1. (a) Differentiate between mutable and immutable objects in Python language with example. (2)

Ans. Every variable in Python holds an instance of an object. There are two types of objects in Python, *i.e.*, **Mutable and Immutable objects.** Whenever an object is instantiated, it is assigned a unique object id. The type of the object is defined at the runtime and it can't be changed afterwards. However, its state can be changed if it is a mutable object.

For example, **int**, **float**, **bool**, **string**, **unicode**, **tuple** are immutable objects in Python. In simple words, an immutable object can't be changed after it is created. Lists, dictionaries and sets are mutable types.

(b) Identify and write the name of the module to which the following functions belong: (1)

(i) ceil() (ii) findall()

Ans. (i) ceil() – math module (ii) findall() – re module

(c) 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()
```

(d) 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
```

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

```
def ChangeList():
    L=[]
    L1=[]
    L2=[]
    for i in range(1,10):
        L.append(i)
    for i in range(10,1,-2):
        L1.append(i)
    for i in range(len(L1)):
        L2.append(L1[i]+L[i])
    L2.append(len(L)-len(L1))
    print(L2)
ChangeList()
```

Ans. Output is:

```
[11,10,9,8,7,4]
```

(f) Study the following program and select the possible output(s) from the options (i) to (iv) following it. Also, write the maximum and the minimum values that can be assigned to the variable Y. (2)

```
import random
X= random.random()
Y= random.randint(0,4)
print(int(X),":",Y+int(X))
```

(i) 0 : 0 (ii) 1 : 6

(iii) 2 : 4 (iv) 0 : 3

Ans. (i) and (iv) are the possible outputs. Minimum value that can be assigned is – Y = 0. Maximum value that can be assigned is – Y = 3

2. (a) Explain operator overloading with the help of an example. (2)

Ans. Operator overloading is a feature in Python that allows the same operator to have a different meaning according to the context. It signifies giving extended meaning beyond the predefined operational meaning. *For example*, operator + is used to add two integers as well as join two strings and merge two lists.

For example,

```
>>print(44 + 2)
46
# concatenate two strings
print("Python"+"Programming")
PythonProgramming
# Product of two numbers
print(5 * 5)
25
# Repeat the String
print("Hello"*3)
HelloHelloHello
```

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

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

Ans. Output is:

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

(c) 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
```

3. (a) Write the definition of a function Reverse(X) in Python to display the elements in reverse order such that each displayed element is twice of the original element (element *2) of the List X in the following manner: (2)

Example:

If List X contains 7 integers as follows:

X[0]	X[1]	X[2]	X[3]	X[4]	X[5]	X[6]
4	8	7	5	6	2	10

After executing the function, the array content should be displayed as follows:

If List

Ans.

20	4	12	10	14	16	8

```
def Reverse(X):
    for i in range(len(X)-1,-1,-1):
        print(X[i]*2)
```

(b) 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)

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

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

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

(c) Write a user-defined function to generate odd numbers between a and b (including b). (3)

Note: a and b are received as an argument by the function.

Ans.

```
def generateodd(a,b):
    for i in range(a, b+1):
        if(i%2 != 0):
            print(i)
```

(d) Observe the following code and answer the questions that follow: (1)

```
File = open("Mydata","a") _____ #Blank1
File.close()
```

(i) What type (Text/Binary) of file is Mydata?

(ii) Fill in Blank 1 with a statement to write “ABC” in the file “Mydata”.

Ans. (i) Text File

(ii) File.write("ABC")

4. (a) Write any one advantage and one disadvantage of Coaxial cable. (1)

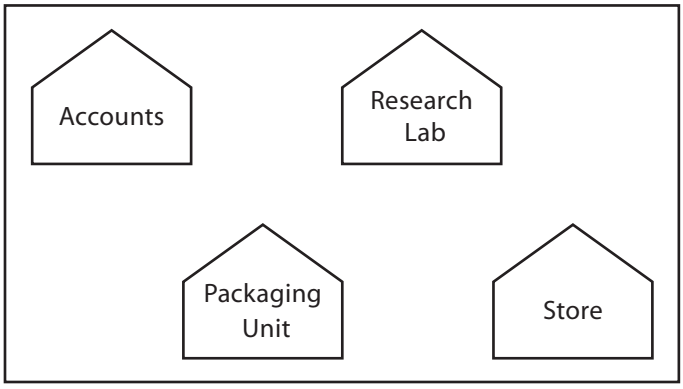
Ans. *Advantages:*

- It is less susceptible to noise or interference (EMI or RFI) as compared to twisted pair cable.
- It supports high bandwidth signal transmission as compared to twisted pair.
- It is easy to wire and easy to expand due to its flexibility.

Disadvantages:

- It is bulky.
- It is expensive to install for longer distances due to its thickness and stiffness.

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



Distances between various buildings are 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 for the following queries:

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

Ans. LAN (Local Area Network)

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

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

(iii) Suggest the placement of the following devices with justification: (a) Repeater (b) Hub/Switch

Ans. (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.

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

Ans. Firewall.

(c) Expand the following: (2)

(i) VoIP

Ans. Voice over Internet Protocol

(ii) SMTP

Ans. Simple Mail Transfer Protocol

(iii) TDMA

Ans. Time Division Multiple Access

(iv) TCP/IP

Ans. Transmission Control Protocol/Internet Protocol

(d) The following is a 32-bit binary number usually represented as 4 decimal values, each representing 8 bits, in the range 0 to 255 (known as octets) separated by decimal points. (1)

140.179.220.200

What is it? What is its importance?

Ans. It is an IP Address. It is used to identify the computers on a network.

(e) Name the network tools used in the given situations: (4)

(i) To troubleshoot internet connection problems

Ans. ping

(ii) To see the IP address associated with a domain name

Ans. nslookup

(iii) To look up registration record associated with a domain name.

Ans. whois

(iv) To test the speed of internet connection

Ans. speedtest.net

(f) What is a cloud? (1)

Ans. A cloud is a combination of networks, hardware, services, storage and interfaces that helps in delivering computing as a service. It has three users:

(i) End users

(ii) Business management users

(iii) Cloud service provider

(g) What are the effects of Network Congestion? (1)

Ans. **Network congestion** in data networking and queuing theory is the reduced quality of service that occurs when a network node or link is carrying more data than it can handle. Typical effects include queuing delay, packet loss or the blocking of new connections.

5. (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) 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)
```

