SAMPLE QUESTION PAPER–I

CLASS XII

COMPUTER SCIENCE (083)

TIME: 3 hrs **M.M: 70**

General Instructions:

- All questions are compulsory.
- Question paper is divided into 4 sections A, B, C and D.
  - ☞ Section A: Unit-1
  - ☞ Section B: Unit-2
  - ☞ Section C: Unit-3
  - ☞ Section D: Unit-4

1. (a) Name the Python Library modules which need to be imported to invoke the following functions: (1)

(i) floor()

(ii) randn()

Ans. (i) math

(ii) random

(b) What type of objects can be used as keys in dictionaries? (1)

Ans. Only immutable type objects (i.e. Numbers, Strings, Tuples) can be used as keys in dictionaries.

(c) What are two ways to remove something from a list? Write syntax only for both. (1)

Ans.
- pop() method to remove single element using index
- remove() method to remove single element using value

(d) Observe the following Python code very carefully and rewrite it after removing all syntactical errors with each correction underlined. (2)

```
DEF execmain():
    x = input("Enter a number:")
    if (abs(x)= x):
        print"You entered a positive number"
    else:
        x=*-1
        print"Number made positive:"x
execmain()
```

Ans. Corrected Code:

```
def execmain():
    x = input("Enter a number:")
    if (abs(x)== x):
        print("You entered a positive number")
    else:
        x *= -1
        print("Number made positive:",x)
execmain()
```

(e) Find the output of the following: (2)

```
L1 = [100,900,300,400,500]
START = 1
SUM = 0
for C in range(START,4):
    SUM = SUM + L1[C]
    print(C, ":", SUM)
    SUM = SUM + L1[0]*10
    print(SUM)
```

Ans. Output is:

```
1 : 900
1900
2 : 2200
3200
3 : 3600
4600
```

(f) Write the output of the following Python program code: (3)

```
A = [10,12,15,17,20,30]
for i in range(0,6):
    if (A[i] % 2 == 0):
        A[i] /= 2
    elif (A[i] % 3 == 0):
        A[i] /= 3
    elif (A[i] % 5 == 0):
        A[i] /= 5
for i in range(0,6):
    print(A[i],end= "#")
```

Ans. Output is:

```
5.0#6.0#5.0#17#10.0#15.0#
```

(g) What are the possible outcomes executed from the following code? Also, specify the maximum and minimum values that can be assigned to variable COUNT. (2)

```
import random
TEXT = "CBSEONLINE"
COUNT = random.randint(0,3)
C=9
while TEXT[C] != 'L':
    print(TEXT[C]+TEXT[COUNT]+'*',end=" ")
    COUNT= COUNT + 1
    C = C-1
```

(i) EC* NB* IS*
(ii) NS* IE* LO*
(iii) ES* NE* IO*
(iv) LE* NO* ON*

Ans. The possible outcomes are: (i) and (iii)

Minimum value of count is 0

Maximum value of count is 3

2. (a) When is a global statement used? Why is its use not recommended? (1)

Ans. Global statement is used when the mentioned variable to be used from global environment/scope. The use of global statement is always discouraged as with this programmers tend to lose the control over variables and their scope.

(b) Can a function return multiple values? How? (1)

Ans. Yes, a function can return multiple values by storing the returning values into individual object variables or in tuple object.

```
def fn():
    return a,b,c,d
```

Calling:

```
i,j,k,l = fn()
```

or

```
t1 = tuple()
t1 = fn()
```

(c) What is the output of the following code: (1)

```
a = 1
def f():
    a = 10
print(a)
```

Ans. 1, the object a inside will not be executed as function f() is not called.

(d) Which file must be present inside a directory to be considered by Python as a library? (1)

Ans. _init_.py

(e) What is namespace in Python? (1)

Ans. Namespace is a named logical environment holding logical and grouping of related objects within a namespace, its member object is referred without any prefix.

(f) Convert the following for loop into a while loop: (2)

```
for k in range (10,20,5):
    print(k)
```

Ans.

```
k=10
while k<20:
    print(k)
    k=k+5
```

(g) Find the output of following: (2)

```
colors=["violet", "indigo", "blue", "green", "yellow", "orange", "red"]
del colors[4]
colors.remove("blue")
colors.pop(3)
print(colors)
```

Ans. Output is:

```
['violet', 'indigo', 'green', 'red']
```

(h) Find the output of the following: (2)

```
str = "Pythonforbeginners is easytolearn"
str2 = "easy"
print("The first occurrence of str2 is at : ", end="")
print(str.find(str2, 4))
print("The last occurrence of str2 is at : ", end="")
print(str.rfind(str2, 4))
```

Ans. Output is:

```
The first occurrence of str2 is at : 22
The last occurrence of str2 is at : 22
```

(i) Consider the following unsorted list: 95 79 19 43 52 3. Write the passes of bubble sort for sorting the list in ascending order till the 3rd iteration. (3)

