2021 – BOARD QUESTION PAPER

Series 3HKP3Б/C

SET~4

Code No. 91

Roll No.

Candidates must write the Code on the title page of the answer-book.

NOTE :

*(i) Please check that this question paper contains **13** printed pages.*

(ii) Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

*(iii) Please check that this question paper contains **40** questions.*

(iii) Please write down the serial number of the question in the answer-book before attempting it.

(iv) 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

COMPUTER SCIENCE (NEW)

Time allowed : 3 hours *Maximum Marks : 70*

General Instructions :

(i) *This question paper contains **two** parts — Part **A** and **B**. Each part is compulsory.*

(ii) *Both Part A and Part B have choices.*

(iii) *Part A has **two** sections :*

a. Section I is short answer questions, to be answered in one word or one line.

*b. Section II has **two** case study-based questions. Each case study has 5 case-based subparts. An examinee is to attempt any **4** out of the 5 subparts.*

(iv) *Part B is Descriptive Paper.*

(v) *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.*

(vi) *All programming questions are to be answered using Python Language only.*

PART A
Section I

*Select the most appropriate option out of the options given for each question. Attempt any **15** questions from questions no. **1** to **21**.*

1. Which of the following options is/are ***not*** Python Keywords ? *1*

(A) `False`

(B) `Math`

(C) `WHILE`

(D) `break`

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

3. Identify the statement(s) from the following options which will raise TypeError exception(s) : *1*

(A) `print('5' * 3)`

(B) `print( 5 * 3)`

(C) `print('5' + 3)`

(D) `print('5' + '3')`

4. Identify the valid relational operator(s) in Python from the following : *1*

(A) `=`

(B) `<`

(C) `<>`

(D) `not`

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'`

6. Write a single line statement in Python to assign the values `'BLUE', 'GREEN', 'RED'` to a tuple named `Colours`. *1*

7. A List is declared as `L = ['ONE', 'TWO', 'THREE']`
What will be the output of the statement ? *1*
`print(max(L))`

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*

9. In context of Communication Networks, which of the following is the correct expansion for the abbreviation PAN : *1*

(A) Prime Area Network

(B) Post Application Network

(C) Picture Application Network

(D) Personal Area Network

10. In context of Cyber Crimes and Cyber Thefts, the term IPR refers to : *1*

(A) Internet Protocol Rights

(B) Inter Personnel Rights

(C) Intellectual Property Rights

(D) Individual Property Rights

11. In SQL, write the name of the aggregate function which will display the cardinality of a table. *1*

12. Which of the following clauses in SQL is most appropriate to use to select matching tuples in a specific range of values ? *1*

(A) `IN`

(B) `LIKE`

(C) `BETWEEN`

(D) `IS`

13. Which of the following is ***not*** a valid datatype in SQL ? *1*

(A) **DATE**

(B) **STRING**

(C) **DECIMAL**

(D) **CHAR**

14. Which of the following is ***not*** a valid DML command in SQL ? *1*

(A) **INSERT**

(B) **UPDATE**

(C) **ALTER**

(D) **DELETE**

15. Which of the following wireless transmission media is best suited for MAN ? *1*

(A) Microwave

(B) Radio Link

(C) Infrared

(D) Bluetooth

16. Which of the following is/are immutable object type(s) in Python ? *1*

(A) List

(B) String

(C) Tuple

(D) Dictionary

17. What shall be the ouput for the execution of the following Python Code ? *1*

```
Cities = ['Delhi', 'Mumbai']
Cities[0], Cities[1] = Cities[1], Cities[0]
print(Cities)
```

18. Which of the following commands in SQL is used to add a new record into a table ? *1*

(A) **ADD**

(B) **INSERT**

(C) **UPDATE**

(D) **NEW**

19. Which of the following is the correct expansion of DML in context of SQL ? *1*

(A) Direct Machine Language

(B) Data Mixing Language

(C) Distributed Machine Language

(D) Data Manipulation Language

20. Which of the following statements correctly explains the term Firewall in context of Computer Network Society ? *1*

(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.

21. Which of the following protocols allows the use of HTML on the World Wide Web ? *1*

(A) HTTP

(B) PPP

(C) FTP

(D) POP

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
```

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*

(b) Identify the attribute best suitable to be declared as a primary key. *1*

(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 UNITS. The rest of the values are as follows :

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

Write the SQL command which Anmol should execute to perform the required task. *1*

(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 ? *1*

(i) **UPDATE**

(ii) **DROP TABLE**

(iii) **CREATE TABLE**

(iv) **ALTER TABLE**

(e) Now Anmol wants to increase the PRICE of all medicines by 5. Which of the following commands will he use for the purpose ? *1*

(i) **UPDATE SET**

(ii) **INCREASE BY**

(iii) **ALTER TABLE**

(iv) **INSERT INTO**

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*

(b) In which mode will she open the file to add data into the file in Line 2 ? *1*

(c) In which mode will she open the file to read the data from the file in Line 3 ? *1*

(d) File in the blank in Line 4 to read the data from a CSV file. *1*

(e) Fill in the blank in Line 5 to close the file. *1*

PART B

Section I

24. Evaluate the following Python expressions : *2*

(a) `2 * 3 + 4 ** 2 – 5 // 2`

(b) `6 < 12 and not (20 > 15) or (10 > 5)`

25. (a) What are cookies in a web browser ? Write one advantage and one disadvantage of enabling cookies in a web browser. *2*

OR

(b) Differentiate between the terms Domain Name and URL in context of web services. Also write one example of each to illustrate the difference. *2*

26. Expand the following terms in context of Computer Networks : *2*

(a) PPP

(b) VoIP

(c) GSM

(d) WLL

27. (a) Explain the use of positional parameters in a Python function with the help of a suitable example. *2*

OR

(b) Explain the use of a default parameter in a Python function with the help of a suitable example. *2*

28. Rewrite the following code in Python after removing all syntax error(s) : *2*

Underline each correction done in the code.

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

29. What possible output(s) is/are expected to be displayed on the 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 #**

30. What are Tuples in a SQL Table ? Write a suitable example with a SQL Table to illustrate your answer. *2*

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

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:** *2*

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

32. Write the names of any two constraints and their respective uses in SQL. *2*

33. Write the output for the execution of the following Python code : *2*

```
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)
```

Section II

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**. *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

35. (a) 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 : *3*

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.

OR

(b) 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 : *3*

```
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
```

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';
```

(ii)
```
SELECT SUM(AMOUNT), TYPE FROM TRANSACTION
GROUP BY TYPE;
```

(iii)
```
SELECT NAME, TDATE, AMOUNT
FROM CUSTOMER C, TRANSACTION T
WHERE C.ACNO = T.ACNO AND TYPE = 'CREDIT';
```

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 : *3*

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".**

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*

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

Centre to Centre 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.

(b) Suggest an ideal layout for connecting these Units for a wired connectivity.

(c) Which device will you suggest to be installed and where should it be placed to provide Internet connectivity to all the Units ?

(d) Suggest the type of the most efficient and economical wired medium for connecting all the computers in the network.

(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.

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'**.

(b) To display the **NAME** and **BALANCE** of Female **CUSTOMER**s (with **GENDER** as **'F'**) whose **TRANSACTION** Date **(TDATE)** is in the year **2019**.

(c) To display the total number of **CUSTOMER**s for each **GENDER**.

(d) To display the **CUSTOMER NAME** and **BALANCE** in ascending order of **GENDER**.

(e) To display **CUSTOMER NAME** and their respective **INTEREST** for all **CUSTOMER**s where **INTEREST** is calculated as **8%** of **BALANCE**.

40. (a) 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*

OR

(b) 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'.** *5*

2021 – BOARD QUESTION PAPER - MS

Strictly Confidential: (For Internal and Restricted use only)
Senior School Certificate Examination
September 2021
Marking Scheme – Computer Science (NEW) (SUBJECT CODE: 083)
(SERIES: 3HKP3b/C , PAPER CODE – 91 , SET 4)

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
```

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		**Domain Name** / **URL (Uniform Resource Locator)** 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** 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"**	
		(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**:
		
		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])`
			2

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

		`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 II	

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

		(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		**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		```
		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)	

2020-21– BOARD SAMPLE QUESTION PAPER

Class: XII Session: 2020-21

Computer Science (083)

Sample Question Paper (Theory)

Maximum Marks: 70 **Time Allowed: 3 hours**

General Instructions:

1. This question paper contains two parts 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 4 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 question 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 internal option.
6. All programming questions are to be answered using Python Language only

Question No.	**Part-A**	**Marks allocated**
	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	Find the invalid identifier from the following a) MyName b) True c) 2ndName d) My_Name	1
2	Given the lists L=[1,3,6,82,5,7,11,92] , write the output of print(L[2:5])	1
3	Write the full form of CSV.	1
4	Identify the valid arithmetic operator in Python from the following. a) ? b) < c) ** d) and	1

5	Suppose a tuple T is declared as T = (10, 12, 43, 39), which of the following is incorrect? a) print(T[1]) b) T[2] = -29 c) print(max(T)) d) print(len(T))	1
6	Write a statement in Python to declare a dictionary whose keys are 1, 2, 3 and values are Monday, Tuesday and Wednesday respectively.	1
7	A tuple is declared as T = (2,5,6,9,8) What will be the value of sum(T)?	1
8	Name the built-in mathematical function / method that is used to return an absolute value of a number.	1
9	Name the protocol that is used to send emails.	1
10	Your friend Ranjana complaints that somebody has created a fake profile on Facebook and defaming her character with abusive comments and pictures. Identify the type of cybercrime for these situations.	1
11	In SQL, name the clause that is used to display the tuples in ascending order of an attribute.	1
12	In SQL, what is the use of IS NULL operator?	1
13	Write any one aggregate function used in SQL.	1
14	Which of the following is a DDL command? a) SELECT b) ALTER c) INSERT d) UPDATE	1
15	Name The transmission media best suitable for connecting to hilly areas.	1
16	Identify the valid declaration of L: L = [‘Mon’, ‘23’, ‘hello’, ’60.5’]	1

	a. dictionary b. string c.tuple d. list	
17	If the following code is executed, what will be the output of the following code? name="ComputerSciencewithPython" print(name[3:10])	1
18	In SQL, write the query to display the list of tables stored in a database.	1
19	Write the expanded form of Wi-Fi.	1
20	Which of the following types of table constraints will prevent the entry of duplicate rows? a) Unique b) Distinct c) Primary Key d) NULL	1
21	Rearrange the following terms in increasing order of data transfer rates. Gbps, Mbps, Tbps, Kbps, bps	1
	Section-II **Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark**	
22	A departmental store MyStore is considering to maintain their inventory using SQL to store the data. As a database administer, Abhay has decided that : • Name of the database - mystore • Name of the table - STORE • The attributes of STORE are as follows: ItemNo - numeric ItemName – character of size 20 Scode - numeric Quantity – numeric	

Table : STORE

ItemNo	ItemName	Scode	Quantity
2005	Sharpener Classic	23	60
2003	Ball Pen 0.25	22	50
2002	Get Pen Premium	21	150
2006	Get Pen Classic	21	250
2001	Eraser Small	22	220
2004	Eraser Big	22	110
2009	Ball Pen 0.5	21	180

(a) Identify the attribute best suitable to be declared as a primary key, 1

(b) Write the degree and cardinality of the table STORE. 1

(c) Insert the following data into the attributes ItemNo, ItemName and SCode respectively in the given table STORE. 1

ItemNo = 2010, ItemName = “Note Book” and Scode = 25

(d) Abhay want to remove the table STORE from the database MyStore. Which command will he use from the following: 1

a) DELETE FROM store;
b) DROP TABLE store;
c) DROP DATABASE mystore;
d) DELETE store FROM mystore;

(e) Now Abhay wants to display the structure of the table STORE, i.e, name of the attributes and their respective data types that he has used in the table. Write the query to display the same. 1

23 Ranjan Kumar of class 12 is writing a program to create a CSV file “user.csv” which will contain user name and password for some entries. He has written the following code. As a programmer, help him to successfully execute the given task.

```
import _____                                    # Line 1

def addCsvFile(UserName,PassWord):          # to write / add data into the CSV file
    f=open(' user.csv','_________')                 # Line 2
```

	newFileWriter = csv.writer(f) newFileWriter.writerow([UserName,PassWord]) f.close() #csv file reading code def readCsvFile(): # to read data from CSV file with open(' user.csv','r') as newFile: newFileReader = csv._____(newFile) # Line 3 for row in newFileReader: print (row[0],row[1]) newFile._____ # Line 4 addCsvFile(“Arjun”,”123@456”) addCsvFile(“Arunima”,”aru@nima”) addCsvFile(“Frieda”,”myname@FRD”) readCsvFile() #Line 5	
	(a) Name the module he should import in Line 1.	1
	(b) In which mode, Ranjan should open the file to add data into the file	1
	(c) Fill in the blank in Line 3 to read the data from a csv file.	1
	(d) Fill in the blank in Line 4 to close the file.	1
	(e) Write the output he will obtain while executing Line 5.	1
	Part – B	
	Section-I	
24	Evaluate the following expressions: a) 6 * 3 + 4**2 // 5 – 8 b) 10 > 5 and 7 > 12 or not 18 > 3	2
25	Differentiate between Viruses and Worms in context of networking and data communication threats. **OR** Differentiate between Web server and web browser. Write any two popular web browsers.	2
26	Expand the following terms: a. SMTP b. XML c. LAN d. IPR	2

27	Differentiate between actual parameter(s) and a formal parameter(s) with a suitable example for each. **OR** Explain the use of global key word used in a function with the help of a suitable example.	2
28	Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. Value=30 for VAL in range(0,Value) If val%4==0: print (VAL*4) Elseif val%5==0: print (VAL+3) else print(VAL+10)	2
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 values that can be assigned to each of the variables Lower and Upper. import random AR=[20,30,40,50,60,70]; Lower =random.randint(1,3) Upper =random.randint(2,4) for K in range(Lower, Upper +1): print (AR[K],end="#") (i) 10#40#70# (ii) 30#40#50# (iii) 50#60#70# (iv) 40#50#70#	2
30	What do you understand by Candidate Keys in a table? Give a suitable example of Candidate Keys from a table containing some meaningful data.	2

31	Differentiate between *fetchone()* and *fetchall()* methods with suitable examples for each.	2
32	Write the full forms of DDL and DML. Write any two commands of DML in SQL.	2

33	Find and write the output of the following Python code:
	
	def Display(str):
	m=""
	for i in range(0,len(str)):
	if(str[i].isupper()):
	m=m+str[i].lower()
	elif str[i].islower():
	m=m+str[i].upper()
	else:
	if i%2==0:
	m=m+str[i-1]
	else:
	m=m+"#"
	print(m)
	
	Display('Fun@Python3.0')
		2

	Section- II	
34	Write a function LShift(Arr,n) in Python, which accepts a list Arr of numbers and n is a numeric value by which all elements of the list are shifted to left. Sample Input Data of the list Arr= [10,20,30,40,12,11], n=2 Output Arr = [30,40,12,11,10,20]	3
35	Write a function in Python that counts the number of “Me” or “My” words present in a text file “STORY.TXT”. If the “STORY.TXT” contents are as follows: My first book was Me and	3

My Family. It
gave me
chance to be
Known to the
world.

The output of the function should be:

Count of Me/My in file: 4

OR

Write a function AMCount() in Python, which should read each character of a text file STORY.TXT, should count and display the occurance of alphabets A and M (including small cases a and m too).

Example:

If the file content is as follows:

Updated information
As simplified by official websites.

The EUCount() function should display the output as:

A or a:4
M or m :2

36 Write the outputs of the SQL queries (i) to (iii) based on the relations Teacher and Posting given below: 3

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F
3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakha	33	Mathematics	31/07/2018	20000	F

	Table : Posting
	
	P_ID | Department | Place
	1 | History | Agra
	2 | Mathematics | Raipur
	3 | Computer Science | Delhi
	
	i. SELECT Department, count(*) FROM Teacher GROUP BY Department;
	ii. SELECT Max(Date_of_Join),Min(Date_of_Join) FROM Teacher;
	iii. SELECT Teacher.name,Teacher.Department, Posting.Place FROM Teachr, Posting WHERE Teacher.Department = Posting.Department AND Posting.Place="Delhi";	

37	Write a function in Python PUSH(Arr), where Arr is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message. **OR** Write a function in Python POP(Arr), where Arr is a stack implemented by a list of numbers. The function returns the value deleted from the stack.	3
	Section-III	
38	MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below: Center to Center distances between various blocks/center is as follows:	5

Law Block to business Block	40m
Law block to Technology Block	80m
Law Block to HR center	105m
Business Block to technology Block	30m
Business Block to HR Center	35m
Technology block to HR center	15m

Number of computers in each of the blocks/Center is as follows:

Law Block	15
Technology Block	40
HR center	115
Business Block	25

a) Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.

b) Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.

c) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.

d) Suggest the placement of a Repeater in the network with justification.

e) The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

39 Write SQL commands for the following queries (i) to (v) based on the relations Teacher and Posting given below: 5

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F

3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakha	33	Mathematics	31/07/2018	20000	F

Table : Posting

P_ID	Department	Place
1	History	Agra
2	Mathematics	Raipur
3	Computer Science	Delhi

i. To show all information about the teacher of History department.
ii. To list the names of female teachers who are in Mathematics department.
iii. To list the names of all teachers with their date of joining in ascending order.
iv. To display teacher's name, salary, age for male teachers only.
v. To display name, bonus for each teacher where bonus is 10% of salary.

40 A binary file "Book.dat" has structure [BookNo, Book_Name, Author, Price]. 5

i. Write a user defined function *CreateFile()* to input data for a record and add to Book.dat .
ii. Write a function *CountRec(Author)* in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat"

OR

A binary file "STUDENT.DAT" has structure (admission_number, Name, Percentage). Write a function *countrec()* in Python that would read contents of the file "STUDENT.DAT" and display the details of those students whose percentage is above 75. Also display number of students scoring above 75%

2020-21– BOARD SAMPLE QUESTION PAPER -MS

Sample Question Paper - 2021

Computer Science – 083

MARKING SCHEME

Maximum Marks: 70 **Time Allowed: 3 hours**

	Part – A **Section - I**	
1	b) True	1
2	[6,82,5]	1
3	Comma Separated Value	1
4	c) **	1
5	b) T[2]= -29 (as tuple is immutable)	1
6	Day={1:'monday',2:'tuesday',3:'wednesday'}	1
7	30	
8	abs()	1
9	SMTP	1
10	Cyber Stalking	1
11	ORDER BY	1
12	To check if the column has null value / no value	1
13	SUM / AVG / COUNT / MAX / MIN	1
14	b) ALTER	1
15	Microwave / Radio wave	1
16	d. List	1
17	puterSc	1
18	SHOW TABLES	1
19	Wireless Fidelity	1
20	(c) Primary Key	1
21	Bps, Kbps, Mbps, Gbps, Tbps	1
	Part – A **Section - II**	
22	(a) ItemNo (b) Degree = 4 Cardinality = 7 (c) INSERT INTO store (ItemNo,ItemName,Scode) VALUES(2010, “Note Book”,25); (d) DROP TABLE store; (e) Describe Store;	1 1 1 1 1
23	(a) Line 1 : csv (b) Line 2 : a (c) Line 3 : reader (d) Line 4 : close()	1 1 1 1

	(e) Line 5 : Arjun 123@456 Arunima aru@nima Frieda myname@FRD	1
	Part – B	
24	a) 13 b) False	2
25	Viruses require an active host program or an already-infected and active operating system in order for viruses to run, cause damage and infect other executable files or documents Worms are stand-alone malicious programs that can self-replicate. **OR** **Web Browser** : A web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device. **Web Server** : A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP). Popular web browsers : Google Chrome, Mozilla Firefox, Internet Explorer etc	2
26	a. SMTP - Simple Mail Transfer Protocol b. XML - eXtensible Markup Language c. LAN – Local Area Network d. IPR – Intellectual Property Rights	2
27	The list of identifiers used in a function call is called actual parameter(s) whereas the list of parameters used in the function definition is called formal parameter(s). Actual parameter may be value / variable or expression. Formal parameter is an identifier. Example: def area(side): # line 1 return side*side; print(area(5)) # line 2 In line 1, side is the formal parameter and in line 2, while invoking area() function, the value 5 is the actual parameter.	2

	A formal parameter, i.e. a parameter, is in the *function definition*. An actual parameter, i.e. an argument, is in a *function call*.
	OR
	Use of global key word:
	In Python, global keyword allows the programmer to modify the variable outside the current scope. It is used to create a global variable and make changes to the variable in local context. A variable declared inside a function is by default local and a variable declared outside the function is global by default. The keyword global is written inside the function to use its global value. Outside the function, global keyword has no effect.
	Example
	c = 10 # global variable
	def add():
	  global c
	  c = c + 2 # global value of c is incremented by 2
	  print("Inside add():", c)
	
	add()
	c=15
	print("In main:", c)
	
	output:
	Inside add() : 12
	In main: 15	

28	**CORRECTED CODE:**
	Value=30
	for VAL in range(0,Value) : # Error 1
	  if val%4==0: # Error 2
	  print (VAL*4)
	  elif val%5==0: # Error 3
	  print (VAL+3)
	  else: # Error 4
	  print(VAL+10)
		2

29	OUTPUT: (ii) Maximum value of Lower: 3 Maximum value of Upper: 4	2
30	A table may have more than one such attribute/group of attributes that identifies a tuple uniquely, all such attribute(s) are known as Candidate Keys.	2

Table:Item

Ino	Item	Qty
I01	Pen	500
I02	Pencil	700
I04	CD	500
I09		700
I05	Eraser	300
I03	Duster	200

In the above table Item, ItemNo can be a candidate key

31 (2)

fetchall() fetches all the rows of a query result. An empty list is returned if there is no record to fetch the cursor.

fetchone() method returns one row or a single record at a time. It will return None if no more rows / records are available.

Any example.

32 (2)

DDL – Data Definition Language

DML – Data Manipulation Language

Any two out of INSERT, DELETE, UPDATE

33 (2)

OUTPUT : **fUNnpYTHON**

34 (3)

```
def LShift(Arr,n):
    L=len(Arr)
    for x in range(0,n):
        y=Arr[0]
        for i in range(0,L-1):
            Arr[i]=Arr[i+1]
        Arr[L-1]=y
    print(Arr)
```

Note : Using of any correct code giving the same result is also accepted.

35 (3)

```
def displayMeMy():
    num=0
    f=open("story.txt","rt")
    N=f.read()
    M=N.split()
    for x in M:
        if x=="Me" or x== "My":
            print(x)
            num=num+1
    f.close()
    print("Count of Me/My in file:",num)
```

OR

```
def count_A_M():
    f=open("story.txt","r")
    A,M=0,0
    r=f.read()
    for x in r:
        if x[0]=="A" or x[0]=="a" :
            A=A+1
        elif x[0]=="M" or x[0]=="m":
            M=M+1
    f.close()
    print("A or a: ",A)
    print("M or m: ",M)
```

Note : Using of any correct code giving the same result is also accepted.

36 **OUTPUT:** 3

i.

Department	Count(*)
History	3
Computer Sc	2
Mathematics	3

ii. Max - 31/07/2018 or 2018-07-31 Min- 05/09/2007 or 2007-09-05

iii.

name	Department	Place
Jugal	Computer Sc	Delhi
Shiv Om	Computer Sc	Delhi

37 **ANSWER: (Using of any correct code giving the same result is also accepted.)** 3

```
def PUSH(Arr,value):
    s=[]
    for x in range(0,len(Arr)):
        if Arr[x]%5==0:
            s.append(Arr[x])
    if len(s)==0:
```

```
        print("Empty Stack")
    else:
        print(s)
```

OR

```
def popStack(st) :
    # If stack is empty
    if len(st)==0:
        print("Underflow")
    else:
        L = len(st)
        val=st[L-1]
        print(val)
        st.pop(L-1)
```

38 (5)

a. Most suitable place to install the server is HR center, as this center has maximum number of computers.

b.

c. Switch

d. Repeater may be placed when the distance between 2 buildings is more than 70 meter.

e. WAN, as the given distance is more than the range of LAN and MAN.

39 (5)

i. SELECT * FROM teacher WHERE department= “History”;

ii. SELECT name FROM teacher WHERE department= “Mathematics” AND gender= “F”;

iii. SELECT name FROM teacher ORDER BY date_of_join;

iv. SELECT name, salary, age FROM teacher WHERE gender=’M’;

v. SELECT name, salary*0.1 AS Bonus FROM teacher;

40	**ANSWER: (Using of any correct code giving the same result is also accepted.)**	5

```
import pickle
def createFile():
    fobj=open("Book.dat","ab")
    BookNo=int(input("Book Number : "))
    Book_name=input("Name :")
    Author = input("Author: ")
    Price = int(input("Price  : "))
    rec=[BookNo,Book_Name,Author,Price]
    pickle.dump(rec,fobj)
    fobj.close()

 def CountRec(Author):
     fobj=open("Book.dat","rb")
     num = 0
     try:
         while True:
             rec=pickle.load(fobj)
             if Author==rec[2]:
                 num = num + 1
     except:
         fobj.close()
     return num
```

OR

```
 import pickle
 def CountRec():
     fobj=open("STUDENT.DAT","rb")
     num = 0
     try:
         while True:
             rec=pickle.load(fobj)
             if rec[2] > 75:
                 print(rec[0],rec[1],rec[2],sep="\t")
                 num = num + 1
     except:
         fobj.close()
     return num
```

2021-22– BOARD SAMPLE

TERM I SAMPLE QUESTION PAPER

Sample Question Paper
Class: XII Session: 2021-22
Computer Science (Code 083)
(Theory: Term-1)

Maximum Marks: 35 **Time Allowed: 90 Minutes**

General Instructions:

- **The question paper is divided into 3 Sections - A, B and C.**
- **Section A, consist of 25 Questions (1-25). Attempt any 20 questions.**
- **Section B, consist of 24 Questions (26-49). Attempt any 20 questions.**
- **Section C, consist of 6 case study based Questions (50-55). Attempt any 5 questions.**
- **All questions carry equal marks.**

Q.N.	Section-A
	This section consists of 25 Questions (1 to 25). Attempt any 20 questions from this section. Choose the best possible option.
1	Find the invalid identifier from the following a. none b. address c. Name d. pass
2	Consider a declaration L = (1, 'Python', '3.14'). Which of the following represents the data type of L? a. list b. tuple c. dictionary d. string
3	Given a Tuple tup1= (10, 20, 30, 40, 50, 60, 70, 80, 90). What will be the output of print (tup1 [3:7:2])? a. (40,50,60,70,80) b. (40,50,60,70) c. [40,60] d. (40,60)
4	Which of the following option is not correct? a. if we try to read a text file that does not exist, an error occurs. b. if we try to read a text file that does not exist, the file gets created. c. if we try to write on a text file that does not exist, no error occurs. d. if we try to write on a text file that does not exist, the file gets Created.
5	Which of the following options can be used to read the first line of a text file Myfile.txt? a. myfile = open('Myfile.txt'); myfile.read() b. myfile = open('Myfile.txt','r'); myfile.read(n) c. myfile = open('Myfile.txt'); myfile.readline() d. myfile = open('Myfile.txt'); myfile.readlines()

6	Assume that the position of the file pointer is at the beginning of 3rd line in a text file. Which of the following option can be used to read all the remaining lines? a. myfile.read() b. myfile.read(n) c. myfile.readline() d. myfile.readlines()
7	A text file student.txt is stored in the storage device. Identify the correct option out of the following options to open the file in read mode. i. myfile = open('student.txt','rb') ii. myfile = open('student.txt','w') iii. myfile = open('student.txt','r') iv. myfile = open('student.txt') a. only i b. both i and iv c. both iii and iv d. both i and iii
8	The return type of the input() function is a. string b. integer c. list d. tuple
9	Which of the following operator cannot be used with string data type? a. + b. in c. * d. /
10	Consider a tuple tup1 = (10, 15, 25, and 30). Identify the statement that will result in an error. a. print(tup1[2]) b. tup1[2] = 20 c. print(min(tup1)) d. print(len(tup1))
11	Which of the following statement is incorrect in the context of binary files? a. Information is stored in the same format in which the information is held in memory. b. No character translation takes place c. Every line ends with a new line character d. pickle module is used for reading and writing
12	What is the significance of the tell() method? a. tells the path of file b. tells the current position of the file pointer within the file c. tells the end position within the file d. checks the existence of a file at the desired location

13	Which of the following statement is true? a. pickling creates an object from a sequence of bytes b. pickling is used for object serialization c. pickling is used for object deserialization d. pickling is used to manage all types of files in Python
14	Syntax of seek function in Python is myfile.seek(offset, reference_point) where myfile is the file object. What is the default value of reference_point? a. 0 b. 1 c. 2 d. 3
15	Which of the following components are part of a function header in Python? a. Function Name b. Return Statement c. Parameter List d. Both a and c
16	Which of the following function header is correct? a. def cal_si(p=100, r, t=2) b. def cal_si(p=100, r=8, t) c. def cal_si(p, r=8, t) d. def cal_si(p, r=8, t=2)
17	Which of the following is the correct way to call a function? a. my_func() b. def my_func() c. return my_func d. call my_func()
18	Which of the following character acts as default delimiter in a csv file? a. (colon) : b. (hyphen) - c. (comma) , d. (vertical line) |
19	Syntax for opening Student.csv file in write mode is myfile = open("Student.csv","w",newline=''). What is the importance of newline=''? a. A newline gets added to the file b. Empty string gets appended to the first line. c. Empty string gets appended to all lines. d. EOL translation is suppressed
20	What is the correct expansion of CSV files? a. Comma Separable Values b. Comma Separated Values c. Comma Split Values d. Comma Separation Values

21	Which of the following is not a function / method of csv module in Python? a. read() b. reader() c. writer() d. writerow()
22	Which one of the following is the default extension of a Python file? a. .exe b. .p++ c. .py d. .p
23	Which of the following symbol is used in Python for single line comment? a. / b. /* c. // d. #
24	Which of the following statement opens a binary file record.bin in write mode and writes data from a list lst1 = [1,2,3,4] on the binary file? a. with open('record.bin','wb') as myfile: pickle.dump(lst1,myfile) b. with open('record.bin','wb') as myfile: pickle.dump(myfile,lst1) c. with open('record.bin','wb+') as myfile: pickle.dump(myfile,lst1) d. with open('record.bin','ab') as myfile: pickle.dump(myfile,lst1)
25	Which of these about a dictionary is false? a) The values of a dictionary can be accessed using keys b) The keys of a dictionary can be accessed using values c) Dictionaries aren't ordered d) Dictionaries are mutable
	Section-B
	This section consists of 24 Questions (26 to 49). Attempt any 20 questions.

26	What is the output of following code:
	`T=(100)`
	`print(T*2)`
	a. Syntax error
	b. (200,)
	c. 200
	d. (100,100)

27	Suppose content of 'Myfile.txt' is:
	
	Twinkle twinkle little star
	How I wonder what you are
	Up above the world so high
	Like a diamond in the sky
	
	What will be the output of the following code?
	`myfile = open("Myfile.txt")`
	`data = myfile.readlines()`
	`print(len(data))`
	`myfile.close()`
	a. 3
	b. 4
	c. 5
	d. 6

28	Identify the output of the following Python statements.
	`x = [[10.0, 11.0, 12.0],[13.0, 14.0, 15.0]]`
	`y = x[1][2]`
	`print(y)`
	a. 12.0
	b. 13.0
	c. 14.0
	d. 15.0

29	Identify the output of the following Python statements.
	`x = 2`
	`while x < 9:`
	`  print(x, end='')`
	`  x = x + 1`
	a. 12345678
	b. 123456789
	c. 2345678
	d. 23456789

30	Identify the output of the following Python statements.
	`b = 1`
	`for a in range(1, 10, 2):`
	`  b += a + 2`
	`print(b)`
	a. 31
	b. 33
	c. 36
	d. 39

31 Identify the output of the following Python statements.

```
lst1 = [10, 15, 20, 25, 30]
lst1.insert( 3, 4)
lst1.insert( 2, 3)
print (lst1[-5])
```

a. 2
b. 3
c. 4
d. 20

32 Raghav is trying to write a tuple tup1 = (1,2,3,4,5) on a binary file **test.bin.** Consider the following code written by him.

```
import pickle
tup1 = (1,2,3,4,5)
myfile = open("test.bin",'wb')
pickle._______ #Statement 1
myfile.close()
```

Identify the missing code in Statement 1.

a. dump(myfile,tup1)
b. dump(tup1, myfile)
c. write(tup1,myfile)
d. load(myfile,tup1)

33 A binary file employee.dat has following data

Empno	empname	Salary
101	Anuj	50000
102	Arijita	40000
103	Hanika	30000
104	Firoz	60000
105	Vijaylakshmi	40000

```
def display(eno):
    f=open("employee.dat","rb")
    totSum=0
    try:
        while True:
            R=pickle.load(f)
            if R[0]==eno:
                        __________      #Line1
                        totSum=totSum+R[2]
    except:
        f.close()
    print(totSum)
```

When the above mentioned function, display (103) is executed, the output displayed is 190000.
Write appropriate jump statement from the following to obtain the above output.

	a. jump b. break c. continue d. return

34	What will be the output of the following Python code?
	`def add (num1, num2):`
	`  sum = num1 + num2`
	`sum = add(20,30)`
	`print(sum)`
	a. 50
	b. 0
	c. Null
	d. None

35	Evaluate the following expression and identify the correct answer. 16 - (4 + 2) * 5 + 2**3 * 4 a. 54 b. 46 c. 18 d. 32

36	What will be the output of the following code?
	`def my_func(var1=100, var2=200):`
	`  var1+=10`
	`  var2 = var2 - 10`
	`  return var1+var2`
	`print(my_func(50),my_func())`
	a. 100 200
	b. 150 300
	c. 250 75
	d. 250 300

37	What will be the output of the following code?
	`value = 50`
	`def display(N):`
	`  global value`
	`  value = 25`
	`  if N%7==0:`
	`  value = value + N`
	`  else:`
	`  value = value - N`
	`print(value, end="#")`
	`display(20)`
	`print(value)`
	a. 50#50
	b. 50#5
	c. 50#30
	d. 5#50#

38	What will be the output of the following code?
	`import random`
	`List=["Delhi","Mumbai","Chennai","Kolkata"]`
	`for y in range(4):`
	`  x = random.randint(1,3)`
	`  print(List[x],end="#")`
	a. Delhi#Mumbai#Chennai#Kolkata#
	b. Mumbai#Chennai#Kolkata#Mumbai#
	c. Mumbai# Mumbai #Mumbai # Delhi#
	d. Mumbai# Mumbai #Chennai # Mumbai

39	What is the output of the following code snippet?
	`def ChangeVal(M,N):`
	`  for i in range(N):`
	`  if M[i]%5 == 0:`
	`  M[i]//=5`
	`  if M[i]%3 == 0:`
	`  M[i]//=3`
	`L = [25,8,75,12]`
	`ChangeVal(L,4)`
	`for i in L:`
	`  print(i,end="#")`
	a) 5#8#15#4#
	b) 5#8#5#4#
	c) 5#8#15#14#
	d) 5#18#15#4#

40	Suppose content of 'Myfile.txt' is
	Humpty Dumpty sat on a wall
	Humpty Dumpty had a great fall
	All the king's horses and all the king's men
	Couldn't put Humpty together again
	What will be the output of the following code?
	`myfile = open("Myfile.txt")`
	`record = myfile.read().split()`
	`print(len(record))`
	`myfile.close()`
	a. 24
	b. 25
	c. 26
	d. 27

41	Find the output of the following code:
	`Name="PythoN3.1"`
	`R=""`
	`for x in range(len(Name)):`
	`  if Name[x].isupper():`
	`  R=R+Name[x].lower()`

```
                    elif Name[x].islower():
                        R=R+Name[x].upper()
                    elif Name[x].isdigit():
                        R=R+Name[x-1]
                    else:
                        R=R+"#"
                print(R)
```

a. pYTHOn##@
b. pYTHOnN#@
c. pYTHOn#@
d. pYTHOnN@#

42 Suppose content of 'Myfile.txt' is

Honesty is the best policy.

What will be the output of the following code?

```
myfile = open("Myfile.txt")
x = myfile.read()
print(len(x))
myfile.close()
```

a. 5
b. 25
c. 26
d. 27

43 Suppose content of 'Myfile.txt' is

Culture is the widening of the mind and of the spirit.

What will be the output of the following code?

```
myfile = open("Myfile.txt")
x = myfile.read()
y = x.count('the')
print(y)
myfile.close()
```

a. 2
b. 3
c. 4
d. 5

44 What will be the output of the following code?

```
x = 3
def myfunc():
   global x
   x+=2
   print(x, end=' ')
print(x, end=' ')
myfunc()
print(x, end=' ')
```

	a. 3 3 3 b. 3 4 5 c. 3 3 5 d. 3 5 5

45	Suppose content of 'Myfile.txt' is
	Ek Bharat Shreshtha Bharat
	What will be the output of the following code?
	`myfile = open("Myfile.txt")`
	`vlist = list("aeiouAEIOU")`
	`vc=0`
	`x = myfile.read()`
	`for y in x:`
	`  if(y in vlist):`
	`  vc+=1`
	`print(vc)`
	`myfile.close()`
	a. 6
	b. 7
	c. 8
	d. 9

46	Suppose content of 'Myfile.txt' is
	Twinkle twinkle little star
	How I wonder what you are
	Up above the world so high
	Like a diamond in the sky
	Twinkle twinkle little star
	What will be the output of the following code?
	`myfile = open("Myfile.txt")`
	`line_count = 0`
	`data = myfile.readlines()`
	`for line in data:`
	`  if line[0] == 'T':`
	`  line_count += 1`
	`print(line_count)`
	`myfile.close()`
	a. 2
	b. 3
	c. 4
	d. 5

47	Consider the following directory structure. Suppose root directory (School) and present working directory are the same. What will be the absolute path of the file Syllabus.jpg? a. School/syllabus.jpg b. School/Academics/syllabus.jpg c. School/Academics/../syllabus.jpg d. School/Examination/syllabus.jpg

48	Assume the content of text file, 'student.txt' is:
	Arjun Kumar
	Ismail Khan
	Joseph B
	Hanika Kiran
	What will be the data type of data_rec?
	`myfile = open("Myfile.txt")`
	`data_rec = myfile.readlines()`
	`myfile.close()`
	a. string
	b. list
	c. tuple
	d. dictionary

49	What will be the output of the following code?
	`tup1 = (1,2,[1,2],3)`
	`tup1[2][1]=3.14`
	`print(tup1)`
	a. (1,2,[3.14,2],3)
	b. (1,2,[1,3.14],3)
	c. (1,2,[1,2],3.14)
	d. Error Message

	Section-C **Case Study based Questions**
	This section consists of 6 Questions (50 -55) Attempt any 5 questions.

	Rohit, a student of class 12, is learning CSV File Module in Python. During examination, he has been assigned an incomplete python code (shown below) to create a CSV File 'Student.csv' (content shown below). Help him in completing the code which creates the desired CSV File.
	
	CSV File
	1,AKSHAY,XII,A
	2,ABHISHEK,XII,A
	3,ARVIND,XII,A
	4,RAVI,XII,A
	5,ASHISH,XII,A
	
	Incomplete Code
	
	import _____ #Statement-1
	fh = open(_____, _____, newline='') #Statement-2
	stuwriter = csv._____ #Statement-3
	data = [ ]
	header = ['ROLL_NO', 'NAME', 'CLASS', 'SECTION']
	data.append(header)
	for i in range(5):
	roll_no = int(input("Enter Roll Number : "))
	name = input("Enter Name : ")
	Class = input("Enter Class : ")
	section = input("Enter Section : ")
	rec = [_____] #Statement-4
	data.append(_____) #Statement-5
	stuwriter. _____ (data) #Statement-6
	fh.close()

50	Identify the suitable code for blank space in the line marked as Statement-1. a) csv file b) CSV c) csv d) cvs
51	Identify the missing code for blank space in line marked as Statement-2. a) "Student.csv","wb" b) "Student.csv","w" c) "Student.csv","r" d) "Student.cvs","r"
52	Choose the function name (with argument) that should be used in the blank space of line marked as Statement-3. a) reader(fh) b) reader(MyFile) c) writer(fh) d) writer(MyFile)

53	Identify the suitable code for blank space in line marked as Statement-4. a) 'ROLL_NO', 'NAME', 'CLASS', 'SECTION' b) ROLL_NO, NAME, CLASS, SECTION c) 'roll_no','name','Class','section' d) roll_no,name,Class,section
54	Identify the suitable code for blank space in the line marked as Statement-5. a) data b) record c) rec d) insert
55	Choose the function name that should be used in the blank space of line marked as Statement-6 to create the desired CSV File? a) dump() b) load() c) writerows() d) writerow()

2021-22– BOARD SAMPLE

TERM I SAMPLE QUESTION PAPER MS

Marking Scheme

Class: XII Session: 2021-22

Computer Science (Code 083)

1	d. pass
2	b. tuple
3	d. (40,60)
4	b. if we try to read a text file that does not exist, the file gets created.
5	c. myfile = open('Myfile.txt'); myfile.readline()
6	d. myfile.readlines()
7	c. both iii and iv
8	a. string
9	d. /
10	b. tup1[2] = 20
11	c. Every line ends with a new line character
12	b. tells the current position of the file pointer within the file
13	b. pickling is used for object serialization
14	a. 0
15	d. Both a and c
16	d. def cal_si(p, r=8, t=2)
17	a. my_func()
18	c. ,
19	d. EOL Translation is suppressed
20	b. Comma Separated Values
21	a. read()
22	c. .py
23	d. #
24	a. with open('record.bin','wb') as myfile: pickle.dump(lst1,myfile)
25	b. The keys of a dictionary can be accessed using values
26	c. 200
27	b. 4
28	d. 15.0
29	c. 2345678
30	c. 36
31	b. 3
32	b. dump(tup1, myfile)
33	c. continue
34	d. None
35	c. 18
36	d. 250 300
37	b. 50#5
38	b. Mumbai#Chennai#Kolkata#Mumbai#
39	b. 5#8#5#4#
40	c. 26
41	b. pYTHOnN#@
42	d. 27

43	b. 3
44	d. 3 5 5
45	b. 7
46	a. 2
47	b. School/Academics/syllabus.jpg
48	b. list
49	b. (1,2,[1,3.14],3)
50	c. csv
51	b. "Student.csv","w"
52	c. writer(fh)
53	d. roll_no,name,Class,section
54	c. rec
55	c. writerows()

2021-22– BOARD SAMPLE

TERM II SAMPLE QUESTION PAPER

Sample Question Paper

COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35 Time: 2 hours

General Instructions

- The question paper is divided into 3 sections – A, B and C
- Section A, consists of 7 questions (1-7). Each question carries 2 marks.
- Section B, consists of 3 questions (8-10). Each question carries 3 marks.
- Section C, consists of 3 questions (11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers 7, 8 and 12.

		Section -A **Each question carries 2 marks**	
Q. No	**Part No.**	**Question**	**Marks**
1.		Give any two characteristics of stacks.	(2)
2.	(i)	Expand the following: **SMTP , XML**	(1)
	(ii)	Out of the following, which is the fastest wired and wireless medium of transmission? **Infrared, coaxial cable, optical fibre, microwave, Ethernet cable**	(1)
3.		Differentiate between char(n) and varchar(n) data types with respect to databases.	(2)
4.		A resultset is extracted from the database using the cursor object (that has been already created) by giving the following statement. **Mydata=cursor.fetchone()** (a) How many records will be returned by fetchone() method? (b) What will be the datatype of Mydata object after the given command is executed?	(2)

5. Write the output of the queries (a) to (d) based on the table, Furniture given below: (2)

Table: FURNITURE

FID	NAME	DATEOFPURCHASE	COST	DISCOUNT
B001	Double Bed	03-Jan-2018	45000	10
T010	Dining Table	10-Mar-2020	51000	5
B004	Single Bed	19-Jul-2021	22000	0
C003	Long Back Chair	30-Dec-2016	12000	3
T006	Console Table	17-Nov-2019	15000	12
B006	Bunk Bed	01-Jan-2021	28000	14

```
(a)  SELECT SUM(DISCOUNT)
     FROM FURNITURE
     WHERE COST>15000;

(b)  SELECT MAX(DATEOFPURCHASE)
     FROM FURNITURE;

(c)  SELECT * FROM FURNITURE
     WHERE DISCOUNT>5 AND FID LIKE "T%";

