

Mar Thoma Residential School , Tiruvalla

Third Terminal Examination

Computer Applications

Std :9

Marks : 100

Section A

Time :2 hrs

Question 1

- 1) What is the use of 'break' in switch statement ? [1]
- 2) What are the two ways of invoking functions ? [2]
- 3) States the difference between entry controlled loop and exit controlled loop [2]
- 4) Explain the principles of OOP'S ? [4]
- 5) Define instance variable ? [1]
- 6) Distinguish between implicit and explicit type conversion ? [2]
- 7) What does the token 'keyword' refer to, in the concept of Java? Give example [2]
- 8) Distinguish between pure and impure function ? [2]
- 9) Difference between constructor and method ? [2]
- 10) State the package that contains the class [2]
 - i) `BufferedReader`
 - ii) `Scanner`

Question 2

- 1) Name the keyword [3]
 - i) that indicates that a method has no return type
 - ii) that causes the control to transfer back to the method call
 - iii) used to call a package in a program.
- 2) What are the values of r1 and r2 [2]
 - i) `double r1= Math.abs(Math.min(- 2.83 , -5.83))`
 - ii) `int r2= Math.max(-21 , -17);`
- 3) Write a Java statement of create an object *mp4* of class *digit* [2]
- 4) Create a class with one integer instance variable, initialize the variable using [2]
 - i) default constructor
 - ii) Parameterized constructor.
- 5) Write Java expression for the following equation : [2]
$$\frac{(x+y)^n}{\sqrt{x} + y}$$
- 6) Evaluate the expression : [2]

a - = (a++) + (++a) + a , if a=2

7) Re-write using Ternary operator [2]

```
if ( sal >= 20000)
    tax = 10.0/100*sal ;
else
    tax = 0;
```

8) Arrange the following data types in ascending order of their size [2]

char , double , int , boolean , float

9) State the Java concept that implemented through super class and sub class [1]

10) Analyze the following program segment and determine how many times the body of the loop will be executed (show the working) also write the output. [2]

```
int a=1,b=50;
```

```
while (a<=b)
```

```
{
```

```
    b=b/a;
```

```
    ++a;
```

```
    System.out.println(b);
```

```
}
```

Section B

Question 3

An **Emirp** number is a number which is prime backwards and forwards.

Example:

13 is an Emirp number since 13 and 31 are both prime numbers. Write a program to accept a number and check whether it is an Emirp number or not.

Using the function `int prime(int)` :- to check whether a number is prime or not.

Question 4

Define a class **taximeter** having the following description:

Data members/instance variables

int taxino - to store taxi number

String name - to store passenger's name

int km - to store number of kilometres travelled.

int billamt - to store the bill amount.

Member functions:

taximeter() : default constructor to initialize the data members.

void input() : to accept taxino , name and km

void calculate() : to calculate the bill for a customer according to given conditions

<u>kilometres travelled(km)</u>	<u>Rate/km</u>
First 3 kms	Rs 10
Next 10 kms	Rs 8
Next 10 kms	Rs 7
For remaining kms	Rs 6

However every customer has to pay minimum of Rs 50/-

void display(): to display the details in the following format

Taxi number	Name	Kilometres travelled	Bill amount
-----	-----	-----	-----

Write a main method to create an object of the class and call the above member methods.

Question 5

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

- i) void sum() : with no arguments computes the sum of the series

$$s = \frac{1}{2^2} + \frac{2}{3^2} + \frac{3}{4^2} \dots \dots \dots + \frac{9}{10^2}$$

- ii) void sum(int n): with one integer argument computes the sum

$$s = 1 + \frac{1}{1!} + \frac{2}{2!} + \frac{3}{3!} + \dots \dots \dots + \frac{n}{n!}$$

- iii) void sum(int x , int n) : with two integer arguments computes

$$s = 1 - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} \dots \dots \dots \frac{x^n}{n}$$

Question 6

Write a menu driven program to generate the following pattern

1) #	2) 5
@@	4 5
###	3 4 5
@@@@	2 3 4 5
#####	1 2 3 4 5

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

Question 7

Using switch statement , write a menu driven program for the following :

- To check whether a number is a perfect number or not.
Eg 6 (1+2+3 =6)
- To check whether a number is a palindrome number or not .