Series &RQPS/S

Set-4

Q.P. Code **90/S**

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

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

INFORMATICS PRACTICES

Time allowed : 2 hours *Maximum Marks : 70*

	NOTE
(I)	Please check that this question paper contains **15** printed pages.
(II)	Please check that this question paper contains **35** questions.
(III)	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.
(IV)	**Please write down the serial number of the question in the answer-book before attempting it.**
(V)	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 :

(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 type questions carrying* ***2*** *marks each.*

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

(vi) ***Section D*** *has* ***2*** *questions carrying* ***4*** *marks each.*

(vii) ***Section E*** *has* ***3*** *questions carrying* ***5*** *marks each.*

(viii) ***All*** *programming question are to be answered using Python language only.*

SECTION A

1. What does a modem do at the sender's end ? *1*

(A) It converts analog signals into digital data.

(B) It converts digital data into analog signals.

(C) It converts digital data into optical signals.

(D) It converts optical signals into digital data.

2. Which out of the following ***cannot*** be included in digital footprint ? *1*

(A) Submitting the form online

(B) Searching for your friend's address online

(C) Walking on the beach

(D) Online shopping

3. Emma is a student working on her research project. She finds a well-written paragraph on the Internet that perfectly explains the concept that she wants to include in her project. She copies and pastes the paragraph as it is into her research paper. Her research paper did not get selected due to plagiarism. What is the one way out of the following that Emma could have followed to avoid plagiarism in this case ? *1*

(A) Copying the content from a book in her college library.

(B) Rewriting the paragraph in her own words and citing the original source.

(C) Asking her friends for information and using it in her research paper, without mentioning her friend's input.

(D) Posting the paper on her college website.

4. What will be the output of the following query ? *1*

```
SELECT MOD (5, 15);
```

(A) 10 (B) 3

(C) 0 (D) 5

5. Which of the following aggregate function returns the average of values in a specified column of a MySQL table ? *1*

(A) `AVG(Column)` (B) `AVERAGE(Column)`

(C) `MEAN(Column)` (D) `TOTAL(Column)`

6. For how long does a patent typically protect an invention ? *1*

(A) 5 years (B) 10 years

(C) 20 years (D) 50 years

7. In Pandas library of Python, a one-dimensional array containing a sequence of values of any datatype is known as : *1*

(A) DataFrame (B) Histogram

(C) Series (D) Panel

8. `Now()` in MySQL returns _____. *1*

(A) Today's date (B) Today's date and current time

(C) System's date and time (D) Name of active database

9. What will be the output of the following query ? *1*

```
SELECT SUBSTR("Swachh Survekshan",2,4)
```

(A) `wac` (B) `wach`

(C) `shan` (D) `achh`

10. What will be the output of the following Pythan code ? *1*

```
import pandas as pd
dd={'Jan':31,'Feb':28,'Mar':31,'Apr':30}
rr=pd.Series(dd)
print(rr)
```

(A)
```
Jan 31
Feb 28
Mar 31
Apr 30
dtype: int64
```

(B)
```
Jan  Feb  Mar  Apr
31   28   31   30
dtype: int64
```

(C)
```
Jan - 31
Feb - 28
Mar - 31
Apr - 30
dtype: int64
```

(D)
```
Jan  Feb  Mar  Apr
 |    |    |    |
31   28   31   30
dtype: int64
```

11. With respect to databases, a row in a relation is also known as a/an _____. *1*

(A) Attribute (B) Tuple

(C) Field (D) Domain

12. Which of the following command is used to display first three rows of a DataFrame **'DF'** ? *1*

(A) `DF.head()`

(B) `DF.header()`

(C) `DF.head(3)`

(D) `DF.Head(3)`

13. Which of the following Internet services is used for instant messaging ? *1*

(A) Chat (B) Email

(C) WWW (D) Python

14. What is the output of the following SQL Query ? *1*

```
SELECT INSTR("KNOWLEDGE","E");
```

(A) 7 (B) 5

(C) 6 (D) – 6

15. Which of the following is ***not*** a feature of Open Source Software ? *1*

(A) It can be shared with others without any licensing burden.

(B) It is same as free software.

(C) It can be downloaded on multiple devices.

(D) Its source code is available for free distribution.

16. What is a common symptom of extended use of digital devices these days ? *1*

(A) Improved eyesight

(B) Enhanced physical fitness

(C) Eye strain

(D) Increased muscle strength

17. Assertion (A) : Hacking is a cyber crime.

Reason (R) : To avoid hacking, one should not share the password with anyone.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true. *1*

18. Assertion (A) : The Pandas library in Python is primarily used for creating static, animated and interactive 2D plots or figures.

