

[This question paper contains 4 printed pages.]

Your Roll No.....

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Sr. No. of Question Paper : 5746
Unique Paper Code : 2342011104
Name of the Paper : Object Oriented Programming Using Python
Name of the Course : B.Sc. (H) – DSC
Semester : I
Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **all** questions from **Section-A**.
3. Attempt any **four** questions from **Section-B**.
4. Attempt **all** parts of a question together.

Section: A

- Q1 (a) Draw a flowchart to compute the factors of a given number. (5)
- (b) Write python statements for the following (6)
- i. Initializing x to 7 and incrementing the value by 1
 - ii. Assign a string to the variable str and print the subset of characters of the string.
 - iii. Store the integer division of x and y in z
- (c) Write a function to check whether a given number is prime or not. (5)
- (d) Give the output of the following code snippet: (6)
- i.

```
L=[12,13,14,15]
sum=0
for x in L:
    sum+=x
print(sum)
```
 - ii.

```
str='Hello'
print(str[::-1])
```
 - iii.

```
S1={1,2,34}
S2={4,34,6}
S3=S1.intersection(S2)
print(S3)
```
- (e) Given the following dictionary (8)
- ```
d={'Gita':45,'Siya':78,'Sarika':90}
```
- Write python statements for the following: (2+3)
- i. Retrieve the student name with the maximum marks
  - ii. Create the list of names and marks separately from the dictionary d. (3)
  - iii. Display the list of names and marks in the following format  
Name marks\_obtained

**Section B**

- Q2 (a) Write a function in python reverse(lst) that takes list lst as a parameter and returns the reverse of lst in a new list. (5)

P.T.O.

- (b) Write a program to generate the following pattern where the height of the pattern, 'h', (5)  
is input from the user.

```
A
BB
CCC
DDD
```

(5)

- (c) Give the output of the following code:

```
i. print(56**2//18%3)
ii. print(10!=9 and 38>=38)
iii. print('Welcome'*4)
iv. print('l' in 'Hello')
v. print(16^23)
```

- Q3 (a) Write a function that takes a string as input and returns the number of characters, vowels (5)  
and words as a tuple.

(5)

- (b) Let's assume a string-  
str1= 'house no123 ,Rajnagar Extension, Uttar Pradesh',  
What will be the output on executing each of the following statements:

```
i. print(str1.find('no'))
ii. print(str1.split(' '))
iii. print(str1[:2])
iv. print(str1.isalpha())
v. print(str1.replace('e','u'))
```

- (c) Write a program using function to swap two numbers with and without using a (5)  
temporary variable.

(9)

- Q4 (a) Given the output of the following code snippets

```
i. c=[23,45,67,89,90,123]
t=()
for x in c:
 if(x%2!=0):
 t=t+(x,)

print(t)

ii. subject='computer'
subject=list(subject)
ch=subject[0]
for i in range(0,len(subject)-1):
 subject[i]=subject[i+1]
 subject[len(subject)-1]=ch
print(' '.join(subject))

iii.
Fruits={'lemon','orange','grapes','apple','pineapple','kiwi'}
```

```
Vegetables={'spinach','cauliflower','lady finger'}
print(Fruits and Vegetables)
print(Fruits or Vegetables)
print(Fruits.add('Pomegranate'))
```

- (b) Write a program that takes a sentence as input and computes the frequency of vowels in it. Create a dictionary 'd' to store the vowels and their frequency present in the sentence. (6)

- Q5 (a) Write a function that reads the file 'file1.txt' and copies odd-numbered lines to another file, 'file2.txt'. Use appropriate exception handling during the file operations. (5)

- (b) Consider the following function computeSquareRoot(): (6)

```
import math
def computeSquareRoot():
 try:
 a=int(input('Enter the value'))
 result=math.sqrt(a)
 except ValueError:
 print('value error')
 except TypeError:
 print('typeerror')
 except:
 print('unexpected error')
 else:
 print(result)
 finally:
 print('End task')
computeSquareRoot()
```

Determine the output for the above function call when the value entered for a= 'h', a='13' and a=-56.

- (c) Find the error in the following code snippet: (4)
- ```
F1=open('A1.txt')
F1.write('welcome')
```

Rewrite the above code with the use of exception handling.

- Q6 (a) Write a program to define the class Student to store the student records. The Student class should have the following attributes: (10)

```
Rollno: integer
Name: string
Course: string
Subjects: list
Marks: list
Percentage: real
```

Write the following member functions:

def __init__(): to initialize the class data members.

def read(): To read the values for the class data members.

def __str__(): to return the string representation of the class data members
 def computePercentage(): To compute the percentage of marks obtained in the subjects.

Write the main function with suitable python statements for the following:

Create an object s1 initialized with the suitable values.

Create an object s2 and use read function to take the input from the user.

Use computePercentage() with both s1 and s2 to compute the average of the marks obtained.

Display s1 and s2 objects.

- (b) Give an output of the following code:

```
def display(l,n):
    if (n>=0):
        print(l[n]*2)
        display(l,n-1)

l=[1,2,3,4]
n=len(l)
display(l,n-1)
```

(5)

- Q7 (a) Given the following class Shape as follows:

```
class Shape:
    def __init__(self,shapetype,x,y):
        self.shapetype=shapetype
        self.side1=x
        self.side2=y
    def computeArea():
        pass
```

(10)

Inherit the classes rectangle and triangle from the class Shape. Both the derived classes should invoke the init() function of shape to initialize shapetype, side1 and side2. Override computeArea() in the rectangle and triangle class to compute and display the area of the rectangle and triangle. Write the main function to create the objects o1 and o2 of class rectangle and triangle. Invoke computeArea() to display the area of the rectangle and circle.

- (b) Given the following function definition:

```
def pow(a=4,b=2):
    pro=1
    for i in range(b):
        pro=pro*a
    print(pro)
```

(5)

Compute the function calls as given below:

```
pow()
pow(2)
pow(4,5)
```

(200)