 (d) SELECT DATEOFPURCHASE FROM FURNITURE
    WHERE NAME IN ("Dining Table", "Console
Table");
```

6. (i) Which command is used to view the list of tables in a database? (1)

(ii) Give one point of difference between an equi-join and a natural join. (1)

7. Consider the table, **MOVIEDETAILS** given below: (2)

Table: MOVIEDETAILS

MOVIEID	TITLE	LANGUAGE	RATING	PLATFORM
M001	Minari	Korean	5	Netflix
M004	MGR Magan	Tamil	4	Hotstar

M010	Kaagaz	Hindi	3	Zee5
M011	Harry Potter and the Chamber of Secrets	English	4	Prime Video
M015	Uri	Hindi	5	Zee5
M020	Avengers: Endgame	English	4	Hotstar

(a) Identify the degree and cardinality of the table.
(b) Which field should be made the primary key? Justify your answer.

OR

(a) Identify the candidate key(s) from the table **MOVIEDETAILS.**
(b) Consider the table **SCHEDULE** given below:

Table: SCHEDULE

SLOTID	**MOVIEID**	**TIMESLOT**
S001	M010	10 AM to 12 PM
S002	M020	2 PM to 5 PM
S003	M010	6 PM to 8 PM
S004	M011	9 PM to 11 PM

Which field will be considered as the foreign key if the tables **MOVIEDETAILS** and **SCHEDULE** are related in a database?

SECTION – B
Each question carries 3 marks

8. Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations: (3)

- Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75.
- Pop and display the content of the stack.

For example:
If the sample content of the dictionary is as follows:

		R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82} The output from the program should be: **TOM ANU BOB OM** **OR** Alam has a list containing 10 integers. You need to help him create a program with separate user defined functions to perform the following operations based on this list. ● Traverse the content of the list and push the even numbers into a stack. ● Pop and display the content of the stack. For Example: If the sample Content of the list is as follows: **N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]** Sample Output of the code should be: **38 22 98 56 34 12**	
9.	(i)	A table, **ITEM** has been created in a database with the following fields: **ITEMCODE, ITEMNAME, QTY, PRICE** Give the SQL command to add a new field, **DISCOUNT** (of type Integer) to the **ITEM** table.	(1)
	(ii)	Categorize following commands into DDL and DML commands? **INSERT INTO, DROP TABLE, ALTER TABLE, UPDATE...SET**	(2)
10.		Charu has to create a database named **MYEARTH** in MYSQL. She now needs to create a table named **CITY** in the database to store the records of various cities across the globe. The table **CITY** has the following structure: Table: CITY	(3)

FIELD NAME	DATA TYPE	REMARKS
CITYCODE	CHAR(5)	Primary Key
CITYNAME	CHAR(30)	
SIZE	INTEGER	

AVGTEMP	INTEGER	
POLLUTIONRATE	INTEGER	
POPULATION	INTEGER	

Help her to complete the task by suggesting appropriate SQL commands.

Section C
Each question carries 4 marks

11. Write queries (a) to (d) based on the tables **EMPLOYEE** and **DEPARTMENT** given below: (4)

Table: EMPLOYEE

EMPID	NAME	DOB	DEPTID	DESIG	SALARY
120	Alisha	23-Jan-1978	D001	Manager	75000
123	Nitin	10-Oct-1977	D002	AO	59000
129	Navjot	12-Jul-1971	D003	Supervisor	40000
130	Jimmy	30-Dec-1980	D004	Sales Rep	
131	Faiz	06-Apr-1984	D001	Dep Manager	65000

Table: DEPARTMENT

DEPTID	DEPTNAME	FLOORNO
D001	Personal	4
D002	Admin	10
D003	Production	1
D004	Sales	3

(a) To display the average salary of all employees, department wise.

(b) To display name and respective department name of each employee whose salary is more than 50000.

		(c) To display the names of employees whose salary is not known, in alphabetical order. (d) To display DEPTID from the table **EMPLOYEE** without repetition.	
12.	(i)	Give two advantages and two disadvantages of star topology **OR** Define the following terms: **www, web hosting**	(2)
	(ii)	How is packet switching different from circuit switching?	(2)
13.		BeHappy Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings. Distance between the various blocks is as follows: A to B 40 m B to C 120m C to D 100m A to D 170m B to D 150m A to C 70m Numbers of computers in each block Block A - 25	(4)

		Block B - 50 Block C - 125 Block D - 10 (a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida centre for connecting the digital devices. (b) Suggest the placement of the following device with justification i. Repeater ii. Hub/Switch (c) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai? (d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at Noida?	

2021-22– BOARD SAMPLE

TERM II SAMPLE QUESTION PAPER MS

Marking Scheme

COMPUTER SCIENCE (Code : 083)

Maximum Marks: 35 Time: 2 hours

General Instructions

- The question paper is divided into 3 sections – A, B and C
- Section A, consists of 7 questions (1-7). Each question carries 2 marks.
- Section B, consists of 3 questions (8-10). Each question carries 3 marks.
- Section C, consists of 3 questions(11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers – 7, 8 and 12

		Section -A **Each question carries 2 marks**		
Q. No	**Part No.**	**Question**	**Marking Instructions**	**Marks**
1.		Characteristics of Stacks: • It is a LIFO data structure • The insertion and deletion happens at one end i.e. from the top of the stack	1 mark for each point	(2)
2.	(i)	SMTP : Simple Mail Transfer Protocol XML: Extensible Mark Up Language	½ mark for each correct expansion	(1)
	(ii)	Wired- optical fibre Wireless – microwave	½ mark for each correct answer	(1)
3.		char(n): • stores a fixed length string between 1 and 255 characters • if the value is of smaller length, adds blank spaces • some space is wasted varchar(n) : • stores a variable length string • no blanks are added even if value is of smaller length • no wastage of space	1 mark for each correct difference (minimum 2 differences to be given)	(2)

<table>
<tr><td>4.</td><td></td><td>(a) One record
(b) tuple</td><td>1 mark for each correct answer</td><td>(2)</td></tr>
<tr><td>5.</td><td></td><td>(a) 29

(b) 19-Jul-2021

(c)
<table>
<tr><td>T006</td><td>Console Table</td><td>17-Nov-2019</td><td>15000</td><td>12</td></tr>
</table>
(d)
10-Mar- 2020
17-Nov-2019</td><td>½ mark for each correct output</td><td>(2)</td></tr>
<tr><td>6.</td><td>(i)</td><td>SHOW TABLES;</td><td>1 mark for correct answer</td><td>(1)</td></tr>
<tr><td></td><td>(ii)</td><td>Equi- join:
• The join in which columns from two tables are compared for equality
• Duplicate columns are shown
Natural Join
• The join in which only one of the identical columns existing in both tables is present
• No duplication of columns</td><td>1 mark for correct difference (Any one point may be given)</td><td>(1)</td></tr>
<tr><td>7.</td><td></td><td>(a) Degree: 5
Cardinality: 6

(b) MOVIEID should be made the primary key as it uniquely identifies each record of the table.</td><td>½ mark each for correct degree and cardinality

½ mark for correct field and ½ mark for justification</td><td>(2)</td></tr>
</table>

		OR (a) MOVIEID and TITLE (b) MOVIEID	½ mark for each correct field name 1 mark for correct answer	
		SECTION – B **Each question carries 3 marks**		
8.		**# Question No 8 (first option)** **R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}** **def PUSH(S,N):** ** S.append(N)** **def POP(S):** ** if S!=[]:** ** return S.pop()** ** else:** ** return None** **ST=[]** **for k in R:** ** if R[k]>=75:** ** PUSH(ST,k)** **while True:** ** if ST!=[]:** ** print(POP(ST),end=" ")** ** else:** ** break** **OR** **# Question No 8 (second option)** **N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]** **def PUSH(S,N):**	1 mark for correct PUSH operation 1 mark for correct POP operation 1 mark for correct function calls and displaying the output 1 mark for correct PUSH operation	(3)

		`  S.append(N)`
		`def POP(S):`
		`  if S!=[]:`
		`  return S.pop()`
		`  else:`
		`  return None`
		`ST=[]`
		`for k in N:`
		`  if k%2==0:`
		`  PUSH(ST,k)`
		`while True:`
		`  if ST!=[]:`
		`  print(POP(ST),end=" ")`
		`  else:`
		`  break`
			1 mark for correct POP operation
			
			1 mark for correct function calls and displaying the output
			
			Note: Marks to be awarded for any other correct logic given by the student	

9.	(i)	`ALTER TABLE Item` `ADD (Discount INT);`	1 mark for correct command	(1)
	(ii)	DDL: `DROP TABLE, ALTER TABLE` DML: `INSERT INTO, UPDATE...SET`	½ mark for each correct command identified	(2)

10.		`CREATE DATABASE MYEARTH;`
		
		`CREATE TABLE CITY`
		`(`
		`  CITYCODE CHAR(5)PRIMARY KEY,`
		`  CITYNAME CHAR(30),`
		`  SIZE INT,`
		`  AVGTEMP INT,`
		`  POPULATIONRATE INT,`
		`  POPULATION INT,`
		`);`
			1 mark for correctly creating database.
			
			2 marks for correctly creating the table.
				(3)

		Section C **Each question carries 4 marks**		
11.		`(a) SELECT AVG(SALARY)`		

		FROM EMPLOYEE GROUP BY DEPTID; (b) SELECT NAME, DEPTNAME FROM EMPLOYEE, DEPARTMENT WHERE EMPLOYEE.DEPTID= DEPARTMENT.DEPTID AND SALARY>50000; (c) SELECT NAME FROM EMPLOYEE WHERE SALARY IS NULL ORDER BY NAME; (d) SELECT DISTINCT DEPTID FROM EMPLOYEE;	1 mark for each correct query	(4)
12.	(i)	Advantages • Ease of service • Centralized control • Easy to diagnose faults • One device per connection Disadvantages • long cable length • difficult to expand • central node dependency OR **www**: a set of protocols that allow you to access any document on the internet through the naming systems based on URLs **Web hosting**: Web hosting is a service that allows organizations and individuals to post a website or web page onto the server, which can be viewed by everyone on the Internet.	½ mark for each correct advantage / disadvantage 1 mark for each correct definition	(2)
	(ii)	Packet switching: • uses store and forward concept to send messages • no physical path is actually establishes • message is divided into smaller parts, known as packets and then sent forward • tight upper limit on block size • Each data unit knows only the final receiver's address	1 mark for each correct difference (minimum two points should be given)	(2)

		Circuit switching • physical connection is established between sender and receiver • Each data unit knows the entire path from sender to receiver • It does not follow store and forward concept		
13.		(a) (b) Repeater : between C and D as the distance between them is 100 mts. Hub/ Switch : in each block as they help to share data packets within the devices of the network in each block (c) WAN. (d) Satellite	1 mark for each correct answer	(4)

2021-22– BOARD SAMPLE

TERM II BOARD QUESTION PAPER

Series : %BAB%

SET-4

प्रश्न-पत्र कोड
Q.P. Code **91**

रोल नं.
Roll No. | | | | | | | | |

Candidates must write the Q.P. Code on the title page of the answer-book.

- Please check that this question paper contains **12** printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **13** questions.
- **Please write down the Serial Number of the question in the answer-book before attempting it.**
- 15 minutes time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.

*

COMPUTER SCIENCE

*Time allowed : **2** hours*

*Maximum Marks : **35***

General Isnstructions :

(i) *This question paper is divided into* ***3 Sections – A, B*** *and* ***C****.*

(ii) ***Section A****, consists of* ***7*** *questions* ***(1-7)****. Each question carries* ***2*** *marks.*

(iii) ***Section B****, consists of* ***3*** *questions* ***(8-10)****. Each question carries* ***3*** *marks.*

(iv) ***Section C****, consists of* ***3*** *questions* ***(11-13)****. Each question carries* ***4*** *marks.*

(v) *Internal choices have been given for question numbers –* ***7, 8*** *and* ***12****.*

SECTION – A

(Each question carries 2 marks)

1. "Stack is a linear data structure which follows a particular order in which the operations are performed." **2**

   What is the order in which the operations are performed in a Stack ?

   Name the List method/function available in Python which is used to remove the last element from a list implemented stack.

   Also write an example using Python statements for removing the last element of the list.

2. (i) Expand the following : **1**

   VoIP, PPP

   (ii) Riya wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth technology to connect two devices. Which type of network (PAN/LAN/MAN/WAN) will be formed in this case ? **1**

3. Differentiate between the terms Attribute and Domain in the context of Relational Data Model. **2**

4. Consider the following SQL table MEMBER in a SQL Database CLUB : **2**

Table : **MEMBER**

M_ID	**NAME**	**ACTIVITY**
M1001	Amina	GYM
M1002	Pratik	GYM
M1003	Simon	SWIMMING
M1004	Rakesh	GYM
M1005	Avneet	SWIMMING

Assume that the required library for establishing the connection between Python and MYSQL is already imported in the given Python code. Also assume that DB is the name of the database connection for table MEMBER stored in the database CLUB.

Predict the output of the following code :

```
MYCUR = DB.cursor()

MYCUR.execute ("USE CLUB")

MYCUR.execute ("SELECT * FROM MEMBER WHERE ACTIVITY= 'GYM'  ")

R=MYCUR.fetchone()

for i in range (2) :

    R=MYCUR.fetchone()

    print (R[0], R[1], sep = "#")
```

5. Write the output of SQL queries (a) to (d) based on the table VACCINATION_DATA given below : **2**

TABLE : **VACCINATION_DATA**

VID	Name	Age	Dose1	Dose2	City
101	Jenny	27	2021-12-25	2022-01-31	Delhi
102	Harjot	55	2021-07-14	2021-10-14	Mumbai
103	Srikanth	43	2021-04-18	2021-07-20	Delhi
104	Gazala	75	2021-07-31	NULL	Kolkata
105	Shiksha	32	2022-01-01	NULL	Mumbai

```
(a) SELECT  Name, Age FROM VACCINATION_DATA
    WHERE  Dose2 IS NOT NULL AND Age > 40;
(b) SELECT City, COUNT(*) FROM VACCINATION_DATA GROUP BY City;
(c) SELECT DISTINCT City FROM VACCINATION_DATA;
(d) SELECT MAX (Dosel), MIN (Dose2) FROM VACCINATION_DATA;
```

6. Write the output of SQL queries (a) and (b) based on the following two tables DOCTOR and PATIENT belonging to the same database : **2**

Table : **DOCTOR**

DNO	DNAME	FEES
D1	AMITABH	1500
D2	ANIKET	1000
D3	NIKHIL	1500
D4	ANJANA	1500

Table : **PATIENT**

PNO	PNAME	ADMDATE	DNO
P1	NOOR	2021-12-25	D1
P2	ANNIE	2021-11-20	D2
P3	PRAKASH	2020-12-10	NULL
P4	HARMEET	2019-12-20	D1

(a)
```
SELECT DNAME, PNAME FROM DOCTOR
NATURAL JOIN PATIENT ;
```

(b)
```
SELECT PNAME, ADMDATE, FEES
FROM PATIENT P, DOCTOR D
WHERE D.DNO = P.DNO AND FEES > 1000;
```

7. Differentiate between Candidate Key and Primary Key in the context of Relational Database Model. **2**

OR

Consider the following table PLAYER :

Table : **PLAYER**

PNO	NAME	SCORE
P1	RISHABH	52
P2	HUSSAIN	45
P3	ARNOLD	23
P4	ARNAV	18
P5	GURSHARAN	42

(a) Identify and write the name of the most appropriate column from the given table PLAYER that can be used as a Primary key.

(b) Define the term Degree in relational data model. What is the Degree of the given table PLAYER ?

SECTION – B

(Each question carries 3 marks)

8. • Write the definition of a user defined function **`PushNV(N)`** which accepts a list of strings in the parameter **`N`** and **`pushes`** all strings which have no vowels present in it, into a list named **`NoVowel`**. **3**

• Write a program in Python to input 5 words and **`push`** them one by one into a list named **`All`**.

The program should then use the function **`PushNV()`** to create a stack of words in the list **`NoVowel`** so that it stores only those words which do not have any vowel present in it, from the list **`All`**. Thereafter, **pop** each word from the list **`NoVowel`** and display the popped word. When the stack is empty display the message **`"EmptyStack"`**.

For example :

If the Words accepted and pushed into the list **`All`** are

`['DRY', 'LIKE', 'RHYTHM', 'WORK', 'GYM']`

Then the stack **NoVowel** should store

['DRY', 'RHYTHM', 'GYM']

And the output should be displayed as

GYM RHYTHM DRY EmptyStack

OR

- Write the definition of a user defined function **Push3_5(N)** which accepts a list of integers in a parameter **N** and **pushes** all those integers which are **divisible by 3 or divisible by 5** from the list **N** into a list named **Only3_5**.
- Write a program in Python to input 5 integers into a list named **NUM**.

  The program should then use the function **Push 3_5()** to create the stack of the list **Only3_5**. Thereafter **pop** each integer from the list **Only3_5** and display the popped value. When the list is empty, display the message **"StackEmpty".**

For example :

If the integers input into the list **NUM** are :

[10, 6, 14, 18, 30]

Then the stack **Only3_5** should store

[10, 6, 18, 30]

And the output should be displayed as

30 18 6 10 StackEmpty

9. (i) A SQL table **ITEMS** contains the following columns : **1**

INO, INAME, QUANTITY, PRICE, DISCOUNT

Write the SQL command to remove the column **DISCOUNT** from the table.

(ii) Categorize the following SQL commands into **DDL** and **DML** : **2**

CREATE, UPDATE, INSERT, DROP

10. Rohan is learning to work upon Relational Database Management System (RDBMS) application. Help him to perform following tasks : **3**

(a) To open the database named **"LIBRARY"**.

(b) To display the names of all the tables stored in the opened database.

(c) To display the structure of the table **"BOOKS"** existing in the already opened database **"LIBRARY"**.

SECTION – C

(Each question carries 4 marks)

11. Write SQL queries for (a) to (d) based on the tables PASSENGER and FLIGHT given below : **4**

Table : **PASSENGER**

PNO	NAME	GENDER	FNO
1001	Suresh	MALE	F101
1002	Anita	FEMALE	F104
1003	Harjas	MALE	F102
1004	Nita	FEMALE	F103

Table : **FLIGHT**

FNO	START	END	F_DATE	FARE
F101	MUMBAI	CHENNAI	2021-12-25	4500
F102	MUMBAI	BENGALURU	2021-11-20	4000
F103	DELHI	CHENNAI	2021-12-10	5500
F104	KOLKATA	MUMBAI	2021-12-20	4500
F105	DELHI	BENGALURU	2021-01-15	5000

(a) Write a query to change the fare to 6000 of the flight whose FNO is F104.

(b) Write a query to display the total number of MALE and FEMALE PASSENGERS.

(c) Write a query to display the **NAME**, corresponding **FARE** and **F_DATE** of all PASSENGERS who have a flight to **START** from DELHI.

(d) Write a query to delete the records of flights which end at Mumbai.

12. (i) Differentiate between Bus Topology and Tree Topology. Also, write one advantage of each of them. **2**

OR

Differentiate between HTML and XML.

(ii) What is a web browser ? Write the names of any two commonly used web browsers. **2**

13. Galaxy Provider Ltd. is planning to connect its office in Texas, USA with its branch at Mumbai. The Mumbai branch has 3 Offices in three blocks located at some distance from each other for different operations – ADMIN, SALES and ACCOUNTS. **4**

As a network consultant, you have to suggest the best network related solutions for the issues/problems raised in (a) to (d), keeping in mind the distances between various locations and other given parameters.

Layout of the Offices in the Mumbai branch :

Shortest distances between various locations :

ADMIN Block to SALES Block	300 m
SALES Block to ACCOUNTS Block	175 m
ADMIN Block to ACCOUNTS Block	350 m
MUMBAI Branch to TEXAS Head Office	14000 km

Number of Computers installed at various locations are as follows :

ADMIN Block	255
ACCOUNTS Block	75
SALES Block	30
TEXAS Head Office	90

(a) It is observed that there is a huge data loss during the process of data transfer from one block to another. Suggest the most appropriate networking device out of the following, which needs to be placed along the path of the wire connecting one block office with another to refresh the signal and forward it ahead.

(i) MODEM (ii) ETHERNET CARD

(iii) REPEATER (iv) HUB

(b) Which hardware networking device out of the following, will you suggest to connect all the computers within each block ?

(i) SWITCH (ii) MODEM

(iii) REPEATER (iv) ROUTER

(c) Which service/protocol out of the following will be most helpful to conduct live interactions of employees from Mumbai Branch and their counterparts in Texas ?

(i) FTP (ii) PPP

(iii) SMTP (iv) VolP

(d) Draw the cable layout (block to block) to efficiently connect the three offices of the Mumbai branch.

2021-22– BOARD SAMPLE

TERM II BOARD QUESTION PAPER - MS

Strictly Confidential: (For Internal and Restricted use only)

Senior Secondary School Term II Examination, 2022

Marking Scheme – COMPUTER SCIENCE (SUBJECT CODE – 083)

(Series: %BAB%, SET - 4, PAPER CODE –91)

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 teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2. **"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to the public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under IPC."**
3. 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 latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them. In class-XII, while evaluating two competency based questions, please try to understand the given answer and even if the reply is not from the marking scheme but correct competency is enumerated by the candidate, marks should be awarded.**
4. 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.
5. Evaluators will mark(√) wherever the answer is correct. For wrong answer 'X' be marked. Evaluators will not put the right kind of mark while evaluating which gives an impression that the answer is correct and no marks are awarded. **This is the most common mistake which evaluators are committing.**
6. 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. This may be followed strictly.
7. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
8. 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.
9. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
10. A full scale of marks **35** (example **0-35** marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 30 answer books per day in main subjects and 35 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in the question paper.

12. Ensure that you do not make the following common types of errors committed by the Examiner in the past :-
    - Leaving the answer or part thereof unassessed in an answer book.
    - Giving more marks for an answer than assigned to it.
    - Wrong totaling of marks awarded on a reply.
    - Wrong transfer of marks from the inside pages of the answer book to the title page.
    - Wrong question wise totaling on the title page.
    - Wrong totaling of marks of the two columns on the title page.
    - Wrong grand total.
    - Marks in words and figures not tallying.
    - Wrong transfer of marks from the answer book to online award list.
    - 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.)
    - Half or a part of the answer was marked correct and the rest as wrong, but no marks awarded.
13. While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
14. 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.
15. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.
16. 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.
17. 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:

- **The answers given in the marking scheme are SUGGESTIVE. Examiners are requested to award marks for all alternative correct Solutions/Answers conveying a similar meaning.**
- **All programming questions have to be answered with respect to Python only.**
- **In Python, ignore case sensitivity for identifiers/ Variables / 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.**

Maximum Marks: 35 Time: 2 hours

General Instructions :

i. This question paper is divided into **3 Sections – A, B and C**
ii. **Section A**, consists of **7** questions **(1-7)**. Each question carries **2** marks.
iii. **Section B**, consists of **3** questions **(8-10)**. Each question carries **3** marks.
iv. **Section C**, consists of **3** questions **(11-13)**. Each question carries **4** marks.
v. Internal choices have been given for question numbers **7**, **8** and **12**.

		Section -A **(Each question carries 2 marks)**	
1.		"Stack is a linear data structure which follows a particular order in which the operations are performed." What is the order in which the operations are performed in a Stack ? Name the List method/function available in Python which is used to remove the last element from a list implemented stack. Also write an example using Python statements for removing the last element of the list.	2
	Ans	**Order of operations performed in a Stack is LIFO (Last In First Out)** **The List method in Python to remove the last element from a list implemented stack is** **pop()** **OR** **pop(-1)** **OR** **pop** **Example:** **L=[10,20,30,40]** **L.pop() OR L.pop(-1)** **OR** **Any other appropriate example**	
		(1 mark for writing correct order) *(½ mark for writing pop or any other correct method/function)* *(½ mark for writing correct Python code of an example)* *OR* *(1 mark for writing correct order)* *(1 mark for correct Python statement to demonstrate the pop() function)* *(Note: FILO - First In Last Out, may also be considered)*	

2.	(i)	Expand the following : **VoIP, PPP**	1
	Ans	**VoIP : Voice over Internet Protocol** **PPP : Point to Point Protocol**	
		(½ mark each for writing correct expansion)	
	(ii)	Riya wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth technology to connect two devices. Which type of network (PAN/LAN/MAN/WAN) will be formed in this case?	1
	Ans	**PAN/ Personal Area Network**	
		(1 mark for correct type of network)	
3.		Differentiate between the terms Attribute and Domain in the context of Relational Data Model.	2
	Ans		

Attribute	Domain
The column/field of a table/relation is known as an attribute.	It is a set of permissible values from which attributes can take/obtain required value.

For example:
Table: Student

Name	Class	Marks
aaa	XII	90
bbb	X	99

Name, Class and Marks are attributes	The attribute class has domain of X, XII

		(1 mark each for writing any correct explanation of Attribute and Domain)	
4.		Consider the following SQL table MEMBER in a SQL Database CLUB:	2

Table: MEMBER

M_ID	NAME	ACTIVITY
M1001	Amina	GYM
M1002	Pratik	GYM
M1003	Simon	SWIMMING
M1004	Rakesh	GYM
M1005	Avneet	SWIMMING

Assume that the required library for establishing the connection between Python and MYSQL is already imported in the given Python code. Also assume that DB is the name of the database connection for table MEMBER stored in the database CLUB.

Predict the output of the following code:

```
MYCUR = DB.cursor()
MYCUR.execute("USE CLUB")
MYCUR.execute("SELECT * FROM MEMBER WHERE ACTIVITY='GYM'")
R=MYCUR.fetchone()
for i in range(2):
   R=MYCUR.fetchone()
   print(R[0], R[1], sep ="#")
```

Ans

M1002#Pratik
M1004#Rakesh

(1 mark for writing each correct line of output)

(Note: Deduct ½ mark for missing # or writing the output in a single line OR writing any additional line along with the correct output)

5. Write the output of the SQL queries (a) to (d) based on the table **VACCINATION_DATA** given below: 2

TABLE: **VACCINATION_DATA**

VID	Name	Age	Dose1	Dose2	City
101	Jenny	27	2021-12-25	2022-01-31	Delhi
102	Harjot	55	2021-07-14	2021-10-14	Mumbai
103	Srikanth	43	2021-04-18	2021-07-20	Delhi
104	Gazala	75	2021-07-31	NULL	Kolkata
105	Shiksha	32	2022-01-01	NULL	Mumbai

(a)

```
SELECT Name, Age FROM VACCINATION_DATA
WHERE Dose2 IS NOT NULL AND Age > 40;
```

Ans

Name	Age
Harjot	55
Srikanth	43

(½ mark for the correct output)
(Note: Ignore column heading of the output and order of the output rows)

(b)

```
SELECT City, COUNT(*) FROM VACCINATION_DATA
GROUP BY City;
```

Ans

City	COUNT(*)
Delhi	2
Mumbai	2
Kolkata	1

(½ mark for the correct output)
(Note: Ignore column heading of the output and order of the output rows)

(c)

```
SELECT DISTINCT City FROM VACCINATION_DATA;
```

Ans

City
Delhi
Mumbai
Kolkata

(½ mark for the correct output)
(Note: Ignore column heading of the output and order of the output rows)

(d)

```
SELECT MAX(Dose1),MIN(Dose2)FROM VACCINATION_DATA;
```

Ans

MAX(Dose1)	MIN(Dose2)
2022-01-01	2021-07-20

(½ mark for the correct output)
(Note: Ignore column heading of the output and order of the output rows)

6 Write the output of SQL queries (a) and (b) based on the following two tables DOCTOR and PATIENT belonging to the same database : 2

Table: **DOCTOR**

DNO	DNAME	FEES
D1	AMITABH	1500
D2	ANIKET	1000
D3	NIKHIL	1500
D4	ANJANA	1500

Table: **PATIENT**

PNO	PNAME	ADMDATE	DNO
P1	NOOR	2021-12-25	D1
P2	ANNIE	2021-11-20	D2
P3	PRAKASH	2020-12-10	NULL
P4	HARMEET	2019-12-20	D1

(a)

```
SELECT DNAME, PNAME FROM DOCTOR
NATURAL JOIN PATIENT ;
```

Ans

DNAME	PNAME
AMITABH	NOOR
ANIKET	ANNIE
AMITABH	HARMEET

(1 mark for writing correct output)

Note:
Deduct ½ mark for any additional row along with the correct rows
Ignore column heading of the output and order of the output rows

(b)

```
SELECT PNAME, ADMDATE, FEES
FROM PATIENT P, DOCTOR D
WHERE D.DNO = P.DNO AND FEES > 1000;
```

Ans

PNAME	ADMDATE	FEES
NOOR	2021-12-25	1500
HARMEET	2019-12-20	1500

(1 mark for writing correct output)

Note:
Deduct ½ mark for any additional row along with the correct rows
Ignore column heading of the output and order of the output rows

7. Differentiate between Candidate Key and Primary Key in the context of Relational Database Model. 2

Ans **A table may have more than one or a combination of attribute(s)that identifies a tuple uniquely. All such attribute(s) are known as Candidate Keys.**

Out of all the Candidate keys, the most appropriate one, which is used for unique identification of the Tuples, is called the Primary Key.

Example:
Table: **BANK**

ACNO	NAME	PHONE
10001	RISHABH	9810876677
10031	ARNAV	9810876123
10064	ARNAV	9810875577
10076	GURSHARAN	9810871144

Candidate Keys: ACNO, PHONE
Primary Key: ACNO

(2 marks for correct explanation OR example given to differentiate the keys)

OR
(1 mark for writing only the correct explanation/example of candidate key)
(1 mark for writing only the correct explanation/example of primary key)

		OR	
		Consider the following table PLAYER : Table: **PLAYER** <table><tr><th>PNO</th><th>NAME</th><th>SCORE</th></tr><tr><td>P1</td><td>RISHABH</td><td>52</td></tr><tr><td>P2</td><td>HUSSAIN</td><td>45</td></tr><tr><td>P3</td><td>ARNOLD</td><td>23</td></tr><tr><td>P4</td><td>ARNAV</td><td>18</td></tr><tr><td>P5</td><td>GURSHARAN</td><td>42</td></tr></table>	2
	(a)	Identify and write the name of the most appropriate column from the given table PLAYER that can be used as a Primary key.	
	Ans	**PNO**	
		(1 mark for mentioning PNO) *(Note: Don't deduct marks, if any additional column name is also mentioned along with PNO)*	
	(b)	Define the term Degree in relational data model. What is the Degree of the given table PLAYER ?	
	Ans	**Total number of columns/attributes in a table/relation is known as its Degree.** **The Degree of the given table is 3.**	
		(½ mark for writing/explaining with example the correct meaning of Degree) *(½ mark writing correct Degree of the given table)*	
		Section -B **(Each question carries 3 marks)**	
8.		• Write the definition of a user defined function **PushNV(N)** which accepts a list of strings in the parameter **N** and **pushes** all strings which have no vowels present in it, into a list named **NoVowel**. • Write a program in Python to input 5 Words and **push** them one by one into a list named **All**. The program should then use the function **PushNV()** to create a stack of words in the list **NoVowel** so that it stores only those words which do not have any vowel present in it, from the list **All**. Thereafter, **pop** each word from the list **NoVowel** and display the popped word. When the stack is empty, display the message **"EmptyStack"**. For example: If the Words accepted and pushed into the list **All** are **['DRY', 'LIKE', 'RHYTHM', 'WORK', 'GYM']**	3

Then the stack **NoVowel** should store
['DRY', 'RHYTHM', 'GYM']

And the output should be displayed as

GYM RHYTHM DRY EmptyStack

Ans

```
def PushNV(N):
    for W in N :
        for C in W :
            if C.upper() in  'AEIOU':
                break
        else:
            NoVowel.append(W)
All=[]
NoVowel=[]

for i in range(5) :
   All.append(input('Enter a Word: '))

PushNV(All)

while NoVowel :
   print(NoVowel.pop(), end=' ')
else :
   print('EmptyStack')
```

OR

Any other correct equivalent code

(½ mark for checking vowels correctly, ignore case sensitivity)
(½ mark for pushing strings into the stack NoVowel)
(½ mark for reading 5 words from the users)
(½ mark for assigning 5 words into All)
(½ mark for writing correct code to pop and display the words from NoVowel)
(½ mark for writing correct code to check empty stack and display the message 'EmptyStack')

OR

- Write the definition of a user defined function **Push3_5(N)** which accepts a list of integers in a parameter **N** and **pushes** all those integers which are **divisible by 3 or divisible by 5** from the list **N** into a list named **Only3_5**.
- Write a program in Python to input 5 integers into a list named **NUM**. The program should then use the function **Push3_5()** to create the stack of the list **Only3_5**. Thereafter **pop** each integer from the list **Only3_5** and display the popped value. When the list is empty, display the message **"StackEmpty"**.

		For example: If the integers input into the list **NUM** are : **[10,6,14,18,30]** Then the stack **Only3_5** should store **[10,6,18,30]** And the output should be displayed as **30 18 6 10 StackEmpty**	
	Ans	**def Push3_5(N):** **for i in N :** **if i%3==0 or i%5==0 :** **Only3_5.append(i)** **NUM=[]** **Only3_5=[]** **for i in range(5):** **NUM.append(int(input('Enter an Integer: ')))** **Push3_5(NUM)** **while Only3_5 :** **print(Only3_5.pop(), end=' ')** **else :** **print('StackEmpty')** **OR** **Any other correct equivalent code**	
		(½ mark for checking divisibility correctly) *(½ mark for pushing integers into the stack Only3_5)* *(½ mark for reading 5 integers from the users)* *(½ mark for assigning those 5 integers into NUM)* *(½ mark for writing correct code to pop and display the integers from Only3_5)* *(½ mark for writing correct code to check empty stack and display the message 'StackEmpty')*	
9.	(i)	A SQL table **ITEMS** contains the following columns: **INO, INAME, QUANTITY, PRICE, DISCOUNT** Write the SQL command to remove the column **DISCOUNT** from the table.	1
	Ans	**ALTER TABLE ITEMS** **DROP COLUMN DISCOUNT;** **OR** **ALTER TABLE ITEMS** **DROP DISCOUNT;**	
		(½ mark for writing ALTER TABLE ITEMS) *(½ mark for writing DROP COLUMN DISCOUNT OR DROP DISCOUNT)*	

	(ii)	Categorize the following SQL commands into **DDL** and **DML** : CREATE, UPDATE, INSERT, DROP	2
	Ans	DDL Commands : **CREATE, DROP** DML Commands : **INSERT, UPDATE**	
		(½ Mark each for writing the correct DDL/DML commands)	
10.		Rohan is learning to work upon Relational Database Management System (RDBMS) application. Help him to perform following tasks:	3
	(a)	To open the database named **"LIBRARY"**.	
	Ans	**USE LIBRARY ;**	
		(1 Mark for writing correct SQL command)	
	(b)	To display the names of all the tables stored in the opened database.	
	Ans	**SHOW TABLES;** **OR** **SHOW TABLES FROM LIBRARY;**	
		(1 Mark for writing correct SQL command)	
	(c)	To display the structure of the table **"BOOKS"** existing in the already opened database **"LIBRARY"**.	
	Ans	**DESCRIBE BOOKS ;** **OR** **DESC BOOKS ;**	
		(1 Mark for writing correct SQL command)	
		Section - C **(Each question carries 4 marks)**	
11.		Write SQL queries for (a) to (d) based on the tables PASSENGER and FLIGHT given below:	4

Table : **PASSENGER**

PNO	NAME	GENDER	FNO
1001	Suresh	MALE	F101
1002	Anita	FEMALE	F104
1003	Harjas	MALE	F102
1004	Nita	FEMALE	F103

Table: **FLIGHT**

FNO	START	END	F_DATE	FARE
F101	MUMBAI	CHENNAI	2021-12-25	4500
F102	MUMBAI	BENGALURU	2021-11-20	4000
F103	DELHI	CHENNAI	2021-12-10	5500
F104	KOLKATA	MUMBAI	2021-12-20	4500
F105	DELHI	BENGALURU	2021-01-15	5000

	(a)	Write a query to change the fare to 6000 of the flight whose FNO is F104.	
	Ans	**UPDATE FLIGHT** **SET FARE=6000 WHERE FNO="F104";**	
		(½ Mark for writing **UPDATE FLIGHT***)* *(½ Mark for writing* **SET FARE=6000 WHERE FNO="F104"***)*	
	(b)	Write a query to display the total number of MALE and FEMALE PASSENGERS.	
	Ans	**SELECT GENDER, COUNT(*) FROM PASSENGER** **GROUP BY GENDER;** **OR** **SELECT COUNT(*) FROM PASSENGER** **GROUP BY GENDER;**	
		(½ mark for writing SELECT part correctly) *(½ mark for writing GROUP BY GENDER;)* ***OR*** *(any alternate correct uses of COUNT() is acceptable)*	
	(c)	Write a query to display the **NAME**, corresponding **FARE** and **F_DATE** of all PASSENGERS who have a flight to **START** from DELHI.	
	Ans	**SELECT NAME, FARE, F_DATE FROM PASSENGER P, FLIGHT F** **WHERE F.FNO= P.FNO AND START = 'DELHI';** **OR** **SELECT NAME, FARE, F_DATE FROM PASSENGER, FLIGHT** **WHERE PASSENGER.FNO= FLIGHT.FNO AND START = 'DELHI';** **OR** **SELECT NAME, FARE, F_DATE FROM PASSENGER, FLIGHT** **WHERE PASSENGER.FNO= FLIGHT.FNO AND START LIKE 'DELHI';** **OR** **SELECT NAME,FARE,F_DATE FROM PASSENGER NATURAL JOIN FLIGHT** **WHERE START = 'DELHI';** **OR** **Any other correct and equivalent query**	
		(½ mark for writing SELECT - FROM part correctly) *(½ mark for writing WHERE part correctly)*	
	(d)	Write a query to delete the records of flights which end at Mumbai.	
	Ans	**DELETE FROM FLIGHT** **WHERE END = "MUMBAI";** **OR** **DELETE FROM FLIGHT** **WHERE END LIKE "MUMBAI";**	
		(½ mark for writing DELETE FROM FLIGHT) *(½ mark for writing WHERE part correctly)*	

12.	(i)	Differentiate between Bus Topology and Tree Topology. Also, write one advantage of each of them.	2

Ans

Bus Topology	Tree Topology
In bus topology, each communicating device connects to a single transmission medium, known as bus.	It is a hierarchical topology, in which there are multiple branches and each branch can have one or more basic topologies like star, ring and bus.
Advantage: It is very cost-effective as compared to other network topologies.	**Advantage:** It is easier to set-up multi-level plans for the network.

OR
Any other correct difference/definition/advantages

(1 Mark for mentioning any one correct difference between the topologies)
(½ mark each for writing any one advantage of Bus and Tree Topologies)

OR

(½ mark each for conveying correct understanding of Bus and Tree Topology using/not using diagram)
(½ mark each for writing any one advantage of Bus and Tree Topologies)

OR

Differentiate between HTML and XML.

Ans

HTML	XML
It stands for HyperText Markup Language.	It stands for eXtensible Markup Language.
It contains predefined tags which are used to design webpages.	It contains user defined tags to describe and store the data.

OR
Any other valid difference/characteristic

		(Full 2 Marks for writing any one correct difference between HTML and XML) ***OR*** *(1 Mark for writing correct explanation of HTML)* ***OR*** *(½ Mark for writing full form of HTML)* *(1 Mark for writing correct explanation of XML)* ***OR*** *(½ Mark for writing full form of XML)*	
	(ii)	What is a web browser ? Write the names of any two commonly used web browsers.	2
	Ans	**A Web browser is a software/tool, which allows us to view/access the content of WebPages.** **OR** **It is a Client software program that is used to access various kinds of Internet resources using HTTP.** **Examples :** **Google Chrome, Microsoft Edge, Mozilla Firefox, Apple Safari, Opera, Chromium, etc. (ANY TWO)**	
		(1 Mark for writing correct explanation of Web-Browser) *(½ Mark for writing each correct name of two Web-Browsers)*	
13.		Galaxy Provider Ltd. is planning to connect its office in Texas, USA with its branch at Mumbai. The Mumbai branch has 3 Offices in three blocks located at some distance from each other for different operations – ADMIN, SALES and ACCOUNTS. As a network consultant, you have to suggest the best network related solutions for the issues/problems raised in (a) to (d), keeping in mind the distances between various locations and other given parameters. Layout of the Offices in the Mumbai branch: Shortest distances between various locations:	4

ADMIN Block to SALES Block	300 m
SALES Block to ACCOUNTS Block	175 m
ADMIN Block to ACCOUNTS Block	350 m
MUMBAI Branch to TEXAS Head Office	14000 km

Number of Computers installed at various locations are as follows:

ADMIN Block	255
ACCOUNTS Block	75
SALES Block	30
TEXAS Head Office	90

(a) It is observed that there is a huge data loss during the process of data transfer from one block to another. Suggest the most appropriate networking device out of the following, which needs to be placed along the path of the wire connecting one block office with another to refresh the signal and forward it ahead.

(i) MODEM (ii) ETHERNET CARD
(iii) REPEATER (iv) HUB

Ans **(iii) REPEATER**

(1 Mark for correct identification of the Networking Device)

(b) Which hardware networking device out of the following, will you suggest to connect all the computers within each block ?

(i) SWITCH (ii) MODEM
(iii) REPEATER (iv) ROUTER

Ans **(i) SWITCH**

(1 Mark for correct identification of the Networking Device)

(c) Which service/protocol out of the following will be most helpful to conduct live interactions of employees from Mumbai Branch and their counterparts in Texas ?

(i) FTP (ii) PPP
(iii) SMTP (iv) VoIP

Ans **(iv) VoIP**

(1 Mark for correct identification of the service/protocol)

(d) Draw the cable layout (block to block) to efficiently connect the three offices of the Mumbai branch.

Ans

OR any alternate cable layout

(1 Mark for drawing correct cable layout)

2021-22– BOARD SAMPLE

TERM II BOARD QUESTION (Comp)

SET-4

Series %BAB%/C

Q.P. Code **91**

Roll No. | | | | | | | | |

Candidates must write the Q.P. Code on the title page of the answer-book.

- Please check that this question paper contains **9** printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **13** questions.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

COMPUTER SCIENCE

Time allowed : 2 hours *Maximum Marks : 35*

General Instructions :

*(i) This question paper is divided into **3** sections – **A**, **B** and **C**.*

*(ii) **Section A**, consists **7** questions (1 – 7). Each question carries **2** marks.*

*(iii) **Section B**, consists **3** questions (8 – 10). Each question carries **3** marks.*

*(iv) **Section C**, consists **3** questions (11 – 13). Each question carries **4** marks.*

*(v) Internal choices have been given for questions number **7**, **8** and **12**.*

SECTION A

(Each question carries 2 marks)

1. Differentiate between Push and Pop operations in the context of stacks. *2*

2. (a) Expand **FTP**. *1*

(b) Out of the following, which has the **largest** network coverage area ? *1*

LAN, MAN, PAN, WAN

3. Differentiate between Degree and Cardinality in the context of Relational Data Model. *2*

4. Consider the following table EMPLOYEE in a Database COMPANY :

Table : EMPLOYEE

E_ID	NAME	DEPT
H1001	Avneet	AC
A1002	Rakesh	HR
A1003	Amina	AC
H1002	Simon	HR
A1004	Pratik	AC

Assume that the required library for establishing the connection between Python and MySQL is already imported in the given Python code.

Also assume that DB is the name of the database connection for the given table EMPLOYEE stored in the database COMPANY.

Predict the output of the following Python code : *2*

