General Instructions:

1. You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and the teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully. **Evaluation is a 10 -12 days mission for all of us. Hence, it is necessary that you put in your best efforts in this process.**

2. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating answers which are based on the latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them.**

3. The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.

4. If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled.

5. If a question does not have any parts, marks must be awarded in the left hand margin and encircled.

6. If a student has attempted an extra question, the answer of the question deserving more marks should be retained and the other answer scored out.

7. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.

8. A full scale of marks 70 (example: 1-70) has to be used. Please do not hesitate to award full marks if the answer deserves it.

9. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 25 answer books per day.

10. Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
    a. Leaving the answer or part thereof unassessed in an answer book.
    b. Giving more marks for an answer than assigned to it.
    c. Wrong transfer of marks from the inside pages of the answer book to the title page.
    d. Wrong question wise totaling on the title page.
    e. Wrong totaling of marks of the two columns on the title page.
    f. Wrong grand total.
    g. Marks in words and figures not tallying.
    h. Wrong transfer of marks from the answer book to online award list.
    i. Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answers.)
    j. Half or a part of the answer marked correct and the rest as wrong, but no marks awarded.

11. While evaluating the answer books, if the answer is found to be totally incorrect, it should be marked as (X) and awarded zero (0) Marks.

12. Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.

13. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.

14. Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.

15. The Board permits candidates to obtain a photocopy of the Answer Book on request in an RTI application and also separately as a part of the re-evaluation process on payment of the processing charges.

Specific Instructions:

1.   This question paper contains two parts- Part A and B. Each part is compulsory.

2.   Both Part A and Part B have choices.

3.   Part-A has 2 sections:

   a. Section – I is short answer questions, to be answered in one word or one line.
   b. Section – II has two case studies questions. Each case study has 5 case-based sub parts. An examinee is to attempt any 4 out of the 5 subparts.

4.   Part - B is Descriptive Paper.

5.   Part- B has three sections

   a. Section-I is short answer questions of 2 marks each in which two questions have internal options.
   b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
   c. Section-III is very long answer questions of 5 marks each in which one question has an internal option.

6. All programming questions are to be answered using Python Language only

- All programming questions have to be answered with respect to Python only
- In Python, ignore case sensitivity for identifiers (Variable / Functions)
- In Python indentation is mandatory, however, the number of spaces used for indenting may vary
- In SQL related questions – both ways of text/character entries should be acceptable for Example: "AMAR" and 'amar' both are acceptable.
- In SQL related questions – all date entries should be acceptable for Example: 'YYYY-MM-DD', 'YY-MM-DD', 'DD-Mon-YY', "DD/MM/YY", 'DD/MM/YY', "MM/DD/YY", 'MM/DD/YY' and {MM/DD/YY} are correct.
- In SQL related questions – semicolon should be ignored for terminating the SQL statements
- In SQL related questions, ignore case sensitivity.

PART - A Section I
Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

1		Which of the following options is/are not Python Keywords ?
		    (A) `False`
		    (B) `Math`
		    (C) `WHILE`
		    (D) `break`
			1

Ans		(B) `Math` (C) `WHILE`	
		(½ Mark for writing each correct option)	

2		Given the dictionary D={'Rno': 1, 'Name':'Suraj'}, write the output of `print(D('Name'))`.	1

Ans		`TypeError`
		OR
		`Suraj`	

		(1 Mark for mentioning Error) *OR* *(1 Mark for writing the correct output as it should have been* `print(D['Name'])` or `print(D.get('Name'))`*)*	
3		Identify the statement(s) from the following options which will raise TypeError exception(s) : (A) `print('5' * 3)` (B) `print( 5 * 3)` (C) `print('5' + 3)` (D) `print('5' + '3')`	1
Ans		(C) `print('5' + 3)`	
		(1 Mark for writing the correct option)	
4		Identify the valid relational operator(s) in Python from the following :	1
		(A) = (B) < (C) <> (D) `not`	
Ans		(B) <	
		(1 Mark for writing the correct option)	
5		For a string S declared as `S = 'PYTHON'`, which of the following is incorrect?	1
		(A) `N=len(S)` (B) `T = S` (C) `'T' in S` (D) `S[0] = 'M'`	
Ans		(D) `S[0] = 'M'`	
		(1 Mark for writing the correct option)	
6		Write a single line statement in Python to assign the values `'BLUE'`, `'GREEN'`, `'RED'` to a tuple named `Colours`.	1
Ans		`Colours = ('BLUE', 'GREEN', 'RED')`	
		(1 Mark for writing the correct statement)	
7		A List is declared as `L = ['ONE', 'TWO', 'THREE' ]` What will be the output of the statement? `print(max(L))`	1

