[This question paper contains 8 printed pages]

Your Roll No. : ....

Sl. No. of Q. Paper : 136   I

Unique Paper Code : 42341102

Name of the Course : **B.Sc.(Prog.) / B.Sc. Mathematics Sciences**

Name of the Paper : Problem Solving Using Computers

Semester : I

Time : 3 Hours   Maximum Marks : 75

Instructions for Candidates :

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

(b) **Section - A** is compulsory.

(c) Answer any **five** questions from **Section- B**.

(d) Answer all parts of a question together.

Section - A

(a) Write full form of RAM, EPROM.

2

(b) Draw a block diagram to illustrate the basic organization of a computer system.

2

P.T.O.

(c) Write at least two characteristics , each Second , Third and Forth generati computers.

(d) Draw a flowchart to find the maximum of three numbers.

(e) If X = 32 and Y = 16, find the value of X a Y after the following operations :

    (i) X << 2

    (ii) X ^ Y

    (iii) X & Y

(f) Evaluate the following expression :

    7% 10 + 15 – 25 * 8//5

(g) Write a function to search an element i list using Binary search.

(h) Identify the syntax errors in the follow code :

```
if (X =Y):

    print(" Equal")

else  if(x<y):

    print("Smaller")

else;
    print("Larger")
```

2

(i) When does need for exception handling routine arise ? 2

(j) What will be the contents of D, if the following statement is executed ?

D = [x+y for x in range (1, 3) for y in range (1, 4)] 2

Section - B

. (a) Find the output of the following program codes : 2

```
total =0

for i in range (10,0, -1);

        total + = i

print total
```

(b)
```
a = b= 40

x=y=50

if a<100;

  if b>50:

        x+ = 1

else ;

  y+ = 1

print x

print y
```

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P.T.O.

(c) List1 = List( )
List2 = List( )
for i in range (0, 10):
    if (i % 2 ==0):
        List1 . append (i)
    else:
        List2 . append (i)
print List1, List2

(d) Given a string S, what will be output executing the following statements ?

S = "University of Delhi"
(i) S [: 10] + S [10 :]
(ii) S [0 : len (S)]
(iii) S [–5 :]
(iv) S [0 : 10 : 2]

3. (a) Write a function that takes an integer parameter n and prints the following pattern with n number of lines using for loop. For example if n = 4 then the following pattern should be printed :

1
12
123
1234

4

(b) Given the following lists : 4

List1 = [1, 2, 3, 4, 5]

List2 = ['A', 'E', 'I']

What will be the output if the following statements are executed :

(i) List2.extend(['O', '10'])

   print List2

(ii) List2.append(['O', '10'])

   print List2

(iii) List[2]==2

(iv) List3 = List1[1 : -1]

   print List3

4. (a) Differentiate between : 5

(i) Testing and Debugging

(ii) PROM and EPROM

(b) Write a function that accepts an integer as input and return the reverse integer. e.g. if the input is 2896, the output should be 6982.

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5. (a) What will be the output of executing the following statements on Python command prompt : 5

A = { 1, 2, 3, 5, 7, 9 }

B = { 2, 4, 6, 8, 9, 10 }

(i) A . intersection (B)

(ii) A . symmetric_difference (B)

(iii) A – B

(iv) B – A

(v) 10 in B

(b) Write a function that takes length of three sides of triangle as parameter and return the area of the triangle. Also assert that sum of length of any two sides is greater than third side.

5

6. (a) Define a class Bank that keeps track of bank customers. The class should contain the following data members : 8

Name - Name of the customer

Account - Account Numbeer
Num

Type - Account Type (Savings or Current)

Amount - Total amount deposited in the bank

The class Bank should support the following methods :

(i) ___init ___ method for initialising the data members

(ii) Deposit method for depositing money in the account

(iii) Withdraw method for withdrawing money from the account

(iv) ___ st___ ___ method that displays the information about bank the customer

(b) When do you need multiple except clauses in a try ...... except block ?　　2

7. (a) Write a function that takes a list of numbers as parameter and sort it using Bubble Sort.

5

7　　　　　　　　　　P.T.O.

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(b) Consider the following list of numbers

10, 23, 45, 67, 89, 99, 105, 150

Show step by step iterations for searching the number 105 in the above list using Binary Search. Also write the number of iterations required to find the number.

8. (a) Write a program to reverse a string using stacks.

(b) Evaluate the following postfix expression. Show the stack status after execution of each expression.

5, 20, 15, –, *, 25, 2, *, +

8

1700