OR

Rewrite the following code in Python after removing all syntax error(s). Mark each correction done in the code.

```
Val = int(input("Value:"))
Adder = 0
For C in range(1,Val,3)
    Adder += C
    if C%2 = 0;
        print(C*10)
    Else:
        print(C*)
    print(Adder)
```

Ans. [79, 19, 43, 52, 3, 95]
[19, 43, 52, 3, 79, 95]
[19, 43, 3, 52, 79, 95]

OR

Ans.
```
Val = int(input("Value:"))
Adder =0
for C in range(1,Val,3): #Error1
    Adder += C
    if C%2 = 0:          #Error2
        print(C*10)
    else:                #Error3
        print(C)         #Error4
    print(Adder)
```

(j) Write a recursive function that computes the sum of number 1……n ; get the value of last number n from the user. (4)

OR

Write a recursive function that could print a string backwards.

Ans.
```
def compute(num):
    if num == 1:
        return 1
    else:
        return num + compute(num-1)
#main
n = int(input("Enter any integer : "))
sum = compute(n)
print("The sum of series from 1 to given number is : ", sum)
```

OR

Ans.
```
def bp(strg,n):
    if n>0:
        print(strg[n], end='')
        bp(strg,n-1)
    elif n==0:
        print(strg[0])
#main
s=input("Enter any string : ")
bp(s, len(s)-1)
```

SECTION–B

3. (a) _____ provides a connection-oriented reliable service for sending messages. (1)

Ans. TCP (Transmission Control Protocol)

(b) The last address of IP address represents _____ . (1)

Ans. Broadcast Address

(c) IPV4 Address is _____ . (1)

Ans. 32 bits

(d) A system designed to prevent unauthorized access is termed as a_____ . (1)

Ans. Firewall

(e) Expand the following: (2)

(i) VoIP
(ii) SMTP
(iii) TDMA
(iv) TCP/IP

Ans. (i) Voice over Internet Protocol
(ii) Simple Mail Transfer Protocol
(iii) Time Division Multiple Access
(iv) Transmission Control Protocol/Internet Protocol

(f) Write the difference between IPv-4 and IPv-6. (2)

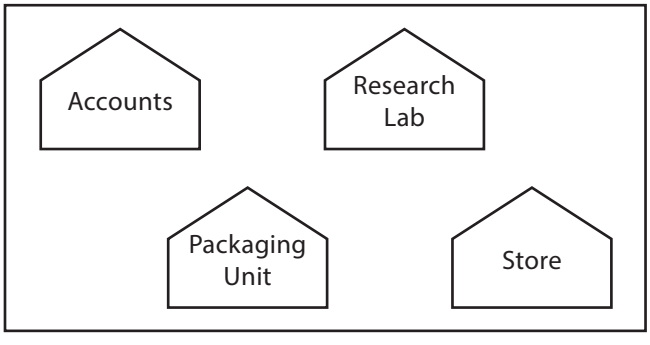
Ans. The difference between IPv4 and IPv6 Addresses lies in the fact that an IP address is binary numbers but can be stored as text for human readers. For example, a 32-bit numeric address (IPv4) is written in decimal as four numbers separated by periods. IPv6 addresses are 128-bit IP address written in hexadecimal and separated by colons.

(g) Write the purpose of following commands: (3)

(i) whois
(ii) ipconfig
(iii) nslookup

Ans. (i) **whois:** Lookup tool finds contact information for the owner of a specified IP address. The ipwhois Lookup tool displays as much information as possible for a given IP address.
(ii) **ipconfig:** In Windows, ipconfig is a console application designed to run from the Windows command prompt. This utility allows you to get the IP address information of a Windows computer. It also allows some control over active TCP/IP connections.
(iii) **nslookup:** It is a network administration command-line tool available for many computer operating systems. It is used for querying the Domain Name System (DNS) to obtain domain name or IP address mapping information.

(h) Riana Medicos Centre has set up its new centre in Dubai. It has four buildings as shown in the diagram given below: (4)



Distance between various buildings is as follows:

Accounts to Research Lab	55 m
Accounts to Store	150 m
Store to Packaging Unit	160 m
Packaging Unit to Research Lab	60 m
Accounts to Packaging Unit	125 m
Store to Research Lab	180 m

Number of computers:

Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

As a network expert, provide the best possible answer to the following queries:

(i) Suggest the type of network established between the buildings.

(ii) Suggest the most suitable place (i.e., building) to house the server of this organization.

(iii) Suggest the placement of the following devices with justification: Repeater, Switch

(iv) Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

Ans. (i) LAN (Local Area Network)

Ans. (ii) Research Lab as it has the maximum number of computers.

Ans. (iii) (a) Repeater: It should be placed between Accounts and Packaging Unit, Accounts to Research Lab, Store to Research Lab and Accounts to Packaging Unit.

(b) Switch should be placed in each of the buildings for better traffic management.

Ans. (iv) Firewall.