Ans		**TWO**	
		(1 Mark for writing the correct output)	
8		Write the name of the built-in function / method of the **math module** which when executed upon 5.8 as parameter, would return the nearest smaller integer 5.	1

Ans		`floor()`
		OR
		`math.floor()`	

		(1 Mark for writing the correct method name)	

9		In context of Communication Networks which of the following is correct expansion for the abbreviation PAN :
		    (A) Prime Area Network
		    (B) Post Application Network
		    (C) Picture Application Network
		    (D) Personal Area Network
			1

Ans		(D) Personal Area Network	
		(1 Mark for writing the correct option)	

10		In context of Cyber Crimes and Cyber Thefts the term IPR refers to :
		    (A) Internet Protocol Rights
		    (B) Inter Personnel Rights
		    (C) Intellectual Property Rights
		    (D) Individual Property Rights
			1

Ans		(C) Intellectual Property Rights	
		(1 Mark for writing the correct option)	
11		In SQL, write the name of the aggregate function which will display the cardinality of a table.	1

Ans		`count(*)`
		OR
		`count`	

		(1 Mark for writing the correct function name)	

12		Which of the following clauses in SQL is most appropriate to use to select matching tuples in a specific range of values ?
		    (A) `IN`
		    (B) `LIKE`
		    (C) `BETWEEN`
		    (D) `IS`
			1

Ans		(C) `BETWEEN`	
		(1 Mark for writing the correct option)	

13		Which of the following is not a valid datatype in SQL ? 　　(A) **DATE** 　　(B) **STRING** 　　(C) **DECIMAL** 　　(D) **CHAR**	1
Ans		(B) **STRING**	
		(1 Mark for writing the correct option)	
14		Which of the following is not a valid DML command in SQL ? 　　(A) **INSERT** 　　(B) **UPDATE** 　　(C) **ALTER** 　　(D) **DELETE**	1
Ans		(C) **ALTER**	
		(1 Mark for writing the correct option)	
15		Which of the following wireless transmission medium is best suited for MAN ? 　　(A) Microwave 　　(B) Radio Link 　　(C) Infrared 　　(D) Bluetooth	1
Ans		(A) Microwave 　　OR 　　(B) Radio Link	
		(1 Mark for writing any one or both of the options)	
16		Which of the following is/are immutable object types in Python ? 　　(A) List 　　(B) String 　　(C) Tuple 　　(D) Dictionary	1
Ans		(B) String 　　(C) Tuple	
		(½ Mark for writing each correct option)	

17		What shall be the output for the execution of the following Python Code ?
		`Cities = ['Delhi', 'Mumbai']`
		`Cities[0], Cities[1] = Cities[1], Cities[0]`
		`print(Cities)`
			1

Ans		`['Mumbai', 'Delhi']`	
		(1 Mark for writing the correct output)	

18		Which of the following commands in SQL is used to add a new record into a table ?
		     (A) `ADD`
		     (B) `INSERT`
		     (C) `UPDATE`
		     (D) `NEW`
			1

Ans		(B) `INSERT`	
		(1 Mark for writing the correct option)	

19		Which of the following is the correct expansion of DML in context of SQL ?
		     (A) Direct Machine Language
		     (B) Data Mixing Language
		     (C) Distributed Machine Language
		     (D) Data Manipulation Language
			1

Ans		(D) Data Manipulation Language	
		(1 Mark for writing the correct option)	

20		Which of the following statements correctly explains the term **Firewall** in context of Computer Network Society ?
		     (A) A device that protects the computer network from catching fire.
		     (B) A device/software that controls incoming and outgoing network traffic.
		     (C) Using abusive language on a social network site.
		     (D) Stealing someone's text and submitting it as his/her own work.
			1

Ans		(B) A device/software that controls incoming and outgoing network traffic.	
		(1 Mark for writing the correct option)	

21		Which of the following protocols allows use of HTML on the World Wide Web
		     (A) HTTP
		     (B) PPP
		     (C) FTP
		     (D) POP
			1

Ans		(A) HTTP	
		(1 Mark for writing the correct option)	

Section II

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark

22		Anmol maintains that database of Medicines for his pharmacy using SQL to store the data. The structure of the table PHARMA for the purpose is as follows:
		● **Name of the table – `PHARMA`**
		● **The attributes of `PHARMA` are as follows:**
		`MID - numeric`
		`MNAME – character of size 20`
		`PRICE - numeric`
		`UNITS – numeric`
		`EXPIRY - date`
			1

Table: **PHARMA**

MID	MNAME	PRICE	UNITS	EXPIRY
M1	PARACETAMOL	12	120	2022-12-25
M2	CETRIZINE	6	125	2022-10-12
M3	METFORMIN	14	150	2022-05-23
M4	VITAMIN B-6	12	120	2022-07-01
M5	VITAMIN D3	25	150	2022-06-30
M6	TELMISARTAN	22	115	2022-02-25

