THE THIRD PRE-BOARD EXAMINATION 2014-15

Class X (ICSE)

COMPUTER APPLICATIONS (Theory)

Time: Two hours **Maximum marks: 100**

Instructions:

- *Answers to this paper must be written on the answer script provided separately.*
- *All subsections of each question are to be answered in the correct order.*
- *All working including rough work should be done on the same sheet as the rest of the answer.*
- *You will not be allowed to write during the first 15 minutes. The time is to be spent in reading the question paper.*
- *Please do not write anything on the question paper except your name and roll number.*
- *The intended marks for questions or parts of questions are given in brackets [ ].*
- *Attempt **all** questions from **Section A** and any **four** questions from **Section B**.*

SECTION A [40 marks]

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

Question 1

Answer the following questions:

(a) Define the following with an example for each:

(i) an object (ii) a class. [2]

(b) Categorize the following as keywords or identifiers:

(i) block (ii) FINAL [1]

(iii) boolean (iv) try. [1]

(c) Write the difference between a character constant and a string constant. [2]

(d) Write the use of keyword import in Java. [2]

(e) Find the errors in the following code snippet:

```
int x; x = 10;
if (x = = 10)
{   int y = 20;
    y * 2 = x;
}
System.out.println("x = " + x + " y = " + y);
```

[2]

Question 2

Answer the following questions:

(a) What will be the value in variable a after executing the following statements?

```
int a = 2;
a *= 15/++a – a++;
```

[2]

(b) Arrange the following group of operators in order of higher precedence to lower precedence:
(i) logical (ii) arithmetic (iii) relational. [2]

(c) Write the difference between a variable and a constant. [2]

(d) Explain function overloading. [2]

(e) Give two examples of wrapper classes. [2]

Question 3

Answer the following questions:

(a) What is the data type returned by the following library functions:
(i) pow( ) (ii) replace( ). [2]

(b) Write the output of the following program snippet:

```
int n = 10;
for (int i = 1; i <= 10; i++)
{
    if (i % 2 = = 0 && i > 3)
    continue;
    System.out.println(n + i);
}
```
[2]

(c) Find out the error in the following code snippet. Rewrite the lines of code correctly that contain an error(s).

```
void fn1(int a, b)
{
    System.out.println( a + b);
    return;
}
void fn2( )
{
    int x = 5, y = 10;
    System.out.println("Sum of values in x and y is = " + fn1(x, y));
}
```
[2]

(d) Rewrite the following *for* loop using *do while* loop:

```
int i, j;
for (i = 1, j = 1; i <= 10; i++, j++)
{
    System.out.println(i * j);
}
```
[2]

(e) Write the output of the following statements:

```
String str = "CMS Lucknow";
System.out.println(Character.isWhitespace(str.charAt(2)) = =
                        Character.isLowerCase(str.charAt(4)));
```

[2]

(f) Write the role of keyword default in a switch case construct. [2]

(g) How many times will the following loop execute?

```
int a = 0, b = 10;
while (a++ < = --b)
{
    System.out.println(a + b);
}
```

[2]

(h) Write the difference between sorting and searching. [2]

(i) Write the output of the following code snippet:

```
char a[ ] = {'A', 'B', 'C', 'D', 'E'};
int len = a.length - 1;
for (int i = 0; i < = len/ 2; i++)
System.out.println((int) a[len - i] - (int) a[i]);
```

[2]

(j) Write the difference between an instance variable and a class variable. [2]

SECTION B [60 marks]

Attempt ***any four questions*** *from this Section.*

The answers in this Section should consist of the ***Program in Blue J environment with Java.*** *Each program should be written using* ***Variable descriptions/Mnemonic Codes*** *such that the logic of the program is clearly depicted.*

Flow-charts and Algorithms ***are not required.***

Question 4

The company announces revised Dearness Allowance (DA) and Special Allowance (SA) for its employees as per the tariff given below:

Basic Salary	Dearness Allowance (DA)	Special Allowance (SA)
up to ₹ 10,000	60%	6%
₹ 10,001 to ₹ 20,000	72%	8%
₹ 20,001 to ₹ 50,000	85%	15%
₹ 50,001 and above	90%	20%

Write a program in Java to accept basic salary of an employee. Calculate the gross salary.
Gross Salary = Basic Salary + Dearness Allowance + Special Allowance.
Print the information in the format given below:

Basic	DA	Special Allowance	Gross Salary
–	–	–	–

[15]

Question 5

Write a menu driven program in Java to perform the following tasks by using switch case statement:

(a) print the series:

0, 3, 8, 15, 24, … n terms

(b) print the pattern:

```
1
1 0
1 0 1
1 0 1 0
1 0 1 0 1
```

[15]

Question 6

Write a program in Java to accept a number and display the new number after removing all zeros from it.

For example:

Input: 8001052

Output: 8152

[15]

Question 7

Write a program in Java to accept a list of twenty strings in an array. From the array print those words which are palindrome. At the end the program should print the total number of palindromes printed.

[15]

Question 8

On the occasion of Golden Jubilee Foundation Day an institution wants to distribute a combination of five gifts whose price is in the range of ₹ 50 to ₹ 200 to each of its employee.

The management has asked to collect the names of twenty such items along with their prices so that five items of minimum prices beginning from ₹ 50 may be chosen for gifting.

Write a program in Java to accept the names of the items and their prices in appropriate type of arrays. Sort the two arrays using selection sort technique on the basis of prices in ascending order.

Print the names of the five items whose price is least but above ₹ 50. Print their prices as well. Assume that in the list there are at least five items whose price is in the range of ₹ 50 to ₹ 200. [15]

Question 9

Define a class named Number with the following description:

Instance variables / data members:

int num	to store a number

Member methods:

Number( )	default constructor to initialize num by 0
void accept( )	to input and store an integer in num
boolean issquare(int x)	to check whether the value in x is a square of the value in num and return true if it is and false otherwise.

Write a main method to create an object of the class and call the above member methods to print the appropriate message. [15]