This question paper contains **8** printed pages]

(Write your Roll No. on the top immediately on receipt of this question paper.)

Section A is compulsory.

Attempt any *five* questions from Section B.

Parts of a question must be answered together..

Section A

1. (*a*) Draw the flowchart to find average of three numbers.   2

    (*b*) Give the full form of the following :   2

                                GIGO, EPROM

    (*c*) What is the purpose of the following registers :   2

                                PC, MBR, MAR, IR

    (*d*) What is an OMR device ? List *one* of its application.   2

(e)   Give the output of the following :   2

   (i)   "62" + "4"

   (ii)   4 << 2

(f)   Which of the following is *not* a legal variable name and why ?   2

      4hello

      helloworld9

      and

      My_Name

(g)   Write a function in python that computes the interest (I) on a loan of principal amount (P) at a rate (R) and a for a time period (T) using the formula. Accept P, T, R as arguments and return I using the formula I = (P*T*R)/100.   2

(h)   Write statements in Python to count the number of occurrences of a character 'e' in the string "welcome".   2

(i)   Consider the string :   2

                  Message = "Hello, Welcome to Programming"

      Determine the output of the following :

      (i)   Message [7:13]

      (ii)   Message.lower( )

(j)   What will be the output of executing the following statements :   2

         >>> cubes = [x**2 for x in range(3, 8)]

         >>> print cubes

(k) Give the output of the following :

2

```
def recur_fun(n) :

    if n <= 1 :

        return n

    else :

        return n * recur_fun(n-2)

print(recur_fun(5))
```

(l) Declare a class **Square**. The class should contain **side** of the square as the data member. It should support the following methods :

3

(i) _int_method for initializing data member side.

(ii) **Perimeter** method to find perimeter of the square.

Section B

2. (a) Consider the following :

5

```
lst = ['if', 'pass', 'for', 'break', 'else']
```

Give the output of the following statements :

```
lst.find('for')

lst.insert(2, 'continue')

lst.remove('break')

lst.sort( )

del lst[2:4]
```

(b) What are exceptions ? How are they handled in Python ? Explain the errors that can occur on executing the following statements : 5

```
>>> int('hello')

>>> result = 'sum of 2 and 3 is' + 5
```

3. Find the output of the following :

(i)
```
a = 150
b = 190
while (a != b) :
    if (a > b) :
        a = a - b
    else :
        b = b - a
print a
print b
```
3

(ii)
```
total = 0
N = 11
for i in range (1, N + 1) :
    for j in range (1, N + 1) :
        total = i + j
print total
```
3

(iii) x = 100   3

      def test( ) :

         x = 200

         y = 300

         print 'Inside test : x = ', x

         print 'Inside test : y = ', y

      test( )

      print 'Outside function test : x = ', x

(iv) '>' . join (['Welcome', 'to', 'Python'])   1

4. *(a)* Write a function that prints Fibonacci series for first n terms. Fibonacci series takes 0 and 1 as the first two values. Third value in the series is computed as the sum of previous two terms. Similarly other terms of the series can be computed. Example 0 1 1 2 3 5 8 13 21 and so on.   5

(b) Write Python statements to accept a four digit number from the user and display its reverse. (For example if user enters 5643, the program should print 3465).   5

5. *(a)* What is the output of the following code statements :   6

(i) for i in range (20, 30) :

      if (i%9 != 0) :

         continue

      print i

(*ii*) def multiple(a = 0, num = 1) :

   return a*num

   multiple(5, 6)

   multiple(num = 7)

(*iii*) i = x = 0

   while i < 10 :

      if (i% 5 = = 0) :

         print x

         x += 1

      i += 1

   print x

(*b*) Write Python code to swap two numbers without using the third variable.   2

(*c*) Consider the following nested list :   2

   city = [['Tokyo', 23], ['Paris', 34],

   ['Amsterdam', 45]]

   What will be the output of the following statements ?

   (*i*) print city[1]

   (*ii*) print city[1] [0]

6. (a) Define a class **Employee** that stores information about employees in the company. The class should contain the following data members : 6

   Name—Employee Name

   Job—Job Profile of the Employee

   Department—Department of the Employee

   Basic, DA, HRA—Salary Components

   Salary—Gross Salary of the Employee

   The Class should support the following methods :

   (i) _init_( ) for initializing data members

   (ii) **findSalary( )** for determining gross salary as sum of Basic + DA + HRA

   (iii) **empDisplay( )** for displaying information about the employee.

   (b) Write a python program to print the following pattern using nested loop : 4

   ```
   *
   **
   ***
   ****
   *****
   ```

7. Consider the following list of items to perform the operations in part (a) and (b) : 10

   37, 12, 89, 11, 41, 94

   (a) Apply any *one* of the sorting techniques (bubble sort, insertion sort, and selection sort) on the given list.

   (b) Write a function in python to implement above selected sorting technique.

8. (*a*) What is a Queue ? Consider Q = [5, 12, 4, 18] as a queue. Write python functions to perform insert and remove operations. Show the modified list Q after each of the following operations : 6

    (*i*) insert(20) on Q

    (*ii*) insert(40) on Q

    (*iii*) remove( ) from Q

  (*b*) Write a function binSearch in python to perform binary search. The function should accept two parameters : 4

    (*i*) a list, lst of values and

    (*ii*) a data, value to be searched in the list.

The function should return the index of the first occurrence of input value in the list. It should return -1 if the value searched is not found in the list.