[This question paper contains 12 printed pages.]

Your Roll No..............

Sr. No. of Question Paper : 974   G

Unique Paper Code   : 2342201102

Name of the Paper   : A1 – Programming
Fundamentals using Python

Name of the Course   : B.A. Program

Semester   : I

Duration : 3 Hours   Maximum Marks : 75

Instructions for Candidates

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

2. **Section A** is compulsory.

3. Attempt **any four** questions from **Section B**.

4. Parts of a question must be answered together.

Section A

(Compulsory)

1. (a) List one similarity and one difference between List and Dictionary data type.   (2)

P.T.O.

(b) What will be the output of the following code?

(2)

```
a = [1, 2, 3, 4, 5, 6, 7, 8, 9]

print (a [ :5])
```

(c) What are mutable and immutable data types in python? Write two examples of each.

(3)

(d) What is the value of sum after the execution of the following code?

(2)

```
sum = 0

for i in range (0,18,3):

    if i%6 == 0:

        sum = sum + 1

print(sum)
```

(e) Indicate the error (if any) in the given statement

(2)

```
str = "Hello Python"
str[5] = "T"
```

(f) Explain the use of following strings module functions briefly :   (3)

    (i) isalpha()

    (ii) swapcase()

    (iii) split ()

(g) Draw a flowchart to find the sum of the first 10 natural numbers.   (3)

(h) Write and explain any 4 data types used in python with suitable examples of each.   (4)

(i) Write the output of the following statements: (5)

    (i) name = "Kavita"
        print("hello", name, "2+2 is", 2+2)

    (ii) print(max(59, 80, 95.6, 33))

    (iii) print(min ("hello", "how", "are", "you", "Sir"))

    (iv) print("978" + "34")

    (v) print((eval("93 + 8")))

                              P.T.O.

(j) What do you understand about Syntax errors and Semantics errors? Explain these with suitable examples.

(4)

Section – B

2. (a) Perform the following operations on the list given below and write the output of each.

(4)

list1 = ["Red", "Green"]

list2 = [10, 20, 30]

    (i) list2 * 2

    (ii) print(list1+["Blue"])

    (iii) len(list1)

    (iv) list2[-1]

    (v) list2[0:2]

    (vi) min(list2)

    (vii) sum(list2)

    (viii) 40 in list2

(b) Write a python program to calculate the area of a rectangle, sides of the rectangle should be entered by the user using the built-in input function. Also, validate user entered data before calculating the area.   (5)

(c) Rewrite the following code segment using while loop   (6)

    (i)
```
total = 0
for count in range (1, 21) :
        total +=count
print(total)
```

    (ii)
```
import math
total = 0
for count in range(1,11,3):
        total += math.pow(count, 2)
print(total)
```

3. (a) Give the output of the following code segments: (6)

P.T.O.

```python
(i)  total = 0

     count = 20

     while count > 5:

             total += count

             count -= 1

     print(total)


(ii)  i = 20
     if(i == 10):
         print(" The value of i is 10 ")
     elif(i==15):
         print(" The value of i is 15 ")
     elif(i==20):
         print(" The value of i is 20 ")
     else:
         print(" i is not present ")

(iii) sum = 0
     for i in range (0,18,3):
         if i%6 == 0:
                 sum= sum + 1
     print(sum)
```

(b) A dictionary named 'Grades' is created as

Grades = {"Sahil":90, "Abhijeet":65, "Garima": 38}

What do the following statements do?   (6)

    (i) print(Grades.keys())

    (ii) print(Grades.values())

    (iii) print(len(Grades))

    (iv) Grades ["Kuruss"] = 99)

    (v) print (Grades.items())

(c) What is the use of the format() function? Explain with the help of suitable examples.   (3)

4. (a) Differentiate between "continue", "pass" and "break" statements in python with suitable examples of each.   (3+3)

Write the output of the following code segment

```
for letter in "statement":
    if letter == "m":
        continue
    print("Current letter:", letter)
```

P.T.O.

(b) Write a function Printdict() that prints a dictionary where the keys are numbers between 1 and 5 and the values are cubes of the keys. (5)

(c) Show the output of the following code. (4)

S1 = {"A","B","C"}

S2 = {"C","D","E"}

    (i) print(S1.union(S2))

    (ii) print(S1.intersection(S2))

    (iii) print (S1.difference(S2))

    (iv) print (S1.symmetric_dif ference(S2))

5. (a) Write a Python function smallerXY(X, Y) that accept two integers X and Y and returns the smaller of two. Write another function smallerXYZ (X, Y, Z) that uses the function smallerXY to find a minimum of three numbers X, Y, Z. (5)

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(b) What do you mean by the scope of a variable? Differentiate between local and global scope of variables with suitable examples of each. (5)

(c) Evaluate the following expressions involving arithmetic operators : (5)

(i) −7 * 20 + 8 / 16 * 2 + 54

(ii) 7 ** 2 // 9 % 3

(iii) (7 − 4 * 2) * 10 / 5 ** 2 + 15

(iv) 5 % 10 + 10 − 25 * 8 // 5

(v) 'hello' * 2 − 5

6. (a) Write a Program to Prompt for a Score between 50 and 100. If the Score is out of range, raise an appropriate exception. If the score is between 50 and 100, print a grade using the table given below. (8)

P.T.O.

Score	Grade
>=90	"A"
>= 80	"B"
>=70	"C"
>=60	"D"
<60	"E"

(b) Write the output of the following functions on the given string :   (7)

```
s= " This is an online Gaming Platform"

print(s.lower())

print(s.count("i"))

print(s.find("o"))

print(s.rfind("o"))

print(s.split("an"))

print(s.swapcase())

print(s.capitalize())
```

7. (a) Evaluate the following expressions : (5)

    (i) d=dict()

        for x in range (1,10+1):

            d[x]=x**2

        print(d)

    (ii) a = (24 ** 2 // 4 % 25 / 19 * 8)

        b = (4 << 8 >> 2)

        print(a)

        print(b)

    (iii) t1 = (42, 36, 50)

        t1= t1 + (18, 23, 5)

        print(t1)

    (iv) print (4.00 / (2.0 + 2.0))

    (v) x = 2+9* ((3*12) – 8) / 10

        print(x)

(b) Write a Python function fact(n) that returns the factorial of a number (e.g.: Factorial of number 5, is 5! where 5! = 5*4*3*2*1 i.e., 120). Take n as input from the user. (5)

P.T.O.

(c) Write a program to calculate the area of a circle using the formula :   (5)

Area of Circle = pi * $(r)^2$; use math.pi to calculate the area of the circle.