Reason (R) : Data visualization can be achieved with the help of a variety of charts and plots, including static plots, animations, and interactive visualizations.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true. *1*

SECTION B

19. (a) Write one function each for the following network devices : *2*

(i) MODEM

(ii) Router

OR

(b) Write any one advantage and any one disadvantage of BUS topology. *2*

20. The Python code written below has syntactical errors. Rewrite the correct code and underline the correction(s) made. *2*

```
import Pandas as pd

countries=[{'country';'INDIA','capital':'New Delhi'},

           {'country':'USA','capital':'New York'},

           {'country':'JAPAN','capital':'Tokyo'}

df=pd.DataFrame(country)

print(df)
```

21. Consider the string `'PAINTING'`. Write the SQL commands to display the following output : *2*

(i) **ING**

(ii) **INT**

22. Find the output of the following Python code : *2*

```
import pandas as pd

vaccine_qty=pd.Series([10,16,1],index=["Typhoid",
                                       "Tetanus","Hepatitis"])

cost=pd.Series([200,500,800],index=["Typhoid","Tetanus",
                                                  "Flu"])

print(vaccine_qty + cost)
```

23. Define the following terms : *2*

(i) Web Hosting

(ii) WWW

24. Consider the following Python code : *2*

```
import pandas as pan
customer=[{'Name':'Alisha','Age':25,'Gender':'Female',
                                        'Occupation':'Engineer'},
          {'Name':'Rozer','Age':34,'Gender':'Male',_______:
                                                    'Analyst'},
          {'Name':'Fazal','Age':28,'Gender':'Male',
                                      'Occupation':'Developer'}]
df= __________.DataFrame(___________)
print(__________)
```

Complete the above given Python code to display the following output :

	Name	Age	Gender	Occuptaion
0	Alisha	25	Female	Occupation
1	Rozer	34	Male	Engineer
2	Fazal	28	Male	Developer

25. Write any two differences between **DELETE** and **DROP TABLE** command of MySQL. *2*

SECTION C

26. Consider the table BIKES given below :

Table : BIKES

Bid	Bikename	Brandname	Biketype	Cost
1001	Dream Racer	Speedo	Super	1980000
1002	Splendid	Indiana	NULL	50000
1003	Silver Wing	Indiana	Touring	2300000
1004	ZZZZ	WMV	Sports	1500000
1005	CH2H	Speedo	Super	470000
1006	Astor	Victory	Normal	1700000
1007	CHANDRA	WMV	Adventure	3000000
1008	SWISS	WMV	Touring	4200000
1009	SWIFT	ROADY	Super	1900000
1010	CLOUD9	GEM	Normal	1700000

(a) Write SQL commands for the following : *3*

(i) Display Bikenames and their corresponding Brandnames in descending order of cost.

(ii) Display Brandnames of bikes whose Biketype is not known.

(iii) Consider the following query :

```
SELECT*FROM BIKES WHERE Cost BETWEEN 200000 AND
3000000;
```

Write another query, using relational and logical operators which will produce the same output.

OR

(b) Predict the output of the following queries based on the table BIKES given above : *3*

(i)
```
SELECT UCASE(TRIM(Brandname)) FROM BIKES
WHERE Bid = 1003;
```

(ii)
```
SELECT COUNT(Biketype) FROM BIKES;
```

(iii)
```
SELECT SUM(Cost), Brandname FROM BIKES
GROUP BY Brandname
Having Brandname = "WMV" OR Brandname = "Indiana";
```

27. Sejal, a Python programmer has been given the following tasks :

(i) Create two series – one to store various product names and the other to store the corresponding price.

Each series should have appropriate row label as given below :

	Product_name	Product_price
B1001	Butterscotch	130
V3002	Vanilla	100
M4002	Mango Zap	150
M4007	Magnum	190
C6005	Cassatta	200

(ii) Create a dictionary containing 'Product_name' and 'Product_price' as keys. Add the series created in part (i) as their corresponding values.

(iii) Create a DataFrame from the above created dictionary of series.

Help her in writing the Python program to accomplish the above mentioned tasks. *3*

28. Answer the following questions based on the table Sales given below :

Table : Sales

id	Name	City	Commission
E001	Naman Batra	Chandigarh	20
E002	Rupesh Mann	Delhi	15
E005	Ravi Gautam	Mumbai	25
E006	Mukul Singh	Delhi	30
E007	Ruby Rai	Mumbai	19
E003	Raman Roy	Kolkata	16

(i) Suggest the Primary key for the given table ?