```
CUR=DB.cursor()
CUR.execute("USE COMPANY")
CUR.execute("SELECT * FROM EMPLOYEE WHERE DEPT = 'AC' ")
for i in range(2) :
    R=CUR.fetchone()
    print(R[0], R[1], sep ="#")
```

5. Write the output of the SQL queries (a) to (d) based on the table TRAVEL given below : *2*

Table : TRAVEL

T_ID	START	END	T_DATE	FARE
101	DELHI	CHENNAI	2021-12-25	4500
102	DELHI	BENGALURU	2021-11-20	4000
103	MUMBAI	CHENNAI	2020-12-10	5500
104	DELHI	MUMBAI	2019-12-20	4500
105	MUMBAI	BENGALURU	2022-01-15	5000

(a)
```
SELECT START, END FROM TRAVEL
WHERE FARE <= 4000 ;
```

(b)
```
SELECT T_ID, FARE FROM TRAVEL
WHERE T_DATE LIKE '2021-12-%' ;
```

(c)
```
SELECT T_ID, T_DATE FROM TRAVEL WHERE END = 'CHENNAI'
ORDER BY FARE ;
```

(d)
```
SELECT START, MIN(FARE)
FROM TRAVEL GROUP BY START ;
```

6. Write the output of the SQL queries (a) and (b) based on the following two tables FLIGHT and PASSENGER belonging to the same database : *2*

Table : FLIGHT

FNO	DEPART	ARRIVE	FARE
F101	DELHI	CHENNAI	4500
F102	DELHI	BENGALURU	4000
F103	MUMBAI	CHENNAI	5500
F104	DELHI	MUMBAI	4500
F105	MUMBAI	BENGALURU	5000

Table : PASSENGER

PNO	NAME	FLIGHTDATE	FNO
P1	PRAKASH	2021-12-25	F101
P2	NOOR	2021-11-20	F103
P3	HARMEET	2020-12-10	NULL
P4	ANNIE	2019-12-20	F105

(a)
```
SELECT NAME, DEPART FROM FLIGHT
NATURAL JOIN PASSENGER ;
```

(b)
```
SELECT NAME, FARE
FROM PASSENGER P, FLIGHT F
WHERE F.FNO = P.FNO AND F.DEPART = 'MUMBAI' ;
```

7. (a) Explain Primary Key in the context of Relational Database Model. Support your answer with suitable example. *2*

OR

(b) Consider the following table BATSMEN :

Table : BATSMEN

PNO	NAME	SCORE
P1	RISHABH	52
P2	HUSSAIN	45
P3	ARNOLD	23
P4	ARNAV	18
P5	GURSHARAN	52

(i) Identify and write the name of the Candidate Keys in the given table BATSMEN.

(ii) How many tuples are there in the given table BATSMEN ? *2*

SECTION B

(Each question carries 3 marks)

8. (a) Write separate user defined functions for the following : *3*

(i) **`PUSH(N)`** – This function accepts a list of names, **`N`** as parameter. It then pushes only those names in the stack named **`OnlyA`** which contain the letter **`'A'`**.

(ii) **`POPA(OnlyA)`** – This function pops each name from the stack **`OnlyA`** and displays it. When the stack is empty, the message **`"EMPTY"`** is displayed.

For example :

If the names in the list **`N`** are

`['ANKITA', 'NITISH', 'ANWAR', 'DIMPLE', 'HARKIRAT']`

Then the stack **`OnlyA`** should store

`['ANKITA', 'ANWAR', 'HARKIRAT']`

And the output should be displayed as

`HARKIRAT ANWAR ANKITA EMPTY`

OR

(b) Write the following user defined functions : *3*

(i) **`pushEven(N)`** – This function accepts a list of integers named **`N`** as parameter. It then pushes only even numbers into the stack named **`EVEN`**.

(ii) **`popEven(EVEN)`** – This function pops each integer from the stack **`EVEN`** and displays the popped value. When the stack is empty, the message **`"Stack Empty"`** is displayed.

For example :

If the list **`N`** contains
`[10,5,3,8,15,4]`
Then the stack, **`EVEN`** should store
`[10,8,4]`
And the output should be
`4 8 10 Stack Empty`

9. (a) A SQL table **BOOKS** contains the following column names :

BOOKNO, BOOKNAME, QUANTITY, PRICE, AUTHOR

Write the SQL statement to add a new column **REVIEW** to store the reviews of the book. *1*

(b) Write the names of any two commands of **DDL** and any two commands of **DML** in SQL. *2*

10. Rashmi has forgotten the names of the databases, tables and the structure of the tables that she had created in Relational Database Management System (RDBMS) on her computer.

(a) Write the SQL statement to display the names of all the databases present in RDBMS application on her computer.

(b) Write the statement which she should execute to open the database named **"STOCK"**.

(c) Write the statement which she should execute to display the structure of the table **"ITEMS"** existing in the above opened database **"STOCK"**. *3*

SECTION C

(Each question carries 4 marks)

11. Write SQL queries for (a) to (d) based on the tables CUSTOMER and TRANSACT given below : *4*

Table : CUSTOMER

CNO	NAME	GENDER	ADDRESS	PHONE
1001	Suresh	MALE	A-123, West Street	9310010010
1002	Anita	FEMALE	C-24, Court Lane	9121211212
1003	Harjas	MALE	T-1, Woods Avenue	9820021001

Table : TRANSACT

TNO	CNO	AMOUNT	TTYPE	TDATE
T1	1002	2000	DEBIT	2021-09-25
T2	1003	1500	CREDIT	2022-01-28
T3	1002	3500	CREDIT	2021-12-31
T4	1001	1000	DEBIT	2022-01-10

(a) Write the SQL statements to delete the records from table TRANSACT whose amount is less than 1000.

(b) Write a query to display the total **AMOUNT** of all **DEBITs** and all **CREDITs.**

(c) Write a query to display the **NAME** and corresponding **AMOUNT** of all **CUSTOMERs** who made a transaction type **(TTYPE)** of **CREDIT**.

(d) Write the SQL statement to change the Phone number of customer whose CNO is 1002 to 9988117700 in the table CUSTOMER.

12. (a) (i) Mention any two characteristics of BUS Topology. *2*

OR

(ii) Differentiate between the terms Domain Name and URL in the context of World Wide Web. *2*

(b) Write the names of two wired and two wireless data transmission mediums. *2*

13. The government has planned to develop digital awareness in the rural areas of the nation. According to the plan, an initiative is taken to set up Digital Training Centers in villages across the country with its Head Office in the nearest cities. The committee has hired a networking consultancy to create a model of the network in which each City Head Office is connected to the Training Centers situated in 3 nearby villages.

As a network expert in the consultancy, you have to suggest the best network-related solutions for the issues/problems raised in (a) to (d), keeping in mind the distance between various locations and other given parameters. *4*

Layout of the City Head Office and Village Training Centers :

Shortest distances between various Centers :

Village 1 Training Center to City Head Office	2 KM
Village 2 Training Center to City Head Office	1·5 KM
Village 3 Training Center to City Head Office	3 KM
Village 1 Training Center to Village 2 Training Center	3·5 KM
Village 1 Training Center to Village 3 Training Center	4·5 KM
Village 2 Training Center to Village 3 Training Center	3·5 KM

Number of Computers installed at various centers are as follows :

Village 1 Training Center	10
Village 2 Training Center	15
Village 3 Training Center	15
City Head Office	100

(a) It is observed that there is a huge data loss during the process of data transfer from one village to another. Suggest the most appropriate networking device out of the following, which needs to be placed along the path of the wire connecting one village with another to refresh the signal and forward it ahead.

(i) MODEM

(ii) ETHERNET CARD

(iii) REPEATER

(iv) HUB

(b) Draw the cable layout (location-to-location) to efficiently connect various Village Training Centers and the City Head Office for the above shown layout.

(c) Which hardware networking device, out of the following, will you suggest to connect all the computers within the premises of every Village Training Center ?

(i) SWITCH

(ii) MODEM

(iii) REPEATER

(iv) ROUTER

(d) Which protocol, out of the following, will be most helpful to conduct online interactions of Experts from the City Head Office and people at the three Village Training Centers ?

(i) FTP

(ii) PPP

(iii) SMTP

(iv) VoIP

2021-22– BOARD SAMPLE

TERM II BOARD QUESTION (Comp) MS

Strictly Confidential: (For Internal and Restricted use only)

Senior Secondary School Term II Compartment Examination, 2022

Marking Scheme – COMPUTER SCIENCE (SUBJECT CODE – 083)

(Series: %BAB%/C, SET - 4, PAPER CODE –91)

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 teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2. **"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to the public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under IPC."**
3. 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 latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them. In class-XII, while evaluating two competency based questions, please try to understand the given answer and even if the reply is not from the marking scheme but correct competency is enumerated by the candidate, marks should be awarded.**
4. 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.
5. Evaluators will mark(√) wherever the answer is correct. For wrong answer 'X' be marked. Evaluators will not put the right kind of mark while evaluating which gives an impression that the answer is correct and no marks are awarded. **This is the most common mistake which evaluators are committing.**
6. 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. This may be followed strictly.
7. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
8. 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.
9. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
10. A full scale of marks **35** (example **0-35** marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 30 answer books per day in main subjects and 35 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in the question paper.

12. Ensure that you do not make the following common types of errors committed by the Examiner in the past :-
    - Leaving the answer or part thereof unassessed in an answer book.
    - Giving more marks for an answer than assigned to it.
    - Wrong totaling of marks awarded on a reply.
    - Wrong transfer of marks from the inside pages of the answer book to the title page.
    - Wrong question wise totaling on the title page.
    - Wrong totaling of marks of the two columns on the title page.
    - Wrong grand total.
    - Marks in words and figures not tallying.
    - Wrong transfer of marks from the answer book to online award list.
    - 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.)
    - Half or a part of the answer was marked correct and the rest as wrong, but no marks awarded.
13. While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
14. 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.
15. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.
16. 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.
17. 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:

- **The answers given in the marking scheme are SUGGESTIVE. Examiners are requested to award marks for all alternative correct Solutions/Answers conveying a similar meaning.**
- **All programming questions have to be answered with respect to Python only.**
- **In Python, ignore case sensitivity for identifiers/ Variables / 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.**

Time allowed: 2 hours Maximum Marks: 35

General Instructions :

*(i) This question paper is divided into **3 Sections – A, B and C**.*

*(ii) **Section A**, consists **7** questions **(1-7)**. Each question carries **2** marks.*

*(iii) **Section B**, consists **3** questions **(8-10)**. Each question carries **3** marks.*

*(iv) **Section C**, consists **3** questions **(11-13)**. Each question carries **4** marks.*

*(v) Internal choices have been given for question numbers **7**, **8** and **12**.*

		SECTION A **(Each question carries 2 marks)**	
1.		Differentiate between Push and Pop operations in the context of stacks.	2
	Ans	PUSH is the operation of insertion of an element in a stack at its topmost location. POP is the operation of deletion of the topmost element of the stack.	
		(1 mark each for writing correct definition/example/explanation of Push and Pop operations)	
2.	(a)	Expand **FTP**.	1
	Ans	**FTP: File Transfer Protocol**	
		(1 mark for writing correct expansion)	
	(b)	Out of the following, which has the **largest** network coverage area ? **LAN, MAN, PAN, WAN**	1
	Ans	**Largest cover: WAN**	
		(1 mark for writing correct type of network)	
3.		Differentiate between Degree and Cardinality in the context of Relational Data Model.	2
	Ans	Degree : Number of columns in a table is called its Degree. Cardinality : Number of rows in a table is called its Cardinality. OR Any valid example to differentiate between Degree & cardinality.	
		(2 marks for writing any valid difference) *OR* *(1 mark each for writing correct definition/example/explanation of Degree and Cardinality)*	

4. Consider the following table **EMPLOYEE** in a Database **COMPANY** : 2

Table: EMPLOYEE

E_ID	NAME	DEPT
H1001	Avneet	AC
A1002	Rakesh	HR
A1003	Amina	AC
H1002	Simon	HR
A1004	Pratik	AC

Assume that the required library for establishing the connection between Python and MySQL is already imported in the given Python code.

Also assume that DB is the name of the database connection for the given table EMPLOYEE stored in the database COMPANY.

Predict the output of the following Python code :

```
CUR = DB.cursor()
CUR.execute("USE COMPANY")
CUR.execute("SELECT * FROM EMPLOYEE WHERE DEPT = 'AC' ")
for i in range(2) :
   R=CUR.fetchone()
   print(R[0], R[1], sep ="#")
```

Ans

```
H1001#Avneet
A1003#Amina
```

(1 mark for writing each correct line of output)

(Note: Deduct ½ mark, if line break or/and # sign is not correctly written)

5. Write the output of the SQL queries (a) to (d) based on the table **TRAVEL** given below : 2

Table: TRAVEL

T_ID	START	END	T_DATE	FARE
101	DELHI	CHENNAI	2021-12-25	4500
102	DELHI	BENGALURU	2021-11-20	4000
103	MUMBAI	CHENNAI	2020-12-10	5500
104	DELHI	MUMBAI	2019-12-20	4500
105	MUMBAI	BENGALURU	2022-01-15	5000

(a)

```
SELECT START, END FROM TRAVEL WHERE FARE <=4000;
```

Ans

START	END
DELHI	BENGALURU

(½ mark for writing correct output - with or without column headings)

(b)

```
SELECT T_ID, FARE FROM TRAVEL
WHERE T_DATE LIKE '2021-12-%' ;
```

Ans

T_ID	FARE
101	4500

(½ mark for writing correct output - with or without column headings)

(c)

```
SELECT T_ID, T_DATE FROM TRAVEL WHERE END = 'CHENNAI'
ORDER BY FARE ;
```

Ans

T_ID	T_DATE
101	2021-12-25
103	2020-12-10

(½ mark for writing correct output - with or without column headings)

	(d)	`SELECT START, MIN(FARE)FROM TRAVEL` `GROUP BY START ;`	
	Ans		

START	MIN(FARE)
DELHI	4000
MUMBAI	5000

(½ mark for writing correct output - with or without column headings)

6 (2)

Write the output of the **SQL** queries (a) and (b) based on the following two tables **FLIGHT** and **PASSENGER** belonging to the same database :

Table: FLIGHT

FNO	DEPART	ARRIVE	FARE
F101	DELHI	CHENNAI	4500
F102	DELHI	BENGALURU	4000
F103	MUMBAI	CHENNAI	5500
F104	DELHI	MUMBAI	4500
F105	MUMBAI	BENGALURU	5000

Table: PASSENGER

PNO	NAME	FLIGHTDATE	FNO
P1	PRAKASH	2021-12-25	F101
P2	NOOR	2021-11-20	F103
P3	HARMEET	2020-12-10	NULL
P4	ANNIE	2019-12-20	F105

(a)

```
SELECT NAME,DEPART
FROM FLIGHT NATURAL JOIN PASSENGER ;
```

Ans

NAME	DEPART
PRAKASH	DELHI
NOOR	MUMBAI
ANNIE	MUMBAI

(1 mark for writing correct output - with or without column headings)

(b)

```
SELECT NAME, FARE
FROM PASSENGER P, FLIGHT F
WHERE F.FNO = P.FNO AND F.DEPART = 'MUMBAI' ;
```

Ans

NAME	FARE
NOOR	5500
ANNIE	5000

(1 mark for writing correct output - with or without column headings)

7. Explain Primary Key in the context of Relational Database Model. Support your answer with suitable example. 2

Ans An attribute or a group of attributes that identifies a tuple uniquely is known as a Primary Key of the table.

Example:

Table: **BANK**

ACNO	NAME	PHONE
10001	RISHABH	9810876677
10031	ARNAV	9810876123
10064	ARNAV	9810875577
10076	GURSHARAN	9810871144

Primary Key: ACNO

(1 mark for writing only the correct explanation/example of primary key)
(1 mark for writing appropriate example)

OR

		Consider the following table BATSMEN : Table: **BATSMEN**	2

PNO	NAME	SCORE
P1	RISHABH	52
P2	HUSSAIN	45
P3	ARNOLD	23
P4	ARNAV	18
P5	GURSHARAN	52

	(a)	Identify and write the name of the Candidate Keys in the given table BATSMEN.	
	Ans	PNO, NAME	
		(½ mark each for writing correct candidate keys)	
	(b)	How many tuples are there in the given table BATSMEN ?	
	Ans	5	
		(1 mark for writing correct answer)	
		SECTION B **(Each question carries 3 marks)**	
8.	(a)	Write separate user defined functions for the following : (i) **PUSH(N)** - This function accepts a list of names, **N** as parameter. It then pushes only those names in the stack named **OnlyA** which contain the letter **'A'**. (ii) **POPA(OnlyA)** - This function pops each name from the stack **OnlyA** and displays it. When the stack is empty, the message **"EMPTY"** is displayed. For example : If the names in the list **N** are **['ANKITA', 'NITISH', 'ANWAR', 'DIMPLE', 'HARKIRAT']** Then the stack **OnlyA** should store **['ANKITA', 'ANWAR', 'HARKIRAT']** And the output should be displayed as **HARKIRAT ANWAR ANKITA EMPTY**	3

	Ans	`def PUSH(N):`
		`  OnlyA=[]`
		`  for aName in N :`
		`  if 'A' in aName :`
		`  OnlyA.append(aName)`
		
		`def POPA(OnlyA):`
		`  while OnlyA :`
		`  print(OnlyA.pop(), end=' ')`
		`  else :`
		`  print('EMPTY')`
		OR
		Any other valid and equivalent definitions	

		(½ mark for accessing all names from the list N) *(½ mark for checking whether the name from N contains the alphabet 'A' or not)* *(½ mark for pushing/appending the desired names into the Stack OnlyA)* *(½ Mark for popping names from the Stack OnlyA)* *(½ mark for displaying popped names on the screen)* *(½ Mark for displaying the message 'EMPTY' when the Stack OnlyA is empty)*	
		OR	

	(b)	Write the following user defined functions :
		
		(i) **pushEven(N) -** This function accepts a list of integers named **N** as parameter. It then pushes only even numbers into the stack named **EVEN**.
		
		(ii) **popEven(EVEN) -** This function pops each integer from the stack **EVEN** and displays the popped value. When the stack is empty, the message "**Stack Empty**" is displayed.
		For example:
		
		If the list **N** contains :
		`[10,5,3,8,15,4]`
		Then the stack, **EVEN** should store
		`[10,8,4]`
		And the output should be
		`4 8 10 Stack Empty`	

	Ans	`def pushEven(N):`
		`  EVEN=[]`
		`  for z in N :`
		`  if z%2==0 :`
		`  EVEN.append(z)`
		
		`def popEven(EVEN):`
		`  while EVEN :`
		`  print(EVEN.pop(), end=' ')`
		`  else :`
		`  print('Stack Empty')`
		OR
		Any other valid and equivalent definitions	

		(½ mark for accessing all integers from the list N) *(½ mark for checking whether the integer from N is even or not)* *(½ mark for pushing/appending the desired integers into the Stack EVEN)* *(½ mark for popping integers from the Stack EVEN)* *(½ mark for displaying popped integers on the screen)* *(½ mark for displaying the message 'Stack Empty' when Stack EVEN is empty)*	
9.	(a)	A SQL table **BOOKS** contains the following column names: **BOOKNO,BOOKNAME, QUANTITY, PRICE, AUTHOR** Write the SQL statement to add a new column **REVIEW** to store the reviews of the book.	1
	Ans	`ALTER TABLE BOOKS` `ADD REVIEW VARCHAR(20) ;`	
		(½ mark for writing ALTER TABLE BOOKS) *(½ mark for writing ADD REVIEW VARCHAR(any size);* *OR ADD REVIEW CHAR(any size);)*	
	(b)	Write the names of any two commands of **DDL** and any two commands of **DML** in SQL.	2
	Ans	`DDL Commands : CREATE, DROP, ALTER (any two)` `DML Commands : INSERT, DELETE, UPDATE etc. (any two)`	

		(½ mark each for correctly writing any two DDL and any two DML commands)	
10.		Rashmi has forgotten the names of the databases,tables and the structure of the tables that she had created in Relational Database Management System (RDBMS) on her computer.	3
	(a)	Write the SQL statement to display the names of all the databases present in **RDBMS** application on her computer.	
	Ans	`SHOW DATABASES ;`	
		(1 Mark for writing correct SQL command)	
	(b)	Write the statement which she should execute to open the database named "**STOCK**".	
	Ans	`USE STOCK;`	
		(1 Mark for writing correct SQL command)	
	(c)	Write the statement which she should execute to display the structure of the table "**ITEMS**" existing in the above opened database "**STOCK**".	

	Ans	`DESCRIBE ITEMS;`
		
		`OR`
		
		`DESC ITEMS;`	

		(1 Mark for writing correct SQL command)	
		SECTION C **(Each question carries 4 marks)**	
11.		Write SQL queries for (a) to (d) based on the tables CUSTOMER and TRANSACT given below:	4

Table : CUSTOMER

CNO	NAME	GENDER	ADDRESS	PHONE
1001	Suresh	MALE	A-123, West Street	9310010010
1002	Anita	FEMALE	C-24, Court Lane	9121211212
1003	Harjas	MALE	T-1, Woods Avenue	9820021001

Table : TRANSACT

TNO	CNO	AMOUNT	TTYPE	TDATE
T1	1002	2000	DEBIT	2021-09-25
T2	1003	1500	CREDIT	2022-01-28
T3	1002	3500	CREDIT	2021-12-31
T4	1001	1000	DEBIT	2022-01-10

	(a)	Write the SQL statements to delete the records from table TRANSACT whose amount is less than 1000.	
	Ans	`DELETE FROM TRANSACT` `WHERE AMOUNT<1000;`	
		(½ Mark for writing `DELETE FROM TRANSACT`*)* *(½ Mark for writing* `WHERE AMOUNT<1000`*)*	
	(b)	Write a query to display the total **AMOUNT** of all **DEBITs** and all **CREDITs**.	
	Ans	`SELECT TTYPE, SUM(AMOUNT)FROM TRANSACT` `GROUP BY TTYPE;`	
		(½ Mark for writing `SELECT TTYPE, SUM(AMOUNT) FROM TRANSACT`*)* *(½ Mark for writing* `GROUP BY TTYPE`*)* *(Note: No marks should be deducted, if TTYPE is not mentioned with SELECT)*	
	(c)	Write a query to display the **NAME** and corresponding **AMOUNT** of all **CUSTOMERs** who made a transaction type **(TTYPE)** of **CREDIT**.	

	Ans	`SELECT NAME, AMOUNT FROM CUSTOMER NATURAL JOIN TRANSACT`
		`WHERE TTYPE='CREDIT';`
		
		OR
		
		`SELECT NAME, AMOUNT FROM CUSTOMER C, TRANSACT T`
		`WHERE C.CNO=T.CNO AND TTYPE='CREDIT';`
		
		OR
		
		`SELECT NAME, AMOUNT FROM CUSTOMER, TRANSACT`
		`WHERE CUSTOMER.CNO=TRANSACT.CNO AND TTYPE='CREDIT';`	

		(½ mark for writing SELECT - FROM part correctly) *(½ mark for writing WHERE part correctly)*	
	(d)	Write the SQL statement to change the Phone number of customer whose CNO is 1002 to 9988117700 in the table CUSTOMER.	
	Ans	`UPDATE CUSTOMER SET PHONE=9988117700` `WHERE CNO=1002;`	
		(½ mark for writing UPDATE - SET part correctly) *(½ mark for writing WHERE part correctly)*	

12.	(a)	(i) Mention any two characteristics of BUS Topology.	2
	Ans	**Bus Topology:** 1. Each communicating device connects to a single transmission medium, known as BUS. 2. Economic option of networking 3. It offers simultaneous flow of data and control. 4. Fault detection and isolation is difficult 5. (any two)	
		(1 mark each for writing any two characteristics of BUS topologies)	
		OR	
		(ii) Differentiate between the terms Domain Name and URL in the context of World Wide Web.	2
	Ans	**Domain Name: It is the unique name that identifies an Internet site or machine.** **Example:** **cbseacademic.nic.in** **URL (Uniform Resource Locator): It is the global address of documents and other resources on the World Wide Web.** **Example:** **https://cbseacademic.nic.in/Term-wise-curriculum.html**	
		(1 marks each for correct explanation/meaning/example of the terms Domain Name and URL)	
	(b)	Write the names of two wired and two wireless data transmission mediums.	2
	Ans	**Wired Mediums: Twisted Pair, Fibre-Optic cable, Coaxial cable (Any two)** **Wireless Mediums: Radio Waves, Microwaves, Infra-red waves (Any two)**	
		(½ Mark for writing each correct name of wired medium) *(½ Mark for writing each correct name of wireless medium)*	

13. The government has planned to develop digital awareness in the rural areas of the nation. According to the plan, an initiative is taken to set up Digital Training Centers in villages across the country with its Head Office in the nearest cities. The committee has hired a networking consultancy to create a model of the network in which each City Head Office is connected to the Training Centers situated in 3 nearby villages. 4

As a network expert in the consultancy, you have to suggest the best network-related solutions for the issues/problems raised in (a) to (d), keeping in mind the distance between various locations and other given parameters.

Layout of the City Head Office and Village Training Centers :

Shortest distances between various Centers:

Village 1 Training Center to City Head Office	2 KM
Village 2 Training Center to City Head Office	1.5 KM
Village 3 Training Center to City Head Office	3 KM
Village 1 Training Center to Village 2 Training Center	3.5 KM
Village 1 Training Center to Village 3 Training Center	4.5 KM
Village 2 Training Center to Village 3 Training Center	3.5 KM

Number of Computers installed at various centers are as follows:

Village 1 Training Center	10
Village 2 Training Center	15
Village 3 Training Center	15
City Head Office	100

	(a)	It is observed that there is a huge data loss during the process of data transfer from one village to another. Suggest the most appropriate networking device out of the following, which needs to be placed along the path of the wire connecting one village with another to refresh the signal and forward it ahead. (i) MODEM (ii) ETHERNET CARD (iii) REPEATER (iv) HUB	
	Ans	**(iii) REPEATER**	
		(1 Mark for correct identification of the Networking Device)	
	(b)	Draw the cable layout (location-to-location) to efficiently connect various Village Training Centers and the City Head Office for the above shown layout.	
	Ans		
		(1 Mark for drawing correct cable layout)	
	(c)	Which hardware networking device, out of the following, will you suggest to connect all the computers within the premises of every Village Training Center ? (i) SWITCH (ii) MODEM (iii) REPEATER (iv) ROUTER	
	Ans	**(i) SWITCH**	
		(1 Mark for correct identification of the service/protocol)	

	(d)	Which protocol, out of the following, will be most helpful to conduct online interactions of Experts from the City Head Office and people at the three Village Training Centers ? (i) FTP (ii) PPP (iii) SMTP (iv) VoIP	
	Ans	**(iv) VoIP**	
		(1 Mark for drawing correct cable layout)	

2022-23– BOARD SAMPLE

BOARD SAMPLE QUESTION

Class: XII Session: 2022-23

Computer Science (083)

Sample Question Paper (Theory)

Maximum Marks: 70 **Time Allowed: 3 hours**

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

SECTION A		
1.	State True or False "Variable declaration is implicit in Python."	1
2.	Which of the following is an invalid datatype in Python? (a) Set (b) None (c)Integer (d)Real	1

3.	Given the following dictionaries
	`dict_exam={"Exam":"AISSCE", "Year":2023}`
	`dict_result={"Total":500, "Pass_Marks":165}`
	Which statement will merge the contents of both dictionaries?
	a. `dict_exam.update(dict_result)`
	b. `dict_exam + dict_result`
	c. `dict_exam.add(dict_result)`
	d. `dict_exam.merge(dict_result)`
		1

4.	Consider the given expression: `not True and False or True` Which of the following will be correct output if the given expression is evaluated? (a) True (b) False (c) NONE (d) NULL	1
5.	Select the correct output of the code: `a = "Year 2022 at All the best"`	1

	`a = a.split('2')`
	`b = a[0] + ". " + a[1] + ". " + a[3]`
	`print (b)`
	
	(a) Year . 0. at All the best
	(b) Year 0. at All the best
	(c) Year . 022. at All the best
	(d) Year . 0. at all the best	

6.	Which of the following mode in file opening statement results or generates an error if the file does not exist? (a) a+ (b) r+ (c) w+ (d) None of the above	1
7.	Fill in the blank: _____ command is used to remove primary key from the table in SQL. (a) `update` (b)`remove` (c) `alter` (d)`drop`	1
8.	Which of the following commands will delete the table from MYSQL database? (a) `DELETE TABLE` (b) `DROP TABLE` (c) `REMOVE TABLE` (d) `ALTER TABLE`	1

9.	Which of the following statement(s) would give an error after executing the following code?
	
	`S="Welcome to class XII" # Statement 1`
	`print(S) # Statement 2`
	`S="Thank you" # Statement 3`
	`S[0]= '@' # Statement 4`
	`S=S+"Thank you" # Statement 5`
	
	(a) Statement 3
	(b) Statement 4
	(c) Statement 5
	(d) Statement 4 and 5
		1

10.	Fill in the blank: _____ is a non-key attribute, whose values are derived from the primary key of some other table. (a) Primary Key (b) Foreign Key (c) Candidate Key	1

	(d) Alternate Key	
11.	The correct syntax of seek() is: (a) `file_object.seek(offset [, reference_point])` (b) `seek(offset [, reference_point])` (c) `seek(offset, file_object)` (d) `seek.file_object(offset)`	1
12.	Fill in the blank: The SELECT statement when combined with _____ clause, returns records without repetition. (a) DESCRIBE (b) UNIQUE (c) DISTINCT (d) NULL	1
13.	Fill in the blank: _____is a communication methodology designed to deliver both voice and multimedia communications over Internet protocol. (a) VoIP (b) SMTP (c) PPP (d)HTTP	1
14.	What will the following expression be evaluated to in Python? `print(15.0 / 4 + (8 + 3.0))` (a) 14.75 (b)14.0 (c) 15 (d) 15.5	1
15.	Which function is used to display the total number of records from table in a database? (a) `sum(*)` (b) `total(*)` (c) `count(*)` (d) `return(*)`	1
16.	To establish a connection between Python and SQL database, `connect()` is used. Which of the following arguments may not necessarily be given while calling `connect()` ? (a) `host` (b) `database` (c) `user` (d) `password`	1
Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A		

	(b) Both A and R are true and R is not the correct explanation for A (c) A is True but R is False (d) A is false but R is True	
17.	Assertion (A):- If the arguments in function call statement match the number and order of arguments as defined in the function definition, such arguments are called positional arguments. Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s).	1
18.	Assertion (A): CSV (Comma Separated Values) is a file format for data storage which looks like a text file. Reason (R): The information is organized with one record on each line and each field is separated by comma.	1
	SECTION B	

19.	Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.
	
	`def prime():`
	`  n=int(input("Enter number to check :: ")`
	`  for i in range (2, n//2):`
	`  if n%i=0:`
	`  print("Number is not prime \n")`
	`  break`
	`  else:`
	`  print("Number is prime \n’)`
		2

20.	Write two points of difference between Circuit Switching and Packet Switching. **OR** Write two points of difference between XML and HTML.	2

21.	(a) Given is a Python string declaration:
	`myexam="@@CBSE Examination 2022@@"`
	
	Write the output of: `print(myexam[::-2])`
	
	(b) Write the output of the code given below:
	`my_dict = {"name": "Aman", "age": 26}`
	`my_dict['age'] = 27`
	`my_dict['address'] = "Delhi"`
	`print(my_dict.items())`
		1
		
		1

22.	Explain the use of ‘Foreign Key’ in a Relational Database Management System. Give example to support your answer.	2

23.	(a) Write the full forms of the following: (i) SMTP (ii) PPP (b) What is the use of TELNET?	2

24.	Predict the output of the Python code given below:
	
	`def Diff(N1,N2):`
	`  if N1>N2:`
	`  return N1-N2`
	`  else:`
	`  return N2-N1`
	
	`NUM= [10,23,14,54,32]`
	`for CNT in range (4,0,-1):`
	`  A=NUM[CNT]`
	`  B=NUM[CNT-1]`
	`  print(Diff(A,B),'#', end=' ')`
	
	OR
	
	Predict the output of the Python code given below:
	
	`tuple1 = (11, 22, 33, 44, 55 ,66)`
	`list1 =list(tuple1)`
	`new_list = []`
	`for i in list1:`
	`  if i%2==0:`
	`  new_list.append(i)`
	`new_tuple = tuple(new_list)`
	`print(new_tuple)`
		2

25.	Differentiate between count() and count(*) functions in SQL with appropriate example. OR Categorize the following commands as DDL or DML: INSERT, UPDATE, ALTER, DROP	2
	SECTION C	
26.	(a) Consider the following tables – Bank_Account and Branch: Table: Bank_Account	1+2

ACode	Name	Type
A01	Amrita	Savings
A02	Parthodas	Current
A03	Miraben	Current

Table: Branch

ACode	City
A01	Delhi
A02	Mumbai
A01	Nagpur

What will be the output of the following statement?

```
SELECT * FROM Bank_Account NATURAL JOIN Branch;
```

(b) Write the output of the queries (i) to (iv) based on the table, TECH_COURSE given below:

Table: TECH_COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	Animation and VFX	12000	2022-07-02	101
C202	CADD	15000	2021-11-15	NULL
C203	DCA	10000	2020-10-01	102
C204	DDTP	9000	2021-09-15	104
C205	Mobile Application Development	18000	2022-11-01	101
C206	Digital marketing	16000	2022-07-25	103

```
(i)     SELECT DISTINCT TID FROM TECH_COURSE;
(ii)    SELECT TID, COUNT(*), MIN(FEES) FROM
  TECH_COURSE GROUP BY TID HAVING COUNT(TID)>1;
(iii)   SELECT CNAME FROM TECH_COURSE WHERE
 FEES>15000 ORDER BY CNAME;
(iv)    SELECT AVG(FEES) FROM TECH_COURSE WHERE
 FEES BETWEEN 15000 AND 17000;
```

27. Write a method COUNTLINES() in Python to read lines from text file 'TESTFILE.TXT' and display the lines which are not starting with any vowel. 3

Example:

If the file content is as follows:

An apple a day keeps the doctor away.
We all pray for everyone's safety.
A marked difference will come in our country.

The COUNTLINES() function should display the output as:

The number of lines not starting with any vowel - 1

OR

Write a function ETCount() in Python, which should read each character of a text file "TESTFILE.TXT" and then count and display the count of occurrence of alphabets E and T individually (including small cases e and t too).

Example:

If the file content is as follows:

Today is a pleasant day.
It might rain today.
It is mentioned on weather sites

The ETCount() function should display the output as:
E or e: 6
T or t : 9

28. (a) Write the outputs of the SQL queries (i) to (iv) based on the relations Teacher and Placement given below: 3

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Arunan	34	Computer Sc	2019-01-10	12000	M
2	Saman	31	History	2017-03-24	20000	F
3	Randeep	32	Mathematics	2020-12-12	30000	M
4	Samira	35	History	2018-07-01	40000	F
5	Raman	42	Mathematics	2021-09-05	25000	M
6	Shyam	50	History	2019-06-27	30000	M
7	Shiv	44	Computer Sc	2019-02-25	21000	M
8	Shalakha	33	Mathematics	2018-07-31	20000	F

Table : Placement

P_ID	Department	Place
1	History	Ahmedabad
2	Mathematics	Jaipur
3	Computer Sc	Nagpur

```
(i)   SELECT Department, avg(salary) FROM Teacher
      GROUP BY Department;
ii)   SELECT MAX(Date_of_Join),MIN(Date_of_Join) FROM
      Teacher;
ii)   SELECT Name, Salary,  T.Department, Place FROM
      Teacher T, Placement P WHERE T.Department =
      P.Department AND Salary>20000;

iv)   SELECT Name, Place FROM Teacher T, Placement P
```

	`WHERE Gender ='F' AND T.Department=P.Department;` (b) Write the command to view all tables in a database.	
29.	Write a function INDEX_LIST(L), where L is the list of elements passed as argument to the function. The function returns another list named 'indexList' that stores the indices of all Non-Zero Elements of L. For example: If L contains [12,4,0,11,0,56] The indexList will have - [0,1,3,5]	3
30.	A list contains following record of a customer: [Customer_name, Phone_number, City] Write the following user defined functions to perform given operations on the stack named '**status**': (i) Push_element() - To Push an object containing name and Phone number of customers who live in Goa to the stack (ii) Pop_element() - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack. For example: If the lists of customer details are: ["Gurdas", "99999999999","Goa"] ["Julee", "8888888888","Mumbai"] ["Murugan","77777777777","Cochin"] ["Ashmit", "1010101010","Goa"] The stack should contain ["Ashmit","1010101010"] ["Gurdas","9999999999"] The output should be: ["Ashmit","1010101010"] ["Gurdas","9999999999"] Stack Empty **OR** Write a function in Python, Push(SItem) where , SItem is a dictionary containing the details of stationary items– {Sname:price}. The function should push the names of those items in the stack who have price greater than 75. Also display the count of elements pushed into the stack. For example: If the dictionary contains the following data:	3

Ditem={"Pen":106,"Pencil":59,"Notebook":80,"Eraser":25}

The stack should contain
Notebook
Pen

The output should be:
The count of elements in the stack is 2

SECTION D

31. MakeInIndia Corporation, an Uttarakhand based IT training company, is planning to set up training centres in various cities in next 2 years. Their first campus is coming up in Kashipur district. At Kashipur campus, they are planning to have 3 different blocks for App development, Web designing and Movie editing. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.

Distance between various blocks/locations:

Block	Distance
App development to Web designing	28 m
App development to Movie editing	55 m
Web designing to Movie editing	32 m
Kashipur Campus to Mussoorie Campus	232 km

Number of computers

Block	Number of Computers
App development	75
Web designing	50
Movie editing	80

(i) Suggest the most appropriate block/location to house the SERVER in the Kashipur campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer. 1

(ii) Suggest a device/software to be installed in the Kashipur Campus to take care of data security. 1

(iii) Suggest the best wired medium and draw the cable layout (Block 1

	to Block) to economically connect various blocks within the Kashipur Campus. (iv) Suggest the placement of the following devices with appropriate reasons: a. Switch / Hub b. Repeater (v) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.	1 1

32.	(a) Write the output of the code given below:
	
	`p=5`
	`def sum(q,r=2):`
	`  global p`
	`  p=r+q**2`
	`  print(p, end= '#')`
	
	`a=10`
	`b=5`
	`sum(a,b)`
	`sum(r=5,q=1)`
	
	(b) The code given below inserts the following record in the table Student:
	
	RollNo – integer
	Name – string
	Clas – integer
	Marks – integer
	
	Note the following to establish connectivity between Python and MYSQL:
	• Username is root
	• Password is tiger
	• The table exists in a MYSQL database named `school`.
	• The details (`RollNo, Name, Clas` and `Marks`) are to be accepted from the user.
	
	Write the following missing statements to complete the code:
	Statement 1 – to form the cursor object
	Statement 2 – to execute the command that inserts the record in the table Student.
	Statement 3- to add the record permanently in the database
	
	`import mysql.connector as mysql`
	`def sql_data():`
	`  con1=mysql.connect(host="localhost",user="root",`
		2+3

```
password="tiger", database="school")
    mycursor=_________________          #Statement 1
    rno=int(input("Enter Roll Number :: "))
    name=input("Enter name :: ")
    clas=int(input("Enter class :: "))
    marks=int(input("Enter Marks :: "))
    querry="insert into student
values({},'{}',{},{})".format(rno,name,clas,marks)
    ______________________              #Statement 2
    ______________________              # Statement 3
    print("Data Added successfully")
```

OR

(a) Predict the output of the code given below:

```
s="welcome2cs"

n = len(s)
m=""
for i in range(0, n):
    if (s[i] >= 'a' and s[i] <= 'm'):
        m =   m +s[i].upper()
    elif (s[i] >= 'n' and s[i] <= 'z'):
        m = m +s[i-1]
    elif (s[i].isupper()):
        m = m + s[i].lower()
    else:
        m = m +'&'
print(m)
```

(b) The code given below reads the following record from the table named `student` and displays only those records who have marks greater than 75:

RollNo - integer
Name - string
Clas - integer
Marks - integer

Note the following to establish connectivity between Python and MYSQL:

- **Username is root**
- **Password is tiger**
- **The table exists in a MYSQL database named `school`.**

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the query that extracts records of those students whose marks are greater than 75.
Statement 3- to read the complete result of the query (records whose

marks are greater than 75) into the object named `data`, from the table `student` in the database.

```
import mysql.connector as mysql
def sql_data():

     con1=mysql.connect(host="localhost",user="root",
     password="tiger", database="school")
    mycursor=_______________            #Statement 1
    print("Students with marks greater than 75 are :
")
    _________________________           #Statement 2
    data=__________________             #Statement 3
    for i in data:
        print(i)
    print()
```

33. What is the advantage of using a csv file for permanent storage? Write a Program in Python that defines and calls the following user defined functions: 5

(i) ADD() – To accept and add data of an employee to a CSV file 'record.csv'. Each record consists of a list with field elements as `empid, name` and `mobile` to store employee id, employee name and employee salary respectively.

(ii) COUNTR() – To count the number of records present in the CSV file named 'record.csv'.

OR

Give any one point of difference between a binary file and a csv file. Write a Program in Python that defines and calls the following user defined functions:

(i) add() – To accept and add data of an employee to a CSV file 'furdata.csv'. Each record consists of a list with field elements as `fid, fname` and `fprice` to store furniture id, furniture name and furniture price respectively.

(ii) search()- To display the records of the furniture whose price is more than 10000.

SECTION E

34. Navdeep creates a table RESULT with a set of records to maintain the marks secured by students in Sem 1, Sem2, Sem3 and their division. After creation of the table, he has entered data of 7 students in the table. 1+1+2

ROLL_NO	SNAME	SEM1	SEM2	SEM3	DIVISION
101	KARAN	366	410	402	I
102	NAMAN	300	350	325	I

103	ISHA	400	410	415	I
104	RENU	350	357	415	I
105	ARPIT	100	75	178	IV
106	SABINA	100	205	217	II
107	NEELAM	470	450	471	I

Based on the data given above answer the following questions:

(i) Identify the most appropriate column, which can be considered as Primary key.

(ii) If two columns are added and 2 rows are deleted from the table result, what will be the new degree and cardinality of the above table?

(iii) Write the statements to:

a. Insert the following record into the table
Roll No- 108, Name- Aadit, Sem1- 470, Sem2-444, Sem3-475, Div – I.

b. Increase the SEM2 marks of the students by 3% whose name begins with 'N'.

OR (Option for part iii only)

(iii) Write the statements to:

a. Delete the record of students securing IV division.

b. Add a column REMARKS in the table with datatype as `varchar` with 50 characters

35. Aman is a Python programmer. He has written a code and created a binary file `record.dat` with employeeid, ename and salary. The file contains 10 records.
He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file `temp.dat`. The records which are not to be updated also have to be written to the file `temp.dat`. If the employee id is not found, an appropriate message should to be displayed.
As a Python expert, help him to complete the following code based on the requirement given above:

```
import _______                          #Statement 1
def update_data():
   rec={}
   fin=open("record.dat","rb")
   fout=open("_____________")           #Statement 2
   found=False
   eid=int(input("Enter employee id to update their
```

```
salary :: "))
while True:
  try:
    rec=_______________                #Statement 3
    if rec["Employee id"]==eid:
         found=True
         rec["Salary"]=int(input("Enter new salary
    :: "))
         pickle._____________        #Statement 4
    else:
         pickle.dump(rec,fout)
  except:
    break
if found==True:
  print("The salary of employee id  ",eid,"  has
  been updated.")
else:
  print("No employee with such id is not found")
fin.close()
fout.close()
```

1

(i) Which module should be imported in the program? (Statement 1) — 1

(ii) Write the correct statement required to open a temporary file named `temp.dat`. (Statement 2) — 2

(iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, `record.dat` and in Statement 4 to write the updated data in the file, `temp.dat`?

2022-23– BOARD SAMPLE

BOARD SAMPLE QUESTION MS

Class: XII Session: 2022-23

Computer Science (083)

Sample Question Paper (Theory)

Maximum Marks: 70 **Time Allowed: 3 hours**

	SECTION A ***(1 mark to be awarded for every correct answer)***	
1.	State True or False – "Variable declaration is implicit in Python." **Ans. TRUE**	1
2.	Which of the following is an invalid datatype in Python? (a) Set (b) None (c)Integer (d)Real **Ans: (d) Real**	1

3.	Given the following dictionaries
	
	`dict_exam={"Exam":"AISSCE", "Year":2023}`
	`dict_result={"Total":500, "Pass_Marks":165}`
	
	Which statement will merge the contents of both dictionaries?
	a. `dict_exam.update(dict_result)`
	b. `dict_exam + dict_result`
	c. `dict_exam.add(dict_result)`
	d. `dict_exam.merge(dict_result)`
	
	Ans: (a) `dict_exam.update(dict_result)`
		1

4.	Consider the given expression: `not True and False or True` Which of the following will be correct output if the given expression is evaluated? (a) True (b) False (c) NONE (d) NULL Ans: (a) True	1

5.	Select the correct output of the code:
	`a = "Year 2022 at All the best"`
	`a = a.split('2')`
	`b = a[0] + ". " + a[1] + ". " + a[3]`
	`print (b)`
	
	(a) Year . 0. at All the best
	(b) Year 0. at All the best
	(c) Year . 022. at All the best
	(d) Year . 0. at all the best
	
	Ans: (a) Year . 0. at All the best
		1

6.	Which of the following mode in file opening statement results or generates an error if the file does not exist? (a) `a+` (b) `r+` (c) `w+` (d) None of the above **Ans: (b) r+**	1
7.	Fill in the blank: _____ command is used to remove primary key from a table in SQL. (a) `update` (b)`remove` (c) `alter` (d)`drop` **Ans: (c) `alter`**	1
8.	Which of the following commands will delete the table from MYSQL database? (a) DELETE TABLE (b) DROP TABLE (c) REMOVE TABLE (d) ALTER TABLE Ans: (b) DROP TABLE	1

9.	Which of the following statement(s) would give an error after executing the following code?
	`S="Welcome to class XII"  # Statement 1`
	`print(S)  # Statement 2`
	`S="Thank you"  # Statement 3`
	`S[0]= '@'  # Statement 4`
	`S=S+"Thank you"  # Statement 5`
	
	(a) Statement 3
	(b) Statement 4
	(c) Statement 5
		1

	(d) Statement 4 and 5 Ans: (b) – Statement 4	
10.	Fill in the blank: _____ is a non-key attribute, whose values are derived from the primary key of some other table. (a) Primary Key (b) Foreign Key (c) Candidate Key (d) Alternate Key **Ans: (b) Foreign Key**	1
11.	The correct syntax of `seek()` is: (a) file_object.seek(offset [, reference_point]) (b) seek(offset [, reference_point]) (c) seek(offset, file_object) (d) seek.file_object(offset) **Ans: (a) `file_object.seek(offset [, reference_point])`**	
12.	Fill in the blank: The SELECT statement when combined with _____ clause, returns records without repetition. (a) `DESCRIBE` (b) `UNIQUE` (c) `DISTINCT` (d) `NULL` **Ans: (c)** `DISTINCT`	
13.	Fill in the blank: _____is a communication methodology designed to deliver both voice and multimedia communications over Internet protocol. (a) VoIP (b) SMTP (c) PPP (d)HTTP **Ans: (a) VoIP**	
14.	What will the following expression be evaluated to in Python? `print(15.0 / 4 + (8 + 3.0))` (a) 14.75 (b)14.0 (c) 15 (d) 15.5	

	Ans: (a) 14.75	
15.	Which function is used to display the total number of records from a table in a database? (a) `sum(*)` (b) `total(*)` (c) `count(*)` (d) `return(*)` **Ans: (c) `count(*)`**	1
16.	To establish a connection between Python and SQL database, `connect()` is used. Which of the following arguments may not necessarily be given while calling `connect()` ? (a) `host` (b) `database` (c) `user` (d) `password` Ans: (b) - `database`	1
Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A (b) Both A and R are true and R is not the correct explanation for A (c) A is True but R is False (d) A is false but R is True		
17.	Assertion (A):- If the arguments in a function call statement match the number and order of arguments as defined in the function definition, such arguments are called positional arguments. Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s). **Ans: (c) A is True but R is False**	1
18.	Assertion (A): CSV (Comma Separated Values) is a file format for data storage which looks like a text file. Reason (R): The information is organized with one record on each line and each field is separated by comma. **Ans: (a) Both A and R are true and R is the correct explanation for A**	1
	SECTION B	
19.	Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.	2

```
def prime():
  n=int(input("Enter number to check :: ")
  for i in range (2, n//2):
    if n%i=0:
      print("Number is not prime \n")
    break
    else:
      print("Number is prime \n')
```

Ans:

```
def prime():
   n=int(input("Enter number to check :: ")) #bracket missing
   for i in range (2, n//2):
      if n%i==0:                                  # = missing
         print("Number is not prime \n")
      __break                                     #wrong indent
      else:
         print("Number is prime \n”)              # quote mismatch
```

(½ mark for each correct correction made and underlined.)

20. Write two points of difference between Circuit Switching and Packet Switching. 2

Ans:

Circuit Switching	Packet Switching
Circuit switching is the method of switching which is used for establishing a dedicated communication path between the sender and the receiver.	**Packet switching is the method of switching where no dedicated path is established from the source to the destination.**
Data is processed and transmitted at the source only.	**Data is processed and transmitted, not only at the source but at each switching station.**
It is more reliable.	**It is less reliable.**

(1 mark for each correct point of difference)

OR

Write two points of difference between XML and HTML.

Ans:

XML (Extensible MarkupLangauge)

- XML tags are not predefined, they are user defined
- XML stores and transfers data.
- Dynamic in nature

HTML (Hypertext Markup Langauge)

- HTML tags are pre-defined and it is a markup language
- HTML is about displaying data.
- Static in nature

(1 mark for each correct difference - Any two)

21. a. Given is a Python string declaration: 1

```
myexam="@@CBSE Examination 2022@@"
```

Write the output of: `print(myexam[::-2])` 1

Ans: @20 otnmx SC@

(1 mark for the correct answer)

b. Write the output of the code given below:

```
my_dict = {"name": "Aman", "age": 26}
my_dict['age'] = 27
my_dict['address'] = "Delhi"
print(my_dict.items())
```

Ans: dict_items([('name', 'Aman'), ('age', 27), ('address', 'Delhi')])

(1 mark for the correct answer)

22. Explain the use of 'Foreign Key' in a Relational Database Management System. Give example to support your answer. 2

Ans:

A foreign key is used to set or represent a relationship between two relations (or tables) in a database. Its value is derived from the primary key attribute of another relation.

For example:
In the tables TRAINER and COURSE given below, TID is primary key in TRAINER table but foreign key in COURSE table.

TRAINER

TID	TNAME	CITY	HIREDATE	SALARY
101	Ritu	Nagpur	1998-10-15	56700
102	Navin	Goa	1994-12-24	80000
103	Murugan	Chandigarh	2001-12-21	82000
104	Jyothi	Guwahati	2002-12-25	68000
105	Chanu	Mumbai	1996-01-12	95000

106	Arbaaz	Delhi	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	Deepa	12000	2018-07-02	101
C202	Sindhu	15000	2018-07-15	103
C203	Neeraj	10000	2018-10-01	102
C204	Prakash	9000	2018-09-15	104
C205	Nikhat	20000	2018-08-01	101

(1 mark for explanation and 1 mark for example)
(Any relevant correct example may be marked)

23. (a) Write the full forms of the following: 2

(i) SMTP **(ii) PPP**

Ans:

(i) SMTP: Simple Mail Transfer Protocol
(ii) PPP: Point to Point Protocol

(½ mark for every correct full form)

(b) What is the use of TELNET?

Ans: TELNET is used to access a remote computer / network.

(1 mark for correct answer)

24. Predict the output of the Python code given below: 2

```
def Diff(N1,N2):
    if N1>N2:
        return N1-N2
    else:
        return N2-N1

NUM= [10,23,14,54,32]
for CNT in range (4,0,-1):
    A=NUM[CNT]
    B=NUM[CNT-1]
    print(Diff(A,B),'#', end=' ')
```

Ans: 22 # 40 # 9 # 13 #

(½ mark for the correct digit with a #)

OR

Predict the output of the Python code given below:

```
tuple1 = (11, 22, 33, 44, 55 ,66)
list1 =list(tuple1)
new_list = []
for i in list1:
    if i%2==0:
        new_list.append(i)
new_tuple = tuple(new_list)
print(new_tuple)
```

Ans: (22,44,66)

(½ mark for each correct digit , ½ mark for enclosing in parenthesis)

25. Differentiate between COUNT() and COUNT(*) functions in SQL with appropriate example. 2

Ans:
COUNT(*) returns the count of all rows in the table, whereas COUNT () is used with Column_Name passed as argument and counts the number of non-NULL values in a column that is given as argument.

Example: Table : EMPL

EMPNO	ENAME	JOB	SAL	DEPTNO
8369	SMITH	CLERK	2985	10
8499	ANYA	NULL	9870	20
8566	AMIR	SALESMAN	8760	30
8698	BINA	MANAGER	5643	20
8912	SUR	NULL	3000	10

e.g. SELECT COUNT(*) FROM EMPL;
Output

COUNT(*)
5

e.g.2 SELECT COUNT(JOB) FROM EMPL;
Output

COUNT(JOB)
3

Since JOB has 2 NULL values

(1 mark for the difference and 1 mark for appropriate example)

OR

Categorize the following commands as DDL or DML:
INSERT, UPDATE, ALTER, DROP

Ans:
DDL- ALTER, DROP
DML – INSERT, UPDATE

(½ mark for each correct categorization)

SECTION C

26. (a) Consider the following tables – Bank_Account and Branch: 1+2

Table: Bank_Account

ACode	Name	Type
A01	Amrita	Savings
A02	Parthodas	Current
A03	Miraben	Current

Table: Branch

ACode	City
A01	Delhi
A02	Mumbai
A01	Nagpur

What will be the output of the following statement?

