−5

Candidates are allowed 15 minutes for only reading the paper, they must NOT start writing during this time.

Answer **all** the questions in **Section A** and **any four** questions from **Section B**.

SECTION A
Answer all the questions.

Question 1:
a)   Name four features of java.   [2]
b)   What are unary and binary operators.   [2]
c)   What are escape sequences? Give two examples.   [2]
d)   What is the advantage of using binary search technique over sequential search ? [2]
e)   Rewrite the following statement using ternary operator.   [2]

```
if(flag==0)
    tax=10;
else
    tax=20;
```

Question 2:
a)   Define: [2]
            i)   subscript   ii)   interface
b)   What is data hiding? How is it implemented in java?   [2]
c)   Explain with examples how break and continue statements work in java.   [2]
d)   Give the output for the following: [4]
      String a="computers";
      String b="applications";
      i)   a.substring(4);   ii)   a.compareTo(b);
      iii)   b.equals(a);   iv)   b.indexOf(3);

Question 3:
a)   Define the 'this' keyword. How is it useful?   [2]
b)   Given a package named EDU.Student, how would you import a class named Test
      contained in this package?   [2]
c)   Compare switch and if...else statements.   [2]
d)   Illustrate selection sort using the following data: [2]
      548, 346, 12, 82, 700
e)   Explain the following error messages with the help of an example: [2]
                i)   arrayIndexOutOfBounds
                ii)   undefined symbol
f)   if array[]={34,56,78,99,2};   [4]
      i)   What is array.length; ?
      ii)   What is array.length(); ?
      iii)   What is array[2]?
      iv)   What is array[3]/0; ?
g)   The following is a function of some class: [6]
```
int somefn(int a, int b)
{
    int ans, sm, la;
    if(a<b)
    {
        sm=a;
        la=b;
    }
    else
    {
        sm=b;
        la=a;
    }
    ans=la;
    while (ans%sm!=0)
        ans+=la;
```

return ans;

i) What will the function somefn(8,6) return?
ii) What will the function somefn(7,9) return?
iii) What is calculated by the function somefn()?

SECTION B
[4 X 15]

Each program should be written with variable descriptions/mnemonic codes so that the logic of the program is clearly depicted.

Question 4:
Display following pattern for 'n' rows where n is taken from the user. n should be >0 and <26.
When n is 5 the pattern should be:

```
55555
54444
54333
54322
54321
```

Question 5:
Declare two numeric arrays A and B of sizes n and m, where n and m are taken from the user.
Accept and store the values taken from the user in them. Find and print AUB and A intersection B.

Question 6:
Declare an integer array of size 'n' and store values given by the user in it. Reverse the order of the values in the array without using another array or variable.

Question 7:
Accept a name from the user and print initials as shown in the example below:
If input is: Ram Kumar Gupta
The output should be: Gupta R.K.

Question 8:
Declare a class replace as follows:
Data member: String s
Metods: i)   a constructor to initialize s to null.
                        ii) a function change() to replace all a with e, e with i, i
                             with o, o with u, u with a, and spaces with *.
                        iii) a function printresult() to print the new string.

Question 9:
Declare a class employee as follows:
Data member: int code, String name, float basicsal, hra, da, pf
Metods: i)   a constructor to initialize name to null and other
                             data members to zero.
                        ii) a function store() to store in data members the
                             values given by the user.
                        iii) a function cal() to calculate and print take home
                             salary as follows:
                             bs + (hra*bs)/100 + (da*bs)/100 – (pf*bs)/100