

### Half Yearly Examination (2019 - 2020)

M.M.: 70

Class – XII

Time: 3 hrs.

Name of the Student \_\_\_\_\_ Roll No. \_\_\_

Subject- Computer Science

**Q1.** Plots / List

[2+2+3+3=10]

1. Write a Python program to display the pie chart with the following data:

Population=[5.9,3.4,9.9,12.5,9.0]

Label=['Aisa', 'Africa', 'Europe', 'South America', 'Australia']

2. Write a Python program to display a bar graph of the number of students in a class. Use different color for each Bar. Give X and Y labels for Bar with appropriate titles:

Class	III	IV	V	VI	VII	VIII
Strength	45	48	60	55	58	30

3. Write a Program to accept a value of 8 different integers in a form of a LIST[]. Now arrange numbers in ascending order using Bubble Sort technique.
4. Write a function to accept two List named A[] and B[]. Now create third list to add the content of both the list one by one using the function prototype:  
def ASSEMBLE(A, B):  
Input: A=[1,2,3,4] B=[10,20,30,40]  
Output: C=[1,10,2,20,3,30,4,40]

**Or**

Write a function to accept two nested list and perform Matrix multiplication on them using the function prototype:

def MULTIPLY(A,B): where A and B are two different nested list

**Q2.** Functions / Recursion

[1+1+2+2+2+2=10]

1. Can a function return multiple values? If yes, explain how?
2. Name the Python Library modules which need to be imported to invoke the following functions  
a. `log()` (ii) `uniform()`
3. What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code ? Also specify the maximum values that can be assigned to each of the variables START and END.

```
import random SCORE=[20,40,10,30,15];
START=random.randint(1,3) END=random.randint(2,4)
for I in range(START,END+1):
    print SCORE[I],"&",
```

(i) 10&40&20&	(ii) 10&30&15&
(iii) 40&10&30&	(iv) 20&40&10&

4. Find and write the output of the following python code :

Val = [20,"A",40,"K",10,"H"]

Freq = 0

Sum = 0

```

Cat = ""
For I in range(1,6,2): Freq = Freq + I
    Sum = Sum + Val[I-1]
    Cat = Cat + Val[I] + "*"
print (Freq,Sum,Cat)

```

5. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.

```

Num = int(rawinput("Number:"))
Sum = 0
for i in range(10,Num,3)
    Sum+=i
    if i%2=0:
        print i*2 Else:
        print i*3 print Sum

```

6. Write a recursive function returning the addition of all the ODD elements of the list using the function def ADD(LIST): where LIST[] is a list holding integers.

### Q3. Files

[2+2+3+3=10]

- (1) Give outputs:

```

import random
import math
clr=['red','green','blue','olive']
random.shuffle(clr)
print("Shuffled l = ",clr)

```

```

print("Ceiling = ",math.ceil(4.8))
print("Absolute = ",math.fabs(-6.45))

```

- (2) Write a statement in Python to open a text file NOTES.TXT so that the following contents can be written in it

*India is my Country  
All Indians are my brothers and sisters*

- (3) Write a method in python to read lines from a text file INDIA.TXT, to find and display the occurrence of the word "INDIA" or "India".

For example:

If the content of the file is

---

**INDIA is a famous country all over the world.**

**Geographically, India is located to the south of Asia continent. India is a high population country and well protected from all directions naturally.**

**India is a famous country for**

**its great cultural and traditional values all across the world.**

---

The output should be 4

**OR**

Write definition of a Method COUNTNOW(REGIONS) to find and display names of those REGIONS, in which there are less than or equal to 5 characters.

For example :

If the list REGIONS contains

**["GOA","NEW DELHI","DAMAN","CHENNAI","BANGALORE"]**

The following should get displayed

**GOA DAMAN**

(3) A company consist of 10 employees. Accept Name[] and Department[] of employees from the user and store it in a file named DETAIL.DAT. Show error if the required file cannot be opened.

**Q4.** Python Stack Queue

[2+2+3+3=10]

1. State two difference in between STACK and QUEUE
2. Evaluate the following postfix notation of the expression and show the status of stack for each operation 12, 3, /, 9, 2, \*, +, 11, -
3. Write a function Delete\_Name(sName, rear, front) to perform delete operation in a linear queue containing Student Name. The function should use two parameters: sName as Student's name and rear which is the insert position of the queue and front as the position of the front.
4. Write a function to Delete an element from the stack which consist of Stack as a list and Top as the position of the Top pointer deleteStack(Stack, Top): Also give appropriate message if an element cannot be removed from the Stack.