(ii) Write the SQL command to insert the following data in the table Sales :

```
id → E009
Name → Sukumar
City → Nagpur
Commission → 10
```

(iii) Is the command used in part (ii) a DDL or a DML command ? *3*

29. (a) Sarah works in a multinational IT firm. One day, she came to know that some mails were sent from her official mail account but she had not actually sent them. *3*

Based on the given information, answer the following questions :

(i) Sarah is a victim of which type of cybercrime ?

(ii) Write any two precautions that one should take to protect oneself from being the victim of cybercrime.

(iii) Should Sarah immediately change the password of her email account ?

OR

(b) At a local electronics store, a new range of smartphones has been launched, creating a buzz among technology enthusiasts. However, the introduction of these new devices has also raised concerns about the increasing generation of e-waste in the community.

Answer the following questions based on above extract : *3*

(i) Define e-waste.

(ii) Give any one environmental challenge posed by e-waste, including its impact on air, water, and soil quality.

(iii) Imagine you are a part of a local environment organization. Provide any two strategies that could be implemented to minimize the negative environmental effects of e-waste.

30. Consider the following DataFrame Cricket :

	Won	Lost	Played
A	9	11	20
B	12	5	17
C	10	6	16
D	7	7	14
E	6	6	12

Write suitable Python statements to perform the following tasks : *3*

(i) Add a new column Rating to the DataFrame having the following values : `3, 1, 2, 4, 5`

(ii) Change the row labels from `A, B, C, D, E to Team A, Team B, Team C, Team D` and `Team E`.

(iii) Change the column label of first column from `'Won'` to `'Matches won'`.

SECTION – D

31. Ms. Sridevi is a placement head in a reputed engineering institute and has created the following table to store the records of students getting placement in various companies :

Table : Placement

Compid	Company Name	Vacancies	Appeared	Department	DoJ	City
CP01	Rising Star	20	300	Networking	2020-07-02	Bengaluru
CP02	Smoke Ring	30	350	Web Development	2019-07-12	Chennai
CP03	Pilot	15	421	Cloud	2020-08-12	Bengaluru
CP04	Jingle	10	145	Servers	2019-01-23	Hyderabad
CP05	Neel Zone	17	568	Data Analytics	2018-09-02	Bengaluru
CP06	Hard Talk	12	276	Marketing	2020-07-02	Hyderabad

Based on the given table, help Ms. Sridevi to write SQL queries for performing the following tasks : *4*

(i) To list names of those companies where department is either Marketing or Networking.

(ii) To display the joining month name for Rising Star company.

Ms. Sridevi has written following queries. Write the output of each query :

(iii)
```
SELECT LEFT (CompanyName, INSTR(CompanyName,"R"))
FROM Placement where vacancies >=20;
```

(iv)
```
SELECT CompanyName FROM Placement WHERE Vacancies
< 20 AND Appeared >300;
```

32. Ms. Shambhavi, a data analyst working on a college admission project, has created the following DataFrame Sub_Details to store subjectwise details :

	Subject	Total Students	Seat Availability
1	English	50	No
2	IT	45	Yes
3	AI	40	Yes
4	CS	50	No
5	CA	47	Yes

Help her by answering the following questions : *4*

(i) Write suitable Python command to display the row having index value 3.

(ii) Predict the output of the following Python statement :

```
print(Sub_Details.loc[2:3,'Total Students'])
```

(iii) (a) Write suitable Python statement to display the list of various subjects along with their corresponding seat availability.

OR [option for part (iii) only]

(b) Ms. Shambhavi has just created a folder named Project in the E: drive of her computer to store necessary files related to the project. Write suitable Python statement to export the given DataFrame into the file stud.csv, created inside project folder in E: drive.

SECTION – E

33. Consider the tables Faculty and Batch given below :

Table : Faculty

F_Id	FacName	DoJ	Qualification	Salary
Emp01	Neeta Khanna	2013-07-01	MCA	85000
Emp02	Sonia Chawla	2023-05-05	MA	35000
Emp03	Sheetal	2015-06-28	MSc	90000
Emp04	Bindu	2016-03-30	M.Com	80000
Emp05	Sunidhi	2002-06-28	BA	100000
Emp06	Ashish	1999-07-01	B.Com	120000

Table : Batch

Batchid	BatchName	F_Id	Daysperweek	Subjects
B01	TXAlpha	Emp01	3	English
B02	TXBeta	Emp05	5	Chemistry
B03	TXGama	Emp02	4	Physics
B04	Super30	Emp03	3	Mathematics
B05	G-20	EMp04	2	Economics
B06	LXAlpha	Emp01	4	Accountancy

Write SQL queries for the following : *5*

(a) (i) Display name and salary of all faculties in alphabetical order of their names.

