grade Unknown");
case 'A' : System.out.print("Grade A"); break;
case 'B' : System.out.print("Grade B"); break;
case 'C' : System.out.print("Grade C"); break;
}
```

- a) None of the below
b) Grade A Grade B
c) Grade B Grade C
d) Grade Unknown Grade A

Question 2

- i) Write the Java expression to find the product of square root of P and the square root of Q using the methods of Math class.
ii) Write the Java statement for creating an object named 'sifra' of the class 'Robot', which takes three double parameters.
iii) Convert the given loop into exit-controlled loop.

```
int a, b;
for(a = 10, b = 1; a >= 1; a -= 2){
    b += a;
    b++;
}
```

- iv) Consider and give the output of the following program:

```
class report{
    int a, b;
    report(){
        a = 10;
        b = 15;
    }
    report(int x, int y){
        a = x;
        b = y;
    }
    void print(){
        System.out.println(a * b);
    }
    static void main(){
        report r = new report();
        r.print();
        report p = new report(4, 5);
        p.print();
    }
}
```

- v) Pragati was asked to write a java code to calculate the **surface area of a cone**, the following code was written by her:

(Surface area of a cone is $A = \pi RL$ and $L = \sqrt{R^2 + H^2}$)

```
class area
{
    public static void main( String args[])
    {
        double R=5.0, H=4.5, L, A ;
        A = 22.0/7 * R * L ;
        L = Math.sqrt( R*R + H*H ) ;
        System.out.println( A);
    }
}
```

Specify the **type of error** in the above program, correct and write the program to be error free.

- vi) Give the output of the following program segment. How many times is the loop executed?

```
for(x=10; x>20; x++)
    System.out.println(x);
    System.out.println(x*2);
```

[2]

- vii) Rewrite the following using a **single if statement**: [2]

```
if( code == 'g')
System.out.println("GREEN");
else if(code == 'G')
System.out.println("GREEN");
```
- viii) Name the keyword which: [2]
a) Indicates that a method has no return type.
b) Makes the variable as a class variable.
- ix) Convert the following if else if construct into switch case: [2]

```
if (ch== 'c' || ch=='C')
System.out . print("COMPUTER");
else if (ch== 'h' || ch=='H')
System.out . print("HINDI");
else
System.out . print("PHYSICAL EDUCATION");
```
- x) What is the value of y after evaluating the expression given below?
y+= ++y + y-- + -- y; when int y=8

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]

Define a class named **CloudStorage** with the following specifications:

Member Variables:

int acno – stores the user's account number

int space – stores the amount of storage space in GB purchased by the user

double bill – stores the total price to be paid by the user

Member Methods:

void accept() – prompts the user to input their account number and storage space using Scanner class methods only.

void calculate() – calculates the bill total price based on the storage space purchased using the pricing table provided:

Storage range	Price per GB (Rs)
First 15 GB	15
Next 15 GB	13
Above 30 GB	11

void display() – displays the account number, storage space and bill to be paid.

Write a main method to create an object of the class and invoke the methods of the class with respect to the object.

Question 4

[15]

Define a class to overload the method print() as follows:

void print() – To print the given format using nested loops.

```
@#@#@
```

```
@#@#@
```

```
@#@#@
```

```
@#@#@
```

double print(double a, double b) – To display the sum of numbers between a and b with difference of 0.5.

e.g. if a = 1.0, b = 4.0

Output is: 1.0 + 1.5 + 2.0 + 2.5 + ... + 4.0

int print(char ch1, char ch2) – Compare the two characters and return the ASCII code of the largest character.

Question 5

[15]

Define a class to accept a number. Check if the sum of the largest digit and the smallest digit is an even number or an odd number. Print appropriate messages.

Sample Input:	6425	3748
Largest digit:	6	8
Smallest digit:	2	3
Sample Output:	Sum is even	Sum is odd

Question 6

[15]

Design a class to overload a method Number() as follows:

- void Number (int num , int d) - To count and display the frequency of a digit in a number.
Example: num = 2565685 d = 5 Frequency of digit 5 = 3
- void Number (int n1) - To find and display the sum of even digits of a number.
Example: n1 = 29865 Sum of even digits = 16

Write a main method to create an object and invoke the above methods.

Question 7

[15]

The sequence of Pell Numbers starts with 0 and 1, and then each Pell number is the sum of twice the previous Pell number and the Pell number before that. The first few Pell numbers are : 0, 1, 2, 5, 12, 29, 70, 169, 408, 985, 2378, 5741, 13860 etc.

Thus 70 is the companion to 29 and $70 = 2 * 29 + 12 = 58 + 12$

Define a class Pellseries with the following description :

Class name : Pellseries

Data members :

int n : to store the number of terms of the series

Member functions :

Pellseries(int num) : To initialize n = num

void showTerm () : To calculate and print n terms of the Pell series

Create a main () to call the functions accordingly.

Question 8

[15]

Write a program to declare a class sequence having the following description:

Data members: double s1,s2

Member functions :

void series1(): to calculate the sum of the series $s1 = 3 + 6 + 12 + 24 + \dots$ to 10 terms

void series2(): to calculate the sum of the series $s2 = 99 + 80 + 63 + \dots$ to 10 terms

Display a menu in the main() to call the functions and display the sum of the series according to the user's choice.

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