**Q5.** Outputs / Errors

[10x1=10]

1. Give putputs:

(i)

```
b=[[9,6],[4,5],[7,7]]
```

```
X=b[:1][1:]
```

```
X.append(10)
```

```
print(X)
```

(ii)

```
b=[[9,6],[4,5],[7,7]]
```

```
X=b[:2]
```

```
X[1:].append(10)
```

```
print(X)
```

2. What will be the status of following list after third pass of bubble sort used for arranging elements in ascending order? 40, 67, -23, 11, 27, 38, -1
3. Give output:  
def codo(n):  
    if n==0:  
        print("finally")  
  
    else:

```
print(n)
codo(n-3)
```

```
codo(15)
```

4. Give output:

```
A={10:1000,20:2000,30:3000,40:4000,50:5000}
```

```
print(A.items() )
```

```
print (A.keys() )
```

```
print (A.values())
```

5. Give output:

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

```
print(alst[::3])
```

6. What is MAD? What function can be used to calculate it? OR Define Django.

7. Which data structure will you use for simulating a blanket donations camp?

8. What are two types of HTTP request?

9. Explain Django Architecture.

10. Give output:

```
with open('app.log', 'w') as f:
```

```
    f.write('We Arranged Examination\n')
```

```
    f.write('We Were Ok\n')
```

```
    f.write('He Wondered\n')
```

```
f = open('app.log', 'r')
```

```
data = f.read(5);
```

```
print('Output 1 :: ', data)
```

```
position = f.tell();
```

```
print('Output 2 :: ', position)
```

```
position = f.seek(0, 0);
```

```
data = f.read(7);
```

```
print('Output 3 :: ', data)
```

```
f.close()
```

### Q6. SQL Single / Multi Table

[2+6+2=10]

(1) Observe the following tables BOOK and MEMBER carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIAN PRODUCT, which has been used to produces the output as shown in RESULT ? Also, find the Degree and Cardinality of the RESULT.

**TABLE: BOOK**

BNO	BNAME	TYPE
C101	Red Scorpion	Comic
F101	The Last Wish	Fiction

<b>L102</b>	<b>French in a week</b>	<b>Literature</b>
-------------	-------------------------	-------------------

**TABLE: MEMBER**

<b>MNO</b>	<b>MNAME</b>
<b>M101</b>	<b>Ritu Oberoi</b>
<b>M102</b>	<b>Fatima</b>
<b>M103</b>	<b>Jenny DeSouza</b>

**TABLE: RESULT**

<b>BNO</b>	<b>BNAME</b>	<b>TYPE</b>	<b>MNO</b>	<b>MNAME</b>
<b>C101</b>	<b>Red Scorpion</b>	<b>Comic</b>	<b>M101</b>	<b>Ritu Oberoi</b>
<b>C101</b>	<b>Red Scorpion</b>	<b>Comic</b>	<b>M102</b>	<b>Fatima</b>
<b>C101</b>	<b>Red Scorpion</b>	<b>Comic</b>	<b>M103</b>	<b>Jenny DeSouza</b>
<b>F101</b>	<b>The Last Wish</b>	<b>Fiction</b>	<b>M101</b>	<b>Ritu Oberoi</b>
<b>F101</b>	<b>The Last Wish</b>	<b>Fiction</b>	<b>M102</b>	<b>Fatima</b>
<b>F101</b>	<b>The Last Wish</b>	<b>Fiction</b>	<b>M103</b>	<b>Jenny DeSouza</b>
<b>L102</b>	<b>French in a week</b>	<b>Literature</b>	<b>M101</b>	<b>Ritu Oberoi</b>
<b>L102</b>	<b>French in a week</b>	<b>Literature</b>	<b>M102</b>	<b>Fatima</b>
<b>L102</b>	<b>French in a week</b>	<b>Literature</b>	<b>M103</b>	<b>Jenny DeSouza</b>

(2) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables.

**TABLE: CUSTOMER**

<b>CNO</b>	<b>CNAME</b>	<b>ADDRESS</b>
<b>101</b>	<b>Richa Jain</b>	<b>Delhi</b>
<b>102</b>	<b>Surbhi Sinha</b>	<b>Chennai</b>
<b>103</b>	<b>Lisa Thomas</b>	<b>Bangalore</b>
<b>104</b>	<b>Imran Ali</b>	<b>Delhi</b>
<b>105</b>	<b>Roshan Singh</b>	<b>Chennai</b>

**TABLE: TRANSACTION**

<b>TRNO</b>	<b>CNO</b>	<b>AMOUNT</b>	<b>TYPE</b>	<b>DOT</b>
<b>T001</b>	<b>101</b>	<b>1500</b>	<b>Credit</b>	<b>2017-11-23</b>
<b>T002</b>	<b>103</b>	<b>2000</b>	<b>Debit</b>	<b>2017-05-12</b>
<b>T003</b>	<b>102</b>	<b>3000</b>	<b>Credit</b>	<b>2017-06-10</b>
<b>T004</b>	<b>103</b>	<b>12000</b>	<b>Credit</b>	<b>2017-09-12</b>