(ii) Display details of faculties who joined on Monday.

(iii) Display names of faculties, their salary and BatchName from both the tables.

(iv) Display the details of all faculties whose salary is more than 60000 and have joined before the year 2007.

(v) Display the name of faculty who is taking **TXAlpha Batch**.

OR

(b) (i) Display maximum days per week for each F_Id from the table Batch.

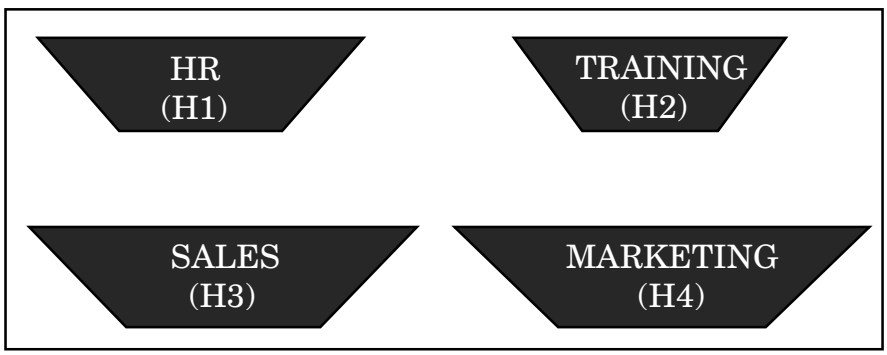
(ii) Display names of faculties after removing leading and trailing spaces.

(iii) Display total number of records in the table Faculty.

(iv) Increase the salary by 25% of those employees whose qualification is MCA.

(v) Delete the records of batches whose subject is English.

34. Classpoint Pvt. Ltd., Pune is a company that deals with development and training of software. They have different divisions HR (H1), Training (H2), Sales (H3) and Marketing (H4). The layout of the Pune branch is :



The management wants to connect all the divisions as well as all the computers of each division (H1, H2, H3 and H4).

Distance between the divisions are as follows :

H1 to H2	**90m**
H1 to H3	**145m**
H1 to H4	**88m**
H2 to H3	**110m**
H2 to H4	**80m**
H3 to H4	**160m**

Number of computers in each division :

Division	Number of Computers
H1	**100**
H2	**220**
H3	**160**
H4	**140**

Based on the above specifications, answer the following questions : *5*

(i) Suggest the topology and draw the most suitable cable layout for connecting all the divisions.

(ii) Classpoint Pvt. Ltd. plans to establish a new office in Dubai. Out of LAN, MAN and WAN, what kind of network will be created to connect Pune office with Dubai office ?

(iii) Suggest the division for the placement of server in Pune office. Explain the reason for your selection.

(iv) Suggest the placement of switch/hub with justification.

(v) Ms. Abhilasha, working in Dubai office, is creating a software for conducting program for the employees of Pune branch. Which protocol would help her in voice transmission over a computer network ?

35. (a) Akriti keeps the calorie count of different food items as follows :

```
Food=['Apple','Banana','Rice','Wheat','Carrot']

Calorie=[72,105,204,455,52]
```

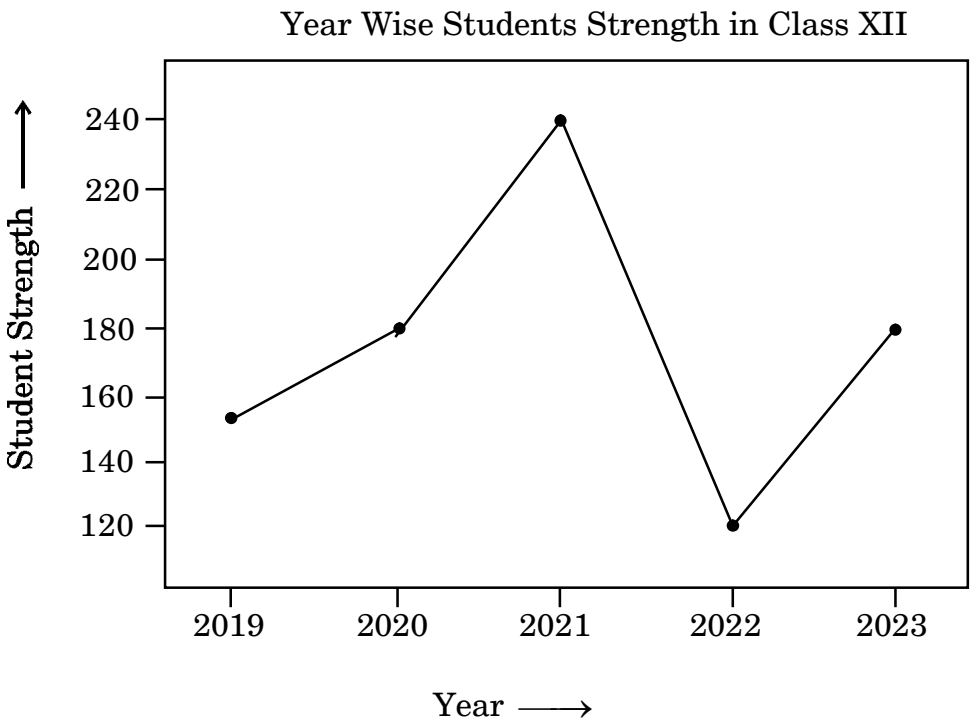
Write a Python code to generate a Bar Chart on the given data, having suitable Chart Title and labels for X and Y axis. Also add suitable statement to save this chart with the name `calorie.png`. *5*