(c) 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)
```

(d) What is the role of Django in website design? (1)

Ans. Django is a high-level Python web framework, designed to help build complex web applications simply and quickly. Django makes it easier to build better web apps quickly and with less code.

6. (a) Write the steps to connect with database "testdb" with Python programming. (2)

Ans. Steps to be followed are:

- Import mysqldb as db
- Connect
- Cursor
- Execute
- Close

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

Ans. fetchall(),fetchone()

(c) 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;.

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

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

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

Ans. Explanation about any methods like:

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

(b) When did IT Act come into force? (1)

Ans. 17th October, 2000.

(c) Explain the gender and disability issues while using computers in the classroom. (1)

Ans. It has been seen in many studies that in many countries computer use in schools is dominated by men. Female teachers have less regard for their skills and knowledge than their male colleagues.

Females know less about information technology, enjoy using the computer less than male students, and perceive more problems with software.

(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) Name some threats to computer security. (1)

Ans.

- Snooping
- Identity theft
- Phishing
- Virus and Trojans
- Child pornography, etc.

(f) 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.

(g) Write any two categories of cyber crime. (1)

Ans. Cyber crime encompasses a wide range of activities, but these can generally be broken into two categories:

- Crimes that target computer networks or devices: Such types of crimes include viruses and denial-of-service (DoS) attacks.
- Crimes that use computer networks to advance other criminal activities: These types of crimes include cyberstalking, phishing and fraud or identity theft.

(h) How does phishing happen? (1)

Ans. Phishing is a fraudulent attempt to obtain sensitive information such as usernames, passwords, and credit card details (and money), often for malicious reasons, by disguising as a trustworthy entity in an electronic communication. Phishing is typically carried out by email spoofing or instant messaging, and it often directs users to enter personal information at a fake website, the look and feel of which is identical to the legitimate one and the only difference is the URL of the website in question.

(i) Define and name some open source software. (1)

Ans. GPl, Apache, Creative Commons, Mozilla Firefox, Open Office.org, etc.

(j) What are Intellectual Property Rights (IPR)? (1)

Ans. IPR is a general term covering patents, copyright, trademark, industrial designs, geographical indications, layout design of integrated circuits, undisclosed information (trade secrets) and new plant varieties.

1	(a)	Which of the following can be used as valid variable identifier(s) in Python? (i) 4thSum (ii) Total (iii) Number# (iv) Data Ans. ii) Total iv) Data	2

	(b)	Name the Python Library modules which need to be imported to invoke the following functions
		(i) floor()
		(ii) randn()
		
		Ans.
		(i) math (ii) random
		OR
		Write the modules that will be required to be imported to execute the following code in Python.
		def main( ):
		for i in range (len(string))):
		if string [i] = = ‘’
		print
		elif
		c=string[i].upper()
		print “string is:”c
		print “String length=”,len(sring.floor())
		Ans. Math module and String module
			1

	(c)	Rewrite the following code in python after removing all syntax error(s).Underline each correction done in the code.
		`STRING=""HAPPY NEW YEAR"`
		`for S in range[0,8]:`
		`print STRING(S)`
		`print S+STRING`
			3

Ans.

```
STRING = "HAPPY NEW YEAR"
for S in range(0,14):
      print(STRING[S])
      print(S,STRING)
```

OR

Write a function mul ( ) which accepts list L, odd_L, even_L as its parameters. Transfer all even values of list L to even_L and all odd values of L to odd_L.

3

eg. If L = [10, 22, 24, 36, 37, 43, 51]

odd_L = [37, 43,51]

and even_L = [10, 22, 24, 26]

Ans. defmul(l, odd_l, even_l):

```
    Odd_l=[]
    Even_l=[]
    fori in range(len(l)):
        if (l[i]%2==0):
            Even_l+=[l[i]]
        else:
            Odd_l+=[l[i]]
```

(d) Find and write the output of the following python code: 2

```
TXT = ["20","50","30","40"]
CNT = 3
TOTAL = 0
for C in [7,5,4,6]:
      T = TXT[CNT]
      TOTAL = float(T) + C
      print(TOTAL)
      CNT -= 1
```

Ans.