```
SELECT * FROM Bank_Account NATURAL JOIN Branch;
```

Ans:

Acode	Name	Type	City
A01	Amrita	Savings	Delhi
A01	Amrita	Savings	Nagpur
A02	Parthodas	Current	Mumbai

(1 mark for correct output)

(b) Write the output of the queries (i) to (iv) based on the table, TECH_COURSE given below:

Table: TECH_COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	Animation and VFX	12000	2022-07-02	101
C202	CADD	15000	2021-11-15	NULL

C203	DCA	10000	2020-10-01	102
C204	DDTP	9000	2021-09-15	104
C205	Mobile Application Development	18000	2022-11-01	101
C206	Digital marketing	16000	2022-07-25	103

```
(i)     SELECT DISTINCT TID FROM TECH_COURSE;
```

Ans:

DISTINCT TID
101
NULL
102
104
103

(½ mark for the correct output)

```
(ii)    SELECT TID, COUNT(*), MIN(FEES) FROM TECH_COURSE
  GROUP BY TID HAVING COUNT(TID)>1;
```

Ans:

TID	COUNT(*)	MIN(FEES)
101	2	12000

(½ mark for the correct output)

```
(iii)   SELECT CNAME FROM TECH_COURSE WHERE FEES>15000
  ORDER BY CNAME;
```

Ans:

CNAME
Digital marketing
Mobile Application Development

(½ mark for the correct output)

```
(iv)    SELECT AVG(FEES) FROM TECH_COURSE WHERE FEES
  BETWEEN 15000 AND 17000;
```

Ans:
15500.00

(½ mark for the correct output)

27.	Write a method COUNTLINES() in Python to read lines from text file 'TESTFILE.TXT' and display the lines which are not starting with any vowel.	3

Example:

If the file content is as follows:

An apple a day keeps the doctor away.
We all pray for everyone's safety.
A marked difference will come in our country.

The COUNTLINES() function should display the output as:
The number of lines not starting with any vowel - 1

Ans:

```
def COUNTLINES() :
    file = open ('TESTFILE.TXT', 'r')
    lines = file.readlines()
    count=0
    for w in lines :
        if (w[0]).lower() not in 'aeoiu'
            count = count + 1
    print ("The number of lines not starting with any
vowel: ", count)
    file.close()

COUNTLINES()
```

(½ mark for correctly opening and closing the file
½ for readlines()
½ mar for correct loop
½ for correct if statement
½ mark for correctly incrementing count
½ mark for displaying the correct output)

OR

Write a function ETCount() in Python, which should read each character of a text file "TESTFILE.TXT" and then count and display the count of occurrence of alphabets E and T individually (including small cases e and t too).

Example:

If the file content is as follows:

Today is a pleasant day.
It might rain today.
It is mentioned on weather sites

The ETCount() function should display the output as:
The number of E or e: 6
The number of T or t : 9

Ans:

```
def ETCount() :
```

```
file = open ('TESTFILE.TXT', 'r')
lines = file.readlines()
countE=0
countT=0
for w in lines :
    for ch in w:
        if ch in 'Ee':
            countE = countE + 1
        if ch in 'Tt':
            countT=countT + 1
print ("The number of E or e : ", countE)
print ("The number of T or t : ", countT)
file.close()
```

(½ mark for correctly opening and closing the file
½ for readlines()
½ mark for correct loops
½ for correct if statement
½ mark for correctly incrementing counts
½ mark for displaying the correct output)

Note: Any other relevant and correct code may be marked

28. (a) Write the outputs of the SQL queries (i) to (iii) based on the relations Teacher and Placement given below: 3

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Arunan	34	Computer Sc	2019-01-10	12000	M
2	Saman	31	History	2017-03-24	20000	F
3	Randeep	32	Mathematics	2020-12-12	30000	M
4	Samira	35	History	2018-07-01	40000	F
5	Raman	42	Mathematics	2021-09-05	25000	M
6	Shyam	50	History	2019-06-27	30000	M
7	Shiv	44	Computer Sc	2019-02-25	21000	M
8	Shalakha	33	Mathematics	2018-07-31	20000	F

Table : Placement

P_ID	Department	Place

1	History	Ahmedabad
2	Mathematics	Jaipur
3	Computer Sc	Nagpur

```
(i)  SELECT Department, avg(salary) FROM Teacher GROUP
     BY Department;
```

Ans:

Department	Avg(Salary)
Computer Sc	16500.00
History	30000.00
Mathematics	25000.00

(½ mark for the correct output)

```
(ii) SELECT MAX(Date_of_Join),MIN(Date_of_Join) FROM
Teacher;
```

Ans:

Max(Date_of_Join)	Min(Date_of_Join)
2021-09-05	2017-03-04

(½ mark for the correct output)

```
(iii)SELECT Name, Salary,  T.Department, Place FROM Teacher
T, Placement P WHERE T.Department = P.Department AND
Salary>20000;
```

Ans:

Name	Salary	Department	Place
Randeep	30000	Mathematics	Jaipur
Samira	40000	History	Ahmedabad
Raman	25000	Mathematics	Jaipur
Shyam	30000	History	Ahmedabad
Shiv	21000	Computer Sc	Nagpur

(½ mark for the correct output)

```
(iv)SELECT Name, Place FROM Teacher T, Placement P WHERE
Gender='F' and T.Department=P.Department;
```

Ans:

Name	Place
Samira	Ahmedabad
Suman	Ahmedabad
Shalaka	Jaipur

	(½ mark for the correct output) (b) Write the command to view all tables in a database. Ans: `SHOW TABLES;` *(1 mark for correct answer)*	
29.	Write a function INDEX_LIST(L), where L is the list of elements passed as argument to the function. The function returns another list named `indexList` that stores the indices of all Non-Zero Elements of L. For example: If L contains [12,4,0,11,0,56] The indexList will have - [0,1,3,5] **Ans:** **def INDEX_LIST(L):** **indexList=[]** **for i in range(len(L)):** **if L[i]!=0:** **indexList.append(i)** **return indexList** *(½ mark for correct function header* *1 mark for correct loop* *1 mark for correct if statement* *½ mark for return statement)* Note: Any other relevant and correct code may be marked	3
30.	A list contains following record of a customer: [Customer_name, Phone_number, City] Write the following user defined functions to perform given operations on the stack named **status**: (i) Push_element() - To Push an object containing name and Phone number of customers who live in Goa to the stack (ii) Pop_element() - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack. For example: If the lists of customer details are:	3

["Gurdas", "99999999999","Goa"]
["Julee", "8888888888","Mumbai"]
["Murugan","77777777777","Cochin"]
["Ashmit", "1010101010","Goa"]

The stack should contain
["Ashmit","1010101010"]
["Gurdas","9999999999"]

The output should be:
["Ashmit","1010101010"]
["Gurdas","9999999999"]
Stack Empty

Ans:

```
status=[]
def Push_element(cust):
    if cust[2]=="Goa":
        L1=[cust[0],cust[1]]
        status.append(L1)

def Pop_element ():
    num=len(status)
    while len(status)!=0:
        dele=status.pop()
        print(dele)
        num=num-1
    else:
        print("Stack Empty")
```

(1.5 marks for correct push_element() and 1.5 marks for correct pop_element())

OR

Write a function in Python, Push(SItem) where , SItem is a dictionary containing the details of stationary items– {Sname:price}.
The function should push the names of those items in the stack who have price greater than 75. Also display the count of elements pushed into the stack.
For example:
If the dictionary contains the following data:
Ditem={"Pen":106,"Pencil":59,"Notebook":80,"Eraser":25}

The stack should contain
Notebook
Pen

The output should be:

The count of elements in the stack is 2

Ans:

```
stackItem=[]
def Push(SItem):
    count=0
    for k in SItem:
        if (SItem[k]>=75):
            stackItem.append(k)
            count=count+1
    print("The count of elements in the stack is :  ",
count)
```

(1 mark for correct function header
1 mark for correct loop
½ mark for correct If statement
½ mark for correct display of count)

SECTION D

31. MakeInIndia Corporation, an Uttarakhand based IT Training company, is planning to set up training centres in various cities in next 2 years. Their first campus is coming up in Kashipur district. At Kashipur campus, they are planning to have 3 different blocks for App development, Web designing and Movie Editing. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.

Distance between various blocks/locations:

Block	Distance
App development to Web designing	28 m
App development to Movie editing	55 m
Web designing to Movie editing	32 m
Kashipur Campus to Mussoorie Campus	232 km

Number of computers

Block	Number of Computers
App development	75
Web designing	50
Movie editing	80

(i) Suggest the most appropriate block/location to house the SERVER in the Kashipur campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer. 1

Ans: Movie editing block is the most appropriate to house the server as it has the maximum number of computers.

(1/2 mark for naming the server block and ½ mark for correct reason.)

(ii) Suggest a device/software to be installed in the Kashipur Campus to take care of data security. 1

Ans: Firewall

(1 mark for the correct answer)

(iii) Suggest the best wired medium and draw the cable layout (Block to Block) to economically connect various blocks within the Kashipur Campus. 1

Ans: Ethernet Cable

Layout:

(½ mark correct wired medium , ½ mark for layout)

(iv) Suggest the placement of the following devices with appropriate reasons: 1

a. Switch / Hub
b. Repeater

Ans: Switch/hub will be placed in all blocks to have connectivity within the block.

	Repeater is not required between the blocks as the distances are less than 100 mts. **(1 mark for the correct answer)** (v) Suggest the protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus. **Ans: Protocol: VoIP** **(1 mark for the correct answer)**	1

32.	(a) Write the output of the code given below
	
	`p=5`
	`def sum(q,r=2):`
	`  global p`
	`  p=r+q**2`
	`  print(p, end= '#')`
	
	`a=10`
	`b=5`
	`sum(a,b)`
	`sum(r=5,q=1)`
	
	Ans:
	
	Output:
	105#6#
	
	(1 mark for 105# and 1 mark for 6#)
	
	(b) The code given below inserts the following record in the table Student:
	
	RollNo – integer
	Name – string
	Clas – integer
	Marks – integer
	
	Note the following to establish connectivity between Python and MYSQL:
	• Username is root
	• Password is tiger
	• The table exists in a MYSQL database named `school`.
	• The details (`RollNo, Name, Clas` and `Marks`) are to be accepted from the user.
	
	Write the following missing statements to complete the code:
	Statement 1 – to form the cursor object
		2+3

Statement 2 - to execute the command that inserts the record in the table Student.
Statement 3- to add the record permanently in the database

```
import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost",user="root",
password="tiger", database="school")
    mycursor=_________________          #Statement 1
    rno=int(input("Enter Roll Number :: "))
    name=input("Enter name :: ")
    clas=int(input("Enter class :: "))
    marks=int(input("Enter Marks :: "))
    querry="insert into student
values({},'{}',{},{})".format(rno,name,clas,marks)
    ______________________              #Statement 2
    ______________________              # Statement 3
    print("Data Added successfully")
```

Ans:

```
Statement 1:
con1.cursor()

Statement 2:
mycursor.execute(querry)

Statement 3:
con1.commit()
```

(1 mark for each correct answer)

OR

(a) Predict the output of the code given below:

```
s="welcome2cs"

n = len(s)
m=""
for i in range(0, n):
    if (s[i] >= 'a' and s[i] <= 'm'):
        m =   m +s[i].upper()
    elif (s[i] >= 'n' and s[i] <= 'z'):
        m = m +s[i-1]
    elif (s[i].isupper()):
        m = m + s[i].lower()
    else:
        m = m +'&'
print(m)
```

Ans:
sELCcME&Cc

(1 mark for first 5 characters, 1 mark for next 5 characters)

(b) The code given below reads the following record from the table named `student` and displays only those records who have marks greater than 75:
RollNo - integer
Name - string
Clas - integer
Marks - integer

Note the following to establish connectivity between Python and MYSQL:

- **Username is root**
- **Password is tiger**
- **The table exists in a MYSQL database named `school`.**

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the query that extracts records of those students whose marks are greater than 75.
Statement 3- to read the complete result of the query (records whose marks are greater than 75) into the object named `data`, from the table `student` in the database.

```
import mysql.connector as mysql
def sql_data():

     con1=mysql.connect(host="localhost",user="root",passwo
     rd="tiger", database="school")
    mycursor=_______________                    #Statement 1
    print("Students with marks greater than 75 are : ")
    __________________________                  #Statement 2
    data=___________________                    #Statement 3
    for i in data:
        print(i)
    print()
```

Ans:
Statement 1:
```
con1.cursor()
```

Statement 2:
```
mycursor.execute("select * from student where Marks>75")
```

Statement 3:
```
mycursor.fetchall()
```

(1 mark for each correct statement)

33. What is the advantage of using a csv file for permanent storage? 5

Write a Program in Python that defines and calls the following user defined functions:

a) ADD() – To accept and add data of an employee to a CSV file 'record.csv'. Each record consists of a list with field elements as `empid, name` and `mobile` to store employee id, employee name and employee salary respectively.
b) COUNTR() – To count the number of records present in the CSV file named 'record.csv'.

Ans:
Advantage of a csv file:

- **It is human readable – can be opened in Excel and Notepad applications**
- **It is just like text file**

<u>Program:</u>

```
import csv
def ADD():
fout=open("record.csv","a",newline="\n")
    wr=csv.writer(fout)
    empid=int(input("Enter Employee id :: "))
    name=input("Enter name :: ")
    mobile=int(input("Enter mobile number :: "))
    lst=[empid,name,mobile] ---------1/2 mark
    wr.writerow(lst)        ---------1/2 mark
    fout.close()

def COUNTR():
    fin=open("record.csv","r",newline="\n")
    data=csv.reader(fin)
    d=list(data)
    print(len(d))
    fin.close()

ADD()
COUNTR()
```

(1 mark for advantage
½ mark for importing csv module
1 ½ marks each for correct definition of ADD() and COUNTR()
½ mark for function call statements
)

OR

Give any one point of difference between a binary file and a csv file.
Write a Program in Python that defines and calls the following user defined functions:

a) add() – To accept and add data of an employee to a CSV file 'furdata.csv'. Each record consists of a list with field elements as `fid`, `fname` and `fprice` to store furniture id, furniture name and furniture price respectively.

b) search()- To display the records of the furniture whose price is more than 10000.

Ans:
Difference between binary file and csv file: (Any one difference may be given)
Binary file:

- **Extension is .dat**
- **Not human readable**
- **Stores data in the form of 0s and 1s**

CSV file

- **Extension is .csv**
- **Human readable**
- **Stores data like a text file**

Program:

```
import csv
def add():
    fout=open("furdata.csv","a",newline='\n')
    wr=csv.writer(fout)
    fid=int(input("Enter Furniture Id :: "))
    fname=input("Enter Furniture name :: ")
    fprice=int(input("Enter price :: "))
    FD=[fid,fname,fprice]
    wr.writerow(FD)
    fout.close()

def search():
    fin=open("furdata.csv","r",newline='\n')
    data=csv.reader(fin)
    found=False
    print("The Details are")
    for i in data:
        if int(i[2])>10000:
            found=True
            print(i[0],i[1],i[2])
    if found==False:
        print("Record not found")
```

```
    fin.close()
add()
print("Now displaying")
search()


(1 mark for difference
½ mark for importing csv module
1 ½  marks each for correct definition of add() and
search()
½ mark for function call statements
)
```

SECTION E

34. Navdeep creates a table **RESULT** with a set of records to maintain the marks secured by students in Sem 1, Sem2, Sem3 and their division. After creation of the table, he has entered data of 7 students in the table. 1+1+2

Table: RESULT

ROLL_NO	SNAME	SEM1	SEM2	SEM3	DIVISION
101	KARAN	366	410	402	I
102	NAMAN	300	350	325	I
103	ISHA	400	410	415	I
104	RENU	350	357	415	I
105	ARPIT	100	75	178	IV
106	SABINA	100	205	217	II
107	NEELAM	470	450	471	I

Based on the data given above answer the following questions:

i. Identify the most appropriate column, which can be considered as Primary key.

Ans: ROLL_NO

(1 mark for correct answer)

ii. If two columns are added and 2 rows are deleted from the table result, what will be the new degree and cardinality of the above table?

Ans:
New Degree: 8
New Cardinality: 5

(1/2 mark for correct degree and ½ mark for correct cardinality)

iii. Write the statements to:

a. Insert the following record into the table – Roll No- 108, Name- Aadit, Sem1- 470, Sem2-444, Sem3-475, Div – I.
b. Increase the SEM2 marks of the students by 3% whose name begins with 'N'.

Ans:

a. **INSERT INTO RESULT VALUES (108, 'Aadit', 470, 444, 475, 'I');**
b. **UPDATE RESULT SET SEM2=SEM2+ (SEM2*0.03) WHERE SNAME LIKE "N%";**

(1 mark for each correct statement)

OR (Option for Part iii only)

iii. Write the statements to:

a. Delete the record of students securing IV division.
b. Add a column REMARKS in the table with datatype as varchar with 50 characters

Ans:

a. **DELETE FROM RESULT WHERE DIV='IV';**
b. **ALTER TABLE RESULT ADD (REMARKS VARCHAR(50));**

(1 mark for each correct statement)

35. Aman is a Python programmer. He has written a code and created a binary file `record.dat` with employeeid, ename and salary. The file contains 10 records.
He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file `temp.dat`. The records which are not to be updated also have to be written to the file `temp.dat`. If the employee id is not found, an appropriate message should to be displayed.
As a Python expert, help him to complete the following code based on the requirement given above:

```
import _______                                  #Statement 1
def update_data():
   rec={}
   fin=open("record.dat","rb")
   fout=open("_____________")                   #Statement 2
   found=False
   eid=int(input("Enter employee id to update their salary
   :: "))
   while True:
     try:
       rec=_____________                         #Statement 3
       if rec["Employee id"]==eid:
            found=True
```

```
            rec["Salary"]=int(input("Enter new salary ::
      "))
            pickle._____________              #Statement 4
      else:
            pickle.dump(rec,fout)
    except:
      break
  if found==True:
    print("The salary of employee id  ",eid,"  has been
    updated.")
  else:
    print("No employee with such id is not found")
 fin.close()
 fout.close()
```

(i) Which module should be imported in the program? (Statement 1) 1

Ans: pickle

(1 mark for correct module)

(ii)Write the correct statement required to open a temporary file named `temp.dat` for writing the updated data. (Statement 2) 1

Ans: fout=open('temp.dat', 'wb')

(1 mark for correct statement)

(iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, `record.dat` and in Statement 4 to write the updated data in the file, `temp.dat`? 2

Ans: **Statement 3: pickle.load(fin)**
Statement 4: pickle.dump(rec,fout)

(1 mark for each correct statement)

2022-23– BOARD SAMPLE

BOARD QUESTION PAPER

SET-4

Series ΣHEFG

प्रश्न–पत्र कोड
Q.P. Code **91**

रोल नं.
Roll No.

Candidates must write the Q.P. Code on the title page of the answer-book.

COMPUTER SCIENCE

*Time allowed : **3** hours* *Maximum Marks : **70***

- Please check that this question paper contains **15** printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **35** questions.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.

^

General Instructions :

(i) *This question paper contains five sections,* ***Section A*** *to* ***E****.*

(ii) ***All*** *questions are compulsory.*

(iii) ***Section A*** *have* ***18*** *questions carrying* ***1*** *mark each.*

(iv) ***Section B*** *has* ***7*** *Very Short Answer type questions carrying* ***2*** *marks each.*

(v) ***Section C*** *has* ***5*** *Short Answer type questions carrying* ***3*** *marks each.*

(vi) ***Section D*** *has* ***3*** *Long Answer type questions carrying* ***5*** *marks each.*

(vii) ***Section E*** *has* ***2*** *questions carrying* ***4*** *marks each.* ***One*** *internal choice is given in* ***Q. 34 and 35,*** *against Part* ***(iii)*** *only.*

(viii) *All programming questions are to be answered using Python Language only.*

SECTION – A

1. State True or False. **1**

"Identifiers are names used to identify a variable, function in a program".

2. Which of the following is a valid keyword in Python ? **1**

(a) false (b) return

(c) non_local (d) none

3. Given the following Tuple **1**

```
Tup= (10, 20, 30, 50)
```

Which of the following statements will result in an error ?

(a) `print(Tup[0])` (b) `Tup.insert (2,3)`

(c) `print(Tup[1:2])` (d) `print(len(Tup))`

4. Consider the given expression :

```
5<10 and 12>7 or not 7>4
```

Which of the following will be the correct output, if the given expression is evaluated ? **1**

(a) `True` (b) `False`

(c) `NONE` (d) `NULL`

5. Select the correct output of the code : **1**

```
S= "Amrit Mahotsav @ 75"
A=S.partition (" ")
print (a)
```

(a) `( 'Amrit Mahotsav','@','75')`

(b) `['Amrit','Mahotsav','@','75']`

(c) `('Amrit', 'Mahotsav @ 75')`

(d) `('Amrit', '', 'Mahotsav @ 75')`

6. Which of the following mode keeps the file offset position at the end of the file ? **1**

(a) `r+` (b) `r`

(c) `w` (d) `a`

7. Fill in the blank. **1**

_____ function is used to arrange the elements of a list in ascending order.

(a) `sort()` (b) `arrange()`

(c) `ascending()` (d) `asort()`

8. Which of the following operators will return either True or False ? **1**

(a) `+=` (b) `!=`

(c) `=` (d) `*=`

9. Which of the following statement(s) would give an error after executing the following code ? **1**

```
Stud={"Murugan":100, "Mithu":95}  # Statement 1
print (Stud[95])                  # Statement 2
Stud ["Murugan"]=99               # Statement 3
print(Stud.pop())                 # Statement 4
print(Stud)                       # Statement 5
```

(a) Statement 2 (b) Statement 3

(c) Statement 4 (d) Statements 2 and 4

10. Fill in the blank. **1**

_____ is a number of tuples in a relation.

(a) `Attribute` (b) `Degree`

(c) `Domain` (d) `Cardinality`

11. `The syntax of seek( ) is :` **1**

`file_object.seek(offset[,reference_point])`

What is the default value of `reference_point` ?

(a) 0 (b) 1

(c) 2 (d) 3

12. Fill in the blank : **1**

_____ clause is used with SELECT statement to display data in a sorted form with respect to a specified column.

(a) `WHERE` (b) `ORDER BY`

(c) `HAVING` (d) `DISTINCT`

13. Fill in the blank : **1**

_____ is used for point-to-point communication or unicast communication such as radar and satellite.

(a) `INFRARED WAVES` (b) `BLUETOOTH`

(c) `MICROWAVES` (d) `RADIOWAVES`

14. What will the following expression be evaluated to in Python ? **1**

```
print(4+3*5/3-5%2)
```

(a) `8.5` (b) `8.0`

(c) `10.2` (d) `10.0`

15. Which function returns the sum of all elements of a list ? **1**

(a) `count()` (b) `sum()`

(c) `total()` (d) `add()`

16. fetchall() method fetches all rows in a result set and returns a : **1**

(a) `Tuple of lists` (b) `List of tuples`

(c) `List of strings` (d) `Tuple of strings`

Q. **17** and **18** are ASSERTION (A) and REASONING (R) based questions. Mark the correct choice as

(a) Both (A) and (R) are true and (R) is the correct explanation for (A).

(b) Both (A) and (R) are true and (R) is not the correct explanation for (A).

(c) (A) is true but (R) is false.

(d) (A) is false but (R) is true.

17. **Assertion (A) :** To use a function from a particular module, we need to import the module. **1**

Reason (R) : import statement can be written anywhere in the program, before using a function from that module.

18. **Assertion (A) :** A stack is a LIFO structure. **1**

Reason (R) : Any new element pushed into the stack always gets positioned at the index after the last existing element in the stack.

SECTION – B

19. Atharva is a Python programmer working on a program to find and return the maximum value from the list. The code written below has syntactical errors. Rewrite the correct code and underline the corrections made. **2**

```
def max_num (L) :
    max=L(0)
    for a in L :
      if a > max
      max=a
    return max
```

20. (a) Differentiate between wired and wireless transmission. **2**

OR

(b) Differentiate between URL and domain name with the help of an appropriate example. **2**

21. (a) Given is a Python list declaration : **1**

```
Listofnames=["Aman","Ankit","Ashish","Rajan","Rajat"]
```

Write the output of :

```
print (Listofnames [-1:-4:-1])
```

(b) Consider the following tuple declaration : **1**

```
tup1=(10,20,30,(10,20,30),40)
```

Write the output of :

```
print(tupl.index(20))
```

22. Explain the concept of "Alternate Key" in a Relational Database Management System with an appropriate example. **2**

23. (a) Write the full forms of the following : **2**

(i) HTML

(ii) TCP

(b) What is the need of Protocols ?

24. (a) Write the output of the code given below : **2**

```
def short_sub (lst,n) :
    for i in range (0,n) :
         if len (lst)>4:
            lst [i]=lst [i]+lst[i]
         else:
            lst[i]=lst[i]
subject=['CS','HINDI','PHYSICS','CHEMISTRY','MATHS']
short_sub(subject,5)
print(subject)
```

OR

(b) Write the output of the code given below : **2**

```
a =30
def call (x) :
      global a
      if a%2==0:
           x+=a
      else:
           x-=a
      return x
x=20
print(call(35),end="#")
print(call(40),end= "@")
```

25. (a) Differentiate between CHAR and VARCHAR data types in SQL with appropriate example. **2**

OR

(b) Name any two DDL and any two DML commands. **2**

SECTION – C

26. (a) Consider the following tables – LOAN and BORROWER : **1 + 2**

Table : LOAN

LOAN_NO	B_NAME	AMOUNT
L-170	DELHI	3000
L-230	KANPUR	4000

Table : BORROWER

CUST_NAME	LOAN_NO
JOHN	L-171
KRISH	L-230
RAVYA	L-170

How many rows and columns will be there in the natural join of these two tables ?

(b) Write the output of the queries (i) to (iv) based on the table, WORKER given below :

TABLE: WORKER

W_ID	F_NAME	L_NAME	CITY	STATE
102	SAHIL	KHAN	KANPUR	UTTAR PRADESH
104	SAMEER	PARIKH	ROOP NAGAR	PUNJAB
105	MARY	JONES	DELHI	DELHI
106	MAHIR	SHARMA	SONIPAT	HARYANA
107	ATHARVA	BHARDWAJ	DELHI	DELHI
108	VEDA	SHARMA	KANPUR	UTTAR PRADESH

(i) `SELECT F_NAME, CITY FROM WORKER ORDER BY STATE DESC;`

(ii) `SELECT DISTINCT (CITY) FROM WORKER;`

(iii) `SELECT F_NAME, STATE FROM WORKER WHERE L_NAME LIKE '_HA%';`

(iv) `SELECT CITY,COUNT(*) FROM WORKER GROUP BY CITY;`

27. (a) Write the definition of a Python function named `LongLines( )` which reads the contents of a text file named `'LINES.TXT'` and displays those lines from the file which have at least 10 words in it. For example, if the content of `'LINES.TXT'` is as follows : **3**

Once upon a time, there was a woodcutter

He lived in a little house in a beautiful, green wood.

One day, he was merrily chopping some wood.

He saw a little girl skipping through the woods, whistling happily.

The girl was followed by a big gray wolf.

Then the function should display output as :

He lived in a little house in a beautiful, green wood.

He saw a little girl skipping through the woods, whistling happily.

OR

(b) Write a function `count_Dwords()` in Python to count the words ending with a digit in a text file "`Details.txt`". **3**

Example:

If the file content is as follows :

On seat2 VIP1 will sit and

On seat1 VVIP2 will be sitting

Output will be:

Number of words ending with a digit are 4

28. (a) Write the outputs of the SQL queries (i) to (iv) based on the relations COMPUTER and SALES given below : **2**

Table : COMPUTER

PROD_ID	PROD_NAME	PRICE	COMPANY	TYPE
P001	MOUSE	200	LOGITECH	INPUT
P002	LASER PRINTER	4000	CANON	OUTPUT
P003	KEYBOARD	500	LOGITECH	INPUT
P004	JOYSTICK	1000	IBALL	INPUT
P005	SPEAKER	1200	CREATIVE	OUTPUT
P006	DESKJET PRINTER	4300	CANON	OUTPUT

Table : SALES

PROD_ID	QTY_SOLD	QUARTER
P002	4	1
P003	2	2
P001	3	2
P004	2	1

(i) `SELECT MIN(PRICE), MAX(PRICE) FROM COMPUTER;`

(ii) `SELECT COMPANY, COUNT(*) FROM COMPUTER GROUP BY COMPANY HAVING COUNT(COMPANY) > 1;`

(iii) `SELECT PROD_NAME, QTY_SOLD FROM COMPUTER C, SALES S WHERE C.PROD_ID=S.PROD_ID AND TYPE = 'INPUT';`

(iv) `SELECT PROD_NAME, COMPANY, QUARTER FROM COMPUTER C, SALES S WHERE C.PROD_ID=S. PROD_ID;`

(b) Write the command to view all databases. **1**

29. Write a function EOReplace() in Python, which accepts a list L of numbers. Thereafter, it increments all even numbers by 1 and decrements all odd numbers by 1. **3**

Example :

If Sample Input data of the list is :

```
L=[10,20,30,40,35,55]
```

Output will be :

```
L=[11,21,31,41,34,54]
```

30. (a) A list contains following record of customer:

```
[Customer_name, Room Type]
```

Write the following user defined functions to perform given operations on the stack named `'Hotel'` :

(i) `Push_Cust()` – To Push customers' names of those customers who are staying in 'Delux' Room Type.

(ii) `Pop_Cust()` – To Pop the names of customers from the stack and display them. Also, display "Underflow" when there are no customers in the stack.

For example :

If the lists with customer details are as follows :

```
["Siddarth", "Delux"]
["Rahul", "Standard"]
["Jerry", "Delux"]
```

The stack should contain

```
Jerry
Siddharth
```

The output should be:

```
Jerry
Siddharth
Underflow
```

OR

(b) Write a function in Python, `Push (Vehicle)` where, Vehicle is a dictionary containing details of vehicles – `{Car_Name: Maker}`.

The function should push the name of car manufactured by 'TATA' (including all the possible cases like Tata, TaTa, etc.) to the stack. **3**

For example:

If the dictionary contains the following data:

```
Vehicle={"Santro":"Hyundai","Nexon":"TATA","Safari":"Tata"}
```

The stack should contain

```
Safari
Nexon
```

SECTION – D

31. Quickdev, an IT based firm, located in Delhi is planning to set up a network for its four branches within a city with its Marketing department in Kanpur. As a network professional, give solutions to the questions (i) to (v), after going through the branches locations and other details which are given below :

Distance between various branches is as follows :

Branch	Distance
Branch A to Branch B	40 m
Branch A to Branch C	80 m
Branch A to Branch D	65 m
Branch B to Branch C	30 m
Branch B to Branch D	35 m
Branch C to Branch D	15 m
Delhi Branch to Kanpur	300 km

Number of computers in each of the branches :

Branch	Number of Computers
Branch A	15
Branch B	25
Branch C	40
Branch D	115

(i) Suggest the most suitable place to install the server for the Delhi branch with a suitable reason. **1**

(ii) Suggest an ideal layout for connecting all these branches within Delhi. **1**

(iii) Which device will you suggest, that should be placed in each of these branches to efficiently connect all the computers within these branches ? **1**

(iv) Delhi firm is planning to connect to its Marketing department in Kanpur which is approximately 300 km away. Which type of network out of LAN, WAN or MAN will be formed ? Justify your answer. **1**

(v) Suggest a protocol that shall be needed to provide help for transferring of files between Delhi and Kanpur branch. **1**

32. (a) What possible output(s) are expected to be displayed on screen at the time of execution of the following program :

```
import random
M=[5,10,15,20,25,30]
for i in range(1,3):
    first=random.randint(2,5)- 1
    sec=random.randint(3,6)- 2
    third=random.randint(1,4)
    print(M[first],M[sec],M[third],sep="#")
```

(i) `10#25#15`
`20#25#25`

(ii) `5#25#20`
`25#20#15`

(iii) `30#20#20`
`20#25#25`

(iv) `10#15#25#`
`15#20#10#` **2**

(b) The code given below deletes the record from the table employee which contains the following record structure :

`E_code` - String
`E_name` - String
`Sal` - Integer
`City` - String

Note the following to establish connectivity between Python and MySQL :

- Username is `root`
- Password is `root`
- The table exists in a MySQL database named `emp`.
- The details `(E_code,E_name,Sal,City)` are the attributes of the table.

Write the following statements to complete the code :

Statement 1 – to import the desired library.

Statement 2 – to execute the command that deletes the record with `E_code` as 'E101'.

Statement 3 – to delete the record permanently from the database.

```
import __________ as mysql     # Statement 1
def delete( ) :
    mydb=mysql.connect(host="localhost",user="root",
    passwd="root",database="emp")

    mycursor=mydb.cursor( )
    _________________ # Statement 2
    _________________ # Statement 3
    print ("Record deleted")
```

3

OR

(a) Predict the output of the code given below :

```
def makenew(mystr):
    newstr=""
    count=0
    for i in mystr:
        if count%2!=0:
             newstr=newstr+str(count)
        else :
              if i.lower():
                newstr=newstr+i.upper()
              else:
                newstr=newstr+i
        count+=1
    print(newstr)
makenew("No@1")
```

2

(b) The code given below reads the following records from the table `employee` and displays only those records who have employees coming from city 'Delhi':

`E_code` - String

`E_name` - String

`Sal` - Integer

`City` - String

Note the following to establish connectivity between Python and MySQL :

- Username is `root`
- Password is `root`
- The table exists in a MySQL database named `emp`.
- The details `(E_code,E_name,Sal,City)` are the attributes of the table.

Write the following statements to complete the code :

Statement 1 – to import the desired library.

Statement 2 – to execute the query that fetches records of the employees coming from city 'Delhi'.

Statement 3 – to read the complete data of the query (rows whose city is Delhi) into the object named `details`, from the table `employee` in the database. **3**

```
import _____________ as mysql          # Statement 1
def display():
    mydb=mysql.connect(host="localhost",user="root",
    passwd="root",database="emp")
    mycursor=mydb.cursor()
    ________________________________   # Statement 2
    details = ______________________   # Statement 3
    for i in details:
          print (i)
```

33. (a) Write one difference between CSV and text files. **5**

Write a program in Python that defines and calls the following user defined functions :

(i) `COURIER_ADD()`: It takes the values from the user and adds the details to a csv file `'courier.csv'`. Each record consists of a list with field elements as `cid`, `s_name`, `Source`, `destination` to store Courier ID, Sender name, Source and destination address respectively.

(ii) `COURIER_SEARCH()` : Takes the destination as the input and displays all the courier records going to that destination.

OR

(b) Why it is important to close a file before exiting ?

Write a program in Python that defines and calls the following user defined functions : **5**

(i) Add_Book() : Takes the details of the books and adds them to a csv file 'Book.csv'. Each record consists of a list with field elements as `book_ID`, `B_name` and `pub` to store book ID, book name and publisher respectively.

(ii) Search_Book() : Takes publisher name as input and counts and displays number of books published by them.

SECTION – E

34. The school has asked their estate manager Mr. Rahul to maintain the data of all the labs in a table LAB. Rahul has created a table and entered data of 5 labs.

LABNO	LAB_NAME	INCHARGE	CAPACITY	FLOOR
L001	CHEMISTRY	Daisy	20	I
L002	BIOLOGY	Venky	20	II
L003	MATH	Preeti	15	I
L004	LANGUAGE	Daisy	36	III
L005	COMPUTER	Mary Kom	37	II

Based on the data given above answer the following questions :

(i) Identify the columns which can be considered as Candidate keys. **1**

(ii) Write the degree and cardinality of the table. **1**

(iii) Write the statements to : **2**

(a) Insert a new row with appropriate data.

(b) Increase the capacity of all the labs by 10 students which are on 'I' Floor.

OR

(Option for part (iii) only)

(iii) Write the statements to :

(a) Add a constraint PRIMARY KEY to the column LABNO in the table.

(b) Delete the table LAB. **2**

35. Shreyas is a programmer, who has recently been given a task to write a user defined function named `write_bin( )` to create a binary file called `Cust_file.dat` containing customer information – customer number `(c_no)`, name `(c_name)`, quantity `(qty)`, price `(price)` and amount `(amt)` of each customer.

The function accepts customer number, name, quantity and price. Thereafter, it displays the message 'Quantity less than 10..... Cannot SAVE', if quantity entered is less than 10. Otherwise the function calculates amount as `price * quantity` and then writes the record in the form of a list into the binary file.