	(a)	Write the degree and cardinality of the table **PHARMA**.	1
Ans		Degree = 5 Cardinality = 6	
		(½ Mark for writing correct value of Degree) *(½ Mark for writing correct value of Cardinality)*	
	(b)	Identify the attribute best suitable to be declared as a primary key.	1
Ans		**MID** OR **MNAME**	
		(1 Mark for identifying correct Attribute Name as Primary Key)	
	(c)	Anmol has received a new medicine to be added into his stock, but for which he does not know the number of UNITS. So he decides to add the medicine without its value for UNIT. The rest of the values are as follows:	1

MID	MNAME	PRICE	EXPIRY
M7	SUCRALFATE	17	2022-03-20

Write the SQL command which Anmol should execute to perform the required task.

Ans		INSERT INTO PHARMA (MID, MNAME, PRICE, EXPIRY) VALUES ('M7', 'SUCRALFATE', 17,'2022-03-20');	
		(½ Mark for writing INSERT INTO PHARMA(MID, MNAME, PRICE, EXPIRY)*)* *(½ Mark for writing* VALUES('M7','SUCRALFATE',17,'2022-03-20')*)*	
	(d)	Anmol wants to change the name of the attribute UNITS to QUANTITY in the table PHARMA. Which of the following commands will he use for the purpose: (i) UPDATE (ii) DROP TABLE (iii) CREATE TABLE (iv) ALTER TABLE	1
Ans		(iv) ALTER TABLE	
		(1 Mark for writing the correct option)	
	(e)	Now Anmol wants to increase the PRICE of all medicines by 5. Which of the following commands will he use for the purpose: (i) UPDATE SET (ii) INCREASE BY (iii) ALTER TABLE (iv) INSERT INTO	1
Ans		(i) UPDATE SET	
		(1 Mark for writing the correct option)	
23		Roshni of class 12 is writing a program in Python for her project work to create a csv file "Teachers.csv" which will contain information for every teacher's Identification Number, Name for some entries. She has written the following code. However she is unable to figure out the correct statements in a few lines of the code, hence she has left them blank. Help her to write the statements correctly for the missing parts in the code.	
| | | ```
import _____                              # Line 1
def addrec(Idno, Name): # to add record into the CSV file
   f=open("Teachers.csv", _____)           # Line 2
   Filewriter = CSV.writer(f)
   Filewriter.writerow([Idno,name])
   f.close()
def readfile(): # to read the data from CSV file
   f=open("Teachers.csv", _____)             # Line 3
   FileReader = CSV._____ (f)                 # Line 4
   for row in FileReader:
     print(row)
   f._____                                  #Line 5
``` | |
| | (a) | Name the module she will import in Line 1. | 1 |

Ans		csv as CSV OR csv	
		(1 Mark for writing the correct module name)	
	(b)	In which mode will she open the file to add data into the file in Line 2 ?	1
Ans		a OR a+ OR append	
		(1 Mark for writing the correct file mode)	
	(c)	In which mode will she open the file to read the data from the file in Line 3 ?	1
Ans		r OR r+ OR read	
		(1 Mark for writing the correct file mode)	
	(d)	File in the blank in Line 4 to read the data from a CSV file.	1
Ans		reader OR Cannot interpret question	
		(1 Mark for writing the correct missing portion) *OR* *(1 Mark if mentioned that the question could not be interpreted)*	
	(e)	Fill in the blank in Line 5 to close the file.	1
Ans		close()	
		(1 Mark for writing the correct missing portion)	

		PART – B **Section I**	
24		Evaluate the following Python expressions:	2
	(a)	2 * 3 + 4 ** 2 – 5 // 2	
Ans		20	
		(1 Mark for writing the correct answer)	

	(b)	`6<12 and not (20 > 15) or (10 > 5)`	
		`True`	
		(1 Mark for writing the correct answer)	
25		What are cookies in a web browser? Write one advantage and one disadvantage of enabling cookies in a web browser.	2
Ans		A **cookie** is a small piece of information that a server sends to a client. When we visit a Web site with cookie capabilities, its server sends certain information about the visited website to our browser, which is stored on our hard drive as a text file and is called a cookie. **Advantage**: When we visit the same website again, the browser recognises it and makes browsing faster. **Disadvantage**: The file stored as a cookie can be exploited by hackers in retrieving our browsing habits and exploit it for their unlawful practices.	
		(1 Mark for writing the correct explanation of cookie) *(½ Mark for writing any one valid/correct advantage)* *(½ Mark for writing any one valid/correct disadvantage)*	
		OR Differentiate between the terms Domain Name and URL in context of web services. Also write one example of each to illustrate the difference.	
Ans		<table><tr><th>Domain Name</th><th>URL (Uniform Resource Locator)</th></tr><tr><td>Domain name is a textual form of an IP address, which is easy to remember It is the unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots (or periods). Example: **w3schools.com**, **microsoft.co.in**</td><td>URL is the complete web address required to find a particular web page or any page within the website. Domain name is a part of URL. For example, in the URL **"http://www.w3schools.com/html/default.asp"**, the domain name is **"w3schools.com"**</td></tr></table>	
		(1 Mark for writing any one valid difference between Domain Name & URL) *(½ Mark for writing the correct example of Domain Name)* *(½ Mark for writing the correct example of a URL)*	

26		Expand the following terms in context of Computer Networks:
		    (a) PPP
		    (b) VoIP
		    (c) GSM
		    (d) WLL
			2

Ans		(a) PPP - **Point-to-Point Protocol** (b) VoIP - **Voice over Internet Protocol** (c) GSM - **Global System for Mobile Communication** (d) WLL - **Wireless Local Loop**	
		(½ Mark for writing each correct expansion)	
27		Explain the use of positional parameters in a Python function with the help of a suitable example.	2
Ans		In such parameters the values in the parameters of the function call are assigned in the same sequence of the corresponding identifier(s) used in the parameter(s)/ argument(s) of the respective function's definition (i.e. from left to right). Example: ```def LEqn(x,y,a):` ` return x+a*y` `X1=int(input("X1:"))` `Y1=int(input("Y1:"))` `A1=int(input("A1:"))` `print(LEqn(X1,A1,Y1))`  `In the above example:` `value of X1 is passed to x, value of A1 is passed to y, value of` `Y1 is passed to a due to their corresponding positions.```	
		(2 mark for briefly explaining the concept of positional parameter with the help of a suitable example) *OR* *(1 mark if only the definition of positional parameter is written without any suitable example)*	
		OR Explain the use of a default parameter in a Python function with the help of a suitable example.	
Ans		Default parameter takes the default values when no argument/value is passed during the function call. Consider the following function definition and two function calls: ```def FUN(A,B=2):` ` print('A=',A,'B=',B)`  `FUN(3,5) # Output will be: A=3 B=5` `FUN(3) # Output will be: A=3 B=2` In the second call, when no value was passed for B, B takes its default value.```	
		(2 mark for briefly explaining the concept of default parameter with the help of a suitable example) *OR* *(1 mark if only the definition of default parameter is written without any suitable example)*	

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