OR

(b) Consider the following data :

Year	Student Strength
2019	150
2020	180
2021	240
2022	120
2023	180

Write a Python code to draw the following line chart having title and labels for x and y axis as shown below : *5*



Also give suitable Python statement to save this chart with name, **`stud.png`**.

CBSE AISSCE (SUPPLEMENTARY) 2024 Marking Scheme for Informatics Practices (Sub Code: 065 Paper Code 90/S)

SET 4

Marking Scheme

Strictly Confidential (For Internal and Restricted use only)

Senior Secondary School Certificate Examination, 2024

SUBJECT NAME: INFORMATICS PRACTICES (SUBJECT CODE 065) (PAPER CODE 90/S)

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-XII, 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 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 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 70 (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 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.
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 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.

CBSE AISSCE (SUPPLEMENTARY) 2024 Marking Scheme for
Informatics Practices (Sub Code: 065 Paper Code 90/S)

SET 4

SPECIFIC INSTRUCTIONS FOR INFORMATICS PRACTICES 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 (SUPPLEMENTARY) 2024 Marking Scheme for Informatics Practices (Sub Code: 065 Paper Code 90/S)

SET 4

SECTION-A

1.	What does a modem do at the sender's end ?		1
	(A)	It converts analog signals into digital data.	
	(B)	It converts digital data into analog signals.	
	(C)	It converts digital data into optical signals.	
	(D)	It converts optical signals into digital data.	
Ans	(B)	It converts digital data into analog signals.	
	(1 Mark for the correct answer)		
2.	Which out of the following **cannot** be included in digital footprint ?		1
	(A)	Submitting the form online	
	(B)	Searching for your friend's address online	
	(C)	Walking on the beach	
	(D)	Online shopping	
Ans	(C)	Walking on the beach	
	(1 Mark for the correct answer)		
3.	Emma is a student working on her research project. She finds a well-written paragraph on the Internet that perfectly explains the concept that she wants to include in her project. She copies and pastes the paragraph as it is into her research paper. Her research paper did not get selected due to plagiarism. What is the one way out of the following that Emma could have followed to avoid plagiarism in this case ?		1
	(A)	Copying the content from a book in her college library.	
	(B)	Rewriting the paragraph in her own words and citing the original source.	
	(C)	Asking her friends for information and using it in her research paper, without mentioning her friend's input.	
	(D)	Posting the paper on her college website.	
Ans	(B)	Rewriting the paragraph in her own words and citing the original source.	
	(1 Mark for the correct answer)		
4.	What will be the output of the following query? `SELECT MOD (5, 15);`		1
	(A) 10	(B) 3	
	(C) 0	(D) 5	
Ans	(D) 5		
	(1 Mark for the correct answer)		
5.	Which of the following aggregate function returns the average of values in a specified column of a MySQL table ?		1
	(A) `AVG(Column)`	(B) `AVERAGE(Column)`	

	(C)	`MEAN(Column)`		(D)	`TOTAL(Column)`	
Ans	(A)	`AVG(Column)`				
	(1 Mark for the correct answer)					
6.	For how long does a patent typically protect an invention ?					1
	(A)	5 years		(B)	10 years	
	(C)	20 years		(D)	50 years	
Ans	(C)	20 years				
	(1 Mark for the correct answer)					
7.	In Pandas library of Python, a one-dimensional array containing a sequence of values of any datatype is known as :					1
	(A)	DataFrame		(B)	Histogram	
	(C)	Series		(D)	Panel	
Ans	(C)	Series				
	(1 Mark for the correct answer)					
8.	`Now()` in MySQL returns _____.					1
	(A)	Today's date		(B)	Today's date and current time	
	(C)	System's date and time		(D)	Name of active database	
Ans	(C)	System's date and time				
	(1 Mark for the correct answer)					
9.	What will be the output of the following query ? `SELECT SUBSTR("Swachh Survekshan",2,4)`					1
	(A)	`wac`		(B)	`wach`	
	(C)	`shan`		(D)	`achh`	
Ans	(B)	`wach`				
	(1 Mark for the correct answer)					