```
47.0
35.0
54.0
```

		26.0 OR Find the output of the following program: def main ( ) : Moves=[11, 22, 33, 44] Queen=Moves Moves[2]+=22 L=Len(Moves) For i in range (L) print “Now@”, Queen[L-i-1], “#”, Moves [i] Ans. Now @ 44 # 11 Now @ 55 # 22 Now @ 22 # 55 Now @ 11 # 44	2

	(e)	What output will be generated when the following Python code is executed?
		`def ChangeList():`
		`  L=[]`
		`  L1=[]`
		`  L2=[]`
		`  for i in range(1,10):`
		`  L.append(i)`
		`  for i in range(10,1,-2):`
		`  L1.append(i)`
		`  for i in range(len(L1)):`
		`  L2.append(L1[i]+L[i])`
		`  L2.append(len(L)-len(L1))`
		`  print L2`
		`ChangeList()`
		Ans.
		`[11, 10, 9, 8, 7, 4]`
			2

	(f)	What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable N.
		`import random`
		`NAV = ["LEFT","FRONT","RIGHT","BACK"]`
		`NUM = random.randint(1,3)`
		`NAVG = ""`
		`for C in range(NUM,1,-1):`
		`  NAVG = NAVG + NAV[C]`
		`  print(NAVG)`
			2

		Ans. No Output or RIGHT or BACK BACKRIGHT Max value 3 and minimum value 1 for variable NUM	
2	(a)	List one similarity and one difference between List and Dictionary datatype. Ans. Similarity: Both List and Dictionary is mutable datatypes. Dissimilarity: List is a sequential data type i.e. they are indexed. Dictionary is a mapping datatype. It consists of key: value pair. For example, L =[1,2,3,4,5] is a list D = {1:"Ajay",2:"Prashant,4:"Himani"} is a dictionary where 1,2,4 are keys and "Ajay",Prashant,"Himani" are their corresponding values.	2

	(b)	Rewrite the following Python program after removing all the syntactical errors (if any), underlining each correction.:
		`def checkval:`
		`  x = input("Enter a number")`
		`  if x % 2 = 0:`
		`  print x,"is even"`
		`  else if x<0:`
		`  print x,"should be positive"`
		`  else;`
		`  print x,"is odd"`
		Ans. Corrected code:
		`def checkval():`
		`  x = int(input("Enter a number:"))`
		`  if x % 2 == 0:`
		`  print(x," is even")`
		`  elif x<0:`
		`  print(x, "should be positive")`
		`  else:`
		`  print(x, "is odd")`
			2

	(c)	Find the output of the following Python program:
		`def makenew(mystr):`
		`  newstr = ""`
		`  count = 0`
		`  for i in mystr:`
		`  if count%2 != 0:`
		`  newstr = newstr + str(count)`
			3

		`else:`
		`  if i.islower():`
		`  newstr = newstr + i.upper()`
		`  else:`
		`  newstr = newstr + i`
		`  count += 1`
		`  newstr = newstr + mystr[:1]`
		`  print("The new string is:", newstr)`
		`makenew("sTUdeNT")`
		
		Ans.
		`The new string is: S1U3E5Ts`	

	(d)	Discuss the strategies employed by python for memory allocation? Ans. Python uses two strategies for memory allocation- Reference counting and Automatic garbage collection: **Reference Counting**: works by counting the number of times an object is referenced by other objects in the system. When an object's reference count reaches zero, Python collects it automatically. **Automatic Garbage Collection:** Python schedules garbage collection based upon a threshold of object allocations and object de-allocations. When the numbers of allocations minus the number of deallocations are greater than the threshold number, the garbage collector is run and the unused block of memory is reclaimed.	3

3	(a)	Write a user defined function findname(name) where name is an argument in Python to delete phone number from a dictionary phonebook on the basis of the name, where name is the key.
		
		Ans.
		`def findname(name):`
		`  if phonebook.has_key():`
		`  del phonebook[name]`
		`  else:`
		`  print("Name not found")`
		`  print("Phonebook Information")`
		`  print("Name",'\t', "Phone number")`
		`  for i in phonebook.keys():`
		`  print(i,'\t', phonebook[i])`
			3

	(b)	Write the specific purpose of functions used in plotting: i) plot() ii) Legend() Ans. i) plot(): A line chart or line graph can be created using the plot() function available in pyplot library. For example, the basic syntax for creating line plots is plt.plot(x,y), where x and y are the points or specify the (x, y) pairs that form the line. ii) Legend(): legend is the text or string that "has to be read" to understand the graph. Legends are used in line graphs to explain the function or the values underlying the different lines of the graph.	2
	(c)	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()
```

(d) Write definition of a Method MSEARCH(STATES) to display all the state names from a list of STATES, which are starting with alphabet M. 3

For example:
If the list STATES contains
["MP","UP","WB","TN","MH","MZ","DL","BH","RJ","HR"]
The following should get displayed
MP
MH
MZ

Ans.

```
def MSEARCH(STATES):
      for i in STATES:
            if i[0]=='M':
                  print(i)
```

(e) Differentiate between file modes r+ and w+ with respect to Python. 2

Ans.
r+ Opens a file for both reading and writing. The file pointer placed at the beginning of the file.
w+ Opens a file for writing. The file pointer placed at the beginning of the file.

4 (a) Write about types of network depending upon geographical location. 1

Ans.
Types of network depending upon geographical location: PAN, LAN, MAN, WAN.

(b) Write down difference between private cloud and public cloud. 2

Ans.

Public Cloud	Private Cloud
Public cloud refers to a common cloud service made available to multiple subscribers.	Consist of computing resources used exclusively owned by one business or organization.

		Cloud resources are owned and operated by third party cloud service provider and delivered over the internet.	Services and infrastructure are always maintained on a private network and the hardware and software are dedicated solely to one organization
		Microsoft Azure, Google drive, Amazon Cloud Drive, iCloud etc.	Used by Government agencies, financial institutions, mid and large size organization
	(c)	Write one restriction of wired and one wireless networks. Ans. Limitation of wireless network is cost, security Limitation of wired network is Speed ,extra cost for expansion etc	2
	(d)	How IP address differ from MAC address? Ans. IP address is a number assigned to the connection in a network. The basic difference between MAC address and IP address is that a MAC address uniquely identifies a device that wants to take part in a network. On the other hand, an IP address uniquely defines a connection of a network with an interface of a device.	2
	(e)	Expand the following terms: 1. MAC 2. DNS 3. URL Ans. 1. MAC-Media Access Control, 2. DNS is Domain Name Server, 3. URL is Uniform Resource Locator.	3
5	(a)	Write difference between IP v-4 and IPv-6. Ans. The difference between IPv4 and IPv6 Addresses. 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.	2
	(c)	Write the purpose of following commands 1. whois 2. ipconfig 3. nslookup Ans. **1. 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. **2. 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.	3

3. nslookup: 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.

(d) Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (vii), which are based on the table. 5

Table: Transact

TRNO	ANO	AMOUNT	TYPE	DOT
T001	101	2500	Withdraw	2017-12-21
T002	103	3000	Deposit	2017-06-01
T003	102	2000	Withdraw	2017-05-12
T004	103	1000	Deposit	2017-10-22
T005	101	12000	Deposit	2017-11-06

(i) To display minimum amount transaction from the table.

Ans.
```
select min(amount) from Transact;
```

(ii) To display total amount withdrawn from table.

Ans.
```
select sum(amount) from Transact where type = “Withdraw”;
```

(iii) To display number of deposited transaction.

Ans.
```
select sum(amount) from Transact where type=”Deposit”;
```

(iv) To display ANO,DOT, AMOUNT for maximum amount transaction.