```
import pickle
def write_bin():
  bin_file=_______ #Statement 1
  while True:
    c_no=int(input("enter customer number"))
    c_name=input("enter customer name")
    qty=int(input("enter qty"))
    price=int(input("enter price"))
    if ______  #Statement 2
      print("Quantity less than 10..Cannot SAVE")
    else:
      amt=price * qty
      c_detail=[c_no,c_name,qty,price,amt]
      ______ #Statement 3
      ans=input("Do you wish to enter more records y/n")
      if ans.lower()=='n':
        ________ #Statement 4
    ____________ #Statement 5
  _______________ #Statement 6
```

(i) Write the correct statement to open a file `'Cust_file.dat'` for writing the data of the customer. **1**

(ii) Which statement should Shreyas fill in Statement 2 to check whether quantity is less than 10. **1**

(iii) Which statement should Shreyas fill in Statement 3 to write data to the binary file and in Statement 4 to stop further processing if the user does not wish to enter more records. **2**

OR

(Option for part (iii) only)

(iii) What should Shreyas fill in Statement 5 to close the binary file named `Cust_file.dat` and in Statement 6 to call a function to write data in binary file ? **2**

2022-23– BOARD SAMPLE

BOARD QUESTION PAPER MS

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior School Certificate Examination, 2023
SUBJECT NAME: COMPUTER SCIENCE (SUBJECT CODE: 083) (PAPER CODE: 91)

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 teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	**"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC."**
3	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 latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.**
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	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. If there is any variation, the same should be zero after delibration and discussion. 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.
6	Evaluators will mark(√) wherever answer is correct. For wrong answer CROSS 'X" be marked. Evaluators will not put right (✓)while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**

7	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. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note **"Extra Question"**.
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____(example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past:- ● Leaving answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totaling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totaling on the title page. ● Wrong totaling of marks of the two columns on the title page. ● Wrong grand total. ● Marks in words and figures not tallying/not same. ● Wrong transfer of marks from the answer book to online award list. ● 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 answer.) ● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.
15	Any un assessed 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.

16	The Examiners should acquaint themselves with the guidelines given in the "**Guidelines for spot Evaluation**" before starting the actual evaluation.
17	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.
18	The candidates are entitled to obtain a photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

General Instructions:

*(i) This question paper contains five sections, **Section A to E**.*
*(ii) **All** questions are compulsory.*
*(iii) **Section A** have **18** questions carrying 1 mark each.*
*(iv) **Section B** has **7** Very Short Answer type questions carrying **2** marks each.*
*(v) **Section C** has **5** Short Answer type questions carrying **3** marks each.*
*(vi) **Section D** has **3** Long Answer type questions carrying **5** marks each.*
*(vii) **Section E** has **2** questions carrying **4** marks each. **One** internal choice is given in **Q.34 and 35**, against Part **(iii)** only.*
(viii) All programming questions are to be answered using Python Language only.

		SECTION - A	
1.		State True or False. "Identifiers are names used to identify a variable, function in a program".	1
	Ans	True	
		(1 mark for writing correct answer)	
2.		Which of the following is a valid keyword in Python ? (a) false (b) return (c) non_local (d) none	1
	Ans	(b) **`return`**	
		(1 mark for writing correct answer)	
3.		Given the following Tuple **`Tup= (10, 20, 30, 50)`** Which of the following statements will result in an error ? (a) **`print (Tup[0])`** (b) **`Tup.insert (2, 3)`** (c) **`print (Tup [1:2])`** (d) **`print (len (Tup))`**	1
	Ans	(b) **`Tup.insert (2, 3)`**	
		(1 mark for writing correct answer)	
4.		Consider the given expression : `5<10 and 12>7 or not 7>4` Which of the following will be the correct output, if the given expression is evaluated ? (a) **`True`** (b) **`False`** (c) **`NONE`** (d) **`NULL`**	1
	Ans	(a) **`True`**	
		(1 mark for writing correct answer)	

5.		Select the correct output of the code :
		`S= "Amrit Mahotsav @ 75"`
		`A=S.partition (" ")`
		`print (a)`
		(a) **`('Amrit Mahotsav','@','75')`**
		(b) **`['Amrit','Mahotsav','@','75']`**
		(c) **`('Amrit', 'Mahotsav @ 75')`**
		(d) **`('Amrit','' , 'Mahotsav @ 75')`**
			1

	Ans	(d) **`('Amrit', '', 'Mahotsav @ 75')`**	

		(1 mark for writing correct answer) ***OR*** ***(1 mark for mentioning Error in code OR no correct option)*** ***Note:*** ***print(A) is wrongly typed as print(a)***	
6.		Which of the following mode keeps the file offset position at the end of the file ? (a) **`r+`** (b) **`r`** (c) **`w`** (d) **`a`**	1
	Ans	(d) **`a`**	
		(1 mark for writing correct answer)	
7.		Fill in the blank. _____ function is used to arrange the elements of a list in ascending order. (a) sort() (b) arrange() (c) ascending() (d) asort()	1
	Ans	(a) **`sort()`**	
		(1 mark for writing correct answer)	
8.		Which of the following operators will return either True or False ? (a) **`+=`** (b) **`!=`** (c) **`=`** (d) **`*=`**	1
	Ans	(b) **`!=`**	
		(1 mark for writing correct answer) ***OR*** ***(1 mark for mentioning No option OR Error in question)*** ***Note:*** ***an operator does not return any values until it is part of an expression***	

9.		Which of the following statement(s) would give an error after executing the following code ?
		`Stud={"Murugan" : 100, "Mithu" : 95}  # Statement 1`
		`print (Stud[95])  # Statement 2`
		`Stud ["Murugan"]=99  # Statement 3`
		`print(Stud.pop())  # Statement 4`
		`print(Stud)  # Statement 5`
		
		(a) Statement 2 (b) Statement 3
		(c) Statement 4 (d) Statements 2 and 4
			1

	Ans	**(a) Statement 2** **OR** **(d) Statements 2 and 4**	
		(1 mark for writing correct answer as (a)) ***OR*** ***(1 mark for writing correct answer as (d))*** ***OR*** ***(1 mark for writing (a) and (c) as the correct answers)*** ***OR*** ***(Only ½ mark for writing (c) as the correct answer)***	
10.		Fill in the blank. _____ is a number of tuples in a relation. (a) Attribute (b) Degree (c) Domain (d) Cardinality	**1**
	Ans	(d) Cardinality	
		(1 mark for writing correct answer)	
11.		The syntax of **`seek ()`** is : **`file_object.seek (offset[, reference_point] )`** What is the default value of **`reference_point`** ? (a) 0 (b) 1 (c) 2 (d) 3	**1**
	Ans	(a) 0	
		(1 mark for writing correct answer)	

12.		Fill in the blank : _____ clause is used with SELECT statement to display data in a sorted form with respect to a specified column. (a) **`WHERE`** (b) **`ORDER BY`** (c) **`HAVING`** (d) **`DISTINCT`**	1
	Ans	(b) **`ORDER BY`**	
		(1 mark for writing correct answer)	
13.		Fill in the blank : _____ is used for point-to-point communication or unicast communication such as radar and satellite. (a) INFRARED WAVES (b) BLUETOOTH (c) MICROWAVES (d) RADIOWAVES	1
	Ans	(c) MICROWAVES OR (d) RADIOWAVES	
		(1 mark for writing correct answer as (c) MICROWAVES) ***OR*** ***(1 mark for writing correct answer as (d) RADIOWAVES)***	
14.		What will the following expression be evaluated to in Python ? **`print(4+3*5/3-5%2)`** (a) **`8.5`** (b) **`8.0`** (c) **`10.2`** (d) **`10.0`**	1
	Ans	(b) **`8.0`**	
		(1 mark for writing correct answer)	
15.		Which function returns the sum of all elements of a list ? (a) **`count()`** (b) **`sum()`** (c) **`total()`** (d) **`add()`**	1
	Ans	(b) **`sum()`**	
		(1 mark for writing correct answer)	
16.		fetchall() method fetches all rows in a result set and returns a : (a) Tuple of lists (b) List of tuples (c) List of strings (d) Tuple of strings	1
	Ans.	(b) List of tuples	
		(1 mark for writing correct answer)	

Q. 17 and **18** are ASSERTION (A) and REASONING (R) based questions. Mark the correct choice as (a) Both (A) and (R) are true and (R) is the correct explanation for (A). (b) Both (A) and (R) are true and (R) is not the correct explanation for (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true.			
17.		**Assertion (A) :** To use a function from a particular module, we need to import the module. **Reason (R) :** import statement can be written anywhere in the program, before using a function from that module.	1
	Ans.	(b) Both (A) and (R) are true and (R) is not the correct explanation for (A)	
		(1 mark for writing correct answer) ***OR*** ***(½ mark for writing (a) as the correct option)***	
18.		**Assertion (A):** A stack is a LIFO structure. **Reason (R) :** Any new element pushed into the stack always gets positioned at the index after the last existing element in the stack	1
	Ans	(c) (A) is true but (R) is false.	
		(1 mark for writing (c) as the correct option) ***OR*** ***(1 mark for writing (b) as the correct option)*** ***OR*** ***(1 mark for writing (a) as the correct option)***	
SECTION B			

19.		Atharva is a Python programmer working on a program to find and return the maximum value from the list. The code written below has syntactical errors. Rewrite the correct code and underline the corrections made.
		`def max_num (L) :`
		`  max=L(0)`
		`  for a in L :`
		`  if a > max`
		`  max=a`
		`  return max`
			2

	Ans	`def max_num (L) :`
		`  max=L[0]`
		`  for a in L:`
		`  if a > max:`
		`  max=a`
		`  return max`	

		(1½ marks for correcting all 3 mistakes) ***(½ mark for underlining the corrections)*** ***OR*** ***(1 mark for correcting only 2 mistakes)*** ***(½ mark for underlining the corrections)*** ***OR*** ***(½ mark for correcting only 1 mistake)*** ***(½ mark for underlining the correction)***	
20.	(a)	Differentiate between wired and wireless transmission.	2
	Ans	In case of wired or guided transmission, there is a physical link made of wire/cable through which data in terms of signals are propagated between the nodes. These are usually metallic cable, fiber-optic cable, etc. In case of wireless or unguided transmission, data travels in air in terms of electromagnetic waves using an antenna. These are usually bluetooth, microwaves, infrared, radio waves, etc. OR In case of wired transmission, the devices in the network are connected using cables. Wireless transmission uses waves/rays to connect devices. OR Any other valid difference (any one)	
		(2 marks for differentiating with or without examples) ***OR*** ***(1 mark each for defining each type with or without examples)*** ***OR*** ***(½ mark each for mentioning example of each type)***	

		OR	
	(b)	Differentiate between URL and domain name with the help of an appropriate example.	
	Ans	URL is the complete internet address of a webpage while Domain name is just the name of the organisation/individual entity along with top-level internet domains such as com, edu, gov, etc. Example : URL: https://www.ncert.nic.in/textbook/textbook.htm Domain Name: ncert.nic.in OR www.ncert.nic.in OR any valid definition along with examples	2
		(2 marks for writing any one difference with the help of examples) ***OR*** ***(2 marks for writing examples to differentiate correctly)*** ***OR*** ***(1 mark only for writing any one difference without examples)***	

21.	(a)	Given is a Python list declaration :
		`Listofnames=["Aman","Ankit","Ashish","Rajan","Rajat"]`
		Write the output of :
		`print (Listofnames [-1:-4:-1])`
			1

	Ans	`['Rajat', 'Rajan', 'Ashish']`	
		(1 mark for writing the correct output with/without formatting) ***OR*** ***(½ mark for mentioning the correct names -'Ashish', 'Rajan', 'Rajat' but not in correct order)***	

	(b)	Consider the following tuple declaration :
		`tup1=(10,20,30,(10,20,30),40)`
		Write the output of :
		`print(tupl.index(20))`
			1

	Ans	`1`	
		(1 mark for writing the correct output)	

<table>
<tr><td>22.</td><td></td><td>Explain the concept of ‘‘Alternate Key’’ in a Relational Database Management System with an appropriate example.</td><td>2</td></tr>
<tr><td></td><td>Ans</td><td>Alternate Keys are all the Candidate Keys of a RDBMS table, which have not been used as a Primary Key.
Example:
<table>
<tr><td>RegNo</td><td>AadhaarNo</td><td>Name</td></tr>
<tr><td>123456</td><td>123456789012</td><td>Abraham Sen</td></tr>
<tr><td>123458</td><td>123456789123</td><td>Umeed Singh</td></tr>
</table>
In this example, any one of the RegNo and AadhaarNo can be used as a Primary Key. If RegNo is used as the Primary Key then AadhaarNo is the Alternate Key.</td><td></td></tr>
<tr><td></td><td></td><td>(2 mark for explaining Alternate Keys with example)
OR
(1 mark for writing example of Alternate Keys without any explanation)
OR
(1 mark only for writing the definition of Alternate Keys)</td><td></td></tr>
<tr><td>23.</td><td>(a)</td><td>Write the full forms of the following:
(i) HTML
(ii) TCP</td><td>2</td></tr>
<tr><td></td><td>Ans</td><td>(i) HTML : Hyper Text Markup Language
(ii) TCP : Transmission Control Protocol</td><td></td></tr>
<tr><td></td><td></td><td>(½ mark for writing each of the two full forms)</td><td></td></tr>
<tr><td></td><td>(b)</td><td>What is the need of Protocols ?</td><td></td></tr>
<tr><td></td><td>Ans</td><td>Protocols are needed for communication between computers.
OR
any valid need/definition/explanation of protocol.</td><td></td></tr>
<tr><td></td><td></td><td>(1 mark for writing any one need OR definition OR explanation)</td><td></td></tr>
</table>

24.	(a)	Write the output of the code given below :
		`def short_sub (lst,n) :`
		`  for i in range (0,n) :`
		`  if len (lst)>4:`
		`  lst [i]=lst [i]+lst[i]`
		`  else:`
		`  lst[i]=lst[i]`
		`subject=['CS','HINDI','PHYSICS','CHEMISTRY','MATHS']`
		`short_sub(subject,5)`
		`print(subject)`
			2

	Ans	Output:
		`['CSCS','HINDIHINDI','PHYSICSPHYSICS','CHEMISTRYCHEMISTRY'`
		`,'MATHSMATHS']`	

		(2 Marks for writing the correct output with or without formatting)	

	(b)	**OR**
		Write the output of the code given below:
		`a =30`
		`def call (x):`
		`  global a`
		`  if a%2==0:`
		`  x+=a`
		`  else:`
		`  x-=a`
		`  return x`
		`x=20`
		`print(call(35),end="#")`
		`print(call(40),end= "@")`
			2

	Ans.	65#70@	
		(½ marks each for the four components 65, #, 70, @ with or without formatting)	
25.	(a)	Differentiate between CHAR and VARCHAR data types in SQL with appropriate example.	2

		CHAR is of fixed length character(string) data type, which means, declaring CHAR (10) implies to reserve spaces for 10 characters. If data does not have 10 characters (e.g., 'CITY' has four characters), MySQL fills the remaining 6 characters with spaces padded on the right. VARCHAR is a variable-length character(string) data type. Declaring VARCHAR (30) means a maximum of 30 characters can be stored but the actual allocated bytes will depend on the length of the entered string. So 'CITY' in VARCHAR (30) will occupy space needed to store 4 characters only and the remaining 26 will be released. **OR** CHAR data type is used to store strings of fixed length, while the VARCHAR data type is used to store strings of variable-length. Eg, to store 'India', VARCHAR(20) occupies only 5 bytes whereas CHAR(20) occupies 20 bytes. **OR** any other valid difference and examples	
		(2 Marks for mentioning one difference with the help of examples) ***OR*** ***(1 Mark each for writing explanation of each type with example)*** ***OR*** ***(½ Mark for each term for mentioning only purpose without example)***	
	(b)	**OR** Name any two DDL and any two DML commands.	2
		DDL – CREATE, ALTER, DROP (OR any two valid DDL command) DML – INSERT, UPDATE, DELETE, SELECT (OR any two valid DML command)	
		(½ Mark each for the two DDL commands) *(½ Mark each for the two DML commands)*	

		SECTION-C	
26	(a)	Consider the following tables – LOAN and BORROWER: Table : LOAN LOAN_NO | B_NAME | AMOUNT L-170 | DELHI | 3000 L-230 | KANPUR | 4000 Table : BORROWER **CUST_NAME** | **LOAN_NO** JOHN | L-171 KRISH | L-230 RAVYA | L-170 How many rows and columns will be there in the natural join of these two tables ?	1
	Ans.	Rows : 2 Columns : 4	
		(½ Mark each for correct values of Rows and Columns)	

(b) Write the output of the queries (i) to (iv) based on the table, WORKER given below: 2

TABLE: WORKER

W_ID	F_NAME	L_NAME	CITY	STATE
102	SAHIL	KHAN	KANPUR	UTTAR PRADESH
104	SAMEER	PARIKH	ROOP NAGAR	PUNJAB
105	MARY	JONES	DELHI	DELHI
106	MAHIR	SHARMA	SONIPAT	HARYANA
107	ATHARVA	BHARDWAJ	DELHI	DELHI
108	VEDA	SHARMA	KANPUR	UTTAR PRADESH

(i) **`SELECT F_NAME, CITY FROM WORKER ORDER BY STATE DESC;`**

Ans.

F_NAME	CITY
SAHIL	KANPUR
VEDA	KANPUR
SAMEER	ROOP NAGAR
MAHIR	SONIPAT
MARY	DELHI
ATHARVA	DELHI

(½ Mark for writing the correct output)

<table>
<tr><td></td><td></td><td>(ii) SELECT DISTINCT (CITY) FROM WORKER;</td><td></td></tr>
<tr><td></td><td>Ans.</td><td><table><tr><td>CITY</td></tr><tr><td>KANPUR</td></tr><tr><td>ROOP NAGAR</td></tr><tr><td>DELHI</td></tr><tr><td>SONIPAT</td></tr></table></td><td></td></tr>
<tr><td></td><td></td><td>(½ Mark for writing the correct output)</td><td></td></tr>
<tr><td></td><td></td><td>(iii) SELECT F_NAME, STATE FROM WORKER WHERE L_NAME LIKE '_HA%';</td><td></td></tr>
<tr><td></td><td>Ans.</td><td><table><tr><td>F_NAME</td><td>STATE</td></tr><tr><td>SAHIL</td><td>UTTAR PRADESH</td></tr><tr><td>MAHIR</td><td>HARYANA</td></tr><tr><td>ATHARVA</td><td>DELHI</td></tr><tr><td>VEDA</td><td>UTTAR PRADESH</td></tr></table></td><td></td></tr>
<tr><td></td><td></td><td>(½ Mark for writing the correct output)</td><td></td></tr>
<tr><td></td><td></td><td>(iv) SELECT CITY, COUNT (*) FROM WORKER GROUP BY CITY;</td><td></td></tr>
</table>

<table>
<tr><td></td><td>Ans.</td><td>
<table>
<tr><td>CITY</td><td>COUNT (*)</td></tr>
<tr><td>KANPUR</td><td>2</td></tr>
<tr><td>ROOP NAGAR</td><td>1</td></tr>
<tr><td>DELHI</td><td>2</td></tr>
<tr><td>SONIPAT</td><td>1</td></tr>
</table>
</td><td></td></tr>
<tr><td></td><td></td><td>(½ Mark for writing the correct output)</td><td></td></tr>
<tr><td></td><td></td><td>Note for (i) to (iv) :
1. Ignore the output header and cases of the outputs
2. ½ mark for each query, for writing any 2 correct rows in the output
3. Order of the output rows/columns should be ignored.</td><td></td></tr>
<tr><td>27.</td><td>(a)</td><td>Write the definition of a Python function named <code>LongLines( )</code> which reads the contents of a text file named <code>'LINES.TXT'</code> and displays those lines from the file which have at least 10 words in it. For example, if the content of <code>'LINES.TXT'</code> is as follows :

Once upon a time, there was a woodcutter
He lived in a little house in a beautiful, green wood.
One day, he was merrily chopping some wood.
He saw a little girl skipping through the woods, whistling happily.
The girl was followed by a big gray wolf.

Then the function should display output as :

He lived in a little house in a beautiful, green wood.
He saw a little girl skipping through the woods, whistling happily.</td><td>3</td></tr>
</table>

Ans.

```
def LongLines():
    myfile=open('LINES.TXT')     # ignore 'r' mode
    all_lines=myfile.readlines()
    for aline in all_lines:
        if(len(aline.split()>=10):
            print(aline)
    myfile.close()
```

OR

```
def LongLines():
    with open ('LINES.TXT') as myfile: # ignore 'r' mode
        all_lines=myfile.readlines()
        for aline in all_lines:
            if(len(aline.split())>=10):
                print(aline)
```

OR

```
def LongLines():
    myfile=open('LINES.TXT')     # ignore 'r' mode
    for aline in myfile:
        if(len(aline.split())>=10):
            print(aline)
    myfile.close()
```

OR

```
def LongLines():
    myfile=open('LINES.TXT')     # ignore 'r' mode
    s1=" "
    while s1:
        s1=myfile.readline()
        words=s1.split()
        if(len(words)>=10):
            print(s1)
    myfile.close()
```

OR

any other valid Python code to serve the purpose.

		(½ mark for the function header) ***(½ mark for opening the file)*** ***(½ mark for reading the file correctly)*** ***(1 mark for checking the number of words in each line)*** ***(½ mark for displaying the desired lines)***	
		OR	
	(b)	Write a function count_Dwords() in Python to count the words ending with a digit in a text file "Details.txt". Example: If the file content is as follows: On seat2 VIP1 will sit and On seat1 VVIP2 will be sitting Output will be: Number of words ending with a digit are 4	3
	Ans.	**def count_Dwords():** **with open ("Details.txt", 'r') as F: # ignore 'r'** **S=F.read()** **Wlist = S.split()** **count = 0** **for W in Wlist:** **if W[-1].isdigit():** **count+=1** **print("Number of words ending with a digit are",count)** **OR** **def count_Dwords():** **count=0** **myfile=open("Details.txt")** **S=myfile.read()** **Wlist=S.split()** **for W in Wlist:** **if i[-1] in "0123456789":** **count=count+1** **myfile.close()** **print("Number of words ending with a digit are",count)**	

OR

```
def count_Dwords():
  myfile=open("Details.txt")
  count=0
  for line in myfile:
        s1=line.split()
        for i in s1:
            if i[-1] in "0123456789":
                count=count+1
  print("Number of words ending with a digit are",count)
  myfile.close()
```

OR

any other valid Python code to serve the purpose.

(½ mark for the function header)
(½ mark for opening the file)
(½ mark for reading the file correctly)
(1 mark for checking the condition)
(½ mark for displaying the desired lines)

28. (a) Write the outputs of the SQL queries (i) to (iv) based on the relations COMPUTER and SALES given below : **2**

Table : COMPUTER

PROD_ID	PROD_NAME	PRICE	COMPANY	TYPE
P001	MOUSE	200	LOGITECH	INPUT
P002	LASER PRINTER	4000	CANON	OUTPUT
P003	KEYBOARD	500	LOGITECH	INPUT
P004	JOYSTICK	1000	IBALL	INPUT
P005	SPEAKER	1200	CREATIVE	OUTPUT
P006	DESKJET PRINTER	4300	CANON	OUTPUT

Table : SALES

PROD_ID	QTY_SOLD	QUARTER
P002	4	1
P003	2	2
P001	3	2
P004	2	1

(i) **SELECT MIN(PRICE), MAX(PRICE) FROM COMPUTER;**

Ans.

MIN(PRICE)	MAX(PRICE)
200	4300

(½ mark for correct output)

(ii) SELECT COMPANY, COUNT(*) FROM COMPUTER GROUP BY COMPANY HAVING COUNT(COMPANY) > 1;

Ans.

COMPANY	COUNT(*)
LOGITECH	2
CANON	2

(½ mark for correct output)

(iii) **SELECT PROD_NAME, QTY_SOLD FROM COMPUTER C, SALES S WHERE C.PROD_ID=S.PROD_ID AND TYPE = 'INPUT';**

Ans.

PROD_NAME	QTY_SOLD
MOUSE	3
KEYBOARD	2
JOYSTICK	2

		(½ mark for correct output)	
		(iv) **`SELECT PROD_NAME, COMPANY, QUARTER FROM COMPUTER C, SALES S WHERE C.PROD_ID=S. PROD_ID;`**	

PROD_NAME	COMPANY	QUARTER
MOUSE	LOGITECH	2
LASER PRINTER	CANON	1
KEYBOARD	LOGITECH	2
JOYSTICK	IBALL	1

		(½ mark for correct output)	
	(b)	Write the command to view all databases.	**1**
	Ans.	SHOW DATABASES;	
		(1 mark for writing the correct command) ***Note: punctuation mark (;) and cases can be ignored.***	
29.		Write a function EOReplace() in Python, which accepts a list L of numbers. Thereafter, it increments all even numbers by 1 and decrements all odd numbers by 1. Example : If Sample Input data of the list is : **`L=[10,20,30,40,35,55]`** Output will be : **`L=[11,21,31,41,34,54]`**	**3**
	Ans.		

```
def EOReplace(L):
    for i in range(len(L)):
        if L[i]%2==0:
            L[i]=L[i]+1
        else:
            L[i]=L[i]-1
    print(L)
```

		OR
		`def EOReplace():`
		`  L=[]`
		`  ch = 'y'`
		`  while ch == 'y' or ch == 'Y':`
		`  x = int(input('give item'))`
		`  L.append(x)`
		`  ch= input('do you want to enter more y/n ')`
		`  for i in range(len(L)):`
		`  if L[i]%2==0:`
		`  L[i]=L[i]+1`
		`  else:`
		`  L[i]=L[i]-1`
		`  print(L)`
		
		OR
		`def EOReplace():`
		`  L=eval(input("Enter list="))`
		`  Size=len(L)`
		`  for i in range(Size):`
		`  if L[i]%2==0:`
		`  L[i]=L[i]+1`
		`  else:`
		`  L[i]=L[i]-1`
		`  print(L)`
		
		OR
		
		any other valid Python code to serve the purpose.	

		(½ mark for correct function header) ***(½ mark for getting the list)*** ***(½ mark for correct loop)*** ***(½ mark for checking the condition)*** ***(½ mark for incrementing the even values)*** ***(½ mark for decrementing the odd values)***	

30.	(a)	A list contains following record of customer :
		`[Customer_name, Room Type]`
		Write the following user defined functions to perform given operations on the stack named `'Hotel'` :
		
		(i) `Push_Cust()` - To Push customers' names of those customers who are staying in 'Delux' Room Type.
		
		(ii) `Pop_Cust()` - To Pop the names of customers from the stack and display them. Also, display "Underflow" when there are no customers in the stack.
		
		For example :
		If the lists with customer details are as follows :
		`["Siddarth", "Delux"]`
		`["Rahul", "Standard"]`
		`["Jerry", "Delux"]`
		The stack should contain
		`Jerry`
		`Siddharth`
		The output should be:
		`Jerry`
		`Siddharth`
		`Underflow`
			3

	Ans.	**`Hotel=[]`** **`Customer=[["Siddarth","Delux"],["Rahul","Standard"],["Jerry","Delux"]]`** **`def Push_Cust():`** **`    for rec in Customer:`** **`        if rec[1]=="Delux":`** **`            Hotel.append(rec[0])`** **`def Pop_Cust():`** **`    while len(Hotel)>0:`** **`        print(Hotel.pop())`** **`    else:`** **`        print("Underflow")`**	

		OR
		`top=0`
		`def Push_Cust(Hotel,Customer):`
		`  global top`
		`  for cust_rec in Customer:`
		`  if cust_rec[1]=="Delux":`
		`  Hotel.insert(top, cust_rec[0])`
		`  top=top+1`
		
		`def Pop_Cust(Hotel):`
		`  global top`
		`  while len(Hotel)>0:`
		`  print(Hotel.pop())`
		`  top=top-1`
		`  else:`
		`  print("Underflow")`
		
		OR
		Any other valid Python code to serve the purpose.	

		(½ mark for defining correct function header (Push_Cust()) ***(½ mark for correct loop in function Push_Cust())*** ***(½ mark for checking the condition and appending the data in Push_Cust())*** ***(½ mark for defining correct function header (Pop_Cust())*** ***(½ mark for correct loop in function Pop_Cust())*** ***(½ mark for deleting and displaying the data in Pop_Cust())***	
		OR	

	(b)	Write a function in Python, `Push (Vehicle)` where, Vehicle is a dictionary containing details of vehicles - `{Car_Name: Maker}`.
		The function should push the name of car manufactured by 'TATA' (including all the possible cases like Tata, TaTa, etc.) to the stack.
		For example:
		If the dictionary contains the following data :
		`Vehicle={"Santro":"Hyundai","Nexon":"TATA","Safari":"Tata"}`
		The stack should contain
		`Safari`
		`Nexon`
			3

Ans

```
stack=[]
def Push(Vehicle) :
     for v_name in Vehicle :
          if Vehicle[v_name].upper()=="TATA" :
               stack.append(v_name)
```

OR

```
stack=[]
def Push(Vehicle) :
  for v_name in Vehicle :
    if Vehicle[v_name] in ("TATA", "TaTa","tata","Tata"):
       stack.append(v_name)
```

OR

Any other valid Python code to serve the purpose.

(½ mark for defining correct function header)
(½ mark for correct loop)
(1 mark for checking the condition)
(1 mark for appending the data)

SECTION - D

31 Quickdev, an IT based firm, located in Delhi is planning to set up a network for its four branches within a city with its Marketing department in Kanpur. As a network professional, give solutions to the questions (i) to (v), after going through the branches locations and other details which are given below:

Distance between various branches is as follows :

Branch	Distance
Branch A to Branch B	40 m
Branch A to Branch C	80 m
Branch A to Branch D	65 m
Branch B to Branch C	30 m
Branch B to Branch D	35 m
Branch C to Branch D	15 m
Delhi Branch to Kanpur	300 km

Number of computers in each of the branches :

Branch	Number of Computers
Branch A	15
Branch B	25
Branch C	40
Branch D	115

	(i)	Suggest the most suitable place to install the server for the Delhi branch with a suitable reason.	1
	Ans	Branch D, as it has maximum number of computers OR any other location with valid justification	
		(½ mark for naming the Branch and ½ mark for correct justification)	
	(ii)	Suggest an ideal layout for connecting all these branches within Delhi.	1
	Ans	 (Based on Server Location) **OR** (Based on minimum distance between branches)	
		(1 mark for correctly drawing any one valid layout) ***OR*** ***(1 mark for correctly suggesting name of any one valid topology)***	
	(iii)	Which device will you suggest, that should be placed in each of these branches to efficiently connect all the computers within these branches ?	1
	Ans.	Switch/Hub/Router	
		(1 mark for suggesting the correct device)	

	(iv)	Delhi firm is planning to connect to its Marketing department in Kanpur which is approximately 300 km away. Which type of network out of LAN, WAN or MAN will be formed ? Justify your answer.	**1**
	Ans.	WAN – as the network is spread across different geographical locations of the country.	
		(½ mark for writing the correct type of network) ***(½ mark for correct justification)***	
	(v)	Suggest a protocol that shall be needed to provide help for transferring of files between Delhi and Kanpur branch.	**1**
	Ans.	FTP	
		(1 mark for writing the correct answer as FTP) ***OR*** ***(1 mark for any other valid protocol that can be used to provide help for transferring of files)***	

32	(a)	What possible output(s) are expected to be displayed on screen at the time of execution of the following program :
		
		`import random`
		`M=[5,10,15,20,25,30]`
		`for i in range(1,3):`
		`  first=random.randint(2,5)-1`
		`  sec=random.randint(3,6)-2`
		`  third=random.randint(1,4)`
		`  print(M[first], M[sec], M[third],sep="#")`
		
		(i) 10#25#15
		20#25#25
		(ii) 5#25#20
		25#20#15
		(iii) 30#20#20
		20#25#25
		(iv) 10#15#25#
		15#20#10#
			2

	Ans.	**(i) 10#25#15** **20#25#25**	
		(2 marks for the correct answer) ***(Deduct ½ mark each for any other additional option along with correct option)***	

	(b)	The code given below deletes the record from the table employee which contains the following record structure:
		
		`E_code` - String
		`E_name` - String
		`Sal` - Integer
		`City` - String
		Note the following to establish connectivity between Python and MySQL :
		· Username is `root`
		· Password is `root`
		· The table exists in a MySQL database named `emp`.
		· The details `(E_code,E_name,Sal,City)` are the attributes of the table.
		Write the following statements to complete the code :
		Statement 1 – to import the desired library.
		Statement 2 – to execute the command that deletes the record with `E_code` as 'E101'.
		Statement 3 – to delete the record permanently from the database.
		
		`import _____ as mysql # Statement 1`
		`def delete() :`
		`mydb=mysql.connect(host="localhost",user="root",`
		`passwd="root",database="emp")`
		
		`mycursor=mydb.cursor()`
		`_____ # Statement 2`
		`_____ # Statement 3`
		`print ("Record deleted")`
			3

	Ans.	Statement 1 : **mysql.connector OR any other valid library used for Python MySQL connectivity** Statement 2: **mycursor.execute("DELETE FROM employee WHERE E_code='E101'")** Statement 3 : **mydb.commit()**	
		(1 mark for writing any valid library for Statement 1) ***(½ mark for writing correct object & function name in Statement 2)*** ***(½ mark for writing correct Query in Statement 2)*** ***(½ mark for writing correct object name in Statement 3)*** ***(½ mark for writing correct function name in Statement 3)***	

		OR	

	(a)	Predict the output of the code given below :
		`def makenew(mystr) :`
		`  newstr=""`
		`  count=0`
		`  for i in mystr :`
		`  if count%2!=0:`
		`  newstr=newstr+str(count)`
		`  else :`
		`  if  i.lower():`
		`  newstr=newstr+i.upper()`
		`  else:`
		`  newstr=newstr+i`
		`  count+=1`
		`  print(newstr)`
		`makenew("No@1")`
			2

	Ans.	**N1@3**	
		(½ mark for writing each correct character with or without formatting)	
	(b)	The code given below reads the following records from the table `employee` and displays only those records who have employees coming from city 'Delhi': `E_code` - String `E_name` - String `Sal` - Integer `City` - String Note the following to establish connectivity between Python and MySQL : • Username is `root` • Password is `root` • The table exists in a MySQL database named emp. • The details (`E_code`,`E_name`,`Sal`,`City`) are the attributes of the table.	

		Write the following statements to complete the code :
		Statement 1 – to import the desired library.
		Statement 2 – to execute the query that fetches records of the employees coming from city 'Delhi'.
		Statement 3 – to read the complete data of the query (rows whose city is Delhi) into the object named `details`, from the table `employee` in the database.
		
		`import _____ as mysql # Statement 1`
		`def display():`
		`mydb=mysql.connect(host="localhost",user="root",`
		`passwd="root",database="emp")`
		`mycursor=mydb.cursor()`
		`_____ # Statement 2`
		`details = _____ # Statement 3`
		`for i in details:`
		`print (i)`
			3

	Ans.	Statement 1: **mysql.connector OR any other valid library used for Python MySQL connectivity** Statement 2: **mycursor.execute("select * from employee where City='Delhi '")** Statement 3: **mycursor.fetchall()**	
		(1 mark for writing any valid library for Statement 1) ***(½ mark for writing correct object & function name in Statement 2)*** ***(½ mark for writing correct Query in Statement 2)*** ***(½ mark for writing correct object name in Statement 3)*** ***(½ mark for writing correct function name in Statement 3)***	
33	(a)	Write one difference between CSV and text files. Write a program in Python that defines and calls the following user defined functions: (i) `COURIER_ADD()` : It takes the values from the user and adds the details to a csv file '`courier.csv`'. Each record consists of a list with field elements as `cid, s_name, Source, destination` to store Courier ID, Sender name, Source and destination address respectively. (ii) `COURIER_SEARCH()` : Takes the destination as the input and displays all the courier records going to that destination.	**5**

	Ans	CSV files ● can be viewed in spreadsheets ● module CSV has to be imported Text files ● can be viewed in the text editor ● No specific module required to be imported (any other valid difference - any one) **import csv** **def COURIER_ADD() :** **f1=open("courier.csv","a",newline="\n")** **writ=csv.writer(f1)** **cid=int(input("Enter the Courier id"))** **s_name=input ("Enter the Sender Name")** **Source=input("Enter the Source Address")** **destination=input("Enter Destination Name")** **detail=[cid,s_name,Source,destination]** **writ.writerow (detail)** **f1.close()**	
		def COURIER_SEARCH() : **f1=open("courier.csv","r") # ignore newline** **detail=csv.reader(f1)** **name=input("Enter the Destination Name to be searched")** **for i in detail :** **if i[3]==name:** **print("Details of courier are: ",i)** **COURIER_ADD()** **COURIER_SEARCH()** **OR** **Any other valid Python code to serve the purpose.**	
		(1 mark for any one correct difference between CSV and Text file) ***(½ mark for correctly importing csv module)*** ***(½ mark for opening in the file in right mode in*** **COURIER_ADD()*)*** ***(½ mark for reading values from the user)*** ***(½ marks correct uses of writerow/writerows)*** ***(½ mark for opening in the file in right mode in*** **COURIER_SEARCH()*)*** ***(½ marks correct uses of reader object)*** ***(½ mark for displaying desired output)*** ***(½ mark for correctly calling*** **COURIER_ADD()** ***and*** **COURIER_SEARCH()*)***	
		OR	

	(b)	Why is it important to close a file before exiting ? Write a program in Python that defines and calls the following user defined functions : (i) Add_Book() : Takes the details of the books and adds them to a csv file 'Book.csv'. Each record consists of a list with field elements as `book_ID, B_name` and `pub` to store book ID, book name and publisher respectively. (ii) Search_Book() : Takes publisher name as input and counts and displays number of books published by them.	5
	Ans	It is important to close the file before exiting as Python makes sure that any unwritten or unsaved data is flushed off to the file before it is closed. **import csv** **def Add_Book():** **f1=open("Book.csv","a",newline="\n")** **writ=csv.writer(f1)** **book_ID=int(input("Enter the Book id"))** **B_name=input("Enter the Book Name")** **pub=input("Enter the Publisher Name")** **detail=[book_ID, B_name,pub]** **writ.writerow(detail)** **f1.close()** **def Search_Book ():** **f1=open("Book.csv","r") # ignore newline** **detail=csv.reader(f1)** **name=input("Enter the Publisher Name to be searched")** **pub_count=0** **for i in detail :** **if i[2]==name:** **pub_count+=1** **print("NUMBER OF BOOKS: ",pub_count)** **Add_Book()** **Search_Book()** **OR** **Any other valid Python code to serve the purpose.**	

		(1 mark for writing correct purpose of closing a file) *(½ mark for correctly importing csv module)* *(½ mark for opening in the file in right mode in* `Add_Book()`*)* *(½ mark for reading values from the user)* *(½ marks correct uses of writerow/writerows)* *(½ mark for opening in the file in right mode in* `Search_Book()`*)* *(½ marks correct uses of reader object)* *(½ mark for displaying desired output)* *(½ mark for correctly calling Add_Book() and Search_Book())*	
		SECTION E	
34		The school has asked their estate manager Mr. Rahul to maintain the data of all the labs in a table LAB. Rahul has created a table and entered data of 5 labs. LABNO | LAB_NAME | INCHARGE | CAPACITY | FLOOR L001 | CHEMISTRY | DAISY | 20 | I L002 | BIOLOGY | VENKY | 20 | II L003 | MATH | PREETI | 15 | I L004 | LANGUAGE | DAISY | 36 | III L005 | COMPUTER | MARY KOM | 37 | II Based on the data given above, answer the following questions :	
	(i)	Identify the columns which can be considered as Candidate keys.	**1**
	Ans.	**`Candidate keys: LABNO and LAB_NAME`**	
		(1 Mark for correctly writing both names of Candidate keys) ***OR*** ***(½ Mark for specifying any one candidate key correctly)***	
	(ii)	Write the degree and cardinality of the table.	**1**
	Ans	**`Degree = 5`** **`Cardinality = 5`**	
		(½ Mark for writing value of Degree correctly) ***(½ Mark for writing value of Cardinality correctly)***	

	(iii)	Write the statements to: (a) Insert a new row with appropriate data. (b) Increase the capacity of all the labs by 10 students which are on '**I**' Floor.	**2**
	Ans	**(a) INSERT INTO LAB** **VALUES('L006','PHYSICS','RAVI',25,'II');** **(b) UPDATE LAB SET CAPACITY=CAPACITY+10 WHERE FLOOR='I';**	
		(½ Mark for writing the INSERT INTO LAB part correctly) ***(½ Mark for writing the* VALUES *part correctly)*** ***(½ Mark for writing the UPDATE LAB SET part correctly)*** ***(½ Mark for writing the* CAPACITY=CAPACITY+10 WHERE FLOOR="I" *part correctly)***	
		OR **(Option for part (iii) only)**	
	(iii)	Write the statements to : (a) Add the constraint PRIMARY KEY to a column LABNO in the table. (b) Delete the table LAB.	**2**
	Ans	**(a) ALTER TABLE LAB ADD PRIMARY KEY (LABNO);** **(b) DROP TABLE LAB;**	
		(a) (½ Mark for writing* ALTER TABLE LAB *part correctly) ***(½ Mark for writing* ADD PRIMARY KEY(LABNO) *part correctly)*** ***(b) (1 Mark for writing query correctly)***	
35		Shreyas is a programmer, who has recently been given a task to write a user defined function named write_bin() to create a binary file called Cust_file.dat containing customer information – customer number (c_no), name (c_name), quantity (qty), price (price) and amount (amt) of each customer. The function accepts customer number, name, quantity and price. Thereafter, it displays the message 'Quantity less than 10 ….. Cannot SAVE', if quantity entered is less than 10. Otherwise the function calculates amount as price * quantity and then writes the record in the form of a list into the binary file.	

		`import pickle`
		`def write_bin():`
		`  bin_file=_____  #Statement 1`
		`  while True:`
		`  c_no=int(input("enter customer number"))`
		`  c_name=input("enter customer name")`
		`  qty=int(input("enter qty"))`
		`  price=int(input("enter price"))`
		`  if _____  #Statement 2`
		`  print("Quantity less than 10..Cannot SAVE")`
		`  else:`
		`  amt=price * qty`
		`  c_detail=[c_no,c_name,qty,price,amt]`
		`  _____  #Statement 3`
		`  ans=input("Do you wish to enter more records y/n")`
		`  if ans.lower()=='n':`
		`  _____  #Statement 4`
		`  _____  #Statement 5`
		`_____  #Statement 6`	

	(i)	Write the correct statement to open a file 'Cust_file.dat' for writing the data of the customer.	**1**
	Ans	**Statement 1:** `open ("Cust_file.dat", "wb")`	
		(1 Mark for correctly writing missing Statement 1) ***Note: 'ab' mode also be considered***	
	(ii)	Which statement should Shreyas fill in Statement 2 to check whether quantity is less than 10.	**1**
	Ans	**Statement 2:** `qty<10 :`	
		(1 Mark for correctly writing missing Statement 2)	
	(iii)	Which statement should Shreyas fill in Statement 3 to write data to the binary file and in Statement 4 to stop further processing if the user does not wish to enter more records.	**2**
	Ans	**Statement 3:** `pickle.dump(c_detail,bin_file)` **Statement 4:** `break`	
		(1 Mark for correctly writing missing Statement 3) ***(1 Mark for correctly writing missing Statement 4)***	

		OR **(Option only for part (iii))**	
	(iii)	What should Shreyas fill in Statement 5 to close the binary file named Cust_file.dat and in Statement 6 to call a function to write data in binary file?	**2**
	Ans	**`Statement 5: bin_file.close()`** **`Statement 6: write_bin()`**	
		(1 Mark for correctly writing missing Statement 5) ***(1 Mark for correctly writing missing Statement 6)***	

2022-23– BOARD SAMPLE

BOARD QUESTION PAPER (Comp)

Series **ΣHEFG/C**

Set-4

Q.P. Code 91

Roll No.

Candidates must write the Q.P. Code on the title page of the answer-book.

COMPUTER SCIENCE (NEW)

*Time allowed : **3** hours* *Maximum Marks : **70***

- Please check that this question paper contains **19** printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **35** questions.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

General Instructions :

- *This question paper contains five sections, **Section A** to **E**.*
- ***All** questions are compulsory.*
- ***Section A** has **18** questions carrying **1** mark each.*
- ***Section B** has **7** Very Short Answer (VSA) type questions carrying **2** marks each.*
- ***Section C** has **5** Short Answer (SA) type questions carrying **3** marks each.*
- ***Section D** has **3** Long Answer (LA) type question carrying **5** marks each.*
- ***Section E** has **2** questions carrying **4** marks each. **One** internal choice is given in Q **35** against part **C** only.*
- *All programming questions are to be answered using Python Language only.*

SECTION A

*All questions carrying **1** mark each.* *18×1=18*

1. State True or False.

"Comments are not executed by interpreter."

2. Which of the following is ***not*** a sequential datatype in Python ?

(a) Dictionary

(b) String

(c) List

(d) Tuple

3. Given the following dictionary

```
Day={1:"Monday", 2: "Tuesday", 3: "Wednesday"}
```

Which statement will return **"Tuesday"**.

(a) **`Day.pop()`**

(b) **`Day.pop(2)`**

(c) **`Day.pop(1)`**

(d) **`Day.pop("Tuesday")`**

4. Consider the given expression :

```
7<4 or 6>3 and not 10==10 or 17>4
```

Which of the following will be the correct output if the given expression is evaluated ?

(a) **`True`**

(b) **`False`**

(c) **`NONE`**

(d) **`NULL`**

5. Select the correct output of the code :

```
S="Amrit Mahotsav @ 75"
A=S.split(" ",2)
print(A)
```

(a) `('Amrit', 'Mahotsav', '@', '75')`

(b) `['Amrit', 'Mahotsav', '@ 75']`

(c) `('Amrit', 'Mahotsav', '@ 75')`

(d) `['Amrit', 'Mahotsav', '@', '75']`

6. Which of the following modes in Python creates a new file, if file does not exist and overwrites the content, if the file exists ?

(a) `r+` (b) `r`

(c) `w` (d) `a`

7. Fill in the blank :

_____ is not a valid built-in function for list manipulations.

(a) `count()`

(b) `length()`

(c) `append()`

(d) `extend()`

8. Which of the following is an example of identity operators of Python ?

(a) `is` (b) `on`

(c) `in` (d) `not in`

9. Which of the following statement(s) would give an error after executing the following code ?

```
S="Happy"                # Statement 1
print(S*2)               # Statement 2
S+="Independence"        # Statement 3
S.append("Day")          # Statement 4
print(S)                 # Statement 5
```

(a) `Statement 2` (b) `Statement 3`

(c) `Statement 4` (d) `Statement 3 and 4`

10. Fill in the blank :

In a relational model, tables are called _____, that store data for different columns.

(a) Attributes

(b) Degrees

(c) Relations

(d) Tuples

11. The correct syntax of `tell()` is :

(a) **`tell.file_object()`**

(b) **`file_object.tell()`**

(c) **`tell.file_object(1)`**

(d) **`file_object.tell(1)`**

12. Fill in the blank :

_____ statement of SQL is used to insert new records in a table.

(a) ALTER

(b) UPDATE

(c) INSERT

(d) CREATE

13. Fill in the blank :

In _____ switching, before a communication starts, a dedicated path is identified between the sender and the receiver.

(a) Packet

(b) Graph

(c) Circuit

(d) Plot

14. What will the following expression be evaluated to in Python ?