10.	What will be the output of the following Python code ?
	`import pandas as pd`
	`dd={'Jan':31,'Feb':28,'Mar':31,'Apr':30}`
	`rr=pd.Series(dd)`
	`print(rr)`
						1

	(A)	`Jan 31`
		`Feb 28`
		`Mar 31`
		`Apr 30`
		`dtype: int64`				

	(B)	`Jan Feb Mar Apr` `31 28 31 30`				

		`dtype: int64`	

	(C)	`Jan – 31`
		`Feb – 28`
		`Mar – 31`
		`Apr – 30`
		`dtype: int64`	

	(D)	`Jan  Feb  Mar  Apr`
		`  |    |    |    |`
		`31   28   31   30`
		`dtype: int64`	

Ans	(A)	`Jan 31`
		`Feb 28`
		`Mar 31`
		`Apr 30`
		`dtype: int64`	

	(1 Mark for the correct answer)		
11.	With respect to databases, a row in a relation is also known as a/an _____.		1
	(A) Attribute	(B) Tuple	
	(C) Field	(D) Domain	
Ans	(B) Tuple		
	(1 Mark for the correct answer)		
12.	Which of the following command is used to display first three rows of a DataFrame '**DF**' ?		1
	(A) `DF.head()`		
	(B) `DF.header()`		
	(C) `DF.head(3)`		
	(D) `DF.Head(3)`		
Ans	(C) `DF.head(3)`		
	(1 Mark for the correct answer)		
13.	Which of the following Internet services is used for instant messaging ?		1
	(A) Chat	(B) Email	
	(C) WWW	(D) Python	
Ans	(A) Chat		
	(1 Mark for the correct answer)		
14.	What is the output of the following SQL Query ? `SELECT INSTR("KNOWLEDGE","E");`		1
	(A) 7	(B) 5	
	(C) 6	(D) – 6	
Ans	(C) 6		

	1 Mark for the correct answer)		
15.	Which of the following is ***not*** a feature of Open Source Software ?		1
	(A)	It can be shared with others without any licensing burden.	
	(B)	It is same as free software.	
	(C)	It can be downloaded on multiple devices.	
	(D)	Its source code is available for free distribution.	
Ans	(B)	It is same as free software.	
	(1 Mark for the correct answer)		
16.	What is a common symptom of extended use of digital devices these days ?		1
	(A)	Improved eyesight	
	(B)	Enhanced physical fitness	
	(C)	Eye strain	
	(D)	Increased muscle strength	
Ans	(C)	Eye strain	
	(1 Mark for the correct answer)		
17.	Assertion (A) : Hacking is a cyber crime.		1
	Reason (R) : To avoid hacking, one should not share the password with anyone.		
	(A)	Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	
	(B)	Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).	
	(C)	Assertion (A) is true, but Reason (R) is false.	
	(D)	Assertion (A) is false, but Reason (R) is true.	
Ans	(B)	Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).	
	(1 Mark for the correct answer) ***Note: Option (A)* also to be accepted as the correct answer.**		
18.	Assertion (A) : The Pandas library in Python is primarily used for creating static, animated and interactive 2D plots or figures.		1
	Reason (R) : Data visualization can be achieved with the help of a variety of charts and plots, including static plots, animations, and interactive visualizations.		
	(A)	Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	
	(B)	Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).	
	(C)	Assertion (A) is true, but Reason (R) is false.	
	(D)	Assertion (A) is false, but Reason (R) is true.	
Ans	(D)	Assertion (A) is false, but Reason (R) is true.	
	(1 Mark for the correct answer)		