```
Runs = ( 10, 5, 0, 2, 4, 3 )
for I in Runs:
  if I=0:
      print (Maiden Over)
else
      print(Not Maiden)
```

Ans		Corrected Code:	

```
Runs = (10, 5, 0, 2, 4, 3)
for I in Runs:
    if I==0:                  # Correction 1
        print('Maiden Over')  # Correction 2
    else :                    # Correction 3, 4
        print('Not Maiden')   # Correction 5
```

(½ mark each for any 4 correction)
(Deduct only ½ mark if the corrections are not underlined)

29		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 and minimum value that can be assigned to the variable R when K is assigned value as 2.	2

```
import random

Signal = [ 'Stop', 'Wait',  'Go' ]
for K in range(2, 0, -1):
  R = randrange(K)
  print (Signal[R], end = ' # ')
```

```
    (a)  Stop # Wait # Go #
    (b)  Wait # Stop #
    (c)  Go # Wait #
    (d)  Go # Stop #
```

Ans			

```
    (b) Wait # Stop #

Maximum value of R = 1
Minimum value of R = 0
```
OR
```
randrange() raises NameError
```

(1 Mark for writing the correct option)
(½ Mark for writing the correct Maximum value of R)
(½ Mark for writing the correct Minimum value of R)
OR
(Full 2 Marks for mentioning Error)

30		What are Tuples in a SQL Table? Write a suitable example with a SQL Table to illustrate your answer.	2
Ans		A tuple in a SQL table is a row of related data which represents or describes an item (or record). It is a horizontal subset of the Table.	

TNO	NAME	START	END
T1	RAVI KUMAR	DELHI	MUMBAI
T2	NISHANT JAIN	DELHI	KOLKATA
T3	DEEPAK PRAKASH	MUMBAI	PUNE

In the above table, we have 3 Tuples:
T1, RAVI KUMAR, DELHI, MUMBAI
T2, NISHANT JAIN, DELHI, KOLKATA
T3, DEEPAK PRAKASH, MUMBAI, PUNE

(1 Mark for writing the correct explanation for Tuple)
(1 Mark for writing the correct example of Tuple)

31		For the following SQL Table named **PASSENGERS** in a database **TRAVEL**:	2

TNO	NAME	START	END
T1	RAVI KUMAR	DELHI	MUMBAI
T2	NISHANT JAIN	DELHI	KOLKATA
T3	DEEPAK PRAKASH	MUMBAI	PUNE

A cursor named **Cur** is created in Python for a connection of a host which contains the database **TRAVEL**. Write the output for the execution of the following Python statements for the above SQL Table **PASSENGERS**:

```
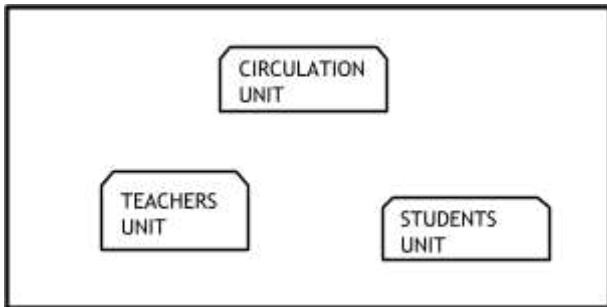Cur.execute('USE TRAVEL')
Cur.execute('SELECT * FROM PASSENGERS')
Recs=Cur.fetchall()
for R in Recs:
   print(R[1])
```

Ans		``` RAVI KUMAR NISHANT JAIN DEEPAK PRAKASH ```	

(½ mark for each line of correct output)
(½ mark for displaying the 3 lines of output in different lines)

32		Write the names of any two constraints and their respective uses in SQL.	2
Ans		**(Any 2 from the following OR any other correct constraint name with usage)** PRIMARY KEY - Uniquely identifies each row/record in a database table. UNIQUE - Ensures that all values in a column are different. NOT NULL - Ensures that a column cannot have NULL value. DEFAULT - Provides a default value for a column when none is specified. CHECK - ensures that all the values in a column satisfies certain conditions.	

		(½ Mark for writing each of the two correct constraint names) *(½ Mark each for writing correct usage of the two constraints)*	
33		Write the output for the execution of the following Python code:	2
| | | ```python
def change(A):
   S=0
   for i in range(len(A)//2):
      S+=(A[i]*2)
   return S
B = [10,11,12,30,32,34,35,38,40,2]
C = Change(B)
Print('Output is',C)
``` | |
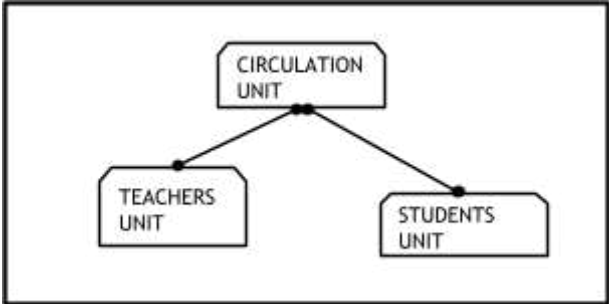| Ans | | ```
Output is 190
OR
NameError for Change()
NameError for Print()
``` | |
		(2 Mark for writing the correct output) *OR* *(2 Mark for mentioning Error)*	
		Section ll	

34		Write the definition of a function `Sum3(L)` in Python, which accepts a list `L` of integers and displays the sum of all such integers from the list `L` which end with the digit `3`.
		For example, if the list `L` is passed
		`[ 123, 10, 13, 15, 23]`
		Then the function should display the sum of `123`, `13`, `23` i.e. `159` as follows:
		`Sum of integers ending with digit 3 = 159`
			3
| Ans | | ```python
def Sum3(L):
   Sum = 0
   for I in L:
      if I%10 == 3:
         Sum += I
   print('Sum of integers ending with digit 3 =', Sum)
``` | |
| | | *(½ mark for the function header)*
(½ mark for initialising the variable Sum (or similar))
(½ mark for the traversal loop)
(½ mark for checking the unit digit 3)
(½ mark for adding the correct number)
(½ mark for displaying the output) | |

35		Write the definition of a function **ChangeGender()** in Python , which reads the contents of a text file "**BIOPIC.TXT**" and displays the content of the file with every occurrence of the word '**he**' replaced by '**she**'. For example, if the content of the file "**BIOPIC.TXT**" is as follows: **Last time he went to Agra,** **there was too much crowd, which he did not like.** **So this time he decided to visit some hill station.** The function should read the file content and display the output as follows: **Last time she went to Agra,** **there was too much crowd, which she did not like.** **So this time she decided to visit some hill station.**	3

Ans		```\ndef ChangeGender():\n f=open("BIOPIC.TXT",'r')\n Text=f.read()\n print(Text.replace(' he ',' she '))\n f.close()\n```
		