Ans.
```
select ANO, DOT, AMOUNT from Transact where AMOUNT = max(AMOUNT);
```

(v)
```
SELECT ANO, COUNT(*), MIN(AMOUNT) FROM TRANSACT
GROUP BY ANO HAVING COUNT(*)> 1
```

Ans.
```
ANO COUNT(*) MIN(AMOUNT)
101         2         2500
103         2         1000
```

(vi)
```
SELECT COUNT(*), SUM(AMOUNT) FROM TRANSACT
WHERE DOT <= '2017-06-01';
```
Ans.
```
COUNT(*) SUM(AMOUNT)
```

<table>
<tr><td></td><td></td><td>2 5000</td><td></td></tr>
<tr><td>6</td><td>(a)</td><td>Is the Django installation as same as other packages?

Ans.
No</td><td>2</td></tr>
<tr><td></td><td>(b)</td><td>Start project command creates four basic Django project in Directory. Write any two file Names.

Ans.
The startproject command creates a basic Django project directory structure with the following files:
• manage.py
• settings.py</td><td>2</td></tr>
<tr><td></td><td>(c)</td><td>What is Django?

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.</td><td>2</td></tr>
<tr><td></td><td>(d)</td><td>Write difference between GET and POST method.

Ans.<table><tr><td>GET method</td><td>POST method</td></tr><tr><td>all form data is encoded into the URL appended to the action URL as query string parameters</td><td>form data appears within the message body of the HTTP request</td></tr><tr><td>Parameters remain in browser history hence cannot be used to send password like sensitive information.</td><td>Parameters are not saved in browser history hence can be used to send sensitive information</td></tr><tr><td>can be bookmarked</td><td>cannot be bookmarked</td></tr><tr><td>Easier to hack for script kiddies</td><td>More Difficult to hack</td></tr><tr><td>Can be cached</td><td>Cannot be cached</td></tr></table></td><td>2</td></tr>
<tr><td>7</td><td>(a)</td><td>What are the environmental issues of e-waste?

Ans.
E-waste, or electronic waste, is waste from all sorts of electronics ranging from computers and mobile phones, to household electronics such as food processors, pressure, cookers etc.
The effects of improper disposal of this E-waste on the environment are little known; these impacts nonetheless pose very real threats and dangers to the global environment at large.</td><td>2</td></tr>
<tr><td></td><td>(b)</td><td>What do you understand by the term Plagiarism? Write 2 software’s used as Plagiarism checker.

Ans.
Plagiarism is "copying and publication" of another author's "language, thoughts, ideas, or</td><td>3</td></tr>
</table>

		expressions" and the representation of them as one's own original work. Plagiarism is considered academic dishonesty and a breach of journalistic ethics Here is a list of the top 10 free plagiarism checker tools available today. DupliChecker. Grammarly. Paperrater. Plagiarisma.	
	(c)	What is Identity Theft? How to prevent this? Ans. Identity theft is known as identity fraud, is a crime in which a cracker obtains key pieces of personally identifiable information, such as Social Security or driver's license numbers, in order to impersonate someone else. Prevention Techniques from Identity theft: 1. Don't share personal information (birth date, Social Security number, or bank account number) just because someone asks for it. 2. Collect mail every day. 3. Pay attention to your billing cycles.	3
	(d)	List down some points about Societal changes introduced by technology. Technology and Social Change. Ans. Technology is the application of scientific knowledge to the making of tools to solve specific problems. Technological advances such as automobiles, airplanes, radio, television, cellular phones, computers, modems, and fax machines have brought major advances and changes to the world.	2

1. (a) Differentiate between Syntax Error and Run-Time Error. Also, write a suitable example in Python to illustrate both. (2)

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

(i) log() (ii) match()

(c) Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. (2)

```
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)
```

(d) Find and write the output of the following Python code: (3)

```
L =["X",20,"Y",10,"Z",30]
CNT = 0
ST = ""
INC = 0
for C in range(1,6,2):
    CNT= CNT + C
    ST= ST + L[C-1]+"@"
    INC = INC + L[C]
    print (CNT,INC,ST)
```

(e) Carefully observe the following Python code and answer the questions that follow. (2)

```
global x
x=5
def fun2():
    x=3
    print(x)
x=x+1
print(x)
```

On execution, the above code produces the following output:

6

3

Explain the output with respect to the scope of the variables.

(f) Observe the following Python code and find out which of the given options (i) to (iv) are the expected correct output(s). Also, assign maximum and minimum values that can be assigned to the variable 'Go'. (2)

```
import random
X=[100,75,10,125]
Go = random.randint(0,3)
for i in range(Go):
    print(X[i],"$$",)
```

What will be the minimum and maximum value for 'i'? Write all the possible output(s).

2. (a) Kritika was asked to accept a list of even numbers but she did not put the relevant condition while accepting the list. Write a user-defined function oddtoeven(L) that accepts the List L as an argument and converts all the odd numbers into even by multiplying them by 2. (2)

(b) Write a Python function generatefibo(n) where n is the limit, using a generator function Fibonacci (max) (where max is the limit n) that produces the Fibonacci series. (2)

(c) 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 4th iteration. (2)

(d) Write a program to perform insert and delete operations on a Queue containing Members details as given in the following definition of item node: (4)

Member No	integer
Member Name	String
Age	integer

```
def isEmpty(Qu ):
       if Qu == []:
           return True
   else:
       return False
def Enqueue(Qu, item):
# Write the code to insert member details using Queue.
def Dequeue(Qu):
# Write the code to delete a member using Queue.
```

(e) Evaluate the following Postfix expression: (2)

20, 4, +, 3, -, 7, 1

3. (a) Observe the following code and answer the questions that follow: (1)

```
File = open("Mydata","a")
____________________ #Blank1
File.close()
```

(i) What type (text/binary) of file is Mydata?

(ii) Fill in Blank 1 with a statement to write "ABC" in the file "Mydata".

(b) Write a user-defined function in Python that displays the number of lines starting with 'H' in the file Para.txt. *For example*, if the file contains: (2)

Whose woods these are I think I know.
His house is in the village though;
He will not see me stopping here
To watch his woods fill up with snow.

Then the line count should be 2.

OR

Write a Python program to copy file1.txt into file2.txt.

