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Grade :	**10**	**Subject : Computer Application**	**Marks: 100**
Date :	**10/01/2015**		**Time : 2 hrs**

- *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 4 printed pages*

- *This paper is divided into two Sections.*
- *Attempt* all *questions from* Section A *and any **four** questions from* Section B.

SECTION – A (40 Marks)

Question I.

1. Which of the following are valid comments? [2]

   /*comment*/
   /*comment
   //comment
   /comment/

2. Operators with higher precedence are evaluated before operators with relatively lower precedence. Arrange the operators given below in order of higher precedence [2]

   &&
   %
   >=
   ++

3. Name two jump statements and their use. [2]

4. Name the keyword that: [2]
   i. is used for allocating memory to an array
   ii. causes the control to transfer back to the method call

5. Give one example each of a primitive data type and a composite data type. [2]

Question II.

1. Give a difference between constructor and method. [2]
2. State the difference between token and identifier. [2]
3. Explain any two types of access specifier. [2]
4. What is an infinite loop? Write an infinite loop statement. [2]

5. State the purpose and return data type of the following String functions: [2]
   i. indexOf( )
   ii. compareTo( )

Question III.

1. State the output of the following program segment: [2]
```
String str1 = "great"; String str2 = "minds";
System.out.println(str1.substring(0,2).concat(str2.substring(1)));
System.out.println(("WH"+(str1.substring(2).toUpperCase( ))));
```
2. What will the following functions return when executed? [2]
   i. Math.max(-17, -19)
   ii. Math.ceil(7.8)
3. State one difference between the floating point literals float and double. [2]
4. Write a Java expression for ut + ½ ft^2 [2]
5. Convert the following segment into equivalent for loop: [2]
```
int i; i=0;
while(i<=20)
{
System.out.print(i+" ");
i++;
}
```
6. If, array[] = {1,9,8,5,2}; [2]
   i. What is array length?
   ii. What is array[2]?
7. Rewrite the following program segment using if-else statements instead of the ternary operator. [2]
```
String grade=(mark>=90) ? "A" : (mark>=80) ? "B" : "C";
```
8. What will be the output when the following code segments are executed?
   i.
```
String s = "1001";
int x = Integer.valueOf(s);
double y = Double.valueOf(s);
System.out.println("x=" +x);
System.out.println("y=" +y);
```
[2]
   ii. System.out.println("The king said \"Begin at the beginning!\" to me"); [1]
9. Give the output of the following method: [3]
```
public static void main(String[] args)
{
int a = 5;
a++;
System.out.println(a);
a -= (a--) – (--a);
System.out.println(a);
a+=++a;
System.out.println(a);
}
```

SECTION – B (60 Marks)

Attempt any four questions from this Section.

The answers in this Section should consist of the Programs in either Blue J 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.
Flow-Charts and Algorithms and outputs are not required.

Question IV:

Define a class called **FruitJuice** with the following description: [15]

Instance variables/data members:
int product_code – stores the product code number
String flavour – stores the flavor of the juice.(orange, apple, etc)
String pack_type – stores the type of packaging (tetra-pack, bottle etc)
int pack_size – stores package size (200ml, 400ml etc)
int product_price – stores the price of the product

Member Methods:
FriuitJuice() – default constructor to initialize integer data members to zero and string data members to "".
void input() – to input and store the product code, flavor, pack type, pack size and product price.
void discount() – to avail 10% discount on the product price .
void display() – to display the product code, flavor, pack type, pack size and product price.

Question V:

Write a program to input and sort the weight of ten people. Sort and display them in descending order using the selection sort technique. [15]

Question VI:

Write a program to accept a string. Convert the string to uppercase. Count and output the number of double letter sequences that exist in the string.
Sample Input: "SHE WAS FEEDING THE LITTLE RABBIT WITH AN APPLE"
Sample Output: 4
[15]

Question VII:

Write a program to generate a triangle or an inverted triangle till n terms based upon the user's choice of triangle to be displayed. Display error message for incorrect option. [15]

Example 1:
Input: Type 1 for a triangle and type 2 for an inverted triangle
1
Enter the number of terms
3
Output:
1
2 2
3 3 3

Example 2:
Input: Type 1 for a triangle and type 2 for an inverted triangle
2
Enter the number of terms
3
Output:
3 3 3
2 2
1

Question VIII:

Design a class to overload a function series() as follows:

i. double series(double n) with one double argument and returns the sum of the series.
sum = 1/1! + 1/2! + 1/3! + ... 1/n!

ii. double series(double a, double n) with two double arguments and returns the sum of the series.
sum = $1/a^2 + 4/a^5 + 7/a^8 + 10/a^{11}$ ..... to n terms [15]

Question IX:

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 the original two-digit number.
Example: Consider the number 59.
Sum of digits = 5 + 9 = 14
Product of its digits = 5 x 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, output the message "Special 2-digit number" otherwise, output the message "Not a special 2-digit number". [15]

**********THE END**********