		OR
		
		```\ndef ChangeGender():\n with open ('BIOPIC.TXT', 'r') as File:\n Lines = File.readlines()\n for L in Lines:\n Words = L.split()\n for W in Words:\n if W == 'he' :\n W = 'she'\n print(W, end = ' ')\n print()\n```	

		(1 Mark for correctly opening the text file) *(1 Mark for correctly reading the file - Any method)* *(½ Mark for correctly search and replace the word 'he' with 'she')* *(½ Mark for correctly displaying the modified contents with the replacements)*	
		OR Write the definition of a function **Count_Line()** in Python, which should read each line of a text file "**SHIVAJI.TXT**" and count total number of lines present in text file. For example, if the content of the file "SHIVAJI.TXT" is as follows : **Shivaji was born in the family of Bhonsle.** **He was devoted to his mother Jijabai.** **India at that time was under Muslim rule.** The function should read the file content and display the output as follows : **Total number of lines : 3**	

Ans		```def Count_Line(): with open ('SHIVAJI.TXT', 'r') as File: Lines = File.readlines() print('Total number of lines :', len(Lines)) OR def Count_Line(): f=open("SHIVAJI.TXT",'r') Lines=f.readlines() print('Total number of lines :',len(Lines)) f.close()```	
		(1 Mark for correctly opening the text file) *(1 Mark for reading all lines from the file - Any method)* *(1 Mark for correctly displaying the total number of lines)*	
36		Write the outputs of the SQL queries (i) to (iii) based on the relations **CUSTOMER** and **TRANSACTION** given below:	3

Table : **CUSTOMER**

ACNO	NAME	GENDER	BALANCE
C1	RISHABH	M	15000
C2	AAKASH	M	12500
C3	INDIRA	F	9750
C4	TUSHAR	M	14600
C5	ANKITA	F	22000

Table : **TRANSACTION**

ACNO	TDATE	AMOUNT	TYPE
C1	2020-07-21	1000	DEBIT
C5	2019-12-31	1500	CREDIT
C3	2020-01-01	2000	CREDIT

	(i)	```SELECT MAX(BALANCE), MIN(BALANCE)FROM CUSTOMER WHERE GENDER = 'M';```	
Ans		MAX(BALANCE) MIN(BALANCE) 15000 12500	
		(½ Mark for writing each correct value - with or without column heading)	
	(ii)	```SELECT SUM(AMOUNT), TYPE FROM TRANSACTION GROUP BY TYPE;```	
Ans		SUM(AMOUNT) TYPE 3500 CREDIT 1000 DEBIT	

		(½ Mark for writing each correct line of output - with or without column heading)	
| | (iii) | ```
SELECT NAME, TDATE, AMOUNT
FROM CUSTOMER C, TRANSACTION T
WHERE C.ACNO = T.ACNO AND TYPE = 'CREDIT';
``` | |
Ans		**NAME**　　　　**TDATE**　　　　**AMOUNT** **ANKITA**　　　2019-12-31　　1500 **INDIRA**　　　2020-01-01　　2000	
		(½ Mark for writing each correct line of output - with or without column heading)	
37	(a)	Write the definition of a function **POP_PUSH(LPop, LPush, N)** in Python. The function should Pop out the last **N** elements of the list **LPop** and Push them into the list **LPush**. For example: If the contents of the list **LPop** are **[10, 15, 20, 30]** And value of **N** passed is **2**, then the function should create the list **LPush** as **[30, 20]** And the list **LPop** should now contain **[10, 15]** **NOTE:** If the value of **N** is more than the number of elements present in **LPop**, then display the message "**Pop not possible**".	3
| Ans | | ```
def POP_PUSH(LPop, LPush, N):
    if len(LPop)<N:
        print("Pop not possible")
    else:
        LPush.clear()      # ignore
        for i in range(N):
            LPush.append(LPop.pop())

OR
def POP_PUSH(LPop, LPush, N) :
  M = len(LPop)
  if M < N :
      print('Pop not possible')
  else :
      for I in range(N) :
        P = LPop.pop(M-1-I)
        LPush.append(P)
``` | |
| | | *(½ mark for checking underflow and printing "Pop not possible" in case of underflow)*
(½ mark for the loop)
(1 mark for popping elements from LPop)
(1 mark for appending popped elements into LPush) | |
| | | **OR** | |

	(b)	Write a function in Python **POPSTACK(L)** where **L** is a stack implemented by a list of numbers. The function returns the value deleted from the stack.	3
| Ans | | ```
def POPSTACK(L):
    if len(L)>0:
        return L.pop()
    else:
        return None


OR


def POPSTACK(L):
  return L.pop()
``` | |
| | | *(1 Mark for writing the correct function header)*
(1 Mark for popping out the last element from the list (Any method))
(1 Mark for returning the popped element) | |