SECTION–C

4. (a) Write the difference between GET and POST method. (1)

Ans. A web browser may be the client and an application on a computer that hosts a website may be the server. So, to request a response from the server, there are mainly two methods:

(i) **GET** : to request data from the server

(ii) **POST** : to submit data to be processed to the server

(b) What is Django? (1)

Ans. Django is a Web framework written in Python. But that's an abstract definition. In practice, Django is a Python package that lives inside the site-packages directory of your current Python installation.

(c) Which method is used to retrieve all rows and single row? (1)

Ans. fetchall(), fetchone()

(d) Consider the table 'empsalary'. (1)

eid	esalary
101	40000
102	NULL
104	51000
107	NULL

To select tuples with some esalary, Arun has written the following erroneous SQL statement: SELECT eid, esalary FROM empsalary WHERE esalary = something;

Write the correct SQL statement.

Ans. The correct SQL statement is:

SELECT eid, esalary FROM empsalary WHERE esalary is NOT NULL;

(e) Write a MySQL-Python connectivity to retrieve data, one record at a time, from city table for employees with id less than 10. (2)

Ans.
```
import MySQLdb as my
try:
    db = my.connect(host="localhost", user="root", passwd="",
                    database="India")
    cursor = db.cursor()
    sql = "select * from city where id < 10"
    number_of_rows = cursor.execute(sql)
    print(cursor.fetchone()) # fetch the first row only
    db.close()
except my.DataError as e:
    print("DataError")
    print(e)
```

(f) Write a Python program to plot the algebraic equation: 10x + 14. (2)

Ans.
```
#Program to evaluate an algebraic expression 10x + 14 using Line Chart
import numpy as np
from matplotlib import pyplot as plt
x = np.arange(12, 20)
y = 10 * x + 14
plt.title("Graph for an Algebraic Expression")
plt.xlabel("x axis")
plt.ylabel("y label")
plt.plot(x,y)
plt.show()
```

(g) What are the basic steps to connect Python with MYSQL using table Members present in the database 'Society'? (3)

Ans.
```
import MySQLdb
conn = MySQLdb.connect(host="localhost", user="root", password =" ",
                               database="Society")
cursor = conn.cursor()
cursor.execute('SELECT COUNT(MemberID) as count FROM Members WHERE id = 1')
row = cursor.fetchone()
conn.close()
print(row)
```

(h) Table COACHING is shown below. Write commands in SQL for (i) to (iii) and output for (iv) and (v). (4)

Table: COACHING

ID	NAME	AGE	CITY	FEE	PHONE
P1	SAMEER	34	DELHI	45000	9811076656
P2	ARYAN	35	MUMBAI	54000	9911343989
P4	RAM	34	CHENNAI	45000	9810593578
P6	PREMLATA	36	BHOPAL	60000	9910139987
P7	SHIKHA	36	INDORE	34000	9912139456
P8	RADHA	33	DELHI	23000	8110668888

(i) Write a query to display name in descending order whose age is more than 23.

Ans. Select name from coaching where age>23 order by name desc;

(ii) Write a query to find the average fee grouped by age from customer table.

Ans. Select avg(fee) from coaching group by age;

(iii) Write query details from coaching table where fee is between 30000 and 40000.

Ans. Select * from coaching table where fee is between 30000 and 40000;

(iv) Select sum(Fee) from coaching where city like "%O% ;

Ans. 94000

(v) Select name, city from coaching group by age having count(age)>2;

Ans. Empty set

SECTION–D

5. (a) What are the proper methods and steps for the disposal of used electronic items? (1)

Ans. Explanation about any methods like:

- Landfilling
- Acid Bath
- Incineration
- Recycling of e-waste
- Reuse of electronic devices

(b) Mention the sources from where phishing activities can happen. (1)

Ans. Phishing is accomplished through online means, *i.e.*, through the use of email, social media and other internet-based methods.

(c) What is Digital Certificate? How does it help in DRM? (2)

Ans. A digital certificate, known as a public key certificate, is used to cryptographically link ownership of a public key with the entity that owns it. It is issued by a Certificate Authority (CA). Digital Rights Management (DRM) systems provide you with the ability to control how people can consume your content. To validate the control of the digital content, digital certificates are issued to authenticate or validate the identity of the parties involved in the DRM systems.

(d) How can we recycle e-waste safely? (2)

Ans. (i) Use a certified e-waste recycler.

(ii) Visit civic institutions. Check with your local government, schools and universities for additional responsible recycling options.

(iii) Explore retail options.

(iv) Donate your electronics.

(e) What is meant by the term Cyber Forensics? (2)

Ans. Cyber forensics is an electronic discovery technique used to determine and reveal technical criminal evidence. It often involves electronic data storage extraction for legal purposes. Although still in its infancy, cyber forensics is gaining traction as a viable way of interpreting evidence. Cyber forensics is also known as computer forensics.

(f) Mention any one social and economic benefit of technology. (2)

Ans. Social benefit: Social networking sites help people stay in touch with their near and dear ones.

Economic benefit: It helps the economy grow at a faster rate, provides transparency and increases accountability.