(c) Consider a binary file Employee.dat containing details such as empno:ename:salary (separator ' :'). Write a Python function to display details of those employees who are earning between ₹ 20,000 and ₹ 40,000 (both values inclusive). (3)

OR

Write the Python code to implement stack of integers.

4. (a) Expand the following: (2)

(i) VoIP (ii) SMTP

(iii) TDMA (iv) TCP/IP

(b) Write one advantage and one disadvantage of Bus topology. (1)

OR

Give one example each of wireless and wired communication media.

(c) The following is a 32-bit binary number, usually represented as 4 decimal values, each representing 8 bits, in the range 0 to 255 (known as octets) separated by decimal points. (1)

140.179.220.200

What is it? What is its importance?

OR

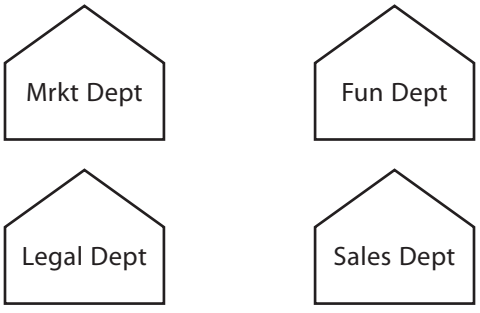
What kind of data gets stored in cookies and how is it useful?

(d) Daniel has to share data among various computers of his two office branches situated in the same city. Name the network (out of LAN, WAN, PAN and MAN) which should be formed in this process. (1)

OR

Which protocol helps us to transfer files to and from a remote computer?

(e) SunRise Pvt. Ltd. is setting up the network in Ahmedabad. There are four departments—MrktDept, FunDept, LegalDept, SalesDept. (4)



Distance between various buildings is as under:

MrktDept to FunDept	80 m
MrktDept to LegalDept	180 m
MrktDept to SalesDept	100 m
LegalDept to SalesDept	150 m
LegalDept to FunDept	100 m
FunDept to SalesDept	50 m

Number of computers in the buildings:

MrktDept	20
LegalDept	10
FunDept	08
SalesDept	42

(i) Suggest the network type between the Departments and specify topology.

(ii) Suggest the most suitable building to place the server with a suitable reason.

(iii) Suggest the placement of i) modem, ii) Hub/Switch in the network.

(iv) The organization is planning to link its sale counters situated in various parts of the same city. Which type of network out of LAN, WAN, MAN will be formed? Justify.

(f) Give two differences between public cloud and private cloud. (2)

(g) Name the network tools used in the given situation— (3)

(i) To troubleshoot internet connection problems

(ii) To see the IP address associated with a domain name

(iii) To look up the registration record associated with a domain name

(h) What makes a protocol have a higher bandwidth? (1)

5. Study the following tables STAFF and SALARY and write SQL command for the questions (a) to (d) and give output for (e) and (f). (6)

Table: STAFF

ID	NAME	DEPT	SEX	EXPERIENCE
101	Siddharth	Sales	M	12
104	Raghav	Finance	M	6
107	Naman	Research	M	10
114	Nupur	Sales	F	3
109	Jhanvi	Finanace	F	9
105	Rama	Research	M	10
117	James	Sales	F	3
111	Binoy	Finance	F	12
130	Samuel	Sales	M	15

Table: SALARY

ID	Basic	Allowance	Commission
101	15000	1500	800
104	17000	1200	500
107	16000	1000	200
114	20000	2200	550
109	18000	1000	250
105	15000	1200	150
117	18000	1700	100
111	20000	1500	300
130	18000	1200	500

(a) Display NAME of all the staff members who are in SALES having more than 10 years' experience from the table staff.

(b) Display the average Basic Salary of all staff members working in "Finance" department using the tables staff and salary.

(c) Display the minimum ALLOWANCE of female staff.

(d) Display the highest commission among all male staff.

(e) Select count(*) from STAFF group by sex;

(f) SELECT NAME,DEPT,BASIC FROM STAFF,SALARY WHERE DEPT='SALES' AND STAFF.ID=SALARY.ID;

6. (a) Write the necessary command to incorporate SQL interface within Python. (1)

(b) Give the Python Statement to: (4)

(i) establish a connection with the database

(ii) create a cursor for the connection

(iii) execute create table SQL query

(iv) insert data into the table created in the above question

(c) What is Django? (2)

(d) Give any two differences between GET and POST submission methods of HTML form. (2)

7. (a) What is meant by intellectual property? What are the provisions for protecting intellectual property in India? (2)

(b) How does technology affect society? Give two points in favour of technology and two points against it. (2)

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

(d) Name any one open source operating system and open source browser. (1)

(e) How does phishing happen? (1)

(f) What is cyber forensics? What is its use? (2)

(i)

SECTION–A

1. Answer the following questions:

(a) Differentiate between Syntax Error and Run-Time Error. Also, write a suitable example in Python to illustrate both. (2)

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

(i) fabs()

(ii) bar()

(c) Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. (2)

```
a = int(input("Value:"))
b = 0
for c in range(1,a,2)
    b + = c if c%2 = 0:
        Print (c*3) Else:
        print (c*) print (b)
```

(d) Which string method is used to implement the following? (2)

(i) To count the number of characters in the string.

(ii) To change the first character of the string in capital letter.

(iii) To check whether the given character is a letter or a number.

(iv) To change lower case to upper case letter.

(v) To change one character into another character.

(e) Differentiate between append() and extend() functions with examples. (2)

(f) Differentiate between read() and write() functions with examples. (2)

(g) What possible output(s) is/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**. (2)

```
import random
POINTS=[20,40,10,30,15]; POINTS=[30,50,20,40,45]
start=random.randint(1,3)
end=random.randint(2,4)
for c in range(start,end+1):
    print(POINTS[c],"#",)
```

(i) 50# 20#	(ii) 40# 30#
(iii) 50# 40# 20#	(iv) 10# 15#

2. Answer the following questions:

(a) How many values may a function return in Python? Illustrate the same with an example in Python. (2)

(b) Write a program in Python to print the Fibonacci series till n terms, where n is entered by users. (2)

(c) Write a program in Python to input a list of numbers from the user and display only those numbers which are divisible by 3 but not by 5. (2)

3. Answer the following questions:

(a) Write a program in Python to search a number from the entered sorted list using binary search. (2)

OR

Write a Python function **generatefibo(n)** where n is the limit, using a generator function **Fibonacci(max)**, where max is the limit n, that produces Fibonacci series.