Section - III			
38		A school library is connecting computers in its units in a LAN. The library has 3 units as shown in the diagram below:	5

		The three units are providing the following services:
		   1. **Teachers Unit :** For access of the Library Books by teachers
		   2. **Students Unit :** For access of the Library Books by Students
		   3. **Circulation Unit :** For issue and return of books for teachers and students
		
		Center to Center distances between the 3 units are as follows:
		   ● Circulation Unit to Teachers Unit - 20 metres
		   ● Circulation Unit to Students Unit - 30 metres
		   ● Teachers Unit to Students Unit - 10 metres
		
		Number of computers in each of the units is as follows:
		   ● Circulation Unit 15
		   ● Teachers Unit 10
		   ● Students Unit 10	

	(a)	Suggest the most suitable place (i.e. the Unit name) to install the server of this Library with a suitable reason.	

Ans		**Circulation Unit** **Reason:** It has maximum number of computers OR any other valid reason.	
		(½ Mark for writing the correct Unit Name) *(½ Mark for writing the correct reason)*	
	(b)	Suggest an ideal layout for connecting these Units for a wired connectivity.	
Ans		 OR Suggesting any other valid cable layout	
		(1 Mark for suggesting the correct connectivity layout)	
	(c)	Which device will you suggest to be installed and where should it be placed to provide Internet connectivity to all the Units.	
Ans		**Modem OR Router** **Placement :** Circulation Unit with the server	
		(½ Mark for writing the correct device name) *(½ Mark for writing the correct placement)*	
	(d)	Suggest the type of the most efficient and economical wired medium for connecting all the computers in the network.	
Ans		**CAT-6 Cable OR CAT-5 Cable OR Ethernet Cable**	
		(1 Mark for suggesting any one efficient and economical wired medium)	
	(e)	The university is planning to connect the Library with the School Principal's computer which is in his office at a distance of 50 metres. Which type of network out of LAN, MAN, or WAN will be used for the network? Justify your answer.	
Ans		**LAN** **Justification:** The office is located at a distance of merely 50 metres from the Library, which is within the geographical limits of a local area network.	
		(½ Mark for writing the correct network type) *(½ Mark for writing the correct Justification)*	

| 39 | | Write SQL statements for the following queries (i) to (v) based on the relations CUSTOMER and TRANSACTION given below: | 5 |

Table : **CUSTOMER**

ACNO	NAME	GENDER	BALANCE
C1	RISHABH	M	15000
C2	AAKASH	M	12500
C3	INDIRA	F	9750
C4	TUSHAR	M	14600
C5	ANKITA	F	22000

Table : **TRANSACTION**

ACNO	TDATE	AMOUNT	TYPE
C1	2020-07-21	1000	DEBIT
C5	2019-12-31	1500	CREDIT
C3	2020-01-01	2000	CREDIT

	(a)	To display all information about the **CUSTOMER**s whose NAME starts with '**A**'.	
Ans		`SELECT * FROM CUSTOMER WHERE NAME LIKE 'A%';`	
		(½ Mark for writing correct SELECT statement) *(½ Mark for writing correct WHERE clause)*	
	(b)	To display the **NAME** and **BALANCE** of Female CUSTOMERs (with **GENDER** as '**F**') whose **TRANSACTION** Date (**TDATE**) is in the year **2019**.	
Ans			

```
SELECT NAME, BALANCE FROM CUSTOMER C, TRANSACTION T
WHERE C.ACNO=T.ACNO
AND GENDER='F' AND TDATE LIKE '2019%';

OR


SELECT NAME, BALANCE FROM CUSTOMER C, TRANSACTION T
WHERE C.ACNO=T.ACNO
AND GENDER='F' AND TDATE>='2019-01-01' AND TDATE<='2019-12-31';

OR

SELECT NAME, BALANCE FROM CUSTOMER, TRANSACTION
WHERE CUSTOMER.ACNO=TRANSACTION.ACNO
AND GENDER='F' AND TDATE LIKE '2019%';

OR


SELECT NAME, BALANCE FROM CUSTOMER, TRANSACTION
WHERE CUSTOMER.ACNO=TRANSACTION.ACNO
AND GENDER='F' AND TDATE>='2019-01-01' AND TDATE<='2019-12-31';
```

		(½ Mark for writing correct SELECT statement) *(½ Mark for writing correct WHERE clause)*		
	(c)	To display the total number of **CUSTOMER**s for each **GENDER**.		
Ans		`SELECT GENDER, COUNT(*) FROM CUSTOMER GROUP BY GENDER;`		
		(½ Mark for writing correct SELECT statement) *(½ Mark for writing correct GROUP BY clause)*		
	(d)	To display the **CUSTOMER NAME** and **BALANCE** in ascending order of **GENDER**.		