SECTION B

19.	(a)	Write one function each for the following network devices :	2
		(i) MODEM (ii) Router	
Ans		(i) Modem converts digital signals into analog signals and vice-versa. (ii) Router receives data,analyzes it and transmits it to the destination through the best possible route.	
		(1 Mark each for any correct function of each network device)	
		OR	
	(b)	Write any one advantage and any one disadvantage of BUS topology.	2
Ans		**Advantage:** • It is relatively inexpensive to implement. • It is easy to expand. New devices can be added to the network by connecting them to the central cable. • It is easy to troubleshoot. **Disadvantage:** • If the central cable fails, the entire network will be down. • Since the whole transmission occurs through a central cable, there is a possibility of data collision in the network. • The number of devices that can be connected to a bus topology is limited. • It is difficult to isolate a problem.	
		(1 Mark each for Any one correct advantage and Any one correct disadvantage of Bus topology)	
20.	The Python code written below has syntactical errors. Rewrite the correct code and underline the correction(s) made.		2

```
import Pandas as pd
countries=[{'country';'INDIA','capital':'New Delhi'},
           {'country':'USA','capital':'New York'},
           {'country':'JAPAN','capital':'Tokyo'}
df=pd.DataFrame(country)
print(df)
```

Ans

```
import pandas as pd
countries=[{'country':'INDIA','capital':'New Delhi'},
           {'country':'USA','capital':'New York'},
           {'country':'JAPAN','capital':'Tokyo'}]
df=pd.DataFrame(countries)
print(df)
```

(½ mark each for each correction)

(Note: 1 mark to be awarded if errors are only identified and corrections are not written)

21. Consider the string `'PAINTING'`. Write the SQL commands to display the following output : **2**

(i) `ING`

(ii) `INT`

Ans (i)
```
SELECT RIGHT('PAINTING',3);
OR
SELECT SUBSTR('PAINTING',6,3);
OR
SELECT SUBSTRING('PAINTING',6,3);
OR
SELECT MID('PAINTING',6,3);
```

(ii)
```
SELECT SUBSTR('PAINTING',3,3);
OR
SELECT SUBSTRING('PAINTING',3,3);
OR
SELECT MID('PAINTING',3,3);
```

(1 Mark each for Any correct SQL commands)

22. Find the output of the following Python code : **2**

```
import pandas as pd
vaccine_qty=pd.Series([10,16,1],index=["Typhoid",
                                       "Tetanus","Hepatitis"])
cost=pd.Series([200,500,800],index=["Typhoid","Tetanus",
                                    "Flu"])
print(vaccine_qty + cost)
```

Ans
```
Flu          NaN
Hepatitis    NaN
Tetanus    516.0
Typhoid    210.0
dtype: float64
```

(½ Mark for each correct row of output)
Note: `dtype: float64` to be *ignored*
Order of rows of output to be ignored

23. Define the following terms : **2**

(i) Web Hosting

(ii) WWW

Ans (i) Web hosting is a service that provides storage for a website's files and network infrastructure that makes the website available on Internet.

(ii) The World Wide Web (WWW) is an interconnected network of web pages and documents accessible through the Internet.

(1 Mark each for each correct definition)

24. Consider the following Python code : **2**

```
import pandas as pan
customer =[{'Name':'Alisha','Age':25,'Gender':'Female',
                                    'Occupation':'Engineer'},
           {'Name':'Rozer','Age':34,'Gender':'Male',_____:
```

```
                                                    'Analyst'},
          {'Name':'Fazal','Age':28,'Gender':'Male',
                                        'Occupation':'Developer'}]
df= __________.DataFrame(__________)
print(__________)
```

Complete the above given Python code to display the following output :

	Name	Age	Gender	Occupation
0	Alisha	25	Female	Occupation
1	Rozer	34	Male	Engineer
2	Fazal	28	Male	Developer

Ans

```
import pandas as pan
customer=[{'Name':'Alisha','Age':25,'Gender':'Female',
                                    'Occupation':'Engineer'},
          {'Name':'Rozer','Age':34,'Gender':'Male','Occupation':
                                                    'Analyst'},
          {'Name':'Fazal','Age':28,'Gender':'Male',
                                    'Occupation':'Developer'}]
df= pan.DataFrame(customer)
print(df)
```

(½ mark each for correct answer for each blank)
Note:
Full 2 marks to be awarded if 'Occupation' blank is not filled/incorrectly filled but other 3 blanks are correctly filled.

25. Write any two differences between DELETE and DROP TABLE command of MySQL. 2

DELETE	DROP TABLE
It removes some or all rows from a table.	It removes the complete table.
It doesn't remove the table structure.	It removes the table structure.
It is a DML command.	It is a DDL command.
It can be used with 'WHERE' clause	It cannot be used with 'WHERE' clause

(1 Mark each for Any 2 correct differences)

SECTION C

26. Consider the table BIKES given below :

Table : BIKES

Bid	Bikename	Brandname	Biketype	Cost
1001	Dream Racer	Speedo	Super	1980000
1002	Splendid	Indiana	NULL	50000
1003	Silver Wing	Indiana	Touring	2300000
1004	ZZZZ	WMV	Sports	1500000
1005	CH2H	Speedo	Super	470000
1006	Astor	Victory	Normal	1700000

		1007	CHANDRA	WMV	Adventure	3000000	
		1008	SWISS	WMV	Touring	4200000	
		1009	SWIFT	ROADY	Super	1900000	
		1010	CLOUD9	GEM	Normal	1700000	

(a) Write SQL commands for the following : 3

(i) Display Bikenames and their corresponding Brandnames in descending order of cost.