```
print(6/3 + 4**3//8-4)
```

(a) `6.5`

(b) `4.0`

(c) `6.0`

(d) `4`

15. Which of the following functions is a valid built-in function for both list and dictionary datatype ?

(a) `items()`

(b) `len()`

(c) `update()`

(d) `values()`

16. `fetchone()` method fetches only one row in a ResultSet and returns a _____.

(a) Tuple

(b) List

(c) Dictionary

(d) String

Q. **17** and **18** are Assertion (A) and Reasoning (R) based questions. Mark the correct choice as

(a) Both (A) and (R) are true and (R) is the correct explanation for (A).

(b) Both (A) and (R) are true and (R) is ***not*** the correct explanation for (A).

(c) (A) is true but (R) is false.

(d) (A) is false but (R) is true.

17. *Assertion (A) :* In Python, a stack can be implemented using a list.

Reasoning (R) : A stack is an ordered linear list of elements that works on the principle of First In First Out (FIFO).

18. *Assertion (A) :* **`readlines()`** reads all the lines from a text file and returns the lines along with newline as a list of strings.

Reasoning (R) : **`readline()`** can read the entire text file line by line without using any looping statements.

SECTION B

19. Ravi, a Python programmer, is working on a project in which he wants to write a function to count the number of even and odd values in the list. He has written the following code but his code is having errors. Rewrite the correct code and underline the corrections made. *2*

```
define EOCOUNT(L):
    even_no=odd_no=0
    for i in range(0,len(L))
        if L[i]%2=0:
            even_no+=1
        Else:
            odd_no+=1
    print(even_no, odd_no)
```

20. (a) Write any two differences between Fiber-optic cable and Coaxial cable. *2*

OR

(b) Write one advantage and one disadvantage of wired over wireless communication. *2*

21. (a) Given is a Python string declaration : *1*

```
NAME = "Learning Python is Fun"
```

Write the output of : `print(NAME[-5:-10:-1])`

(b) Write the output of the code given below : *1*

```
dict1={1:["Rohit",20], 2:["Siya",90]}
dict2={1:["Rahul",95], 5:["Rajan",80]}
dict1.update(dict2)
print(dict1.values())
```

22. Explain the usage of **HAVING** clause in **GROUP BY** command in RDBMS with the help of an example. *2*

23. (a) Write the full forms of the following : *1*

(i) XML

(ii) HTTPS

(b) What is the use of FTP ? *1*

24. (a) Write the output of the Python code given below : *2*

```
g=0
def fun1(x,y):
    global g
    g=x+y
    return g
def fun2(m,n):
    global g
    g=m-n
    return g
k=fun1(2,3)
fun2(k,7)
print(g)
```

OR

(b) Write the output of the Python code given below : *2*

```
a=15
def update(x):
    global a
    a+=2
    if x%2==0:
        a*=x
    else:
        a//=x
a=a+5
print(a,end="$")
update(5)
print(a)
```

25. (a) Differentiate between **IN** and **BETWEEN** operators in SQL with appropriate examples. *2*

OR

(b) Which of the following is ***NOT*** a DML command. *2*

DELETE, DROP, INSERT, UPDATE

SECTION C

26. (a) Consider the following tables – Student and Sport :

Table : Student

ADMNO	NAME	CLASS
1100	MEENA	X
1101	VANI	XI

Table : Sport

ADMNO	GAME
1100	CRICKET
1103	FOOTBALL

What will be the output of the following statement ? *1*

```
SELECT * FROM Student, Sport;
```

(b) Write the output of the queries (i) to (iv) based on the table, GARMENT given below : *2*

TABLE : GARMENT

GCODE	TYPE	PRICE	FCODE	ODR_DATE
G101	EVENING GOWN	850	F03	2008-12-19
G102	SLACKS	750	F02	2020-10-20
G103	FROCK	1000	F01	2021-09-09
G104	TULIP SKIRT	1550	F01	2021-08-10
G105	BABY TOP	1500	F02	2020-03-31
G106	FORMAL PANT	1250	F01	2019-01-06

(i) `SELECT DISTINCT(COUNT(FCODE))FROM GARMENT;`

(ii) `SELECT FCODE, COUNT(*), MIN(PRICE) FROM GARMENT GROUP BY FCODE HAVING COUNT(*)>1;`

(iii) `SELECT TYPE FROM GARMENT WHERE ODR_DATE >'2021-02-01' AND PRICE <1500;`

(iv) `SELECT * FROM GARMENT WHERE TYPE LIKE 'F%';`

27. (a) Write a function in Python that displays the book names having 'Y' or 'y' in their name from a text file "Bookname.txt". *3*

Example :

If the file 'Bookname.txt' contains the names of following books :

One Hundred Years of Solitude
The Diary of a Young Girl
On the Road

After execution, the output will be :

One Hundred Years of Solitude
The Diary of a Young Girl

OR

(b) Write a function **RevString()** to read a textfile "Input.txt" and prints the words starting with 'O' in reverse order. The rest of the content is displayed normally. *3*

Example :

If content in the text file is :

UBUNTU IS AN OPEN SOURCE OPERATING SYSTEM

Output will be :

UBUNTU IS AN NEPO SOURCE GNITAREPO SYSTEM

(words 'OPEN' and 'OPERATING' are displayed in reverse order)

28. Write the output of any three SQL queries (i) to (iv) based on the tables COMPANY and CUSTOMER given below : *3*

Table : COMPANY

CID	C_NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	CHENNAI	MOBILE
666	DELL	DELHI	LAPTOP

Table : CUSTOMER

CUSTID	CID	NAME	PRICE	QTY
C01	222	ROHIT SHARMA	70000	20
C02	666	DEEPIKA KUMARI	50000	10
C03	111	MOHAN KUMAR	30000	5
C04	555	RADHA MOHAN	30000	11

(i) **SELECT PRODUCTNAME, COUNT(*)FROM COMPANY GROUP BY PRODUCTNAME HAVING COUNT(*)> 2;**

(ii) **SELECT NAME, PRICE, PRODUCTNAME FROM COMPANY C, CUSTOMER CT WHERE C.CID = CU.CID AND C_NAME = 'SONY';**

(iii) **SELECT DISTINCT CITY FROM COMPANY;**

(iv) **SELECT * FROM COMPANY WHERE C_NAME LIKE '%ON%';**

29. Write a function **`search_replace()`** in Python which accepts a list L of numbers and a number to be searched. If the number exists, it is replaced by 0 and if the number does not exist, an appropriate message is displayed. *3*

Example :

L = [10,20,30,10,40]

Number to be searched = 10

List after replacement :

L = [0,20,30,0,40]

30. A list contains following record of course details for a University :

`[Course_name, Fees, Duration]`

Write the following user defined functions to perform given operations on the stack named **`'Univ'`** : *3*

(i) **`Push_element()`** – To push an object containing the Course_name, Fees and Duration of a course, which has fees greater than 100000 to the stack.

(ii) **`Pop_element()`** – To pop the object from the stack and display it. Also, display "Underflow" when there is no element in the stack.

For example :

If the lists of courses details are :

["MCA",200000,3]

["MBA",500000,2]

["BA",100000,3]

The stack should contain :

["MBA",500000,2]

["MCA",200000,3]

SECTION D

31. ABC Consultants are setting up a secure network for their office campus at Noida for their day-to-day office and web-based activities. They are planning to have connectivity between three buildings and the head office situated in Bengaluru. As a network consultant, give solutions to the questions (i) to (v), after going through the building locations and other details which are given below :

Distance between various blocks/locations :

Building	**Distance**
Building 1 to Building 3	120 m
Building 1 to Building 2	50 m
Building 2 to Building 3	65 m
Noida Branch to Head Office	1500 km

Number of computers

Building	**Number of Computers**
Building 1	25
Building 2	51
Building 3	150
Head Office	10

(i) Suggest the most suitable place to install the server for this organization. Also, give reason to justify your suggested location. *1*

(ii) Suggest the cable layout of connections between the buildings inside the campus. *1*

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

- Switch
- Repeater

(iv) The organization is planning to provide a high-speed link with the head office situated in Bengaluru, using a wired connection. Suggest a suitable wired medium for the same. *1*

(v) The System Administrator does remote login to any PC, if any requirement arises. Name the protocol, which is used for the same. *1*

32. (a) (i) What possible output(s) are expected to be displayed on screen at the time of execution of the following code ? *2*

```
import random
S=["Pen","Pencil","Eraser","Bag","Book"]
for i in range (1,2):
    f=random.randint(i,3)
    s=random.randint(i+1,4)
    print(S[f],S[s],sep=":")
```

Options :

(I) `Pencil:Book`

(II) `Pencil:Book`
`Eraser:Bag`

(III) `Pen:Book`
`Bag:Book`

(IV) `Bag:Eraser`

(ii) The table **Bookshop** in MySQL contains the following attributes :

B_code – Integer

B_name – String

Qty – Integer

Price – Integer

Note the following to establish connectivity between Python and MySQL on a 'localhost' :

- Username is 'shop'
- Password is 'Book'
- The table exists in a MySQL database named **Bstore**.

The code given below updates the records from the table **Bookshop** in MySQL. *3*

Statement 1 – to form the cursor object.

Statement 2 – to execute the query that updates the Qty to 20 of the records whose B_code is 105 in the table.

Statement 3 – to make the changes permanent in the database.

```
import mysql.connector as mysql
def update_book():

    mydb=mysql.connect(host="localhost",
    user="shop",passwd="Book",database="Bstore")
    mycursor=__________              # Statement 1
    qry= "update Bookshop set Qty=20 where
    B_code=105"
    ___________________              # Statement 2
    ___________________              # Statement 3
```

OR

(b) (i) Predict the output of the code given below : *2*

```
text="LearningCS"
L=len(text)
ntext=""
for i in range (0,L):
    if text[i].islower():
        ntext=ntext+text[i].upper()
    elif text [i].isalnum():
            ntext=ntext+text[i-1]
    else:
            ntext=ntext+'&&'
print(ntext)
```

(ii) The table **Bookshop** in MySQL contains the following attributes :

B_code – Integer

B_name – String

Qty – Integer

Price – Integer

Note the following to establish connectivity between Python and MySQL on a 'localhost' :

- Username is 'shop'
- Password is 'Book'
- The table exists in a MySQL database named **Bstore**.

The code given below reads the records from the table **Bookshop** and displays all the records : *3*

Statement 1 – to form the cursor object.

Statement 2 – to write the query to display all the records from the table.

Statement 3 – to read the complete result of the query into the object named **B_Details**, from the table **Bookshop** in the database.

```
import mysql.connector as mysql
def Display_book():
   mydb=mysql.connect(host="localhost",
   user="shop",passwd="Book",database="Bstore")
   mycursor=__________            # Statement 1
   mycursor.execute("_________") # Statement 2
   B_Details=__________           # Statement 3
for i in B_Details:
   print(i)
```

33. (a) Write a point of difference between append **(a)** and write **(w)** modes in a text file. *5*

Write a program in Python that defines and calls the following user defined functions :

(i) Add_Teacher() : It accepts the values from the user and inserts record of a teacher to a csv file 'Teacher.csv'. Each record consists of a list with field elements as **T_id**, **Tname** and **desig** to store teacher ID, teacher name and designation respectively.

(ii) Search_Teacher() : To display the records of all the PGT (designation) teachers.

OR

(b) Write one point of difference between **seek()** and **tell()** functions in file handling. Write a program in Python that defines and calls the following user defined functions : *5*

(i) Add_Device() : The function accepts and adds records of the peripheral devices to a csv file 'peripheral.csv'. Each record consists of a list with field elements as **P_id**, **P_name** and **Price** to store peripheral device ID, device name, and price respectively.

(ii) Count_Device() : To count and display number of peripheral devices, whose price is less than ₹ 1000.

SECTION E

34. The ABC Company is considering to maintain their salespersons records using SQL to store data. As a database administrator, Alia created the table Salesperson and also entered the data of 5 Salespersons.

Table : Salesperson

S_ID	S_NAME	AGE	S_AMOUNT	REGION
S001	SHYAM	35	20000	NORTH
S002	RISHABH	30	25000	EAST
S003	SUNIL	29	21000	NORTH
S004	RAHIL	39	22000	WEST
S005	AMIT	40	23000	EAST

Based on the data given above, answer the following questions :

(i) Identify the attribute that is best suited to be the Primary Key and why ? *1*

(ii) The Company has asked Alia to add another attribute in the table. What will be the new degree and cardinality of the above table ? *1*

(iii) Write the statements to : *2*

(a) Insert details of one salesman with appropriate data.

(b) Change the Region of salesman 'SHYAM' to 'SOUTH' in the table Salesperson.

OR (Option for part iii only)

(iii) Write the statement to : *2*

(a) Delete the record of salesman RISHABH, as he has left the company.

(b) Remove an attribute REGION from the table.

35. Atharva is a programmer, who has recently been given a task to write a Python code to perform the following binary file operation with the help of a user defined function/module :

- Copy_new() : to create a binary file **new_items.dat** and write all the item details stored in the binary file, **items.dat,** except for the item whose item_id is 101. The data is stored in the following format :
  {item_id:[item_name,amount]}

```
import ___________                          # Statement 1
def Copy_new():
     f1=_____________                       # Statement 2
     f2=_____________                       # Statement 3
     item_id=int(input("Enter the item id"))
     item_detail=___________                # Statement 4
     for key in item_detail:
          if ________________:              # Statement 5
               pickle.___________           # Statement 6
     f1.close()
     f2.close()
```

He has succeeded in writing partial code and has missed out certain statements. Therefore, as a Python expert, help him to complete the code based on the given requirements :

(i) Which module should be imported in the program ? (Statement 1) *1*

(ii) Write the correct statement required to open the binary file **`"items.dat"`**. (Statement 2) *1*

(iii) Which statement should Atharva fill in Statement 3 to open the binary file **`"new_items.dat"`** and in Statement 4 to read all the details from the binary file **`"items.dat"`**. *2*

OR (Option for part iii only)

(iii) What should Atharva write in Statement 5 to apply the given condition and in Statement 6 to write data in the binary file **`"new_items.dat"`**. *2*

2022-23– BOARD SAMPLE

BOARD QUESTION PAPER (Comp) MS

CBSE AISSCE 2023 Marking Scheme for Computer Science (NEW)

(Sub Code: 083 Series ∑HEFG/C Paper Code 91 Set-4)

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior School Certificate Examination, 2023 (Supplimentary)
SUBJECT NAME Computer Science (NEW) (PAPER CODE 91)

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 ev aluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	**"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to the public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC."**
3	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 latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-XII, while evaluating two competency-based questions, please try to understand the given answer and even if the reply is not from the marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.**
4	The Marking scheme carries only suggested value points for the answers These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	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. If there is any variation, the same should be zero after deliberation and discussion. 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.
6	Evaluators will mark(√) wherever the answer is correct. For wrong answer CROSS 'X" be marked. Evaluators will not put right (✓)while evaluating which gives an impression that the answer is correct and no marks are awarded. **This is the most common mistake which evaluators are committing.**
7	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. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	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 with a note **"Extra Question"**.
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 0 to 70 has to be used. Please do not hesitate to award full marks if the answer deserves it.

12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past:- ● Leaving the answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totaling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totaling on the title page. ● Wrong totaling of marks of the two columns on the title page. ● Wrong grand total. ● Marks in words and figures not tallying/not same. ● Wrong transfer of marks from the answer book to online award list. ● 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.) ● Half or a part of the answer marked correct and the rest is wrong, but no marks awarded.
14	While evaluating the answer books, if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.
15	Any un-assessed 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.
16	The Examiners should acquaint themselves with the guidelines given in the "**Guidelines for spot Evaluation**" before starting the actual evaluation.
17	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.
18	The candidates are entitled to obtain a photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

SPECIFIC INSTRUCTIONS FOR COMPUTER SCIENCE ONLY

1	**In Python, string content is accepted within a pair of single quotes ' ' or within a pair of double quotes " ".**
2	**In MySQL, CHAR/VARCHAR/DATE type content is accepted within a pair of single quotes ' ' or within a pair of double quotes " ".**
3	**In MySQL commands, lowercase/UPPERCASE both are correct.**
4	**In MySQL output questions, column headings to be ignored.**
5	**In MySQL output questions, alignment (left/right) of content to be ignored.**
6	**All answers/codes are suggestive, any other alternative correct answers to be accepted.**

CBSE AISSCE 2023 Marking Scheme for Computer Science (NEW)

(Sub Code: 083 Series ∑HEFG/C Paper Code 91 Set-4)

General Instructions:

(i) This question paper contains five sections, Section A to E.
(ii) All questions are compulsory.
(iii) Section A has 18 questions carrying 1 mark each.
(iv) Section B has 7 Very Short Answer (VSA) type questions carrying 2 marks each.
(v) Section C has 5 Short Answer (SA) type questions carrying 3 marks each.
(vi) Section D has 3 Long Answer (LA) type questions carrying 5 marks each.
(vii) Section E has 2 questions carrying 4 marks each. One internal choice is given in Q.34 and Q. 35, against Part (iii) only.
(viii) All programming questions are to be answered using python language only.

SECTION - A

1		State True or False. "Comments are not executed by interpreter."	1
	Ans	**`True`**	
		(1 Mark for writing the correct answer)	
2		Which of the following is ***not*** a sequential datatype in Python ? (a) Dictionary (b) String (c) List (d) Tuple	1
	Ans	**(a) `Dictionary`**	
		(1 Mark for writing the correct option)	
3		Given the following dictionary **`Day={1:"Monday", 2: "Tuesday", 3: "Wednesday"}`** Which statement will return **`"Tuesday"`**. (a) **`Day.pop()`** (b) **`Day.pop(2)`** (c) **`Day.pop(1)`** (d) **`Day.pop("Tuesday")`**	1
	Ans	**(b) `Day.pop(2)`**	
		(1 Mark for writing the correct option)	
4		Consider the given expression : **`7<4 or 6>3 and not 10==10 or 17>4`** Which of the following will be the correct output if the given expression is evaluated ? (a) **`True`** (b) **`False`** (c) **`NONE`** (d) **`NULL`**	1
	Ans	**(a) `True`**	
		(1 Mark for writing the correct option)	
5		Select the correct output of the code : **`S="Amrit Mahotsav @ 75"`** **`A=S.split(" ",2)`** **`print(A)`** (a) **`('Amrit', 'Mahotsav','@','75')`** (b) **`['Amrit','Mahotsav','@ 75']`** (c) **`('Amrit', 'Mahotsav','@75')`** (d) **`['Amrit','Mahotsav','@','75']`**	1
	Ans	**(b) `['Amrit', 'Mahotsav','@ 75']`**	
		(1 Mark for writing the correct option)	

6		Which of the following modes in Python creates a new file, if file does not exist and overwrites the content, if the file exists ? (a) **r+** (b) **r** (c) **w** (d) **a**	1
	Ans	(c) **w**	
		(1 Mark for writing the correct option)	
7.		Fill in the blank : _____ is not a valid built-in function for list manipulations. (a) **count()** (b) **length()** (c) **append()** (d) **extend()**	1
	Ans	(b) **length()**	
		(1 Mark for writing the correct option)	
8		Which of the following is an example of identity operators of Python ? (a) **is** (b) **on** (c) **in** (d) **not in**	1
	Ans	(a) **is**	
		(1 Mark for writing the correct option)	
9		Which of the following statement(s) would give an error after executing the following code? **S="Happy" # Statement 1** **print(S*2) # Statement 2** **S+="Independence" # Statement 3** **S.append("Day") # Statement 4** **print(S) # Statement 5** (a) **Statement 2** (b) **Statement 3** (c) **Statement 4** (d) **Statement 3 and 4**	1
	Ans	(c) **Statement 4**	
		(1 Mark for writing the correct options)	
10		Fill in the blank : In a relational model, tables are called _____, that store data for different columns. (a) **Attributes** (b) **Degrees** (c) **Relations** (d) **Tuples**	1
	Ans	(c) **Relations**	
		(1 Mark for writing the correct option)	
11		The correct syntax of `tell()` is : **(a) tell.file_object()** **(b) file_object.tell()** **(c) tell.file_object(1)** **(d) file_object.tell(1)**	1
	Ans	(b) **file_object.tell()**	
		(1 Mark for writing the correct option)	

12		Fill in the blank : _____ statement of SQL is used to insert new records in a table. **(a)** ALTER **(b)** UPDATE **(c)** INSERT **(d)** CREATE	1
	Ans	(c) INSERT	
		(1 Mark for writing the correct option)	
13		Fill in the blank : In _____ switching, before a communication starts, a dedicated path is identified between the sender and the receiver. **(a)** Packet **(b)** Graph **(c)** Circuit **(d)** Plot	1
	Ans	(c) Circuit	
		(1 Mark for writing the correct option)	
14		What will the following expression be evaluated to in Python ? `print(6/3 + 4**3//8-4)` **(a)** `6.5` **(b)** `4.0` **(c)** `6.0` **(d)** `4`	1
	Ans	(c) `6.0`	
		(1 Mark for writing the correct option)	
15		Which of the following functions is a valid built-in function for both list and dictionary datatype ? **(a)** `items()` **(b)** `len()` **(c)** `update()` **(d)** `values()`	1
	Ans	(b) `len()`	
		(1 Mark for writing the correct option)	
16		`fetchone()` method fetches only one row in a ResultSet and returns a _____. **(a)** Tuple **(b)** List **(c)** Dictionary **(d)** String	1
	Ans	(a) Tuple	
		(1 Mark for writing the correct option)	

		Q. **17** and **18** are Assertion (A) and Reasoning (R) based questions. Mark the correct choice as **(a)** Both (A) and (R) are true and (R) is the correct explanation for (A). **(b)** Both (A) and (R) are true and (R) is ***not*** the correct explanation for (A). **(c)** (A) is true but (R) is false. **(d)** (A) is false but (R) is true.	
17		*Assertion (A)* : In **Python**, a stack can be implemented using a list. *Reasoning (R)* : A stack is an ordered linear list of elements that works on the principle of First In First Out (FIFO).	1
	Ans	(c) (A) is true but (R) is false. .	
		(1 Mark for writing the correct option)	
18		*Assertion (A)* : `readlines()` reads all the lines from a text file and returns the lines along with newline as a list of strings. *Reasoning (R)* : `readline()` can read the entire text file line by line without using any looping statements.	1
	Ans	(c) (A) is true but (R) is false.	
		(1 Mark for writing the correct option)	
		SECTION - B	

19		Ravi, a Python programmer, is working on a project in which he wants to write a function to count the number of even and odd values in the list. He has written the following code but his code is having errors. Rewrite the correct code and underline the corrections made.
		`define EOCOUNT(L):`
		`  even_no=odd_no=0`
		`  for i in range(0,len(L))`
		`  if L[i]%2=0:`
		`  even_no+=1`
		`  Else:`
		`  odd_no+=1`
		`  print(even_no, odd_no)`
			2

	Ans	`def EOCOUNT(L):  # Error 1`
		`  even_no=odd_no=0`
		`  for i in range(0,len(L)):  # Error 2`
		`  if L[i]%2==0:  # Error 3`
		`  even_no+=1`
		`  else:  # Error 4`
		`  odd_no+=1`
		`  print(even_no, odd_no)`	

		(½ Mark for correctly identifying and correcting each of the four errors) ***Note: 1 Mark for identifying all 4 errors without any correction***	
20	(a)	Write any two differences between Fiber-optic cable and Coaxial cable.	2
	Ans	**Fiber-Optic cable** Very fast, expensive, very reliable, minimum interference	

		Coaxial cable Slow, Economic, Convenient to lay down using the bus topology of networks	
		(2 Marks for writing the correct difference between Fiber-optic cable and coaxial cable) ***OR*** ***(1 Mark for correctly defining Fiber-optic cable)*** ***(1 Mark for correctly defining coaxial cable)***	
		OR	
	(b)	Write one advantage and one disadvantage of wired over wireless communication.	2
	Ans	Wired technologies: Advantage: ● point to point connectivity between nodes and are not affected by the variation in weather conditions. ● Speed is higher in wired connectivity. Disadvantage: ● Cut in cable (Wired Technology) will result in network failure Examples ● Optical Fiber, Ethernet Cable, Co-axial Cable are used in Wired Technologies Wireless technologies: Disadvantage: ● are not necessarily point to point connectivity between nodes and can be affected by the variation in weather conditions. ● Speed is lesser as compared to wired connectivity. Advantage: ● There is no issue of physical cut Examples ● Bluetooth, Microwave, Radiowave, Satellite Links are examples of Wireless Technologies	
		(1 Mark for writing any one correct advantage of wired over wireless communication) ***(1 Mark for writing any one correct disadvantage of wired over wireless communication)*** ***Note:*** ***1 Mark for only specifying the names of Wired and Wireless Technologies***	
21	(a)	Given is a Python string declaration : `NAME = "Learning Python is Fun"` Write the output of : `print(NAME[-5:-10:-1])`	1
	Ans	`si no`	
		(1 Mark for writing the correct output)	

	(b)	Write the output of the code given below :
		`dict1={1:["Rohit",20], 2:["Siya",90]}`
		`dict2={1:["Rahul",95], 5:["Rajan",80]}`
		`dict1.update(dict2)`
		`print(dict1.values())`
			1

	Ans	`dict_values([['Rahul', 95], ['Siya', 90], ['Rajan', 80]])`	
		(1 Mark for writing the correct output) ***Note: ignore if `dict_values()` is not written with the output***	

22		Explain the usage of **HAVING** clause in **GROUP BY** command in RDBMS with the help of an example.	2
	Ans	**HAVING** is used for including conditions based on aggregate functions on groups. **SELECT DEPT, COUNT(*) FROM EMPLOYEE** **GROUP BY DEPT HAVING COUNT(*)>1;** Above command will return the number of employees in each department for the departments having more than 1 employee.	
		(1 Mark for writing any correct example of HAVING) ***(1 Mark for writing the correct explanation of the query or the output)*** ***OR*** ***(1 Mark for explaining use of HAVING correctly without example)***	
23	(a)	Write the full forms of the following : (i) XML (ii) HTTPS	1
	Ans	(i) Extensible Markup Language (ii) Hyper-Text Transfer Protocol Secure	
		(½ Mark for writing each correct Full Form)	
	(b)	What is the use of FTP ?	1
	Ans	Protocol is needed to download, upload and transfer files. **OR** FIle Transfer Protocol	
		(1 Mark for correctly defining OR full form of FTP)	
24	(a)	Write the output of the Python code given below : **g=0** **def fun1(x,y):** ** global g** ** g=x+y** ** return g** **def fun2(m,n):** ** global g** ** g=m-n** ** return g** **k=fun1(2,3)** **fun2(k,7)** **print(g)**	2
	Ans	**-2**	
		(2 Mark for writing the correct output) ***Note:*** ***Give only 1 mark if 2 written without minus sign***	
		OR	

	(b)	Write the output of the Python code given below :
		`a=15`
		`def update(x):`
		`  global a`
		`  a+=2`
		`  if x%2==0:`
		`  a*=x`
		`  else:`
		`  a//=x`
		`a=a+5`
		`print(a,end="$")`
		`update(5)`
		`print(a)`
			2

	Ans	`20$4`	
		(2 Mark for writing the correct output) ***Note:*** ***Deduct ½ Mark for not writing $ at correct place*** ***Deduct ½ Mark for writing the output in two lines***	
25	(a)	Differentiate between **IN** and **BETWEEN** operators in SQL with appropriate examples.	2

	Ans	**IN() function in MySQL finds a match in the given arguments.**
		`Exprs IN (value1, value2, ...)`
		The function returns 1 if Exprs is equal to any of the values in the IN list, otherwise, returns 0.
		Example:
		`SELECT NAME, SECTION`
		`FROM STUDENTS`
		`WHERE SECTION IN ('C' , 'D');`
		Whereas BETWEEN operator in MySQL selects values within a given range.
		The values can be numbers, text, or dates.
		Range values are inclusive, both begin and end values are included.
		Example:
		`SELECT ROLL, MARKS`
		`FROM RESULT`
		`WHERE MARKS BETWEEN 75 AND 100;`	

		(2 Marks for explaining the difference with appropriate example(s)) ***OR*** ***(1 Mark for correct use of IN in SQL with appropriate example)*** ***(1 Mark for correct use of BETWEEN in SQL with appropriate example)***	
		OR	
	(b)	Which of the following is ***NOT*** a DML command. DELETE, DROP, INSERT, UPDATE	2
	Ans	**DROP**	
		(2 Marks for mentioning the correct answer) ***(Deduct ½ mark for writing each wrong answer, if <u>written along with</u> DROP)***	

SECTION-C

26 (a) Consider the following tables - Student and Sport : **1**

Table : Student

ADMNO	NAME	CLASS
1100	MEENA	X
1101	VANI	XI

Table: Sport

ADMNO	GAME
1100	CRICKET
1103	FOOTBALL

What will be the output of the following statement ?

```
SELECT * FROM Student, Sport;
```

Ans

ADMNO	NAME	CLASS	ADMNO	GAME
1100	MEENA	X	1100	CRICKET
1101	VANI	XI	1100	CRICKET
1100	MEENA	X	1103	FOOTBALL
1101	VANI	XI	1103	FOOTBALL

(1 Mark for writing the correct output)

Note:
(Ignore the order of rows and columns of the output)

(b) Write the output of the queries (i) to (iv) based on the table, GARMENT given below : **2**

TABLE : GARMENT

GCODE	TYPE	PRICE	FCODE	ODR_DATE
G101	EVENING GOWN	850	F03	2008-12-19
G102	SLACKS	750	F02	2020-10-20
G103	FROCK	1000	F01	2021-09-09
G104	TULIP SKIRT	1550	F01	2021-08-10
G105	BABY TOP	1500	F02	2020-03-31
G106	FORMAL PANT	1250	F01	2019-01-06

(i) `SELECT DISTINCT(COUNT(FCODE))FROM GARMENT;`

Ans

DISTINCT(COUNT(FCODE))
3

(½ Mark for writing correct output)

(ii)
```
SELECT FCODE, COUNT(*), MIN(PRICE) FROM GARMENT GROUP BY FCODE
HAVING COUNT(*)>1;
```

Ans

FCODE	COUNT(*)	MIN(PRICE)
F02	2	750
F01	3	1000

(½ Mark for writing correct output)

(iii) **SELECT TYPE FROM GARMENT WHERE ODR_DATE >'2021-02-01' AND PRICE <1500;**

Ans

TYPE
FROCK

(½ Mark for writing correct output)

(iv) **SELECT * FROM GARMENT WHERE TYPE LIKE 'F%';**

Ans

GCODE	TYPE	PRICE	FCODE	ODR_DATE
G103	FROCK	1000	F01	2021-09-09
G106	FORMAL PANT	1250	F01	2019-01-06

(½ Mark for writing correct output)

27 (a) Write a function in Python that displays the book names having 'Y' or 'y' in their name from a text file "Bookname.txt". 3

Example :

If the file "Bookname.txt" contains the names of following books :

```
One Hundred Years of Solitude
The Diary of a Young Girl
On the Road
```

After execution, the output will be :

```
One Hundred Years of Solitude
The Diary of a Young Girl
```

Ans

```
def Book_Name():
    fin=open('Bookname.txt')
    lines=fin.readlines()
    for line in lines:
        if 'y' in line or 'Y' in line: # or if 'Y' in line.upper():
            print(line,end="")         # ignore end=""
    fin.close()
```

OR

```
def Book_Name():
    fin=open('Bookname.txt')
    for line in fin:
        if 'y' in line or 'Y' in line: # or if 'Y' in line.upper():
            print(line,end="")         # ignore end=""
    fin.close()
```

OR

Any other correct equivalent code

(½ Mark for writing the function header correctly with any function identifier and/or argument)
(½ Mark for opening the file correctly)
(½ Mark for reading/extracting the lines from the file)
(½ Mark for processing the lines one by one using a loop)
(½ Mark for checking condition for presence of 'y' or 'Y')
(½ Mark for printing the matching lines)

OR

(b) Write a function **RevString()** to read a textfile "Input.txt" and prints the words starting with 'O' in reverse order. The rest of the content is displayed normally. **3**

Example :

If content in the text file is :

UBUNTU IS AN OPEN SOURCE OPERATING SYSTEM

Output will be :

UBUNTU IS AN NEPO SOURCE GNITAREPO SYSTEM

(words 'OPEN' and 'OPERATING' are displayed in reverse order)

Ans

```
def RevString():
    fin=open('Input.txt')
    S=fin.read()
    for w in S.split():
        if w[0]=='O':
            print(w[::-1],end=' ')        #ignore end
        else:
            print(w,end=' ')              #ignore end
    fin.close()
```

OR

Any other correct equivalent code

(½ Mark for writing the function header correctly)
(½ Mark for opening the file correctly)
(½ Mark for reading/separating all words from the file)
(½ Mark for checking the first alphabet of each word)
(½ Mark for displaying the matched word in reverse order)
(½ Mark for displaying all unmatched words)

28 (a) Write the output of any three SQL queries (i) to (iv) based on the tables COMPANY and CUSTOMER given below : **3**

Table : COMPANY

CID	C_NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	CHENNAI	MOBILE
666	DELL	DELHI	LAPTOP

Table: CUSTOMER

CUSTID	CID	NAME	PRICE	QTY
C01	222	ROHIT SHARMA	70000	20
C02	666	DEEPIKA KUMARI	50000	10
C03	111	MOHAN KUMAR	30000	5
C04	555	RADHA MOHAN	30000	11

(i)

```
SELECT PRODUCTNAME, COUNT(*)FROM COMPANY GROUP BY
PRODUCTNAME HAVING COUNT(*)> 2;
```

Ans

PRODUCTNAME	COUNT(*)
MOBILE	3

(1 Mark for writing correct output)

(ii)

```
SELECT NAME, PRICE, PRODUCTNAME FROM COMPANY C,
CUSTOMER CT WHERE C.CID = CU.CID AND C_NAME = 'SONY';
```

Ans

NAME	PRICE	PRODUCTNAME
MOHAN KUMAR	30000	TV

(1 Mark for writing correct output)
OR
(1 Mark for mentioning ERROR)

(iii)

```
SELECT DISTINCT CITY FROM COMPANY;
```

Ans

DISTINCT(CITY)
DELHI
MUMBAI
CHENNAI

(1 Mark for writing correct output)

(iv)

```
SELECT * FROM COMPANY WHERE C_NAME LIKE '%ON%';
```

Ans

CID	C_NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE

(1 Mark for writing correct output)

NOTE: Only three options would be awarded marks

29		Write a function **`search_replace()`** in Python which accepts a list L of numbers and a number to be searched. If the number exists, it is replaced by 0 and if the number does not exist, an appropriate message is displayed. Example : **`L = [10,20,30,10,40]`** **`Number to be searched = 10`** List after replacement : **`L = [0,20,30,0,40]`**	3
	Ans	**`def search_replace(L,SN):`** **`    Found=False  # or Found=0`** **`    for i in range(len(L)):`** **`        if L[i]==SN:`** **`            L[i]=0`** **`            Found=True  # or Found=1`** **`    if Found==False:  # if Found==0:`** **`        print('Number not found')`** **OR** **`def search_replace(L,SN):`** **`    Found=False  # or Found=0`** **`    for i in range(len(L)):`** **`        if L[i]==SN:`** **`            L[i]=0`** **`            Found=True  # or Found=1`** **`    else:`** **`      print('Number not found')`** **OR** **Any other correct equivalent code**	
		(½ Mark for writing the function header correctly) ***(½ Mark for passing the correct parameters)*** ***(½ Mark for writing the correct loop)*** ***(½ Mark for comparing the number from elements of L)*** ***(½ Mark for assigning the compared element as 0)*** ***(½ Mark for displaying appropriate message when no matching element found)***	
30		A list contains following record of course details for a University : **`[Course_name, Fees, Duration]`** Write the following user defined functions to perform given operations on the stack named **`'Univ'`** : (i) **Push_element()** - To push an object containing the Course_name, Fees and Duration of a course, which has fees greater than 100000 to the stack. (ii) **`Pop_element()`** - To pop the object from the stack and display it. Also, display "Underflow" when there is no element in the stack.	3

For example :
If the lists of courses details are :
```
["MCA", 200000, 3]
["MBA", 500000, 2]
["BA", 100000, 3]
```

The stack should contain
```
["MBA", 500000, 2]
["MCA", 200000, 3]
```

Ans

```
Univ=[]
def Push_element(Course):
    for Rec in Course:
        if Rec[1]>100000:
            Univ.append(Rec)

def Pop_element():
    while len(Univ)>0:
        print(Univ.pop())
    else:
        print("Underflow")
```

OR

```
Course=[["MCA",200000,3],["MBA",500000,2],["BA",100000,3]]
Univ=[]
def Push_element():
    for Rec in Course:
        if Rec[1]>100000:
            Univ.append(Rec)

def Pop_element():
    while len(Univ)>0:
        print(Univ.pop())
    else:
        print("Underflow")
```

OR

Any other correct equivalent code

(½ Mark for writing function header Push_element correctly with or without argument)
(½ Mark for processing and checking each element of the courses list)
(½ Mark for appending the matched data into the stack Univ)

(½ Mark for writing function header Pop_element correctly with or without argument)
(½ Mark for popping and displaying the objects from Univ)
(½ Mark for checking Underflow condition and displaying appropriate message)

SECTION - D

31 ABC Consultants are setting up a secure network for their office campus at Noida for their day-to-day office and web-based activities. They are planning to have connectivity between three buildings and the head office situated in Bengaluru. As a network consultant, give solutions to the questions (i) to (v), after going through the building locations and other details which are given below :

Distance between various blocks/locations:

Building	Distance
Building 1 to Building 3	120 m
Building 1 to Building 2	50 m
Building 2 to Building 3	65 m
Noida Branch to Head Office	1500 km

Number of computers

Building	Number of Computers
Building 1	25
Building 2	51
Building 3	150
Head Office	10

(i) Suggest the most suitable place to install the server for this organization. Also, give reason to justify your suggested location. **1**

Ans Building 3
It has maximum number of computers

OR

Building 2
Considering closest to both the other buildings

(½ Mark for writing correct Building to install server)
(½ Mark for writing any one valid reason)

(ii) Suggest the cable layout of connections between the buildings inside the campus. **1**

Ans

		 OR Keeping the minimum distance concept in mind	
		(1 Mark for suggesting the correct layout) ***Note: Any other valid layout should also be awarded***	
	(iii)	Suggest the placement of the following devices with justification: ● Switch ● Repeater	1
	Ans	Switch to be placed in each building for establishing connection Repeater to be placed between Building 1 and Building 3 because distance is more than 100 meters between these two buildings. However, if the second layout given in this marking scheme is considered, repeater will not be required at all.	
		(½ Mark for correctly suggesting placement of Switch) ***(½ Mark for correctly suggesting placement of Repeater)***	
	(iv)	The organization is planning to provide a high-speed link with the head office situated in Bengaluru, using a wired connection. Suggest a suitable wired medium for the same.	1
	Ans	Optical Fibre	
		(1 Mark for suggesting correct answer)	
	(v)	The System Administrator does remote login to any PC, if any requirement arises. Name the protocol, which is used for the same.	1
	Ans	Telnet	
		(1 Mark for suggesting the correct protocol)	
32	(a)	(i) What possible output(s) are expected to be displayed on screen at the time of execution of the following code ? **`import random`** **`S=["Pen","Pencil","Eraser","Bag","Book"]`**	2

```
for i in range (1,2):
  f=random.randint(i,3)
  s=random.randint(i+1,4)
  print(S[f],S[s],sep=":")
```

Options:

(I) `Pencil:Book`

(II) `Pencil:Book`
`Eraser:Bag`

(III) `Pen:Book`
`Bag:Book`

(IV) `Bag:Eraser`

Ans `(I)` and `(IV)`

(1 Mark for writing each of the correct option)

(ii) The table **Bookshop** in MySQL contains the following attributes : 3

```
B_code - Integer
B_name - String
Qty - Integer
Price - Integer
```

Note the following to establish connectivity between Python and MySQL on a 'localhost' :

- Username is 'shop'
- Password is 'Book'
- The table exists in a MySQL database named **Bstore**.

The code given below updates the records from the table **Bookshop** in MySQL.
Statement 1 - to form the cursor object.
Statement 2 - to execute the query that updates the Qty to 20 of the records whose B_code is 105 in the table.
Statement 3 - to make the changes permanent in the database.

