

Section A

Question 1

- 1) Distinguish between class variable and instance variable ? [2]
- 2) Write any two jump statements ? Explain with an example [2]
- 3) Distinguish between pure and impure function ? [2]
- 4) Write any two advantages of using functions in a program ? [2]
- 5) Write one advantage and one disadvantage of binary search , when compare to linear search . [2]
- 6) Name the following [1]
 - 1) A package that is invoked by default
 - 2) A keyword ,to use the classes defined in a package.
- 7) Write the prototype for the following : [1]

A function TestDos() which takes a character argument and float type argument and return true or false value .
- 8) What is Exception ? What is the use of try ... catch block ? [3]
- 9) Distinguish between String and stringBuffer ? [2]
- 10) State the number of bytes occupied by a character array if 10 elements . [1]

Question 2

- 1) What will be the output of the following program segments?

```
int i=1;

while(i++<=1) {

i++;

System.out.print(i+" "); }

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

2) What is the output of the following:

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

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

[1]

3) Rewrite the following condition without using logical operator:-

```
if (a>b || a>c)
```

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

[1]

4) Answer the following questions based on the program segment given below:-

```
void display(int n,char c)
{
double y=3.2+n++;
n++;
c+=2;
System.out.println(n+" "+y+" "+c);
}
```

[3]

i) Name the formal parameters

ii) Name the local variables

iii) Give the output , when the function display() is invoked with n=7 and c='B'

5) Analyse that how many times the following loop executes and what will be the output ? [show the working]

```
int p=200;
```

```
while(true)
```

```
{
```

```
if (p<100)
```

```
break;
```

```
p=p-20;
```

```
}
```

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

[2]

6) What are the final values stored in variables x ,y and z below ?

```
double a= - 2.35;
```

```
double b=4.5;
```

```
double x= Math.abs(ceil(a));
```

```
double y= Math.pow(16, 0.5);
```

```
double z=Math.round(Math.max(a,b));
```

[3]

7) Rewrite the following program segment using if...else statements instead of the ternary operator.

String grade = (mark >= 90) ? "A+" : (mark >= 80) ? "B" : "C"; [2]

Section B (48 Marks)

Each program should be written using variable description /Mnemonic codes so that the logic of the program is clearly depicted.

Flow-chart and algorithms are not required

Question 3

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

1) double series():- with no argument, find the sum of the series

$$s = 1 + \frac{2!}{1+2} + \frac{3!}{1+2+3} \dots \dots + \frac{10!}{1+2+\dots+10}$$

2) double series(int n) :- with one integer argument , find the sum of the series

$$s = (1 \times 2) + (2 \times 3) - (3 \times 4) + (4 \times 5) - (5 \times 6) + \dots \dots \dots (n-1) \times n$$

3) double series(double x , double n) :- with two double arguments , find the sum of the series

$$s = \frac{1}{x^2} + \frac{4}{x^5} + \frac{7}{x^8} + \frac{10}{x^{11}} \dots \dots \dots (n \text{ terms})$$

Question 4

Using switch statement ,write a menu driven program to generate the following patterns:

1) To print the Floyd's triangle with n rows

Example if n=4 output

```
1
2 3
4 5 6
7 8 9 10
```

2) To input a word and print the word in the following format

Sample input: BLUEJ output

```
B L U E J
B L U E
BLU
BL
B
```


3) To print the following pattern

```
@ # @ # @  
@ # @ #  
@ # @  
@ #  
@
```

For an incorrect choice , an appropriate error message should be display

Question 5

Write a program to input name and percentage of 25 students in a class in two separate one dimensional arrays . Arrange students details according to their percentage in the descending order using selection sort method . Display the name and percentage of ten toppers of the class.

Question 6

Write a program to accept the names of 10 cities in a single dimensional arrays their STD codes in another single dimensional array . Search for a name of a city input by the user in the list. If found , display "search successful" and print the name of the city along with its STD code , otherwise display the message "Search unsuccessful , no such city in the list".