Ans		`SELECT NAME, BALANCE FROM CUSTOMER`
		`ORDER BY GENDER ;`
		
		OR
		
		`SELECT NAME, BALANCE FROM CUSTOMER`
		`ORDER BY GENDER ASC;`		

		(½ Mark for writing correct SELECT statement) *(½ Mark for writing correct ORDER BY clause)*		
	(e)	To display **CUSTOMER NAME** and their respective **INTEREST** for all **CUSTOMER**s where **INTEREST** is calculated as **8%** of **BALANCE**.		

Ans		`SELECT NAME, 0.08 * BALANCE INTEREST FROM CUSTOMER;`
		
		OR
		
		`SELECT NAME, 0.08 * BALANCE AS INTEREST FROM CUSTOMER;`		

		(½ Mark for writing correct SELECT statement) *(½ Mark for writing correct WHERE clause)* *NOTE:* `"INTEREST"` *may be written within quotes (single or double).*		
40		A binary file "**PLANTS.dat**" has structure **(ID, NAME, PRICE)**. ● Write the definition of a function **WRITEREC()** in Python, to input data for records from the user and write them to the file **PLANTS.dat**. ● Write the definition of a function **SHOWHIGH()** in Python, which reads the records of **PLANTS.dat** and displays those records for which the **PRICE** is more than **500**.	5	
| Ans | | ```python
import pickle
def WRITEREC():
    f = open("PLANTS.dat","wb") # OR "ab"
    data_log = []
    while True:
        ID = int(input("Enter ID:"))
        NAME = input("Enter Name:")
        PRICE = float(input("Enter Price:"))
        data_log.append([ID,NAME,PRICE])
        Choice=input("Do you want to add more? (Yes/No) : ")
        if Choice[0].lower()=='n':
            break
    pickle.dump(data_log,f)
    f.close()
``` | | |

```
def SHOWHIGH():
    f = open("PLANTS.dat","rb")
    try:
        while True:
            data= pickle.load(f)
            for record in data:
                if record[2]>500:
                    print("ID:",record[0])
                    print("Name:",record[1])
                    print("Price:",record[2])
                    print()
    except:
        f.close()
```

OR

```
import pickle
def WRITEREC() :
  with open ('PLANTS.DAT', 'wb') as FW :
    while True :
      ID = input('Enter ID : ')
      NAME = input('Enter NAME : ')
      PRICE = input('Enter PRICE : ')
      pickle.dump([ID, NAME, PRICE])
      More = input('More records (Y/N) ? ')
      if More in ['n', 'N'] :
        break

def SHOWHIGH()  :
  with open ('PLANTS.DAT', 'rb') as FR :
    CR = pickle.load(FR)
    for R in CR:
      if int(R[2]) > 500 :
        print(R)
```

(½ Mark for correctly opening the PLANTS.dat file to write/append)
(½ Mark for correctly inputting data from the user)
(1 Mark for correctly writing the input data as a record into the file)
(½ Mark for writing correct loop to add more records till user wants)

(½ Mark for correctly opening the PLANTS.dat file to read)
(1 Mark for correctly loading the the file)
(½ Mark for correctly checking each record price > 500)
(½ Mark for displaying the validated record)

		OR A binary file "**PATIENTS.dat**" has structure **(PID, NAME, DISEASE)**. Write the definition of a function **countrec()** in Python that would read contents of the file "**PATIENTS.dat**" and display the details of those patients who have the **DISEASE** as 'COVID-19'. The function should also display the total number of such patients whose **DISEASE** is 'COVID-19'.	
Ans		(see code below)	

```
import pickle
def countrec():
  with open ('PATIENTS.DAT', 'rb') as FR :
      CR = pickle.load(FR)
      N=0
      for R in CR:
        if (R[2]) == 'COVID-19' :
            print(R)
            N += 1
      print('Total number of Covid-19 Patients = ', N)
```
OR
```
import pickle
def countrec():
    f = open("PATIENTS.dat","rb")
    N=0
    try:
        while True:
            data= pickle.load(f)
            for record in data:
                if record[2]=='COVID-19':
                    print("PID:",record[0])
                    print("NAME:",record[1])
                    print("DISEASE:",record[2])
                    N += 1
    except:
        f.close()
    print('Total number of Covid-19 Patients = ', N)
```

(½ mark for opening the file in correct mode)
(½ mark for initialising the Counter Identifier)
(1 mark for reading the binary file)
(1 mark for the traversal loop)
(½ mark for checking the COVID-19 condition)
(½ mark for displaying the matched records)
(½ mark for incrementing the Counter Identifier)
(½ mark for displaying the final value of the Counter Identifier)