(b) Write the definition of a method COUNTNOW(PLACES) to find and display those place names, in which there are more than 7 characters. *For example*: If the list PLACES contains (3)

["SYDNEY","TOKYO","PINKCITY","BEIJING","SUNCITY"]

The following should get displayed : **PINKCITY**

OR

Consider the following unsorted list, 95 79 19 43 52 3. Write the passes of bubble sort along with the respective algorithm for sorting the list in ascending order till the 4th iteration.

4. Answer the following questions:

(a) Write a statement in Python to open a text file STORY.TXT so that new contents can be added at the end of it. (1)

OR

Neena intends to position the file pointer at the beginning of a text file. Write Python statement for the same assuming F is the File object.

(b) Explain all file modes in Data File Handling in Python for Data Handling. (2)

OR

Write a function **countthe()** in Python to read the text file "DATA.TXT" and count the number of times "the" occurs in the file.

For example, if the file "DATA.TXT" contains:

"This is my website. I have displayed my preferences in the CHOICE section. The website looks good."

The **countthe()** function should display the output as:

"the occurs 2 times".

(c) Write a program which inputs two lists 'FirstName' and 'LastName' and returns answer in list 'name' with 'FirstName' and 'LastName' concatenated. (3)

OR

Write a user-defined function named Count() that will read the contents of text file named "Report.txt" and count the number of lines which start with either "J" or "M" and display the count, *e.g.*,

In the following paragraph, there are 3 lines starting with "J" or "M".

"India is the fastest growing economy. India is looking for more investments from around the globe.

The whole world is looking at India as a great market.

Most of the Indians can foresee the dizzy heights that India is capable of reaching."

SECTION–B

5. Answer the following questions:

(a) Differentiate between having and Group By clauses of a table with an example. (2)

(b) What do you mean by group/aggregate functions? Give any four examples of these functions. (2)

(c) Explain with the help of examples: (2)

(i) Primary Key

(ii) Foreign key

(d) Differentiate between GET and POST method with examples. (2)

(e) What do you mean by MVC? (1)

(f) Consider the following tables ACTIVITY and COACH. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii). (6)

Table: ACTIVITY

ACode	ActivityName	ParticipantsNum	PrizeMoney	ScheduledDate
1001	Relay 100x4	16	10000	23-Jan-2004
1002	High jump	10	12000	12-Dec-2003
1003	Shot Put	12	8000	14-Feb-2004
1005	Long Jump	12	9000	01-Jan-2004
1008	Discuss Throw	10	15000	19-Mar-2004

Table: COACH

PCode	Name	ACode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

(i) To display the name of all activities with their Acodes in descending order.

(ii) To display sum of PrizeMoney for each of the Number of participants groupings (as shown in column ParticipantsNum 10,12,16)

(iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH

(iv) To display the content of the GAMES table whose ScheduledDate is earlier than 01/01/2004 in ascending order of ParticipantNum

(v) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;

(vi) SELECT MAX(ScheduledDate),MIN(ScheduledDate) FROM ACTIVITY;

(vii) SELECT SUM(PrizeMoney) FROM ACTIVITY;

(viii) SELECT DISTINCT ParticipantNum FROM COACH;

SECTION–C

6. Answer the following questions:

(a) What do you understand by the following? (2)

(i) cyber bullying

(ii) cookies

(b) Differentiate between digital signature and digital certificate. Explain with examples. (2)

(c) What do you mean by web browser and web server? Explain with examples. (2)

(d) What do you mean by Wi-Fi and IR? Explain with examples. (2)

(e) What do you mean by firewall? Explain its use in modern scenario. (2)

7. Answer the following questions:

(a) Differentiate between Bus Topology and Star Topology of Networks. What are the advantages and disadvantages of Star Topology over Bus Topology? (2)

(b) Classify each of the following Web Scripting as Client Side Scripting and Server Side Scripting: (2)

(i) Java Scripting (ii) ASP

(iii) VB Scripting (iv) JSP

(c) Write the expanded forms of the following abbreviated terms used in networking and communications: (2)

(i) SMTP (ii) VoIP

(iii) GSM (iv) WLL

(d) Differentiate between guided and unguided media with examples of each. (2)

(e) Differentiate between bridge and router with examples of each. (2)

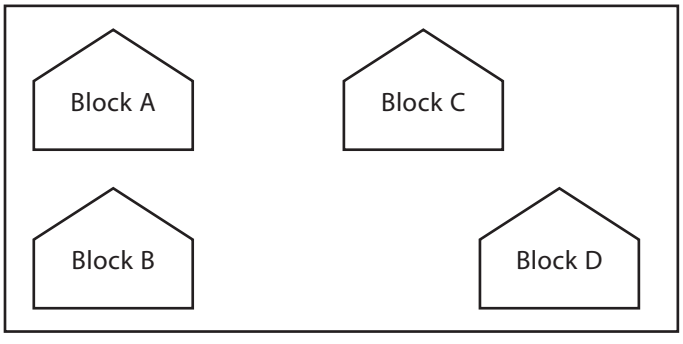
(f) Knowledge Supplement Organization has set up its new centre at Mangalore for its office and web-based activities. It has 4 blocks of buildings as shown in the diagram below:

Centre to centre distances between various blocks:

Block A to Block B	50 m
Block B to Block C	150 m
Block C to Block D	25 m
Block A to Block D	170 m
Block B to Block D	125 m
Block A to Block C	90 m

Number of computers:

Block A	25
Block B	50
Block C	125
Block D	10



(i) Suggest the network implemented. (1)

(ii) Suggest the most suitable place (*i.e.*, block) to house the server of this organization with a suitable reason. (1)

(iii) Suggest the placement of the following devices with justification: (1)