```
import mysql.connector as mysql
def update_book():
  mydb=mysql.connect(host="localhost",
  user="shop",passwd="Book",database="Bstore")
  mycursor=__________ # Statement 1
  qry= "update Bookshop set Qty=20 where B_code=105"
  ___________________ # Statement 2
  ___________________ # Statement 3
```

```
Statement 1: mydb.cursor()
Statement 2: mycursor.execute(qry)
Statement 3: mydb.commit()
```

OR

```
Statement 3: mycursor.execute("COMMIT")
```

(1 Mark for writing each correct statement)

		OR	

	(b)	(i) Predict the output of the code given below :
		`text="LearningCS"`
		`L=len(text)`
		`ntext=""`
		`for i in range (0,L):`
		`  if text[i].islower():`
		`  ntext=ntext+text[i].upper()`
		`  elif text [i].isalnum():`
		`  ntext=ntext+text[i-1]`
		`  else:`
		`  ntext=ntext+'&&'`
		`print(ntext)`
			2

	Ans	**SEARNINGgC**	
		(1 Mark for the output resulting from condition given if i.e. _EARNING__) ***(1 Mark for the output resulting from condition given elif i.e. S_____gC)*** **OR** ***(½ Mark for correctly writing part of the output as S_____)*** ***(½ Mark for correctly writing part of the output as _EAR_____)*** ***(½ Mark for correctly writing part of the output as ____NING__)*** ***(½ Mark for correctly writing part of the output as _____gC)***	

		(ii) The table Bookshop in MySQL contains the following attributes :
		B_code - Integer
		B_name - String
		Qty - Integer
		Price - Integer
		Note the following to establish connectivity between Python and MySQL on a 'localhost' :
		● Username is 'shop'
		● Password is 'Book'
		● The table exists in a MySQL database named Bstore.
		The code given below reads the records from the table Bookshop and displays all the records :
		Statement 1 - to form the cursor object.
		Statement 2 - to write the query to display all the records from the table.
		Statement 3 - to read the complete result of the query into the object named B_Details, from the table Bookshop in the database.
		`import mysql.connector as mysql`
		`def Display_book():`
		`  mydb=mysql.connect(host="localhost",`
		`  user="shop",passwd="Book",database="Bstore")`
		`  mycursor=_____ # Statement 1`
		`  mycursor.execute("_____") # Statement 2`
		`  B_Details=_____ # Statement 3`
		`  for i in B_Details:`
		`  print(i)`
			3

	Ans	`Statement 1: mydb.cursor()`
		`Statement 2: mycursor.execute("SELECT * FROM BOOKSHOP;")`
		`Statement 3: mycursor.fetchall()`	

		(1 Mark for writing each correct statement)	
33	**(a)**	Write a point of difference between **`append (a)`** and **`write (w)`** modes in a text file. Write a program in Python that defines and calls the following user defined functions : (i) Add_Teacher() : It accepts the values from the user and inserts record of a teacher to a csv file 'Teacher.csv'. Each record consists of a list with field elements as **`T_id,Tname`** and **`desig`** to store teacher ID, teacher name and designation respectively. (ii) Search_Teacher() : To display the records of all the PGT (designation) teachers.	5

	Ans	a (append) mode - To open the file to write the content at the bottom(or end) of existing content. It also creates the file, if it does not exist.
		whereas
		w (write) mode - To create a new file to write the content in it. It overwrites the file, if it already exists.
		
		`import csv`
		`def Add_Teacher():`
		`  fout=open("Teacher.csv","a",newline="\n")`
		`  T_id=int(input("Enter Teacher id: "))`
		`  Tname=input("Enter Teacher name: ")`
		`  desig=input("Enter Designation: ")`
		`  rec=[T_id,Tname,desig]`
		`  csvw=csv.writer(fout)`
		`  csvw.writerow(rec)`
		`  fout.close()`
		
		`def Search_Teacher():`
		`  fin=open("Teacher.csv")`
		`  csvr=csv.reader(fin)`
		`  for record in csvr:`
		`  if record[2]=="PGT":`
		`  print(record)`
		`  fin.close()`
		
		`Add_Teacher()`
		`Search_Teacher()`	

		(2 Mark for writing 1 point of difference between append(a) and write (w) modes) ***OR*** ***(2 Mark for illustrating the difference using only example)*** ***OR*** ***(1 Marks for correct explanation of append (a) mode)*** ***(1 Mark for correct explanation of write (w) mode)*** ***—----------*** ***(1 Mark for writing correct function definition of `Add_Teacher()`, ½ Mark for partially correct code)***	

		(1 Mark for writing correct function definition of `Search_Teacher()`, ½ Mark for partially correct code) ***(½ Mark for writing correct function call of `Add_Teacher()`)*** ***(½ Mark for writing correct function call of `Search_Teacher()`)***	
		OR	
	(b)	Write one point of difference between **`seek()`** and **tell()** functions in file handling. Write a program in Python that defines and calls the following user defined functions : (i) Add_Device() : The function accepts and adds records of the peripheral devices to a csv file 'peripheral.csv'. Each record consists of a list with field elements as **`P_id`**, **`P_name`** and **`Price`** to store peripheral device ID, device name, and price respectively. (ii) Count_Device() : To count and display number of peripheral devices, whose price is less than ₹ 1000.	5

	Ans	seek() method is used to move the file pointer to a specified location in the file object.
		tell() method is used to return the current location of the file pointer in the file object.
		
		`import csv`
		`def Add_Device():`
		`  fout=open("perpheral.csv","a",newline="\n")`
		`  P_id=int(input("Enter Device Id: "))`
		`  P_name=input("Enter Device name: ")`
		`  Price=int(input("Enter Price: ")`
		`  rec=[P_id,P_name,Price]`
		`  csvw=csv.writer(fout)`
		`  csvw.writerow(rec)`
		`  fout.close()`
		
		`def Count_Device():`
		`  fin=open("peripheral.csv")`
		`  csvr=csv.reader(fin)`
		`  ctr=0`
		`  for record in csvr:`
		`  if int(record[2])<1000:`
		`  ctr=ctr+1`
		`  print("Count of Price<1000 is",ctr)`
		`  fin.close()`
		`Add_Device()`
		`Count_Device()`	

		(2 Mark for writing 1 point of difference between seek() and tell() functions with/without example) ***OR*** ***(2 Mark for illustrating the difference using only example)*** ***OR*** ***(1 Marks for correct explanation of seek() function)*** ***(1 Mark for correct explanation of tell() function)*** **—----------**	

(1 Mark for writing correct function definition of `Add_Device()`, ½ Mark for partially correct code)
(1 Mark for writing correct function definition of `Count_Device()`, ½ Mark for partially correct code)
(½ Mark for writing correct function call of `Add_Device()`)
(½ Mark for writing correct function call of `Count_Device()`)

SECTION - E

34 The ABC Company is considering to maintain their salespersons records using SQL to store data. As a database administrator, Alia created the table Salesperson and also entered the data of 5 Salespersons.

Table : Salesperson

S_ID	S_NAME	AGE	S_AMOUNT	REGION
S001	SHYAM	35	20000	NORTH
S002	RISHABH	30	25000	EAST
S003	SUNIL	29	21000	NORTH
S004	RAHIL	39	22000	WEST
S005	AMIT	40	23000	EAST

Based on the data given above, answer the following questions :

(i) Identify the attribute that is best suited to be the Primary Key and why ? 1

Ans **Primary key: `S_ID`**
As it is non-repeating value and not expected to repeat for new rows too.

(½ Mark for identifying the correct attribute for Primary Key)
(½ Mark for appropriate explanation)

Note:
S_NAME should also be considered as a Primary Key

(ii) The Company has asked Alia to add another attribute in the table. What will be the new degree and cardinality of the above table ? 1

Ans **`Degree = 6 and Cardinality = 5`**

(½ Mark for writing value of Degree correctly)
(½ Mark for writing value of Cardinality correctly)

(iii) Write the statements to : 2

(a) Insert details of one salesman with appropriate data.
(b) Change the Region of salesman 'SHYAM' to 'SOUTH' in the table Salesperson.

Ans

```
(a) INSERT INTO SALESPERSON
    VALUES ("S006","JAYA",23,34000,'SOUTH');
(b) UPDATE SALESPERSON
    SET REGION='SOUTH' WHERE S_NAME="SHYAM";
```

(½ Mark for writing the INSERT INTO SALESPERSON correctly)
(½ Mark for writing the any valid data using `VALUES` correctly)
(½ Mark for writing the UPDATE SALESPERSON correctly)
(½ Mark for writing the assignment operation with appropriate condition correctly)

		OR **(Option for part iii only)**	
	(iii)	Write the statement to :	2
		(a) Delete the record of salesman RISHABH, as he has left the company. (b) Remove an attribute REGION from the table.	

	Ans	**(a)** `DELETE FROM SALESPERSON`
		`WHERE S_NAME="RISHABH";`
		(b) `ALTER TABLE SALESPERSON`
		`DROP COLUMN REGION;`	

		(½ Mark for writing `DELETE FROM` ***correctly)*** ***(½ Mark for writing*** `WHERE condition` ***correctly)*** ***(½ Mark for writing*** `ALTER TABLE` ***correctly)*** ***(½ Mark for writing*** `DROP COLUMN` ***correctly)***	

35		Atharva is a programmer, who has recently been given a task to write a Python code to perform the following binary file operation with the help of a user defined function/module :
		
		• Copy_new() : to create a binary file new_items.dat and write all the item details stored in the binary file, items.dat, except for the item whose item_id is 101. The data is stored in the following format : {item_id:[item_name,amount]}
		
		`import _____ # Statement 1`
		`def Copy_new():`
		`  f1=_____ # Statement 2`
		`  f2=_____ # Statement 3`
		`  item_id=int(input("Enter the item id"))`
		`  item_detail=_____ # Statement 4`
		`  for key in item_detail:`
		`  if _____: # Statement 5`
		`  pickle._____ # Statement 6`
		`  f1.close()`
		`  f2.close()`
		He has succeeded in writing partial code and has missed out certain statements. Therefore, as a Python expert, help him to complete the code based on the given requirements :	

	(i)	Which module should be imported in the program ? (Statement 1)	1

	Ans	`pickle`
		`OR`
		`import pickle`	

		(1 Mark for correctly writing missing module in Statement 1)	
	(ii)	Write the correct statement required to open the binary file `"items.dat"`. (Statement 2)	1

	Ans	`open("items.dat","rb")`
		`OR`
		`f1=open("items.dat","rb")`	

		(1 Mark for correctly writing missing function in Statement 2)	

	(iii)	Which statement should Atharva fill in Statement 3 to open the binary file **"new_items.dat"** and in Statement 4 to read all the details from the binary file **"items.dat"**.	2
	Ans	**open("new_items.dat","wb")** **pickle.load(f1)** **OR** **f2=open("new_items.dat","wb")** **item_detail = pickle.load(f1)**	
		(1 Mark for correctly writing missing function/method in Statement 3) ***(1 Mark for correctly writing missing function/method in Statement 4)***	
		OR (Option for Part (iii) only)	
	(iii)	What should Atharva write in Statement 5 to apply the given condition and in Statement 6 to write data in the binary file **"new_items.dat"**.	2
	Ans	**if key != 101:** **pickle.dump(item_detail[key],f2) #OR any alternative valid code** **OR** **if key != item_id:** **pickle.dump(item_detail[key],f2) #OR any alternative valid code**	
		(1 Mark for correctly writing missing condition in Statement 5) ***(1 Mark for correctly writing missing function/method in Statement 6)***	

Class: XII	
Subject: COMPUTER SCIENCE	

Q. No. 1	Rohit, a student of class 12th, is learning CSV File Module in Python. During examination, he has been assigned an incomplete python code (shown below) to create a CSV File 'Student.csv' (content shown below). Help him in completing the code which creates the desired CSV File.
	
	CSV File
	1,AKSHAY,XII,A
	2,ABHISHEK,XII,A
	3,ARVIND,XII,A
	4,RAVI,XII,A
	5,ASHISH,XII,A
	
	Incomplete Code
	`import_____ #Statement-1`
	`fh = open(_____, _____, newline='') #Statement-2`
	`stuwriter = csv._____ #Statement-3`
	`data = []`
	`header = ['ROLL_NO', 'NAME', 'CLASS', 'SECTION']`
	`data.append(header)`
	`for i in range(5):`
	`  roll_no = int(input("Enter Roll Number : "))`
	`  name = input("Enter Name : ")`
	`  Class =  input("Enter Class : ")`
	`  section =  input("Enter Section : ")`
	`  rec = [_____] #Statement-4`
	`  data.append(rec)`
	`stuwriter. _____ (data) #Statement-5`
	`fh.close()`

i.	Identify the suitable code for blank space in line marked as Statement-1. a) csv file b) CSV c) csv d) Csv Correct Answer : c) csv
ii.	Identify the missing code for blank space in line marked as Statement-2? a) "School.csv","w" b) "Student.csv","w" c) "Student.csv","r" d) "School.csv","r" Correct Answer : b) "Student.csv","w"
iii.	Choose the function name (with argument) that should be used in the blank space of line marked as Statement-3 a) reader(fh) b) reader(MyFile) c) writer(fh) d) writer(MyFile)

	Correct Answer : c) writer(fh)
iv.	Identify the suitable code for blank space in line marked as Statement-4. a) 'ROLL_NO', 'NAME', 'CLASS', 'SECTION' b) ROLL_NO, NAME, CLASS, SECTION c) 'roll_no','name','Class','section' d) roll_no,name,Class,section c) co.connect() Correct Answer : d) roll_no,name,Class,section
v.	Choose the function name that should be used in the blank space of line marked as Statement-5 to create the desired CSV File? a) dump() b) load() c) writerows() d) writerow() Correct Answer : c) writerows()

Q. No. 2	Amritya Seth is a programmer, who has recently been given a task to write a python code to perform the following binary file operations with the help of two user defined functions/modules:
	
	a. **AddStudents()** to create a binary file called **STUDENT.DAT** containing student information – roll number, name and marks (out of 100) of each student.
	b. **GetStudents()** to display the name and percentage of those students who have a percentage greater than 75. In case there is no student having percentage > 75 the function displays an appropriate message. The function should also display the average percent.
	
	He has succeeded in writing partial code and has missed out certain statements, so he has left certain queries in comment lines. You as an expert of Python have to provide the missing statements and other related queries based on the following code of Amritya.
	
	Answer any four questions (out of five) from the below mentioned questions.
	
	`import pickle`
	`def AddStudents():`
	`  _____ #1 statement to open the binary file to write data`
	`  while True:`
	`  Rno = int(input("Rno :"))`
	`  Name = input("Name : ")`
	`  Percent = float(input("Percent :"))`
	`  L = [Rno, Name, Percent]`
	`  _____ #2 statement to write the list L into the file`
	`  Choice = input("enter more (y/n): ")`
	`  if Choice in "nN":`
	`  break`
	`  F.close()`

```
def GetStudents():
      Total=0
      Countrec=0
      Countabove75=0
      with open("STUDENT.DAT","rb") as F:
            while True:
                  try:
                        ____________  #3 statement to read
from the file
                        Countrec+=1
                        Total+=R[2]
                        if R[2] > 75:
                              print(R[1], " has percent =
",R[2])
                              Countabove75+=1
                  except:
                        break
            if Countabove75==0:
                  print("There is no student who has
percentage more than 75")
      average=Total/Countrec
      print("average percent of class = ",average)

AddStudents()
GetStudents()
```

i. Which of the following commands is used to open the file “STUDENT.DAT” for writing only in binary format? (marked as #1 in the Python code)

a. F= open("STUDENT.DAT",'wb')
b. F= open("STUDENT.DAT",'w')
c. F= open("STUDENT.DAT",'wb+')
d. F= open("STUDENT.DAT",'w+')

Correct Answer : a. F= open("STUDENT.DAT",'wb')

ii. Which of the following commands is used to write the list L into the binary file, STUDENT.DAT? (marked as #2 in the Python code)

a. pickle.write(L,f)
b. pickle.write(f, L)
c. pickle.dump(L,F)
d. f=pickle.dump(L)

Correct Answer : c. pickle.dump(L,F)

iii. Which of the following commands is used to read each record from the binary file STUDENT.DAT? (marked as #3 in the Python code)

a. R = pickle.load(F)
b. pickle.read(r,f)
c. r= pickle.read(f)
d. pickle.load(r,f)

Correct Answer : a. R = pickle.load(F)

iv. Which of the following statement(s) are correct regarding the file access modes?

	a. ‘r+’ opens a file for both reading and writing. File object points to its beginning. b. ‘w+’ opens a file for both writing and reading. Adds at the end of the existing file if it exists and creates a new one if it does not exist. c. ‘wb’ opens a file for reading and writing in binary format. Overwrites the file if it exists and creates a new one if it does not exist. d. ‘a’ opens a file for appending. The file pointer is at the start of the file if the file exists. Correct Answer : a
v.	Which of the following statements correctly explain the function of seek() method? a. tells the current position within the file. b. determines if you can move the file position or not. c. indicates that the next read or write occurs from that position in a file. d. moves the current file position to a given specified position Correct Answer : d

Q. No. 3	Krrishnav is looking for his dream job but has some restrictions. He loves Delhi and would take a job there if he is paid over Rs.40,000 a month. He hates Chennai and demands at least Rs. 1,00,000 to work there. In any another location he is willing to work for Rs. 60,000 a month. The following code shows his basic strategy for evaluating a job offer.
	
	Code:
	
	`pay= _____`
	`location= _____`
	`if location == "Mumbai":`
	`  print ("I’ll take it!") #Statement 1`
	`elif location == "Chennai":`
	`  if pay < 100000:`
	`  print ("No way") #Statement 2`
	`  else:`
	`  print("I am willing!") #Statement 3`
	`elif location == "Delhi" and pay > 40000:`
	`  print("I am happy to join") #Statement 4`
	`elif pay > 60000:`
	`  print("I accept the offer") #Statement 5`
	`else:`
	`  print("No thanks, I can find something better")#Statement 6`
	
	On the basis of the above code, choose the right statement which will be executed when different inputs for pay and location are given.

i.	Input: location = "Chennai”, pay = 50000 a. Statement 1 b. Statement 2 c. Statement 3 d. Statement 4

	Correct Answer : ii. Statement 2
ii.	Input: location = "Surat" ,pay = 50000 a. Statement 2 b. Statement 4 c. Statement 5 d. Statement 6 Correct Answer: d. Statement 6
iii.	Input- location = "Any Other City", pay = 1 a Statement 1 b. Statement 2 c. Statement 4 d. Statement 6 Correct Answer: d. Statement 6
iv.	Input location = "Delhi", pay = 500000 a. Statement 6 b. Statement 5 c. Statement 4 d. Statement 3 Correct Answer: c. Statement 4
v.	v. Input- location = "Lucknow", pay = 65000 i. Statement 2 ii. Statement 3 iii. Statement 4 iv. Statement 5 Correct Answer: d. Statement 5

Q. No. 4	Consider the following code and answer the questions that follow:
	`Book={1:'Thriller', 2:'Mystery', 3:'Crime', 4:'Children Stories'}`
	`Library ={'5':'Madras Diaries','6':'Malgudi Days'}`

i.	Ramesh needs to change the title in the dictionary book from ‘Crime’ to ‘Crime Thriller’. He has written the following command: Book[‘Crime’]=’Crime Thriller’ But he is not getting the answer. Help him choose the correct command: a. Book[2]=’Crime Thriller’ b. Book[3]=’Crime Thriller’ c. Book[2]=(’Crime Thriller’) d. Book[3] =(‘Crime Thriller’) Correct Answer: b
ii.	The command to merge the dictionary Book with Library the command would be: a. d=Book+Library b. print(Book+Library) c. Book.update(Library)

d. Library.update(Book)
Correct Answer: d

iii. What will be the output of the following line of code:
print(list(Library))
a. ‘5’,’Madras Diaries’,’6’,’Malgudi Days’]
b. (‘5’,’Madras Diaries’,’6’,’Malgudi Days’)
c. [’Madras Diaries’,’Malgudi Days’]
d. [‘5’,’6’]

Correct Answer: d

iv. In order to check whether the key 2 is present in the dictionary Book, Ramesh uses the following command:
2 in Book
He gets the answer ‘True’. Now to check whether the name ‘Madras Diaries’ exists in the dictionary Library, he uses the following command:
‘Madras Diaries’ in Library
But he gets the answer as ‘False’. Select the correct reason for this:
a. We cannot use the in function with values. It can be used with keys only.
b. We must use the function Library.values() along with the in operator
c. We can use the Library.items() function instead of the in operator
d. Both b and c above are correct.

Correct Answer: b

v. With reference to the above declared dictionaries, predict the output of the following code fragments

Code 1	Code 2
`Library=Book`	`Library=Book.copy()`
`Library.pop(2)`	`Library.pop(2)`
`print(Library)`	`print(Library)`
`print(Book)`	`print(Book)`

a)

Code 1	Code 2
`{1: 'Thriller', 2: 'Mystery', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`
`{1: 'Thriller', 2: 'Mystery', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`

b)

Code 1	Code 2
`{2:’Mystery’}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`
`{1: 'Thriller', 2: 'Mystery', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`

c)

Code 1	Code 2

`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`
`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 2: 'Mystery', 3: 'Crime', 4: 'Children Stories'}`

d)

Code 1	Code 2
`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`
`{1: 'Thriller', 2: 'Mystery', 3: 'Crime', 4: 'Children Stories'}`	`{1: 'Thriller', 3: 'Crime', 4: 'Children Stories'}`

Correct Answer: c

Q. No. 5

In a Database, there are two tables with the instances given below:

Table: STUDENTS

ADMNO	NAME	CLASS	SEC	RNO	ADDRESS	PHONE
1211	MEENA	12A	D	4	A-26	3245678
1212	VANI	10A	D	1	B-25	5456789
1213	MEENA	12B	A	1	NULL	NULL
1214	KARISH	10B	B	3	AB-234	4567890

Table: SPORTS

ADMNO	GAME	COACHNAME	GRADE
1215	CRICKET	MR. RAVI	A
1213	VOLLEYBALL	MR. AMANDEEP	B
1211	VOLLEYBALL	MR. GOVARDHAN	A
1212	BASKET BALL	MR TEWARI	B

i. Choose the command to display name and game of those students whose address is available in students' table.

a. SELECT NAME, GAME FROM STUDENTS, SPORTS WHERE STUDENTS.ADMNO=SPORTS.ADMNO AND ADDRESS IS NOT NULL;

b. SELECT NAME, GAME FROM STUDENTS, SPORTS WHERE STUDENTS.ADMNO=SPORTS.ADMNO AND ADDRESS IS NULL;

c. SELECT NAME, GAME FROM STUDENTS, SPORTS WHERE STUDENTS.ADMNO=SPORTS.ADMNO, ADDRESS IS NULL;

d. SELECT NAME, GAME FROM STUDENTS, SPORTS WHERE STUDENTS.ADMNO=SPORTS.ADMNO NOT ADDRESS IS NULL;

	Correct Answer: a. SELECT NAME, GAME FROM STUDENTS, SPORTS WHERE STUDENTS.ADMNO=SPORTS.ADMNO AND ADDRESS IS NOT NULL;
ii.	Identify the statement to delete a column phone from the table students. a. ALTER TABLE STUDENTS DROP PHONE; b. DROP PHONE; c. UPDATE DROP PHONE; d. DELETE FROM STUDENTS WHERE DROP PHONE; Correct Answer: a. ALTER TABLE STUDENTS DROP PHONE;
iii.	Choose the command to display Name of the students who are studying in class 12 and their corresponding Coach names a. SELECT NAME, COACHNAME FROM STUDENTS, SPORTS WHERE CLASS LIKE “12%” AND STUDENTS.ADMNO =SPORTS.ADMNO; b. SELECT NAME, COACHNAME FROM STUDENTS, SPORTS WHERE CLASS LIKE “12%” AND STUDENTS.ADMNO= SPORTS.ADMNO; c. SELECT NAME, COACHNAME FROM STUDENTS, SPORTS WHERE CLASS LIKE “12%” AND ADMNO.STUDENTS =ADMNO.SPORTS; d. SELECT NAME, COACHNAME FROM STUDENTS, SPORTS WHERE CLASS LIKE= “12%” AND STUDENTS.ADMNO =SPORTS.ADMNO; Correct Answer: a. SELECT NAME, COACHNAME FROM STUDENTS,SPORTS WHERE CLASS LIKE “12%” AND STUDENTS.ADMNO=SPORTS.ADMNO ;
iv.	which two select queries will give the same output A. SELECT NAME, GRADE FROM STUDENTS,SPORTS WHERE ADDRESS IS NULL AND STUDENTS.ADMNO =SPORTS.ADMNO ; B. SELECT NAME, GRADE FROM STUDENTS,SPORTS WHERE ADDRESS IS NOT NULL AND STUDENTS.ADMNO =SPORTS.ADMNO ; C SELECT NAME, GRADE FROM STUDENTS,SPORTS WHERE ADDRESS IS NULL OR STUDENTS.ADMNO=SPORTS.ADMNO ; D. SELECT ST.NAME, SP.GRADE FROM STUDENTS ST,SPORTS SP WHERE ADDRESS IS NULL AND ST.ADMNO=SP.ADMNO ; a. A AND B b. B AND C c. A AND D d. C AND D Correct Answer: c. A AND D

v.	Choose the command to count the number of students who play volleyball a. SELECT COUNT(*) FROM STUDENTS,SPORTS WHERE GAME="VOLLEYBALL" AND STUDENTS.ADMNO=SPORTS.ADMNO ; b. SELECT COUNT(GAME) FROM STUDENTS,SPORTS WHERE GAME="VOLLEYBALL" AND STUDENTS.ADMNO=SPORTS.ADMNO ; c. SELECT COUNT(*) FROM STUDENTS,SPORTS WHERE GAME="VOLLEYBALL" ; d. SELECT COUNT(*) FROM STUDENTS,SPORTS WHERE SPORTS="VOLLEYBALL" AND STUDENTS.ADMNO=SPORTS.ADMNO Correct Answer : a. SELECT COUNT(*) FROM STUDENTS,SPORTS WHERE GAME="VOLLEYBALL" AND STUDENTS.ADMNO=SPORTS.ADMNO ;
Q. No. 6	A company ABC Enterprises has four blocks of buildings as shown: Center to center distance between various blocks B3 TO B1 — 50 M B1 TO B2 — 60 M B2 TO B4 — 25 M B4 TO B3 — 170 M B3 TO B2 — 125 M B1 TO B4 — 90 M Number of computers in each block : B1 — 150 M B2 — 15 M B3 — 15 M B4 — 25 M Computers in each block are networked but blocks are not networked. The company has now decided to connect the blocks also.
i.	Suggest the most appropriate topology for the connections between the blocks. a. Ring topology b. Star topology c. Mesh topology d. Bus topology

	Correct Answer: b. Star topology
ii.	The company wants internet accessibility in all the blocks. The suitable and cost-effective technology for that would be: a. Satellite b. Lease line c. Telephone line d. Broadband Correct Answer: d. Broadband
iii.	Which one of the following devices will you suggest for connecting all the computers with in each of their blocks? a. Switch/Hub b. Modem c. Telephone d. Repeater Correct Answer: a. Switch/Hub
iv.	The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically: a. Micro waves b. Coaxial cable c. Fibre optic d. Radio waves Correct Answer: d. Radio waves
v.	Suggest the most appropriate location of the server, to get the best connectivity for maximum number of computers. a. BLOCK B2 b. BLOCK B1 c. BLOCK B4 d. BLOCK B3 Correct Answer: b. BLOCK B1
Q. No. 7	Millions of computer science students have taken a course on algorithms and data structures, typically the second course after the initial one introducing programming. One of the basic data structures in such a course is the stack. The stack has a special place in the emergence of computing as a science, as argued by Michael Mahoney, the pioneer of the history of the theory of computing. The Stack can be used in many computer applications, few are given below: a) In recursive function b) When function is called. c) Expression conversion such as – Infix to Postfix, Infix to Prefix, Postfix to Infix, Prefix to Infix. In Stack, insertion operation is known as Push whereas deletion operation is known as Pop. Code – 1

```
def push(Country,N):
    Country._________(len(Country),N))  #Statement 1

#Function Calling
Country=[]
C=['Indian', 'USA', 'UK', 'Canada', 'Sri Lanka']
for i in range(0,len(C),________):     #Statement 2
    push(Country,C[i])
print(Country)
```

Required Output:
['Indian', 'UK', 'Sri Lanka']

Code - 2

```
def pop(Country):
    if _______________:                #Statement 3
        return "Under flow"
    else:
       return Country._________()      #Statement 4

#Function Calling
for i in range(len(Country)+1):
    print(_________________)           #Statement 5
```

Required Output:
Sri Lanka
UK
India
Under flow

Fill the above statement based on given questions:

i. Identify the suitable code for the blank of statement 1.
a. .append()
b. .insert()
c. .extend()
d. .append(len(Country),N)

Correct Answer : b. .insert()

ii. Fill the statement 2, to insert the alternate element from Country list.
a. 3
b. 0
c. -1
d. 2

Correct Answer : d. 2

iii. Fill the statement 3, to check the stack is empty.
a. Country=[]
b. Country.isEmpty()
c. len(country)==0
d. No of the above

	Correct Answer : c. len(country)==0
iv.	Fill the statement 4, to delete an element from the stack. a. pop(1) b. pop() c. del country[1] d. Country.delete(1) Correct Answer: b. pop()
v.	Fill the statement 5, to call the pop function. a. pop(C) b. pop(Country) c. call pop(Country) d. def pop(Country) Correct Answer: b. pop(Country)

Q. No. 8	Arun, during Practical Examination of Computer Science, has been assigned an incomplete search() function to search in a pickled file student.dat. The File student.dat is created by his Teacher and the following information is known about the file.
	• File contains details of students in [roll_no,name,marks] format.
	• File contains details of 10 students (i.e. from roll_no 1 to 10) and separate list of each student is written in the binary file using dump().
	Arun has been assigned the task to complete the code and print details of roll number 1.
	
	`def search():`
	`  f = open("student.dat",____)`
	`#Statement-1`
	`  ____:  #Statement-2`
	`  while True:`
	`  rec = pickle.____`
	`#Statement-3`
	`  if(____):  #Statement-4`
	`  print(rec)`
	`  except:`
	`  pass`
	`  ____  #Statement-5`

i.	In which mode Arun should open the file in Statement-1? a) r b) r+ c) rb d) wb Correct Answer: c) rb
ii.	Identify the suitable code to be used at blank space in line marked as Statement-2 a) if(rec[0]==1)

	b) for i in range(10) c) try d) pass Correct Answer: c) try
iii.	Identify the function (with argument), to be used at blank space in line marked as Statement-3. a) load() b) load(student.dat) c) load(f) d) load(fin) Correct Answer: c) load(f)
iv.	What will be the suitable code for blank space in line marked as Statement-4. a) rec[0]==2 b) rec[1]==2 c) rec[2]==2 d) rec[0]==1 Correct Answer: d) rec[0]==1
v.	Which statement Arun should use at blank space in line marked as Statement-4 to close the file. a) file.close() b) close(file) c) f.close() d) close() Correct Answer: c) f.close()

Q. No. 9	Radha Shah is a programmer, who has recently been given a task to write a python code to perform the following CSV file operations with the help of two user defined functions/modules:
	
	a. CSVOpen() : to create a CSV file called BOOKS.CSV in append mode containing information of books – Title, Author and Price.
	b. CSVRead() : to display the records from the CSV file called BOOKS.CSV where the field title starts with 'R'.
	She has succeeded in writing partial code and has missed out certain statements, so she has left certain queries in comment lines.
	
	`import csv`
	`def CSVOpen():`
	`  with open('books.csv','_____',newline='') as csvf:`
	`  #Statement-1`
	`  cw=_____  #Statement-2`
	`  _____  #Statement-3`
	`  cw.writerow(['Rapunzel','Jack',300])`
	`  cw.writerow(['Barbie','Doll',900])`
	`  cw.writerow(['Johnny','Jane',280])`
	
	`def CSVRead():`

```
      try:
            with open('books.csv','r') as csvf:
                  cr=______          #Statement-4
                  for r in cr:
                        if ______:       #Statement-5
                              print(r)
      except:
            print('File Not Found')


CSVOpen()
CSVRead()
```

You as an expert of Python have to provide the missing statements and other related queries based on the following code of Radha.
Answer any four questions (out of five) from the below mentioned questions.

i. Choose the appropriate mode in which the file is to be opened in append mode (Statement 1)

a. w+
b. ab
c. r+
d. a

Correct Answer: d. a

ii. Which statement will be used to create a csv writer object in Statement 2.

a. csv.writer(csvf)
b. csv.writer(csvf)
c. csvf.writer()
d. cs.writer(csvf)

Correct Answer: b. csv.writer(csvf)

iii. Choose the correct option for Statement 3 to write the names of the column headings in the CSV file, BOOKS.CSV.

a. cw.writerow('Title','Author','Price')
b. cw.writerow(['Title','Author','Price'])
c. cw.writerows('Title','Author','Price')
d. cw.writerows(['Title','Author','Price'])

Correct Answer: b. cw.writerow(['Title','Author','Price'])

iv. Which statement will be used to read a csv file in Statement 4.

a. cs.read(csvf)
b. csv.reader(csvf)
c. csvf.read()
d. csvf.reader(cs)

Correct Answer: b. csv.reader(csvf)

v. Fill in the appropriate statement to check the field Title starting with ‘R’ for Statement 5 in the above program.

a. r[0][0]=='R'
b. r[1][0]=='R'
c. r[0][1]=='R'

	d. d) r[1][1]=='R' Correct Answer: a. r[0][0]=='R'

Q. No. 10	Ankita is writing a program to perform some operations in Queue. She has created three Insert_in_Queue(Student), Delete_from_Queue(Student) and Print_Queue(Student) methods/functions in Python to add a new Student name, delete a Student name and print list of student from a queue, considering them to act as insert, delete and print operations of the Queue data structure. She is not getting the desired result. Help her to get the desired result from the given python code.
	`def Insert_in_Queue(queue):`
	`  a=input("enter student name: ")`
	`  queue._____  # Statement-1`
	
	`def Delete_from_Queue (queue):`
	`  if (_____):  # Statement-2`
	`  print("Queue empty")`
	`  else:`
	`  print("Deleted element is: ",queue[0])`
	`  del queue[___]  #Statement-3`
	
	`def Print_Queue(queue):`
	`  if not _____:  #Statement-4`
	`  print(queue[__:___ ])  # Statement-5`

i.	What Ankita should write to complete the Statement-1 to store the student name? a. queue.append(a) b. queue=append(a) c. queue.append=a d. append(a).queue Correct Answer: a queue.append(a)
ii.	Fill in the blank in Statement-2 to check whether the queue is empty or not? a. isEmpty(Queue) b. isEmpty(q) c. Queue.isEmpty d. Empty.Queue Correct Answer: a isEmpty(Queue)
iii.	iii. Fill in the blank in Statement-3 with index number. a. delete(0) b. del queue[0] c. delete.queue(0) d. queue.delete[0] Correct Answer: b) del queue[0]
iv.	Select the correct option to complete the statement at statement-4. a. isEmpty( ) b. Empty( ) c. len( ) = 0

	d. not Empty Correct Answer : a isEmpty( )
v.	Specify the range to print all queue elements in statement-5? a. print(queue=[0:len=(queue)]) b. print(queue[0:len(queue)]) c. print(queue[[0:len]]) d. print(queue[0=len(queue)]) Correct Answer : b. print(queue[0:len(queue)])
Q. No. 11	Priyank is a software developer with a reputed firm. He has been given the task to computerise the operations for which he is developing a form which will accept customer data as follows:
	i. The DATA TO BE ENTERED IS : a. Name b. Age c. Items bought(all the items that the customer bought) d. Bill amount Correct Answer :
	i. Choose the most appropriate data type to store the above information in the given sequence. a. string, tuple, float, integer b. string, integer, dictionary, float c. string, integer, integer, float d. string, integer, list, float Correct Answer :
	ii. Now the data of each customer needs to be organised such that the customer can be identified by name followed by the age, item list and bill amount. Choose the appropriate data type that will help Priyank accomplish this task. a. List b. Dictionary c. Nested Dictionary d. Tuple Correct Answer :
	iii. Which of the following is the correct way of storing information of customers named ‘Paritosh’ and ‘Bhavesh’ with respect to the option chosen above? a. a.customers= {‘Paritosh’:24,[‘Printed Paper’, ‘ Penstand’], 3409, ‘Bhavesh’: 45,[‘A4 Rim’,’Printer Cartridge’, ‘Pen Carton’, ‘Gift Wrap’], 8099.99 } b. customers={‘Paritosh’:[24,[‘Printed Paper’, ‘ Penstand’], 3409], ‘Bhavesh’: [45,[‘A4 Rim’,’Printer Cartridge’, ‘Pen Carton’, ‘Gift Wrap’], 8099.99] }

	c. c.customers= [‘Paritosh’:24,‘Printed Paper’, ‘ Penstand’, 3409, ‘Bhavesh’: 45,‘A4 Rim’,’Printer Cartridge’, ‘Pen Carton’, ‘Gift Wrap’, 8099.99] d. customers=(‘Paritosh’:24,[‘Printed Paper’, ‘ Penstand’], 3409, ‘Bhavesh’: 45,[‘A4 Rim’,’Printer Cartridge’, ‘Pen Carton’, ‘Gift Wrap’], 8099.99) Correct Answer :
	iv. In order to calculate the total bill amount for 15 customers, Priyank Statement 1. must use a variable of the type float to store the sum. Statement 2. may use a loop to iterate over the values a. Both statements are correct. b. Statement 1 is correct, but statemnt 2 is not. c. Both statements ar incorrect. d. Statement 1 is incorrect but statement 2 is correct. Correct Answer :

Q. No. 12	Your teacher has given you a method/function FilterWords() in python which read lines from a text file NewsLetter.TXT, and display those words, which are lesser than 4 characters. Your teachers intentionally kept few blanks in between the code and asked you to fill the blanks so that the code will run to find desired result. Do the needful with the following python code.
	
	`def FilterWords():`
	`  c=0`
	`  file=open('NewsLetter.TXT', '_____')  #Statement-1`
	`  line = file._____  #Statement-2`
	`  word = _____  #Statement-3`
	`  for c in word:`
	`  if _____:  #Statement-4`
	`  print(c)`
	`  _____  #Statement-5`
	
	`FilterWords()`

i.	Write mode of opening the file in statement-1? a. a b. ab c. w d. r Correct Answer: d. r
ii.	Fill in the blank in statement-2 to read the data from the file. a. File.Read() b. file.read() c. read.lines( ) d. readlines( ) Correct Answer: b. file.read()
iii.	Fill in the blank in statement-3 to read data word by word. a. Line.Split()

	b. Line.split() c. line.split() d. split.word() Correct Answer: c. line.split()
iv.	Fill in the blank in statement-4, which display the word having lesser than 4 characters. a. len(c) ==4 b. len(c)<4 c. len ( )= =3 d. len ( )==3 Correct Answer: b. len(c)<4
v.	Fill in the blank in Statement-5 to close the file. a. file.close() b. File.Close() c. Close() d. end() Correct Answer: a. file.close()

CBSE Additional Practice Question Paper
Class: XII Session: 2023-24
Computer Science (083)

Time allowed: 3 Hours **Maximum Marks: 70**

General Instructions:

- Please check this question paper contains 35 questions.
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.
- Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.
- Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.
- Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.
- Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.

Q No.	Questions Section-A (18 Marks)	Marks
1	Which of the following is an invalid identifier to be used in Python? **a.** per%marks **b.** _for **c.** While **d.** true	1
2	What is the correct way to add an element to the end of a list in Python? **a.** list.add(element) **b.** list.append(element) **c.** list.insert(element) **d.** list.extend(element)	1
3	What will be the output of `print("Welcome To My Blog"[2:6] + "Welcome To My Blog"[5:9])` **a.** Lcomme **b.** lcomme T **c.** lcomme To **d.** lcomme	1
4	Which of the following statements is false? **a.** A try-except block can have more than one except statement **b.** One block of except statement cannot handle multiple exceptions **c.** The finally block is always executed **d.** When 1 == "1" is executed, no exception is raised	1
5	Which of the following statement(s) would give an error during the execution of the following code? R = {'pno':52,'pname':'Virat', 'expert':['Badminton','Tennis'] ,'score':(77,44)} print(R) #Statement 1	1

	R['expert'][0]='Cricket' #Statement 2 R['score'][0]=50 #Statement 3 R['pno']=50 #Statement 4 **a.** Statement 1 **b.** Statement 2 **c.** Statement 3 **d.** Statement 4	
6	Which pickle module method is used to write a Python object to a binary file? **a.** save() **b.** serialize() **c.** store() **d.** dump()	1

7	Given the following dictionaries
	`dict_student = {"rno" : "53", "name" : 'Rajveer Singh'}`
	`dict_marks = {"Accts" : 87, "English" : 65}`
	
	Which statement will append the contents of dict_marks in dict_student?
	
	a. dict_student + dict_marks
	b. dict_student.add(dict_marks)
	c. dict_student.merge(dict_marks)
	d. dict_student.update(dict_marks)
		1

8	Which of the following is not a component of the math module in Python? **a.** ceil() **b.** mean() **c.** fabs() **d.** pi	1

9	What will be the output of the following code?
	`L=["One , Two", "Three", "Four"]`
	`print(len(L)/2*len(L[0]))`
	
	a. 6.5
	b. 13
	c. 13.5
	d. 6.0
		1

10	Expand the following terms: (i) PPP (ii) VoIP	1
11	Which SQL operator performs pattern matching? **a.** BETWEEN operator **b.** LIKE operator **c.** EXISTS operator **d.** =	1

12	Which Python function is used for displaying only one result set from SQL table in a database? **a.** fetch1() **b.** fetchno() **c.** fetchall() **d.** fetchone()	1
13	Which of the following file opening mode in Python, generates an error if the file does not exist? **a.** a **b.** r **c.** w **d.** w+	1
14	The correct syntax of seek() is: **a.** file_object.seek(offset [, reference_point]) **b.** seek(offset [, reference_point]) **c.** seek(offset, file_object) **d.** seek.file_object(offset)	1
15	Which of the following statements is false? **a.** SMTP and POP protocols are used in email communication. **b.** URL of a page is not always the same as its domain name. **c.** HTTPS is safer than HTTP. **d.** Interlinking of collection of webpages is called Internet.	1
16	Fill in the blank: _____ protocol provides access to services hosted on a remote computer. **a.** FTP **b.** PPP **c.** Telnet **d.** SMTP	1
	Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A (b) Both A and R are true and R is not the correct explanation for A (c) A is True but R is False (d) A is false but R is True	
17	**Assertion (A):** For changes made to a variable defined within a function to be visible outside the function, it should be declared as global. **Reasoning (R):** Variables defined within a function are local to that function by default, unless explicitly specified with the global keyword.	1
18	**Assertion (A):** A binary file in python is used to store collection objects like lists and dictionaries that can be later retrieved in their original form using pickle module.	1

	Reasoning (A): Binary files are just like normal text files and can be read using a text editor like Notepad.	
Q No.	**Questions** **Section-B (14 Marks)**	**Marks**
19	Write two advantages and two disadvantages of circuit switching. **OR** Differentiate between Web server and web browser. Write the names of any two web browsers.	2

20	Rewrite the following code in Python after removing all the syntax errors. Underline each correction done in the code.
	
	`num1, num2 = 10, 45`
	`While num1 % num2 == 0`
	`num1+= 20`
	`num2+= 30`
	`Else:`
	`  print('hello')`
		2

21	Write a function `dispBook(BOOKS)` in Python, that takes a dictionary `BOOKS` as an argument and displays the names in uppercase of those books whose name starts with a consonant.
	
	For example, Consider the following dictionary
	
	`BOOKS = {1:"Python", 2:"Internet Fundamentals ", 3:"Networking ", 4:"Oracle sets", 5:"Understanding HTML"}`
	
	The output should be:
	`PYTHON`
	`NETWORKING`
	OR
	Write a Python Program containing a function `FindWord(STRING, SEARCH)`, that accepts two arguments : `STRING` and `SEARCH`, and prints the count of occurrence of `SEARCH` in `STRING`. Write appropriate statements to call the function.
	
	For example, if `STRING` = "Learning history helps to know about history with interest in history" and `SEARCH` = 'history', the function should display
	`The word history occurs 3 times.`
		2

22	What will be the output of the following code?
	
	`L = [5,10,15,1]`
	`G = 4`
	`def Change(X):`
	`  global G`
	`  N=len(X)`
	`  for i in range(N):`
	`  X[i] += G`
	
	`Change(L)`
	
	`for i in L:`
	`  print(i,end='$')`
		2

23	Write a suitable Python statement for each of the following tasks using built-in functions/methods only: i To delete an element Mumbai:50 from Dictionary D. ii To display words in a string S in the form of a list **OR** Write a Python Program to display alternate characters of a string `my_str`. For example, if `my_str` = "Computer Science" The output should be `Cmue cec`	2
24	Differentiate between % (percentage) and _(underscore) characters used with the LIKE operator in SQL with appropriate examples. **OR** Differentiate between DROP and DELETE commands in SQL with appropriate examples.	2
25	Consider the following two commands with reference to a table, named `Employee` having a column named *`Department`*: (a) `Select count(Department) from Employee;` (b) `Select count(*) from Employee;` If these two commands are producing different results, (i) What may be the possible reason? (ii) Which command (a) or (b) might be giving a higher value?	2
Q No	**Questions** **Section-C (15 Marks)**	**Marks**
26	(a) Consider the table, `BOOK` and `MEMBER` given below:	3

`TABLE : BOOK`

CODE	BNAME	TYPE
F101	The priest	Fiction
L102	Easy Python	Programming
C101	Juman Ji	Thriller
F102	Untold Story	Fiction
C102	War Stories	Comic

`Table: MEMBER`

MNO	MNAME	CODE	ISSUEDATE
M101	SNEH SINHA	L102	2022-10-13
M103	SARTHAK	F102	2021-02-23
M102	SARA KHAN	C101	2022-06-12

What will be the output of the following statement?

