
Section A – 40 Marks

Attempt all questions

Question 1

1. State the java concept that is implemented through [2]
 - a) a superclass and subclass
 - b) function overloading

2. Why is an object called an instance of a class [2]
3. State the output of the following program segment [2]

```
String s="Examination";  
int n=s.length();  
System.out.println(s.startsWith(s.substring(5,n)));  
System.out.println(s.charAt(2)==s.charAt(6));
```
4. State the values stored in the variables str1 and str2 [2]

```
String s1="good";  
String s2="world matters";  
String str1=s2.substring(5).replace('t','n');  
String str2=s1.concat(str1);
```
5. Write a java statement to perform the following tasks [2]
 - a. convert a string number stored in z variable to double type
 - b. convert int type variable to String

Question 2

1. Give the prototype of a function search which receives a sentence sentc and a word wrd and returns 1 or 0 [2]
2. Write 2 uses of return statement. [2]
3. Name and explain briefly any two access specifiers. [2]
4. What is the use of this keyword? [2]
5. What are wrapper classes? Give 4 examples [2]

Question 3

- i. Name the keyword that [3]
 - i) informs that an error has occurred in an input/output operation
 - ii) distinguishes between instance variables and class variables
 - iii) resolves the conflict between local variables and instance variables

ii. Identify the statements as assignment , increment, method invocation or object creation [2]

- i. `System.out.println("java");`
- ii. `cp=45.50;`
- iii. `Fridge voltas =new Fridge();`
- iv. `pp++;`

iii. Consider the following class [2]

```
public class Myclass
{
public static int x=3,y=4;
public int a=2,b=3; }
```

- i. Name the variables for which each object of the class will have its own distinct copy.
- ii. Name the variables that are common to all objects of the class.

iv. Give the output of the following code [2]

```
String p="20",q="19";
int a=Integer.parseInt(p);
int b=Integer.valueOf(q);
System.out.println(a+ " "+b);
```

v. Give the output [4]

```
String x ="vision";
String y="2021";
i. System.out.println(x+y);
ii. System.out.println(x.length());
iii. System.out.println(x.charAt(3));
iv. System.out.println(x.equals(y));
```

vi. Write the purpose of the following functions [3]

- i. `Float.parseFloat();`
- ii. `Double.toString();`
- iii. `Integer.valueOf();`

vii. What is a recursive method. [2]

viii. Define an impure function. [2]

Section B – 60 Marks

Attempt any 4 question from this section(4 x 15 = 60)

The answers in this section should consist of programs in either BlueJ environment or any program environment with java as the base. Each program should be written using variable declarations/ mnemonic codes such that the logic of the program is clearly depicted. Flowcharts and algorithms are not required

Question 4

Design a class name ShowRoom with the following description.

Instance variables/Data members

String name – to store the name of the customer.

long mobno – to store the mobile number of the customer,

double cost- to store the cost of items purchased.

double dis – to store the discount amount

double amount – to store the amount to be paid after discount

member methods

ShowRoom()- default constructor to initialize datamembers.

void input(): to input customer name, mobile number, cost

void calculate(): to calculate discount on the purchased items , based on the following criteria

Cost	Discount(in%)
Less than or equal to 10000	5%
Greater than 10000 and less than or equal to 20000	10%
Greater than 20000 and less than or equal to 35000	15%
Greater than 35000	20%

void display() – to display customer name, mobile number, amount to be paid after discount

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

Question 5

Write a program to accept a string and display

- i. The number of lower case characters
- ii. The number of upper case characters
- iii. The number of special characters
- iv. The number of digits present in the string

Sample Input: S.T.D code of New Delhi - 011

Sample Output:

The number of lower case characters = 12

The number of upper case characters = 5

The number of special characters = 9

The number of digits present in the string = 3

Question 6

Write a program to input a set of 3 integer numbers. Find the sum and product of the numbers. Join the sum and product to form a single number. Display the concatenated number.

Hint: Let sum =245 and product=1346 then the number after joining sum and product will be 2451346

Question 7

Design a class to overload a function num_cal() as follows

- a. void num_cal (int num, char ch) with one integer argument and one character argument . It computes the square of an integer if choice ch is 's' otherwise, computes its cube.
- b. void num_cal (int a,int b, char ch) with two integer arguments and one character argument. It computes the product of integer arguments if ch is 'p' else adds the integers.
- c. void num_cal (String str1,String str2) with two String arguments prints whether the two Strings are equal or not.

Question 8

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

a) To print the Floyd's triangle

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

b) To display the pattern

```
I
I C
I C S
I C S E
```

Question 9

Write a program to input a number and check whether the number is Palprime or not .(palprime is a number which is palindrome as well as prime)

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