(a) Repeater

(b) Hub/Switch

(iv) The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible. Suggest an economic way to connect it with reasonably high speed. (1)

(v) Which topology do we use for establishing this architecture? (1)

1. (a) Which of the following can be used as valid variable identifier(s) in Python? 2

```
My.file, _Count, For, 2digits, 4thSu, Total, Number#,
Name1
```

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

(i) `floor()` (ii) `find()`

c) Rewrite the following python code after removing all syntax error(s). Underline the corrections done. 2

```
def main():
      r = input('enter any radius: ')
      a = pi * math.pow(r,2)
      print("Area = " + a)
```

(d) Find and write the output of the following Python code: 2

```
L1 = [500,800,600,200,900]
START = 1
SUM = 0
for C in range(START,4):
      SUM = SUM + L1[C]
      print(C,":",SUM)
      SUM = SUM + L1[0]*10
      print(SUM)
```

OR

(d) Observe the following program and answer the questions that follow:

```
import random
X=3
N = random.randint(1,X)
for i in range(N):
    print i,'#',i+1
```

What is the minimum and maximum number of times the loopwill execute?
b. Find out, which line of output(s) out of (i) to (iv) will not be expected from the program?
i. 0#1
ii. 1#2
iii. 2#3
iv. 3#4

(e) Find and write the output of the following Python code: 2

```
def rec(x):
      if(x>1):
            return x*rec(x-2)
```

```
        print(x)
        return x
print(rec(5))
```

(f) which module needs to be imported for showing data in chart form? 2

OR

(f) Which string method is used to implement the following:

a) To count the number of characters in the string.

b) To change the first character of the string in capital letter.

c) To check whether given character is letter or a number.

d) To change lower case to upper case letter.

e) Change one character into another character

2. (a) Write the definition of a function Reverse(X) in Python, to display the elements in reverse order such that each displayed element is the Four time of the original element (element * 4) of the List X in the following manner: 2

Example:

If List X contains 7 integers is as follows:

X[0]	X[1]	X[2]	X[3]	X[4]	X[5]	X[6]
4	6	9	12	5	8	7

After executing the function, the array content should be displayed as follows:

28 32 20 48 36 24 16

(b) Consider the following sorted list: 3

[22, 54, 66, 90, 155, 178]

Write the passes of binary search for searching the list for value 25 till the 3rd iteration.

(c) Write AddCustomer(Customer) and DeleteCustomer(Customer) methods in Python to add a new Customer and delete a Customer from a List of CustomerNames, considering them to act as push and pop operations of the stack data structure. 4

(d) Write definition of a Method COUNTNOW(STATES) to find and display names of those STATES, in which there are less than or equal to 8 characters. 2

For example:

If the list STATES contains

["GOA","NEW DELHI","RAJASTHAN","TAMILNADU","GUJARAT"]

The following should get displayed

GOA

GUJARAT

(e) Evaluate the following postfix expression using a stack. Show the contents of stack after execution of each operation:

20,80,50,-,*,30,8,*,+ 2

3. (a) Neena intends to position the file pointer to the beginning of a text file. Write Python statement for the same assuming F is the File object. 1

(b) Write a function **countthe()** in Python to read the text file "DATA.TXT" and count the number of times "the" occurs in the file. 2
For example if the file "DATA.TXT" contains:
"This is my website. I have displayed my preferences in the CHOICE section. The website looks good."
The **countthe**( ) function should display the output as:
"the occurs 2 times".
OR
(b) .A text file "Quotes.Txt" has the following data written in it:

Living a life you can be proud of

Doing your best

Spending your time with people and activities that are important to you

Standing up for things that are right even when it's hard

Becoming the best version of you

Write a user defined function to display the total number of words present in the file.

(c) Write a user-defined function named Count() that will read the contents of text file named "Report.txt" and count the number of lines which starts with either "I‟ or "M‟ and displays the count. 2
E.g. In the following paragraph, there are 3 lines starting with "I‟ or "M‟:
"India is the fastest growing economy. India is looking for more investments around the globe.
The whole world is looking at India as a great market.
Most of the Indians can foresee the heights that India is capable of reaching."
OR

(c) Observe the following code and answer the questions that follow:

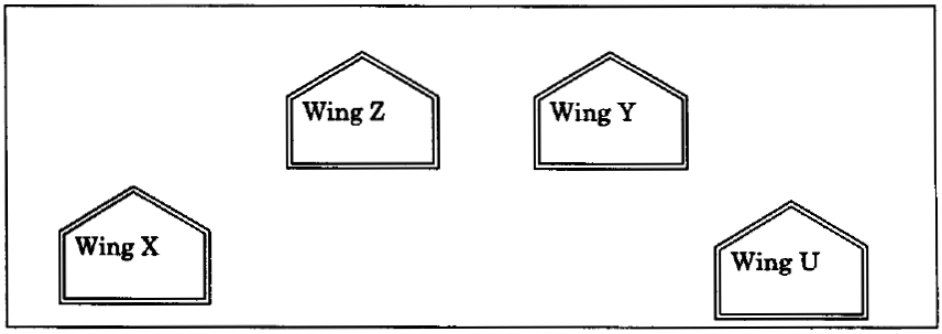
```
File = open("Mydata","a")
_____                    #Blank1
File.close()
```

i. What type (Text/Binary) of file is Mydata?
ii. Fill the Blank 1 with statement to write "ABC" in the file "Mydata"

4. (a) A teacher provides **"http://www.publicschools.nic.in/staff.aspx"** to his/her students. Identify the URL & domain name. 1

(b) Expand the following terminologies: 2
(i) FTP (ii) SCP (iii) NFC (iv) IMAP

(c) The ABC Pvt Ltd has set up its new Branch at Jammu for its office and web based activities. It has 4 Wings of buildings as shown in the diagram: 4



Center to center distances between various blocks

Wing X to Wing Z	50m
Wing Z to Wing Y	70m
Wing Y to Wing X	125m
Wing Y to Wing U	80m
Wing X to Wing U	175m
Wing Z to Wing U	90m

Number of Computers

Wing X	50
Wing Z	30
Wing Y	150
Wing U	15

(i) Suggest a most suitable connection between the Wings, and topology.
(ii) Suggest the most suitable place (i.e. Wing) to house the server of this organization with a suitable reason, with justification.
(iii) Suggest the placement of the following devices with justification:
(1) Repeater (2) Hub/Switch
(iv) The organization is planning to link its head office situated in Delhi with the offices at Jammu. Suggest an economic way to connect it; the company is ready to compromise on the speed of connectivity. Justify your answer.