```
SELECT * FROM BOOK NATURAL JOIN MEMBER;
```

(b) Write the output of the queries (i) to (iv) based on the table

`Table: Employee`

EID	Name	DOB	DOJ	Salary	Project
E01	Ranjan	1990-07-12	2015-01-21	150000	P01
E02	Akhtar	1992-06-21	2015-02-01	125000	P04
E03	Muneera	1996-11-15	2018-08-19	135000	P01
E04	Alex	1991-10-25	2018-10-19	75000	P02
E05	Satyansh	1993-12-16	2018-10-19	85000	P04

i `SELECT NAME, PROJECT FROM EMPLOYEE ORDER BY NAME DESC;`

ii `SELECT NAME, SALARY FROM EMPLOYEE WHERE NAME LIKE 'A%';`

iii `SELECT NAME, DOJ FROM EMPLOYEE WHERE SALARY BETWEEN 100000 AND 200000;`

iv `SELECT * FROM EMPLOYEE WHERE PROJECT = 'P01';`

27 (a) Consider the following tables – `FACULTY` and `COURSES` : 3

`Table: FACULTY`

FID	FNAME	LNAME	JOINDATE	SALARY
F01	Anishma	Garg	2000-12-14	32000
F03	Bhumi	Goel	2001-08-10	15000
F04	Neha	Verma	2000-05-17	27000
F05	Meenu	Sharma	2006-07-11	30000

`Table: COURSES`

C_ID	FID	CNAME	FEES
C11	F01	Grid Computing	40000
C12	F04	Python	17000
C13	F03	C++	8000
C14	F04	Computer Network	15000
C15	F01	HTML	12000
C16	F05	Data Science	NULL

What will be the output of the following statement?

i `SELECT FID, MIN(FEES), MAX(FEES) FROM COURSES GROUP BY FID;`

ii `SELECT AVG(SALARY) FROM FACULTY WHERE FNAME LIKE '%a';`

iii `SELECT FNAME, CNAME FROM FACULTY F, COURSES C WHERE F.FID=C.FID AND COURSES.FID='F04';`

iv `SELECT FNAME, CNAME , FEES FROM FACULTY F , COURSES C WHERE F.FID = C.FID AND FEE>15000;`

(b) Write the name of the command to display the structure of a table in a database.

28 Write a function `COUNT()` in Python to read from a text file `'Gratitude.txt'` and display the count of the letter `'e'` in each line 3

Example: If the file content is as follows:

```
Gratitude is a humble heart's radiant glow,
A timeless gift that nurtures and bestows.
It's the appreciation for the love we're shown,
In moments big and small, it's truly known.
```

The COUNT() function should display the output as:

```
Line 1 : 3
Line 2 : 4
Line 3 : 6
Line 4 : 1
```

OR

Write a function `Start_with_I()` in Python, which should read a text file `'Gratitude.txt'` and then display lines starting with `'I'`.

Example: If the file content is as follows:

```
Gratitude is a humble heart's radiant glow,
A timeless gift that nurtures and bestows.
It's the appreciation for the love we're shown,
In moments big and small, it's truly known.
```

Then the output should be

```
It's the appreciation for the love we're shown,
In moments big and small, it's truly known.
```

29 (3)

Navdeep creates a table `RESULT` with a set of records to maintain the marks secured by students in Sem1, Sem2, Sem3, and their divisions. After the creation of the table, he entered data of 7 students in the table.

ADNO	ROLLNO	SNAME	SEM1	SEM2	DIVISION
123	101	KARAN	366	410	I
245	102	NAMAN	300	350	I
128	103	ISHA	400	410	I
129	104	RENU	350	357	I
234	105	ARPIT	100	75	IV
187	106	SABINA	100	205	II
181	107	NEELAM	470	450	I

Based on the data given above answer the following questions:

i Identify the columns which can be considered as candidate keys?

ii If 2 more columns are added and 3 rows are deleted from the table result, what will be the new degree and cardinality of the above table?

iii Write a statement to increase the SEM2 marks by 3% for the students securing marks between 70 to 100.

30 (3)

Given a Dictionary `Stu_dict` containing marks of students for three test-series in the form `Stu_ID`*:(TS1, TS2, TS3)* as key-value pairs. Write a Python program with the following user-defined functions to perform the specified operations on a stack named `Stu_Stk`

(i) `Push_elements(Stu_Stk, Stu_dict)` : It allows pushing IDs of those students, from the dictionary `Stu_dict` into the stack `Stu_Stk`, who have scored more than or equal to 80 marks in the TS3 Test.

(ii) `Pop_elements(Stu_Stk):` It removes all elements present inside the stack in LIFO order and prints them. Also, the function displays 'Stack Empty' when there are no elements in the stack.

Call both functions to execute queries.

For example:

If the dictionary `Stu_dict` contains the following data:

```
Stu_dict  ={5:(87,68,89),  10:(57,54,61),  12:(71,67,90),
14:(66,81,80), 18:(80,48,91)}
```

After executing `Push_elements(),  Stk_ID` should contain [5,12,14,18]

After executing `Pop_elements()`, The output should be:

```
18
14
12
5
Stack Empty
```

<table>
<tr><th>Q No.</th><th>Questions
Section-D (8 Marks)</th><th>Marks</th></tr>
<tr><td>31</td><td>Create a function <code>maxsalary()</code> in Python to read all the records from an already existing file <code>record.csv</code> which stores the records of various employees working in a department. Data is stored under various fields as shown below:
<table>
<tr><th>E_code</th><th>E_name</th><th>Scale</th><th>Salary</th></tr>
<tr><td>A01</td><td>Bijesh Mehra</td><td>S4</td><td>65400</td></tr>
<tr><td>B02</td><td>Vikram Goel</td><td>S3</td><td>60000</td></tr>
<tr><td>C09</td><td>Suraj Mehta</td><td>S2</td><td>45300</td></tr>
<tr><td>……</td><td>……</td><td>……</td><td>……</td></tr>
</table>
Function should display the row where the salary is maximum.
Note: Assume that all employees have distinct salary.</td><td>4</td></tr>
<tr><td>32</td><td>Consider a binary file <code>'INVENTORY.DAT'</code> that stores information about products using tuple with the structure <code>(ProductID, ProductName, Quantity, Price).</code> Write a Python function <code>expensiveProducts()</code> to read the contents of <code>'INVENTORY.DAT'</code> and display details of products with a price higher than Rs. 1000. Additionally, calculate and display the total count of such expensive products.

For example: If the file stores the following data in binary format
(1, 'ABC', 100, 5000)
(2, 'DEF', 250, 1000)
(3, 'GHI', 300, 2000)
then the function should display
<code>Product ID: 1</code>
<code>Product ID: 3</code>
<code>Total expensive products: 2</code></td><td>4</td></tr>
<tr><th>Q No.</th><th>Questions
Section-E (15 Marks)</th><th>Marks</th></tr>
<tr><td>33</td><td>Fun Media Services Ltd is an event planning organization. It is planning to set up its India campus in Mumbai with its head office in Delhi. The Mumbai campus will have four blocks/buildings - ADMIN, DECORATORS, FOOD, and MEDIA.
You as a network expert need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in points (i) to (v), keeping in mind the distances between various blocks/buildings and other given parameters.

</td><td>5</td></tr>
</table>

Shortest distance between various buildings:

FROM – TO	DISTANCE
ADMIN TO DECORATORS	90 meters
ADMIN TO MEDIA	75 meters
ADMIN TO FOOD	50 meters
DECORATORS TO FOOD	65 meters
DECORATORS TO MEDIA	50 meters
FOOD TO MEDIA	45 meters
DELHI Head Office to MUMBAI Campus	1475 KM

The number of computers at various buildings is as follows:

BUILDING	NUMBER OF COMPUTERS
ADMIN	110
DECORATORS	75
MEDIA	12
FOOD	20

i. Suggest the most appropriate location of the server inside the MUMBAI campus (out of the 4 buildings). Justify your answer.
ii. Draw the cable layout to efficiently connect various buildings within the MUMBAI campus.
iii. Which hardware device will you suggest to connect all the computers within each building?
iv. Which of the following will you suggest to establish online face-to-face communication between the people in the Admin Office of the MUMBAI campus and the DELHI Head Office?
   a. Cable TV
   b. Email
   c. Video Conferencing
   d. Text Chat
v. What type of network (out of PAN, LAN, MAN, WAN) will be set up in each of the following cases?
   a. The Mumbai campus gets connected with the Head Quarter in Delhi
   b. The computers connected in the MUMBAI campus

34

i. Mention any two differences between seek() and tell(). 2+3=5
ii. Consider a file `FLIGHT.DAT` containing multiple records. The structure of each record is as shown below:
`[Fno, FName, Fare, Source, Destination]`
Write a function `COPY_REC()` in Python that copies all those records from FLIGHT.DAT where the source is `DELHI` and the destination is `MUMBAI`, into a new file `RECORD.DAT`

OR

i. Mention any two differences between binary files and csv files?
ii. Consider a Binary file `BOOK.DAT` containing a dictionary having multiple elements. Each element is in the form `BNO:[BNAME,BTYPE,PRICE]` as key:value pair
where
`BNO` – Book Number
`BNAME` – Book Name
`BTYPE` - Book Type
`PRICE` – Book price

	Write a user-defined function, `findBook(price)`, that accepts price as parameter and displays all those records from the binary file `BOOK.DAT` which has a book price more than or equal to the price value passed as a parameter.	

35	i. Define the term constraint with respect to RDBMS. Give a suitable example.
	ii. Sameera maintains a database named `STORE` which contains a table named `ITEM` with the structure given below:
	• `Ino`(Item number)- integer
	• `Iname`(Item Name) – string
	• `Price` (Item Price) – float
	• `Discount` (Discount) – float
	Note the following to establish connectivity between Python and MySQL:
	• Username - root
	• Password - tiger
	• Host - localhost
	Help her to remove the record from the table ITEM for a particular value of item name input by the user.
	`import mysql.connector as mysql`
	`con1= mysql.connect(host='localhost', user='root', password= '__', database='STORE')  #Statement-1`
	`mycursor = ________  #Statement-2`
	`item_name = input("Enter the Item name to remove the record : ")`
	`query = _____  #Statement-3`
	`mycursor.execute(query)`
	`con1.____  #Statement-4`
	`print('Data Deleted successfully')`
	`con1.close()`
	
	With reference to the above code, answer the following questions
	a) Complete statement 1 to establish the connection with the database.
	b) Write statement 2 to create the cursor object.
	c) Complete statement 3 to remove the record from the table ITEM based on the item name entered by the user
	d) Complete statement 4 to save the changes in the table.
	OR
	i. Write one difference between the alternate key and the candidate key.
	ii. A table named `ITEM` is created in a database `STORE`. The table contains multiple columns whose details are as shown below:
	• `Ino`(Item number)- integer
	• `Iname`(Item Name) – string
	• `Price` (Item Price) – float
	• `Discount` (Discount) – float
	
	Note the following to establish connectivity between Python and MySQL:
	• Username - root
	• Password - tiger
	• Host - localhost
	However, the table is to be interfaced with Python to perform certain tasks. The incomplete code is given below:
		5

```
_______  #Line 1
con1= mysql.connect(host='localhost', user = 'root', password =
'tiger', database='STORE')
mycursor = con1.____     #Line 2
query = 'SELECT * FROM ITEM where Price > {}'.format(___) #Line3
mycursor.execute(query)
data = mycursor.___  #Line 4
for rec in data:
      print(rec)
con1.close()
```

i. Complete line 1 to import the appropriate module.
ii. Complete Line 2 to create the cursor object
iii. Complete the query given in Line 3 to display details of all such items from the table ITEMS whose price is more than 5000.
iv. Complete Line 4 to extract all the records.

CBSE Additional Practice Question Paper
Class: XII Session: 2023-24
Computer Science (083)
Marking Scheme

Q No.	Answer	Total Marks
1	a. per%marks	1
2	b. list.append(element)	1
3	b. lcomme T	1
4	b. One block of except statement cannot handle multiple exceptions	1
5	c. Statement 3	1
6	d. dump	1
7	d. dict_student.update(dict_marks)	1
8	b. mean()	1
9	c. 13.5	1
10	PPP – Point to Point Protocol VoIP - Voice Over Internet Protocol	1
11	b. LIKE operator	1
12	d. fetchone	1
13	b. r	1
14	a. file_object.seek(offset [, reference_point])	1
15	d. Interlinking of collection of webpages is called Internet.	1
16	c. TelNet	1
17	a. Both A and R are true and R is the correct explanation for A	1
18	c. A is True but R is False	1
19	Advantages: 1) A dedicated communication channel increases the quality of communication. 2) Suitable for long continuous communication. Disadvantages: 1) Resources are not utilized fully. 2) The time required to establish the physical link between the two stations is too long. *½ mark for each advantage and disadvantage* **OR** **Web browser** Purpose: Receives and displays web content.	2

	Function: Initiates requests to web servers, and receives and displays content for users. **Web server** Purpose: Delivers web content to clients. Function: Listens to incoming requests, processes them, and sends requested content to the client. **Name of Web browsers:** Google Chrome, Mozilla Firefox *1 mark for any one correct difference and 1/2 mark for each two correct examples*	

20	`num1, num2 = 10, 45`
	`while num1 % num2 == 0:`
	`____num1+= 20`
	`____num2+= 30`
	`else:`
	`    print('hello')`
	
	½ mark for while
	½ mark for :
	½ mark for correct indentation (inside the block of while)
	½ mark for else
		2

21	`def dispBook(BOOKS):`
	`    for key in BOOKS:`
	`        if BOOKS[key][0] not in "AEIOUaeiou":`
	`            print(BOOKS[key].upper())`
	
	`BOOKS = {1:"Python",2:"Internet Fundamentals ",3:"Networking ",4:"Oracle sets",5:"Understanding HTML"}`
	`dispBook(BOOKS)`
	
	½ mark for for loop
	1 mark for if condition
	½ mark for display in upper case
	OR
	`def FindWord(STRING,SEARCH):`
	`    return (STRING . count (SEARCH) )`
	
	`str = input('Enter String : ')`
	`word = input('Enter word to search : ')`
	`print('The word', word, 'occurs', FindWord(str,word), 'times')`
	
	½ mark for input
	½ mark for print statement
	1 mark for counting the word and returning the value
		2

22	9$14$19$5$ *½ mark for 9$* *½ mark for 14$* *½ mark for 19$* *½ mark for 5$*	2
23	i. del D['Mumbai'] *1 mark for correct answer*	2

ii. print(S.split())
1 mark for correct answer

OR

```
my_str = "Computer Science"
alternate_chars = my_str[::2]
print(alternate_chars)
```

1.5 mark for logic of alternate characters
½ mark for printing alternate characters

---

24 (2)

% (Percentage):

- Matches any sequence of characters (including empty sequence).
- Example: LIKE 'T%' matches all those strings starting with the letter 'T'. The string with just 1 character 'T' will also be considered.

_ (Underscore):

- Matches a single character.
- Example: LIKE '_ _T' on the other hand will search for a three letter string, whose 3rd letter is 'T'. At first two places any two character can appear.

1 mark for one correct difference. 1/2 mark each for correct example of each.

OR

DROP is a DDL command in SQL and can be used to remove tables (or database).
Example: 'DROP TABLE STUDENT;' will remove the table STUDENT from the database.

DELETE is a DML command used to remove or delete rows/records from a table.
Example: 'DELETE FROM STUDENT WHERE PER < 33;' will remove all those records from the table STUDENT where the percentage is less than 33.

1 mark for one correct difference. 1/2 mark each for correct example of each.

---

25 (2)

- COUNT(*) returns the count of all rows in the table, whereas COUNT() is used with Column_Name passed as an argument and counts the number of non-NULL values in a column that is given as an argument. Hence the result may differ.
- The SQL command with COUNT(*) may have higher value as it count all rows in the table.

1 mark for suitable reason
1 mark for mentioning correct command

---

26 (3)

(a)

CODE	BNAME	TYPE	MNO	MNAME	ISSUEDATE
L102	Easy Python	Programming	M101	SNEH SINHA	2022-10-13
F102	Untold Story	Fiction	M103	SARTHAK	2021-02-23
C101	Juman Ji	Thriller	M102	SARA KHAN	2022-06-12

1 mark for correct answer

(b)

(i)

NAME	PROJECT
Satyansh	P04
Ranjan	P01
Muneera	P01
Alex	P02
Akhtar	P04

½ mark for correct output

(ii)

NAME	SALARY
Akhtar	125000
Alex	75000

½ mark for correct output

(iii)

NAME	DOJ
Ranjan	2015-01-21
Akhtar	2015-02-01
Muneera	2018-08-19

½ mark for correct output

(iv)

Eid	Name	DOB	DOJ	Salary	Project
E01	Rannja	1990-07-12	2015-01-21	150000	P01
E03	Muneera	1996-11-15	2018-08-19	135000	P01

½ mark for correct output

27 (a) 3

(i)

FID	MIN(FEES)	MAX(FEES)
F01	12000	40000
F04	15000	17000
F03	8000	8000
F05	NULL	NULL

½ mark for correct answer

(ii)

AVG(SALARY)
29500

½ mark for correct answer

(iii)

FNAME	CNAME
Neha	Python
Neha	Computer Network

½ mark for correct answer

(iv)

FNAME	CNAME	FEES
Anishma	Grid Computing	40000
Neha	Python	17000

½ mark for correct answer

	(b) DESC or DESCRIBE command *1 mark for correct answer*	

28	
	``
	def Count():
	    F=open('Gratitude.txt')
	    T=F.readlines()
	    X=1
	    for i in T:
	        print('Line',X,':',i.count('e'))
	        X=X+1
	    F.close()
	Count()
	``
	
	½ mark for function header
	½ mark for opening and closing the file
	½ mark for reading lines
	½ mark for loop
	½ mark for count function/or any other alternate correct statement(s)
	½ mark for counter
	
	OR
	
	``
	def Start_with_I():
	    F=open('Gratitude.txt')
	    T=F.readlines()
	    for i in T:
	       if i[0] in 'Ii':
	           print(i,end='')
	    F.close()
	Start_with_I()
	``
	
	½ mark for function header
	½ mark for opening and closing the file
	½ mark for reading lines
	½ mark for loop
	½ mark for if condition
	½ mark for print statment
		3

29	(i) Candidate Keys : ADMNO, ROLLNO *1 mark for correctly writing both names of candidate keys. OR ½ mark for specifying any one candidate key correctly.* (ii) Degree-8, Cardinality=4 *½ mark for degree and ½ mark for cardinality* (iii) Update result set SEM2=SEM2+.03*SEM2 where SEM2 between 70 and 100; *½ mark for writing Update result set part correctly* *½ mark for writing SEM2=SEM2+.03*SEM2 where SEM2 between 70 and 100; correctly.*	3
30	``` Stu_dict={5:(87,68,89), 10:(57,54,61), 12:(71,67,90), 14:(66,81,80), 18:(80,48,91)} ``` 	3

<table>
<tr><td></td><td>

```
Stu_Stk=[]

def Push_elements(Stu_Stk, Stu_dict):
    for Stu_ID, marks in Stu_dict.items():
        if marks[2]>=80:
            Stu_Stk.append(Stu_ID)

def Pop_elements(Stu_Stk):
      while len(Stu_Stk)>0:
         print(Stu_Stk.pop())
      if not Stu_Stk:
         print('Stack Empty')

Push_elements(Stu_Stk, Stu_dict)
Pop_elements(Stu_Stk)
```

1.5 marks for correct implementation of Push_elements()
1.5 marks for correct implementation of Pop_elements()

</td><td></td></tr>
<tr><td>31</td><td>

```
import csv
def maxsalary():
    f=open('record.csv', 'r')
    reader=csv.reader(f)
    skip_header = True
    max= 0
    for row in reader:
        if skip_header:
            skip_header = False
        else:
            if(int(row[3])>max):
                max=int(row[3])
                rec=row
    print('Row with the highest salary : ', rec)
    f.close()
maxsalary()
```

½ mark for importing module
½ mark for function definition
½ mark for opening and closing file
½ for reader object
½ for skipping first row (i.e. header)
1 mark for calculating maximum salary
½ mark for displaying record having maximum salary

</td><td>4</td></tr>
<tr><td>32</td><td>

```
import pickle
def expensiveProducts():
    with open('INVENTORY.DAT', 'rb') as file:
        expensive_count = 0
        while True:
            try:
                product_data = pickle.load(file)
                product_id, product_name, quantity, price = product_data
                if price > 1000:
                    print("Product ID:", product_id)
                    expensive_count += 1
            except EOFError:
                break

        print("Total expensive products: ", expensive_count)

expensiveProducts()
```

½ mark for function definition

</td><td>4</td></tr>
</table>

½ mark for opening and closing file
½ mark for correct try and except block
1.5 mark identifying and displaying details of expensive products
1 mark for displaying count of expensive products

33 (5)

i. The most appropriate location of the server inside the MUMBAI campus is ADMIN building due to the maximum number of computers in it.

½ mark for mentioning the branch and ½ mark for proper justification

ii. Cable Layout

Star Topology (Based on server location)	Bus Topology (Based on minimum distance between branches)

1 mark for drawing any valid cable layout

iii. Switch or Hub

1mark for suggesting the correct device

iv. c. Video Conferencing

1 mark for correct answer

v.

(a) WAN
(b) LAN

½ mark for mentioning WAN and ½ mark for mentioning LAN

34 (5)

i.

	seek()	tell()
Purpose	Repositions the file pointer to a specific location within a file	Returns the current position of the file pointer
Syntax	seek(offset [,reference point])	tell()
Parameters	Requires specifying the offset and an optional reference point	Requires no parameters

2 marks for mentioning two correct differences.
OR
1 marks for mentioning only one correct differences.

ii.

```
import pickle
def  COPY_REC():
    In_file = open('FLIGHT.DAT','rb')
    out_file = open('RECORD.DAT','wb')
    try:
```

```
        while True:
            data = pickle.load(In_file)
            if data[3] == 'DELHI' and data[4] == 'MUMBAI':
                pickle.dump(data,out_file)
    except:
        In_file.close()
        out_file.close()

COPY_REC()
```

½ mark for function definion
½ mark for correctly opening and closing file
½ mark for correct try and except block
1.5 marks for writing required data in RECORD.DAT

OR

i.

Binary	CSV
1. pickle module to be used	1. csv module is used
2. Data is stored in binary format(0s and 1s) and is not in human readable form using any plain text editor.	2. Data is stored in tabular fashion and comma separated by default. The file can be read by any spreadsheet software or text editor.
3. File extension .dat/.pdf/.exe etc.	3. File extension .csv

2 marks for mentioning two correct differences.
OR
1 marks for mentioning only one correct differences.

ii.

```
import pickle

def findBook(price):
    with open('BOOK.DAT', 'rb') as file:
        while True:
            try:
                book_record = pickle.load(file)
                for item in book_record:
                    book_price = book_record[item][2]
                    if book_price >= price:
                        print(item, book_record[item])
            except EOFError:
                break

findBook(50)
```

½ mark for function definion
½ mark for correctly opening and closing file
½ mark for correct try and except block
1.5 marks for displying required records

35	(i)	5

SQL constraints are used to specify rules for the data in a table. Constraints are used to limit the type of data that can go into a table.
Constraints –
NOT NULL - Ensures that a column cannot have a NULL value
UNIQUE - Ensures that all values in a column are different
PRIMARY KEY - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table

½ mark for correct definition, ½ mark for correct example (anyone)
(ii)

a) password='tiger'
b) mycursor = con1.cursor()
c) query = 'delete from ITEM where Iname = "{}" '.format.(item_name)
d) con1.commit()

1 mark for each correct statement

OR

(i)
Candidate Key: A candidate key is a set of attributes in a relation that can uniquely identify each tuple (row). A relation can have multiple candidate keys, but only one of them is chosen as the primary key.
Alternate Key: An alternate key is a candidate key that is not selected as the primary key.

1 mark for any one correct difference.

(ii)

a) import mysql.connector as mysql
b) mycursor = con1.cursor()
c) query = 'SELECT * FROM ITEM where Price > {}'.format(5000)
d) data = mycursor.fetchall()

1 mark for each correct statement

Class: XII Session: 2023-24

Computer Science (083)

Sample Question Paper (Theory)

Time allowed: 3 Hours **Maximum Marks: 70**

General Instructions:

- **Please check this question paper contains 35 questions.**
- **The paper is divided into 4 Sections- A, B, C, D and E.**
- **Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.**
- **Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.**
- **Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.**
- **Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.**
- **Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.**
- **All programming questions are to be answered using Python Language only.**

Ques No	Question	Marks
	SECTION A	
1	State True or False: "In a Python program, if a `break` statement is given in a nested loop, it terminates the execution of all loops in one go."	1
2	In a table in MYSQL database, an attribute `A` of datatype `varchar(20)` has the value "`Keshav`". The attribute `B` of datatype `char(20)` has value "`Meenakshi`". How many characters are occupied by attribute `A` and attribute `B`? a. 20,6 b. 6,20 c. 9,6 d. 6,9	1
3	What will be the output of the following statement: `print(3-2**2**3+99/11)` a. 244 b. 244.0 c. -244.0 d. Error	1
4	Select the correct output of the code:	1

	``python
	s = "Python is fun"
	l = s.split()
	s_new = "-".join([l[0].upper(), l[1], l[2].capitalize()])
	print(s_new)
	``
	Options:
	a. `PYTHON-IS-Fun`
	b. `PYTHON-is-Fun`
	c. `Python-is-fun`
	d. `PYTHON-Is -Fun`	

5	In MYSQL database, if a table, **`Alpha`** has degree 5 and cardinality 3, and another table, **`Beta`** has degree 3 and cardinality 5, what will be the degree and cardinality of the Cartesian product of **`Alpha`** and **`Beta`**? a. 5,3 b. 8,15 c. 3,5 d. 15,8	1
6	Riya wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth Technology to connect two devices. Which type of network will be formed in this case? a. PAN b. LAN c. MAN d. WAN	1
7	Which of the following will delete key-value pair for key = "`Red`" from a dictionary `D1`? a. `delete D1("Red")` b. `del D1["Red"]` c. `del.D1["Red"]` d. `D1.del["Red"]`	1

8	Consider the statements given below and then choose the correct output from the given options:
	`pride="#G20 Presidency"`
	`print(pride[-2:2:-2])`
		1

	Options: a. ndsr b. ceieP0 c. ceieP d. yndsr	

9	Which of the following statement(s) would give an error during execution of the following code?
	`tup = (20,30,40,50,80,79)`
	`print(tup)  #Statement 1`
	`print(tup[3]+50)  #Statement 2`
	`print(max(tup))  #Statement 3`
	`tup[4]=80  #Statement 4`
	
	Options:
	a. Statement 1
	b. Statement 2
	c. Statement 3
	d. Statement 4
		1

10	What possible outputs(s) will be obtained when the following code is executed?
	`import random`
	`myNumber=random.randint(0,3)`
	`COLOR=["YELLOW","WHITE","BLACK","RED"]`
	`for I in range(1,myNumber):`
	`  print(COLOR[I],end="*")`
	`  print()`
	
	Options:
	a.
		1

	RED* WHITE* BLACK* b. WHITE* BLACK* c. WHITE* WHITE* BLACK* BLACK* d. YELLOW* WHITE*WHITE* BLACK* BLACK* BLACK*	
11	Fill in the blank: The modem at the sender's computer end acts as a _____. a. Model b. Modulator c. Demodulator d. Convertor	1

12	Consider the code given below:
	`b=100`
	`def test(a):`
	`_____ # missing statement`
	`b=b+a`
	`print(a,b)`
	`test(10)`
	`print(b)`
		1

	Which of the following statements should be given in the blank for #Missing Statement, if the output produced is 110? Options: a. `global a` b. `global b=100` c. `global b` d. `global a=100`	
13	State whether the following statement is True or False: An exception may be raised even if the program is syntactically correct.	1
14	Which of the following statements is FALSE about keys in a relational database? a. Any candidate key is eligible to become a primary key. b. A primary key uniquely identifies the tuples in a relation. c. A candidate key that is not a primary key is a foreign key. d. A foreign key is an attribute whose value is derived from the primary key of another relation.	1
15	Fill in the blank: In case of _____ switching, before a communication starts, a dedicated path is identified between the sender and the receiver.	1

16	Which of the following functions changes the position of file pointer and returns its new position?
	`a.flush()`
	`b.tell()`
	`c.seek()`
	`d.offset()`
		1

	Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A (b) Both A and R are true and R is not the correct explanation for A	

	(c) A is True but R is False (d) A is false but R is True	
17	Assertion(A): List is an immutable data type Reasoning(R): When an attempt is made to update the value of an immutable variable, the old variable is destroyed and a new variable is created by the same name in memory.	1
18	Assertion(A): Python Standard Library consists of various modules. Reasoning(R): A function in a module is used to simplify the code and avoids repetition.	1
	SECTION B	
19	(i) Expand the following terms: POP3 , URL (ii) Give one difference between XML and HTML. OR (i) Define the term bandwidth with respect to networks. (ii) How is http different from https?	1+1=2

20	The code given below accepts a number as an argument and returns the reverse number. Observe the following code carefully and rewrite it after removing **all syntax and logical errors**. Underline all the corrections made.
	`define revNumber(num):`
	`  rev = 0`
	`  rem = 0`
	`  While num > 0:`
	`  rem ==num %10`
	`  rev = rev*10 + rem`
	`  num = num//10`
	`  return rev`
	`print(revNumber(1234))`
		2

21	Write a function `countNow(PLACES)` in Python, that takes the dictionary, `PLACES` as an argument and displays the names (in uppercase)of the places whose names are longer than 5 characters. For example, Consider the following dictionary `PLACES={1:"Delhi",2:"London",3:"Paris",4:"New York",5:"Doha"}` The output should be: LONDON NEW YORK OR Write a function, `lenWords(STRING)`, that takes a string as an argument and returns a tuple containing length of each word of a string. For example, if the string is "`Come let us have some fun`", the tuple will have `(4, 3, 2, 4, 4, 3)`	2

22	Predict the output of the following code:
	`S = "LOST"`
	`L = [10,21,33,4]`
	`D={}`
	`for I in range(len(S)):`
	`  if I%2==0:`
	`  D[L.pop()] = S[I]`
	`  else:`
	`  D[L.pop()] = I+3`
	`for K,V in D.items():`
	`  print(K,V,sep="*")`
		2

23	Write the Python statement for **each** of the following tasks using BUILT-IN functions/methods only: (i) To insert an element `200` at the third position, in the list `L1`. (ii) To check whether a string named, `message` ends with a full stop / period or not.	1+1=2

	OR A list named `studentAge` stores age of students of a class. Write the Python command to import the required module and (using built-in function) to display the most common age value from the given list.	
24	Ms. Shalini has just created a table named "`Employee`" containing columns `Ename, Department` and `Salary.` After creating the table, she realized that she has forgotten to add a primary key column in the table. Help her in writing an SQL command to add a primary key column `EmpId` of integer type to the table `Employee`. Thereafter, write the command to insert the following record in the table: `EmpId`- 999 `Ename`- Shweta `Department`: Production `Salary`: 26900 OR Zack is working in a database named `SPORT,` in which he has created a table named "`Sports`" containing columns `SportId, SportName, no_of_players,` and `category.` After creating the table, he realized that the attribute, `category` has to be deleted from the table and a new attribute `TypeSport` of data type string has to be added. This attribute `TypeSport` cannot be left blank. Help Zack write the commands to complete both the tasks.	2
25	Predict the output of the following code:	2

```
def Changer(P,Q=10):
    P=P/Q
    Q=P%Q
    return P

A=200
B=20
A=Changer(A,B)
print(A,B, sep='$')
B=Changer(B)
print(A,B, sep='$', end='###')
```

SECTION C

26 Predict the output of the Python code given below: 3

```
Text1="IND-23"
Text2=""
I=0
while I<len(Text1):
    if Text1[I]>="0" and Text1[I]<="9":
        Val = int(Text1[I])
        Val = Val + 1
        Text2=Text2 + str(Val)
    elif Text1[I]>="A" and Text1[I]<="Z":
        Text2=Text2 + (Text1[I+1])
    else:
        Text2=Text2 + "*"
    I+=1
print(Text2)
```

27 Consider the table CLUB given below and write the output of the SQL queries that follow. 1*3= 3

CID	CNAME	AGE	GENDER	SPORTS	PAY	DOAPP
5246	AMRITA	35	FEMALE	CHESS	900	2006-03-27

4687	SHYAM	37	MALE	CRICKET	1300	2004-04-15
1245	MEENA	23	FEMALE	VOLLEYBALL	1000	2007-06-18
1622	AMRIT	28	MALE	KARATE	1000	2007-09-05
1256	AMINA	36	FEMALE	CHESS	1100	2003-08-15
1720	MANJU	33	FEMALE	KARATE	1250	2004-04-10
2321	VIRAT	35	MALE	CRICKET	1050	2005-04-30

(i) `SELECT COUNT(DISTINCT SPORTS) FROM CLUB;`

(ii) `SELECT CNAME, SPORTS FROM CLUB WHERE DOAPP<"2006-04-30" AND CNAME LIKE "%NA";`

(iii) `SELECT CNAME, AGE, PAY FROM CLUB WHERE GENDER = "MALE" AND PAY BETWEEN 1000 AND 1200;`

28 Write a function in Python to read a text file, `Alpha.txt` and displays those lines which begin with the word '`You`'. 3

OR

Write a function, `vowelCount()` in Python that counts and displays the number of vowels in the text file named `Poem.txt`.

29 Consider the table `Personal` given below: 1*3=3

`Table: Personal`

P_ID	Name	Desig	Salary	Allowance
P01	Rohit	Manager	89000	4800

P02	Kashish	Clerk	NULL	1600
P03	Mahesh	Superviser	48000	NULL
P04	Salil	Clerk	31000	1900
P05	Ravina	Superviser	NULL	2100

Based on the given table, write SQL queries for the following:

(i) Increase the salary by 5% of personals whose allowance is known.

(ii) Display Name and Total Salary (sum of Salary and Allowance) of all personals. The column heading 'Total Salary' should also be displayed.

(iii) Delete the record of personals who have salary greater than 25000

30 A list, `NList` contains following record as list elements: 3

```
[City, Country, distance from Delhi]
```

Each of these records are nested together to form a nested list. Write the following user defined functions in Python to perform the specified operations on the stack named `travel`.

(i) **`Push_element(NList)`:** It takes the nested list as an argument and pushes a list object containing name of the city and country, which are not in India and distance is less than 3500 km from Delhi.

(ii) **Pop_element():** It pops the objects from the stack and displays them. Also, the function should display "Stack Empty" when there are no elements in the stack.

For example: If the nested list contains the following data:

```
NList=[["New York", "U.S.A.", 11734],
["Naypyidaw", "Myanmar", 3219],
["Dubai", "UAE", 2194],
["London", "England", 6693],
```

```
["Gangtok", "India", 1580],
["Columbo", "Sri Lanka", 3405]]
```

The stack should contain:

```
['Naypyidaw', 'Myanmar'],
['Dubai', 'UAE'],
['Columbo', 'Sri Lanka']
```

The output should be:

```
['Columbo', 'Sri Lanka']
['Dubai', 'UAE']
['Naypyidaw', 'Myanmar']
Stack Empty
```

SECTION D

31 Consider the tables PRODUCT and BRAND given below: 1*4=4

Table: PRODUCT

PCode	PName	UPrice	Rating	BID
P01	Shampoo	120	6	M03
P02	Toothpaste	54	8	M02
P03	Soap	25	7	M03
P04	Toothpaste	65	4	M04
P05	Soap	38	5	M05
P06	Shampoo	245	6	M05

Table: BRAND

BID	BName
M02	Dant Kanti
M03	Medimix
M04	Pepsodent
M05	Dove

	Write SQL queries for the following: (i) Display product name and brand name from the tables PRODUCT and BRAND. (ii) Display the structure of the table PRODUCT. (iii) Display the average rating of Medimix and Dove brands (iv) Display the name, price, and rating of products in descending order of rating.	
32	Vedansh is a Python programmer working in a school. For the Annual Sports Event, he has created a csv file named `Result.csv`, to store the results of students in different sports events. The structure of `Result.csv` is : `[St_Id, St_Name, Game_Name, Result]` Where `St_Id` is Student ID (integer) `ST_name` is Student Name (string) `Game_Name` is name of game in which student is participating(string) Result is result of the game whose value can be either `'Won', 'Lost'` or `'Tie'` For efficiently maintaining data of the event, Vedansh wants to write the following user defined functions: `Accept()` – to accept a record from the user and add it to the file `Result.csv`. The column headings should also be added on top of the csv file. `wonCount()` – to count the number of students who have won any event. As a Python expert, help him complete the task.	4
	SECTION E	

33 Meticulous EduServe is an educational organization. It is planning to setup its India campus at Chennai with its head office at Delhi. The Chennai campus has 4 main buildings – ADMIN, ENGINEERING, BUSINESS and MEDIA 1*5=5

Block to Block distances (in Mtrs.)

From	To	Distance
ADMIN	ENGINEERING	55 m
ADMIN	BUSINESS	90 m
ADMIN	MEDIA	50 m
ENGINEERING	BUSINESS	55 m
ENGINEERING	MEDIA	50 m
BUSINESS	MEDIA	45 m
DELHI HEAD OFFICE	CHENNAI CAMPUS	2175 km

Number of computers in each of the blocks/Center is as follows:

ADMIN	110
ENGINEERING	75
BUSINESS	40
MEDIA	12
DELHI HEAD	20

a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the CHENNAI campus for connecting the digital devices.

	b) Which network device will be used to connect computers in each block to form a local area network? c) Which block, in Chennai Campus should be made the server? Justify your answer. d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at DELHI with the campus in CHENNAI? e) Is there a requirement of a repeater in the given cable layout? Why/ Why not?	

34	(i) Differentiate between r+ and w+ file modes in Python.
	(ii) Consider a file, `SPORT.DAT`, containing records of the following structure:
	`[SportName, TeamName, No_Players]`
	Write a function, `copyData()`, that reads contents from the file `SPORT.DAT` and copies the records with Sport name as "**`Basket Ball`**" to the file named `BASKET.DAT`. The function should return the total number of records copied to the file `BASKET.DAT`.
	OR
	(i) How are text files different from binary files?
	(ii) A Binary file, `CINEMA.DAT` has the following structure:
	`{MNO:[MNAME, MTYPE]}`
	Where
	`MNO` – Movie Number
	`MNAME` – Movie Name
	`MTYPE` is Movie Type
	Write a user defined function, `findType(mtype)`, that accepts `mtype` as parameter and displays all the records from the binary file `CINEMA.DAT`, that have the value of Movie Type as `mtype`.
		2+3=5

35	(i) Define the term Domain with respect to RDBMS. Give one example to support your answer.	1+4=5

(ii) Kabir wants to write a program in Python to insert the following record in the table named `Student` in MYSQL database, `SCHOOL`:

- `rno`(Roll number)- integer
- `name`(Name) - string
- `DOB` (Date of birth) – Date
- `Fee` – float

Note the following to establish connectivity between Python and MySQL:

- Username - `root`
- Password - `tiger`
- Host - `localhost`

The values of fields `rno, name, DOB` and `fee` has to be accepted from the user. Help Kabir to write the program in Python.

OR

(i) Give one difference between alternate key and candidate key.

(ii) Sartaj has created a table named `Student` in MYSQL database, `SCHOOL`:

- `rno`(Roll number)- integer
- `name`(Name) - string
- `DOB` (Date of birth) – Date
- `Fee` – float

Note the following to establish connectivity between Python and MySQL:

- Username - `root`
- Password - `tiger`
- Host - `localhost`

	Sartaj, now wants to display the records of students whose fee is more than 5000. Help Sartaj to write the program in Python.	

Class XII

Computer Science (083)

Marking Scheme

Time Allowed: 3 hours **MM: 70**

Ques No	Question and Answers	Distribution of Marks	Total Marks
	SECTION A		
1	False	1 mark for correct answer	1
2	Option b 6,20	1 mark for correct answer	1
3	Option c -244.0	1 mark for correct answer	1
4	PYTHON-is-Fun	1 mark for correct answer	1
5	Option b 8,15	1 mark for correct answer	1
6	Option a PAN	1 mark for correct answer	1
7	Option b `del D1["Red"]`	1 mark for correct answer	1
8	Option b	1 mark for correct answer	1

	ceieP0		
9	Option d Statement 4	1 mark for correct answer	1
10	Option b WHITE* BLACK*	1 mark for correct answer	1
11	Option b Modulator	1 mark for correct answer	1
12	Option c global b	1 mark for correct answer	1
13	True	1 mark for correct answer	1
14	Option c A candidate key that is not a primary key is a foreign key.	1 mark for correct answer	1
15	Circuit	1 mark for correct answer	1
16	Option c `seek()`	1 mark for correct answer	1
17	Option d A is false but R is True	1 mark for correct answer	1

18	Option b Both A and R are true but R is not the correct explanation for A	1 mark for correct answer	1
	SECTION B		
19	(i) POP3 – Post Office Protocol 3 URL – Uniform Resource Locator (ii) HTML(Hyper text mark Up language) • We use pre-defined tags • Static web development language – only focuses on how data looks • It use for only displaying data, cannot transport data • Not case sensistive XML (Extensible Markup Language) • we can define our own tags and use them • Dynamic web development language – as it is used for transporting and storing data • Case sensitive OR (i) Bandwidth is the maximum rate of data transfer over a given transmission medium. / The amount of information that can be transmitted over a network.	½ mark for each correct expansion 1 mark for any one correct difference No mark to be awarded if only full form is given 1 mark for correct definition	1+1=2

	(ii) https (Hyper Text Transfer Protocol Secure) is the protocol that uses SSL (Secure Socket Layer) to encrypt data being transmitted over the Internet. Therefore, https helps in secure browsing while http does not.	1 mark for correct difference.	
20	 **def** revNumber(num): rev = 0 rem = 0 **while** num > 0: rem **=n**um %10 rev = rev*10 + rem num = num//10 **return rev** print(revNumber(1234))	½ mark for each correction made	2

21	
	PLACES={1:"Delhi",2:"London",3:"Paris",4:"New York",5:"Dubai"}
	def countNow(PLACES):
	for place in PLACES.values():
	if len(place)>5:
	print(place.upper())
	countNow(PLACES)
	
	OR
		½ mark for correct function header
		
		½ mark for correct loop
		
		½ mark for correct if statement
		
		½ mark for displaying the output
		
		½ mark for correct function header
		
		½ mark for using split()
			2

	`def lenWords(STRING):`
	`  T=()`
	`  L=STRING.split()`
	`  for word in L:`
	`  length=len(word)`
	`  T=T+(length,)`
	`  return T`
	
	<u>Note: Any other correct logic may be marked</u>
		½ mark for adding to tuple
		
		½ mark for return statement	

22	4*L 33*4 21*S 10*6	½ mark for each correct line of output	2

23	(i) `L1.insert(2,200)`
	(ii) `message.endswith('.')`
	
	OR
	
	`import statistics`
	`print(statistics.mode(studentAge) )`
		1 mark for each correct statement
		
		1 mark for correct import statement
		
		1 mark for correct command with mode() and print()
			1+1=2

24	SQL Command to add primary key: `ALTER TABLE Employee ADD EmpId INTEGER PRIMARY KEY;`	1 mark for correct ALTER TABLE command	2

	As the primary key is added as the last field, the command for inserting data will be:
	`INSERT INTO Employee`
	`VALUES("Shweta","Production",26900,999);`
	Alternative answer:
	`INSERT INTO`
	`Employee(EmpId,Ename,Department,Salary)`
	`VALUES(999,"Shweta","Production",26900);`
	OR
	To delete the attribute, category:
	`ALTER TABLE Sports`
	`DROP category;`
	
	To add the attribute, TypeSport
	
	`ALTER TABLE Sports`
	`ADD TypeSport char(10) NOT NULL;`
		1 mark for correct INSERT command
		
		1 mark for correct ALTER TABLE command with DROP
		
		1 mark for correct ALTER TABLE command with ADD	

25	10.0$20 10.0$2.0###	1 mark for each correct line of output	2
	SECTION C		
26	ND-*34	½ mark for each correct character	3
27			
	(i) **COUNT(DISTINCT SPORTS)**	1 mark for each correct output	1*3=3

4

(ii)

CNAME	SPORTS
AMINA	CHESS

(iii)

CNAME	AGE	PAY
AMRIT	28	1000
VIRAT	35	1050

28 (3)

```
def test():
    fObj1 = open("Alpha.txt","r")
    data = fObj1.readlines()
    for line in data:
        L=line.split()
        if L[0]=="You":
            print(line)
    fObj1.close()
```

OR

1 mark for correctly opening and closing files

½ mark for correctly reading data

1 mark for correct loop and if statement

½ mark for displaying data

1 mark for correctly opening and closing the files

	`def vowelCount():`
	`  fObj = open("Alpha.txt","r")`
	`  data = str(fObj.read())`
	`  cnt=0`
	`  for ch in data:`
	`  if ch in "aeiouAEIOU":`
	`  cnt=cnt+1`
	`  print(cnt)`
	`  fObj.close()`
	
	<u>Note: Any other correct logic may be marked</u>
		½ mark for correctly reading data
		
		1 mark for correct loop and if statement
		
		½ mark for displaying the output.	

29	(i)
	`UPDATE Personal`
	`SET Salary=Salary + Salary*0.5`
	`WHERE Allowance IS NOT NULL;`
	
	(ii)
	`SELECT Name, Salary + Allowance AS`
	`"Total Salary" FROM Personal;`
	
	(iii)
	`DELETE FROM Personal`
	`WHERE Salary>25000`
		1 mark for each correct query	1*3=3

30	
	travel = []
	def Push_element(NList):
	for L in NList:
	if L[1] != "India" and L[2]<3500:
	travel.append([L[0],L[1]])
	
	def Pop_element():
	while len(travel):
	print(travel.pop())
	else:
	print("Stack Empty")
		1 ½ marks for each function	3

SECTION D			
31	(i) SELECT PName, BName FROM PRODUCT P, BRAND B WHERE P.BID=B.BID; (ii) DESC PRODUCT; (iii) SELECT BName, AVG(Rating) FROM PRODUCT P, BRAND B WHERE P.BID=B.BID GROUP BY BName HAVING BName='Medimix' OR BName='Dove'; (iv) SELECT PName, UPrice, Rating FROM PRODUCT ORDER BY Rating DESC;	1 mark for each correct query	1*4=4

32	
	`def Accept():`
	`  sid=int(input("Enter Student ID "))`
	`  sname=input("Enter Student Name ")`
	`  game= input("Enter name of game ")`
	`  res=input("Enter Result")`
	`  headings=["Student ID","Student Name"," Game Name", "Result"]`
	`  data=[sid,sname,game,res]`
	`  f=open('Result.csv','a',newline='')`
	`  csvwriter=csv.writer(f)`
	`  csvwriter.writerow(headings)`
	`  csvwriter.writerow(data)`
	`  f.close()`
	
	`def wonCount():`
	`  f=open('Result.csv','r')`
	`  csvreader=csv.reader(f, delimiter=',')`
	`  head=list(csvreader)`
	`  print(head[0])`
	`  for x in head:`
	`  if x[3]=="WON":`
	`  print(x)`
	`  f.close()`
		½ mark for accepting data correctly
		
		½ mark for opening and closing file
		
		½ mark for writing headings
		
		½ mark for writing row
		
		½ mark for opening and closing file
		
		½ mark for reader object
		
		½ mark for print heading
		
		½ mark for printing data
			4

SECTION E			
33	a) 	1 mark for each correct answer	1*5=5

	b) Switch c) Admin block, as it has maximum number of computers. d) Microwave e) No, a repeater is not required in the given cable layout as the length of transmission medium between any two blocks does not exceed 70 m.		
34	(i) r+ mode: • Primary function is reading • File pointer is at beginning of file • if the file does not exist, it results in an error w+ mode: • primary function is writing • if the file does not exist, it creates a new file. • If the file exists, previous data is overwritten • File pointer is at the beginning of file (ii)	1 mark for each correct difference (minimum two differences should be given) ½ mark for correctly opening and closing files ½ mark for correct try and except block ½ mark for correct loop 1 mark for correctly copying data	2+3=5

```
def copyData():
    fObj = open("SPORT.DAT", "rb")
    fObj1 = open("BASKET.DAT","wb")
    cnt=0
    try:
        while True:
            data = pickle.load(fObj)
            print(data)
            if data[0] == "Basket Ball":
                pickle.dump(data,fObj1)
                cnt+=1
    except:
        fObj.close()
        fObj1.close()
    return cnt
```

½ mark for correct return statement

½ mark for correctly opening and closing files

½ mark for correct try and except block

½ mark for correct loop

½ mark for correct if statement

1 mark for correctly displaying data

OR

(i) Text files:

- Extension is .txt
- Data is stored in ASCII format that is human readable
- Has EOL character that terminates each line of data stored in the text files

Binary Files

- Extension is .dat
- Data is stored in binary form (0s and 1s), that is not human readable.

(ii)

```
def Searchtype(mtype):
    fObj = open("CINEMA.DAT", "rb")
    try:
        while True:
            data = pickle.load(fObj)
            if data[2] == mtype:
                print("Movie number:",data[0])
                print("Movie Name:",data[1])
                print("Movie Type:",data[2])
    except EOFError:
        fObj.close()
```

Note: Any other correct logic may be marked

35

(i) Domain is a set of values from which an attribute can take value in each row. For example, roll no field can have only integer values and so its domain is a set of integer values

½ mark for correct definition

½ mark for correct example

1+4=5

(ii)

```
import mysql.connector as mysql
con1 = mysql.connect(host="localhost",user="root", password="tiger", database="sample2023")
mycursor=con1.cursor()
rno = int(input("Enter Roll Number:: "))
name = input("Enter the name:: ")
DOB = input("Enter date of birth:: ")
fee= float(input("Enter Fee:: "))
query = "INSERT into student values({},'{}','{}',{})".format(rno,name,DOB,fee)
mycursor.execute(query)
con1.commit()
print("Data added successfully")
con1.close()
```

Note: Any other correct logic may be marked

½ mark for importing correct module

1 mark for correct connect()

½ mark for correctly accepting the input

1 ½ mark for correctly

		executing the query ½ mark for correctly using commit()	
	OR (i) All keys that have the properties to become a primary key are candidate keys. The candidate keys that do not become primary keys are alternate keys. (ii)	1 mark for correct difference	

	``
	import mysql.connector as mysql
	con1 = mysql.connect(host="localhost",user="root", password="tiger", database="sample2023")
	mycursor=con1.cursor()
	query = "SELECT * FROM student where fee>{}".format(5000)
	mycursor.execute(query)
	data=mycursor.fetchall()
	for rec in data:
	  print(rec)
	con1.close()
	``
	
	½ mark for importing correct module
	
	1 mark for correct connect()
	
	1 mark for correctly executing the query
	
	½ mark for correctly using fetchall()
	
	1 mark for correctly		

		displaying data	