SUBJECT : Computer Applications

Marks : 100
Time Allowed :2 Hrs

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 (40 Marks)

*Attempt **all** questions*

Question 1.

(a)   Name any two Object Oriented Programming (OOP) principles.   [2]
(b)   Give an example of a Relational operator and a Logical Operator.   [2]
(c)   Mention any two characteristics of a Constructor ?   [2]
(d)   What is a compound statement? Give an example.   [2]
(e)   Find the value of c where x = 0, y = 10.25, z = -5
        c =(x + y * z / 2.5)   [2]

Question 2.

(a)   Explain with the help of an example, the purpose of default in a switch-case construct.   [2]
(b)   Give an example each for:
        (i)   Runtime Error
        (ii)   Syntax Error
        (iii)   Logical Error   [2]
(c)   Differentiate between equals ( ) and compareTo ( ) functions.   [2]
(d)   Write a Java expression for $\sqrt{6x^2 + 10x + 1/2}$ [2]
(e)   Write Java statements to find if a character variable called 'var' contains an alphabet or not.   [2]

Question 3.

(a)   What is the purpose of:
        (i)   new operator   [2]
        (ii)   void keyword   [2]
(b)   Write Java statements to check if the 5th element of an array X [10] is divisible by 2.   [2]
(c)   How are primitive datatypes and reference datatypes are passed in Java, while invoking a function ?   [2]
(d)   Give the output in the following function definitions if value of n = 7:
        void test1(int n)
        {

```
        for(int x=1; x< = n; x++)
        if(n%x = = 0)
                System.out.println (x);
        }                                                                    [2]
```

Question 4.

(a)   Determine the errors in the following statements of Java programs and correct them:
    (i)   String x = {"Java","for","School","Students", "Rocks"};
    (ii)   String s = "Apple".equals("Banana");   [2]
(b)   Name the package of Java:
    (i)   which is imported by default.
    (ii)   which contains Scanner class.   [2]
(c)   What is array ? Write Syntax to create array.   [2]
(d)   What is the Syntax for :   [2]
    (i)   for loop
    (ii)   do….while loop
(e)   Fill in the blanks :   [2]
    (i)   _____ is the process in which a program is validated and _____ is the process in which the errors in the program are removed
    (ii)   A Java Program executes but doesn't give the desired output and will not terminate from the terminal window . Then this is a _____ error in the program

SECTION B (60 Marks)
Attempt *any four* questions from this Section.
*Each program should be written using **Variable descriptions***

Question 5.

Define a class Telephone having the following description:

Instance Variables / Data Members:

int prv, pre   - to store the previous and present meter reading
int call   - to store the calls made (i.e. pre – prv)
String name   - to store name of the customer
double amt   - to store the amount
double total   - to store the total amount to be paid

Member Methods:

void input ( )   - to input the previous reading, present reading and name of the customer
void cal ( )   - to calculate the amount and total amount to be paid
void display ( ) - to display the name of the customer, calls made, amount and total amount to be paid in the following format:

Name	Calls Made	Amount	Total Amount
……..	…………..	………..	………………

Write a program to compute the monthly bill to be paid according to the given conditions:

Calls made	Rate
Up to 100 calls	No charge
For the next 100 calls	90 paise per call
For the next 200 calls	80 paise per call
More than 400 calls	70 paise per call

However every customer has to pay Rs. 180 per month as monthly rent for availing the service.   [15]

Question 6.

Write a program in Java to input a word. Arrange all the alphabets of the word in ascending order and display the new word.

Sample Input: BLUEJ

Sample Output: BEJLU   [15]

Question 7.

Write a program in Java to accept two integer arrays from the user and join them into a third array. After joining the arrays, sort the final array in ascending order using Bubble sort technique.

Sample Input: Array A [ ] = {5,6,45,17,2,58,33};
                 Array B [ ] = {13,25,1,0,7,9};

Sample Output: The final Array after joining is :   5 6 45 17 2 58 33 13 25 1 0 7 9
               The final Array after sorting is :   0 1 2 5 6 7 9 13 17 25 33 45 58   [15]

Question 8.

Write a menu driven program to perform the following: (Use switch-case statement)

(a)   To input a word from the user and print it in the following pattern: [7]
         J
         J A
         J A V
         J A V A

(b)   Write a Program in java to obtain the first eight numbers of the following series :   [8]
         1,11,111,1111……………….

Question 9.

Using Scanner class, write a program to input a string and display all those words of the string which begins with a capital letter and end with a small letter.

Sample Input: We all love Java for School Students because of its Uniqueness

Sample Output: We Java School Students Uniqueness

Question 10.

A special two-digit number is such that when the sum of its digits is added to the product of its digits , the result
is equal to original number
Example : 59
5+9 = 14
5*9 = 45
45+14 = 59 Therefore , 59 is a special two digit number
Write a program in java to check whether a number is special two-digit number or not

****** END OF PAPER ******