<b>T005</b>	<b>101</b>	<b>1000</b>	<b>Debit</b>	<b>2017-09-05</b>
-------------	------------	-------------	--------------	-------------------

- (i) To display details of all transactions of TYPE Credit from Table TRANSACTION.
  - (ii) To display the CNO and AMOUNT of all Transactions done in the month of September 2017 from table TRANSACTION.
  - (iii) To display the last date of transaction (DOT) from the table TRANSACTION for the customer having CNO as 103.
  - (iv) To display all CNO, CNAME and DOT (date of transaction) of those CUSTOMERS from tables CUSTOMER and TRANSACTION who have done transactions more than or equal to 2000.
  - (v) **SELECT COUNT(\*), AVG(AMOUNT) FROM TRANSACTION  
WHERE DOT >= '2017-06-01';**
  - (vi) **SELECT CNO, COUNT(\*), MAX (AMOUNT) FROM TRANSACTION GROUP  
BY CNO HAVING COUNT(\*)> 1;**
  - (vii) **SELECT CNO, CNAME FROM CUSTOMER  
WHERE ADDRESS NOT IN ('DELHI', 'BANGALORE');**
  - (viii) **SELECT DISTINCT CNO FROM TRANSACTION;**
- (3) Answer the following with examples:
- i) What is the purpose of BETWEEN? Give its alternative
  - ii) How UPDATE is different from ALTER command?

**Q7. Networking**

[6+4=10]

1. Mention one difference in between Linear and Star topology in a network.
2. What is a bridge?
3. Differentiate between RJ – 11 and RJ – 45 connectors.
4. Expand the following: URI, HTTPS
5. International Tour and Travels company has set up its new branch office in Jaipur where different buildings are spanned over in the radius of 900 meter in Jaipur. Name the network formed in the following situations :
  - (i) The branch office is connected with the regional office in New Delhi.
  - (ii) All the buildings of branch office are connected to each other.
6. Write one important advantage of 4G over 3G Mobile Telecommunication Technologies in terms of services
7. CASE STUDY BASED QUESTION

Medico Training Educational Institute is setting up its centre in Poona with four specialised units for Radiology, Neurology and ENT alongwith an administrative office in separate buildings. The physical distances between these units and the number of computers to be installed in these units and administrative office as given as follows. You as a network expert have to answer the queries as raised by them in (i) to (iv).

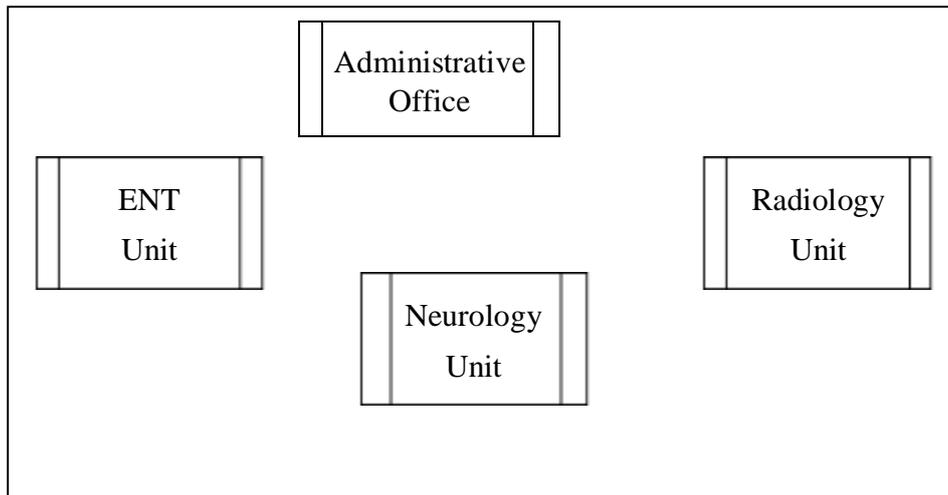
Shortest distances between various locations in metres :

Administrative Office to Radiology Unit	60
Neurology Unit to Administrative Office	40
Radiology Unit to Neurology Unit	80
ENT Unit to Neurology Unit	60

ENT Unit to Administrative Office	30
ENT Unit to Radiology Unit	120

Number of Computers installed at various locations are as follows :

ENT Unit	50
Radiology Unit	70
Administrative Office	120
Neurology	40



- (i) Suggest the most suitable location to install the main server of this institution to get efficient connectivity. 1
- (ii) Suggest the best cable layout for effective network connectivity of the building having server with all the other buildings. 1
- (iii) Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following: 1
  - Modem
  - Switch
  - Gateway
- (iv) Suggest the topology of the network and network cable for efficiently connecting each computer installed in each of the building out of the following :
 

Topologies : Star Topology, Bus Topology

Network Cable : Co-axial Cable, Ethernet Cable, Single Pair Telephone Cable.

=====