(d) How MAC address is different from IP address? Why IP address is needed? 2

(e) What is IoT? 1

(f) What is cloud? How a private cloud is different from public cloud? 2

(g) What is the use of traceroute and ping network tools? 2

(h) What is SIM? 1

5. (a) What is MVT in respect of Django Framework? 1

(b) Which module needs to be imported from making MySQL connectivity with python? 1

(c) What is the difference between flat file and csv file? 1

(d) What are aggregate functions in SQL? Give examples? 2

(e) How is having clause different from where clause? Explain with help of an example. 2

(f) Consider the following table names EXAM with details of marks. Rite command of MySQl for (i) to (iv) and output for (v) to (viii). 8

Table EXAM

Adno	SName	Percentage	Clsection	Stream
R001	Sushant	90.2	12A	Science
R002	Vaidyanath	80.5	12B	Humanities
R003	Miara	68.9	12B	Science
R004	Niara	96.0	12A	Commerce
R005	Shinjini	88.9	12D	Commerce

(i) To display all information of the students of humanities in descending order of percentage.
(ii) To display Adno, Name, Percentage and Stream of those students whose name starts with S and ends with t.
(iii) To display SName, Percentage, Clsection of students who have highest percentage in each stream.
(iv) To display details of students who have Percentage in range of 80 and 90(both inclusive) in decreasing order of Percentage.
(v) SELECT COUNT(*) FROM EXAM;
(vi) SELECT Sname, Percentage FROM EXAM WHERE Name LIKE “N%”;
(vii) SELECT ROUND(Percentage,0) FROM EXAM WHERE Adno=”R005”;
(viii) SELECT DISTINCT Clsection FROM EXAM.

6. (a) What is plagiarism? 1

(b) What is Creative Commons and GPL? 2

(c) What is open source and open data? 2

(d) What is E-waste management? 1

(e) What is cyber forensics? 1

(f) What is Identity theft? 1

(g) What is Gender and disability issues while teaching and using computers? 2

#Brain Teasers- Project for conducting quiz

'''
Before creating and executing the code, create the required database and the associated table for MySQL as shown below:
.....
create database brain_teaser;
use brain_teaser;
create table question(qid int(4) primary key, question varchar(500) not null,op1 varchar(100) not null,op2 varchar(100) not null,op3 varchar(100),op4 varchar(100),ans varchar(100) not null);
'''

```
import sys
import mysql.connector
import random
mydb=mysql.connector.connect(host="localhost", user="root", password="",
                                        database="brain_teaser")
mycursor=mydb.cursor()

# Function definition for Home screen
def Home():
    f=1
    while f!=3:
        print("Welcome to Quiz")
        print("**********")
        print("1. Enter Questions")
        print("2. Take Quiz")
        print("3. Exit")
        f=int(input("Enter your choice: "))
        if f == 1:
            Question()
        elif f == 2:
            Quiz()
        elif f == 3:
            print("Exiting the Quiz")
            mycursor.close()
            mydb.close()
            sys.exit()
        else:
            Home()
```

```
def Question():
    ch='Y'
    while ch=='Y' or ch=='y':
      print("Welcome to Question Portal")
      print("**********************")
      q=input("Enter the question :")
      op1=input("Enter the option 1 :")
      op2=input("Enter the option 2 :")
      op3=input("Enter the option 3 :")
      op4=input("Enter the option 4 :")
      ans=0
      while ans == 0:
            op=int(input("Which option is correct answer (1,2,3,4) :"))
          if op==1:
             ans=op1
          elif op==2:
             ans=op2
           elif op==3:
             ans=op3
           elif op==4:
             ans=op4
          else:
             print("Please choose the correct option as answer")
       mycursor.execute("Select * from question")
       data=mycursor.fetchall()
       qid=(mycursor.rowcount)+1
       mycursor.execute("Insert into question values
                          (%s,%s,%s,%s,%s,%s,%s)",(qid,q,op1,op2,op3,op4,ans))
      mydb.commit()
      ch=input("Question added successfully. Do you want to add more (Y/N)")
      Home()


# Function definition for Quiz
def Quiz():
      print("Welcome to Quiz portal")
      print("**********************")
      mycursor.execute("Select * from question")
      data=mycursor.fetchall()
```

```
name=input("Enter your name :")
rc=mycursor.rowcount
noq=int(input("Enter the number of questions to attempt (max %s):"%rc))
l=[]
while len(l) != noq:
    x=random.randint(1,rc)
    if l.count(x)>0:
        l.remove(x)
    else:
        l.append(x)
        print("Quiz has started")
        c=1
        score = 0
        for i in range(0,len(l)):
            mycursor.execute("Select * from question where qid=%s",(l[i],))
            ques=mycursor.fetchone()
            print("---------------------------------------------------------------------------------------------")
            print("Q.",c,":
                ",ques[1],"\nA.",ques[2],"\t\tB.",ques[3],"\nC.",ques[4],"\t\tD.",ques[5])
            print("---------------------------------------------------------------------------------------------")
            c += 1
        ans=None
        while ans==None:
            choice=input("Answer (A,B,C,D) :")
            if choice=='A' or choice=='a':
                ans=ques[2]
            elif choice=='B' or choice=='b':
                ans=ques[3]
            elif choice=='C' or choice=='c':
```

```
                ans=ques[4]
            elif choice=='D' or choice=='d':
                ans=ques[5]
            else:
                print("Kindly select A,B,C,D as option only")
                if ans==ques[6]:
                    print("Correct")
                    score=score+1
                else:
                    print("Incorrect.. Correct answer is :",ques[6])
        print("Quiz has ended !! Your final score is :",score)
        input("Press any key to continue")

Home()
```