

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]  
Ans a. Inheritance, Polymorphism, Abstractions
- (b) Give an example of a Relational operator and a Logical Operator. [2]  
Ans b. Relational : <, >, <=, >= Logical : &, |, ~
- (c) Mention any two characteristics of a Constructor ? [2]  
Ans c. Name same as class name, Initialization of object
- (d) What is a compound statement? Give an example. [2]  
Ans d. Statement in { }, statement in block, eg, for, while etc
- (e) Find the value of c where x = 0, y = 10.25, z = -5 [2]  
 $c = (x + y * z / 2.5)$

#### Question 2.

- (a) Explain with the help of an example, the purpose of default in a switch-case construct. [2]  
Ans a. When no case match default is executed.
- (b) Give an example each for: [2]  
(i) Runtime Error (0/1)  
(ii) Syntax Error (+ab)  
(iii) Logical Error (addition done instead of multiplication, infinite loop)
- (c) Differentiate between equals ( ) and compareTo ( ) functions. [2]  
Ans c. equals() return type Boolean and compareTo is int.
- (d) Write a Java expression for  $\sqrt{6x^2 + 10x + 1/2}$  [2]  
Ans d. `Math.sqrt(6*Math.pow(x,2) + (10*x) + 0.5)`
- (e) Write Java statements to find if a character variable called 'var' contains an alphabet or not. [2]  
Ans e. `Boolean ans = var.isCharacter();`

#### Question 3.

## Sample Practice Paper

- (a) What is the purpose of:
- (i) new operator (assign memory to object) [2]
  - (ii) void keyword (no return type) [2]
- (b) Write Java statements to check if the 5<sup>th</sup> element of an array X [10] is divisible by 2. [2]

Ans b. boolean ans = (X[5] \ 2 == 0)

- (c) How are primitive datatypes and reference datatypes are passed in Java, while invoking a function ? [2]

Ans c. primitive datatypes (Call by value) and reference datatypes (Call by Reference)

- (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]

Ans d . 1 , 7

### Question 4.

- (a) Determine the errors in the following statements of Java programs and correct them:
- (i) String x = {"Java", "for", "School", "Students", "Rocks"}; (Create array) [2]
  - (ii) String s = "Apple".equals("Banana"); (Return type boolean) [2]
- (b) Name the package of Java:
- (i) which is imported by default. (java.lang) [2]
  - (ii) which contains Scanner class. (java.util) [2]
- (c) What is array ? Write Syntax to create array. [2]

Ans c. Continues memory location. int[] a = new int[4];

- (d) What is the Syntax for : [2]
- (i) for loop (for(init;cond;update))
  - (ii) do...while loop (do{ } while(condition);)
- (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

Ans : (i) Testing , (ii) Debugging

(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

Ans: Logical Error

## 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: 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 :

1,11,111,1111.....

```
class Prog5
{
static void test()
{
double s=1.0;
int p;
for(int i = 0;i<=7;i++)
{
s=s+Math.pow(10,i);
p = (int)s;
System.out.print(p+" , ");
}
}
}
```

[15]

### 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

[15]

### 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

Ans

```
class Prog2
{
static void test(int num)//user inputs a two-digit number
{
int m = num;
int product = 1;
int sum = 0;
while(m>0)
{
```

```
int dig = m%10;
sum = sum+dig;
product = product*dig;
m/=10;
}
int finalsum = sum+product;
if(finalsum==num)
System.out.println(num+" is a special two digit number ");
else
System.out.println(num+" is not a special two digit number ");
}
}
```

\*\*\*\*\* End of Paper \*\*\*\*\* [15]

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