

MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA
SECOND TERMINAL EXAMINATION – DECEMBER 2018

STD IX

Marks: 100

Time: 2hrs

COMPUTER APPLICATIONS

SECTION A (40 Marks)

Attempt all questions

Question 1.

- (a) Define encapsulation. [2]
- (b) Explain the purpose of using a 'new' keyword in a Java program. [2]
- (c) What are literals? [2]
- (d) Write a java statement to print the last character of a string st. [2]
- (e) What is constructor overloading? [2]

Question 2.

- (a) Write the prototype of a function search which takes two arguments a string and a character and returns an integer value. [2]
- (b) Differentiate between = and == operators. [2]
- (c) Write down the output of the following: [2]

```
int i = 1;
while(i++<=1)
{ i++;
System.out.print(i+ " ");}
System.out.print(i);
```

- (d) What is the output of the following:

```
String a="Java is programming language\n developed by \t 'James Gosling'";
```

```
System.out.println(a); [2]
```

- (e) Write a statement in Java for [2]

$$\sqrt{\frac{(a+b)^3}{|a-b|}}$$

Question 3

(a) Define abstraction.

(b) (i) `int res='A';`

What is the value of `res`?

(ii) `System.out.print("BEST ");`

`System.out.println("OF LUCK");`

Choose the correct option for the output of the above statements

- (i) BEST OF LUCK (ii) BEST
OF LUCK

(c) Differentiate between formal parameter and actual parameter?

(d) What are the two ways of invoking functions?

(e) What is the value of `m` after evaluating the following expression:

`m -= 9%++n + ++n/2;` when `int m=10,n=6`

(f) Predict output of the following:

(i) `Math.pow(25,0.5)+Math.ceil(4.2)+Math.cbrt(125)`

(ii) `Math.round(14.7) + Math.floor(-7.9)`

(g) State the type of errors if any in the following statements:

(i) `switch (n > 2)`

(ii) `System.out.println(100/0)`

(h) Convert the following into for loop

```
int m = 5, n = 10;
```

```
while (n >= 1)
```

```
{ System.out.println(m*n);
```

```
    n --;
```

```
}
```

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

```
char ch; int x = 97;
```

```
while(x <= 100)
```

```
{ ch = (char)x;
```

```
System.out.print(ch+" ");
```

```
if(x%10 == 0)
```

```
break;
```

```
++x;
```

```
}
```

(j) Write down any two differences between a constructor and a function.

SECTION B (60 Marks)

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 descriptions/Mnemonic Codes so that the logic of the program is clearly depicted. Flow -Charts and Algorithms are not required.

Question 4.

Anshul transport company charges for the parcels of its customers as per the following specifications given below : [15]

Class name : Atransport

Member variables:

String name –to store the name of the customer

int w –to store the weight of the parcel in Kg

int charge –to store the charge of the parcel

Member functions:

void accept () –to accept the name of the customer, weight of the parcel from the user

void calculate () –to calculate the charge as per the weight of the parcel as per the

following criteria.

Weight in Kg	Charge per Kg
Upto 10 Kgs	Rs.25 per Kg
Next 20 Kgs	Rs.20 per Kg
Above 30 Kgs	Rs.10 per Kg

A surcharge of 5% is charged on the bill.

void print () –to print the name of the customer, weight of the parcel, total bill inc of surcharge in a tabular form in the following format :

Name	Weight	Bill amount
-----	-----	-----

Define a class with the above -mentioned specifications, create the main method, create an object and invoke the member methods

Question 5

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

(i) double volume(double r) – with radius 'r' as an argument, returns the volume of sphere

using the formula:
$$v = \frac{4}{3} \times \frac{22}{7} \times r^3$$

(ii) double volume(double h, double r) – with height 'h' and radius 'r' as the arguments, returns the volume of a cylinder using the formula:

$$v = \frac{22}{7} \times r^2 \times h$$

(iii) double volume(double l, double b, double h) – with length 'l', breadth 'b' and height 'h' as the arguments, returns the volume of a cuboid using the formula:

$$v = l \times b \times h$$

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

Question 6

Write a three separate java programs to display the following patterns

Pattern 1	Pattern 2	Pattern 3
A B C D E	B	1
A B C D	L L	3 5
A B C	U U U	7 9 11
A B	E E E E	13 15 17 19
A		21 23 25 27 29

Question 7

a) Write a program to accept a number and check and display whether it is a Niven number or not. (Niven number is that number which is divisible by its sum of digits).

Example:

Consider the number 126.

Sum of its digits is $1 + 2 + 6 = 9$ and 126 is divisible by 9.

b) Write a java program to find the sum of the following series

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