(ii) Display Brandnames of bikes whose Biketype is not known.

(iii) Consider the following query :

```
SELECT*FROM BIKES WHERE Cost BETWEEN 200000 AND  3000000;
```

Write another query, using relational and logical operators which will produce the same output.

(i)
```
SELECT Bikename, Brandname FROM BIKES ORDER BY Cost DESC;
```

(ii)
```
SELECT Brandname FROM BIKES WHERE Biketype IS NULL;
```

(iii)
```
SELECT * FROM BIKES
   WHERE Cost >= 200000 AND Cost<=3000000;
```

(1 Mark each for each correct SQL command)

OR

(b) Predict the output of the following queries based on the table **BIKES** given above : 3

(i)
```
SELECT UCASE(TRIM(Brandname)) FROM BIKES
      WHERE Bid = 1003;
```

(ii)
```
SELECT COUNT(Biketype) FROM BIKES;
```

(iii)
```
SELECT SUM(Cost), Brandname FROM BIKES
      GROUP BY Brandname
      Having Brandname = "WMV" OR Brandname = "Indiana";
```

Ans

(i) INDIANA

(1 Mark for correct output)

(ii) 9

(1 Mark for correct output)

(iii)

SUM(Cost)	Brandname
2350000	Indiana
8700000	WMV

(½ Mark each for each correct column/row)

Note: Ignore order of rows

27. Sejal, a Python programmer has been given the following tasks : 3

(i) Create two series - one to store various product names and the other to store the corresponding price.

Each series should have appropriate row label as given below :

	Product_name	Product_price
B1001	Butterscotch	130
V3002	Vanilla	100
M4002	Mango Zap	150

M4007	Magnum	190
C6005	Cassatta	200

(ii) Create a dictionary containing 'Product_name' and 'Product_price' as keys. Add the series created in part (i) as their corresponding values.

(iii) Create a DataFrame from the above created dictionary of series.
Help her in writing the Python program to accomplish the above mentioned tasks.

Ans (i)

```
import pandas as pd
D1=['Butterscotch','Vanilla','Mango Zap','Magnum','Cassatta']
D2=[130,100,150,190,200]
I=['B1001','V3002','M4002','M4007','C6005']
S1=pd.Series(D1,I)
S2=pd.Series(D2,I)
```

(1 Mark for correct answer)
Note: ½ mark to be awarded if Any 2 correct lines of code are written.
Note: Full 1 mark to be awarded if series are created using any other correct method.

(ii) `D={'Product_name':S1,'Product_price':S2}`

(1 Mark for correct answer)

(iii) `DF=pd.DataFrame(D)`

(1 Mark for correct answer)

28. Answer the following questions based on the table Sales given below : 3

Table : Sales

id	Name	City	Commission
E001	Naman Batra	Chandigarh	20
E002	Rupesh Mann	Delhi	15
E005	Ravi Gautam	Mumbai	25
E006	Mukul Singh	Delhi	30
E007	Ruby Rai	Mumbai	19
E003	Raman Roy	Kolkata	16

(i) Suggest the Primary key for the given table ?

(ii) Write the SQL command to insert the following data in the table Sales :
id → E009
Name → Sukumar
City → Nagpur
Commission → 10

(iii) Is the command used in part (ii) a **DDL** or a **DML** command ?

Ans (i) id

(1 Mark for correct answer)

(ii)

```
INSERT INTO Sales VALUES('E009','Sukumar','Nagpur',10)
OR
INSERT INTO Sales VALUE('E009','Sukumar','Nagpur',10)
OR
INSERT INTO Sales(id, Name, City, Commision)
```

		`VALUES('E009','Sukumar','Nagpur',10)`
		OR
		`INSERT INTO Sales(id, Name, City, Commision)`
		`VALUE('E009','Sukumar','Nagpur',10)`
		(1 Mark for any correct answer)	

	(iii)	DML ***(1 Mark for correct answer)***	
29.	(a)	Sarah works in a multinational IT firm. One day, she came to know that some mails were sent from her official mail account but she had not actually sent them.	3
		Based on the given information, answer the following questions : (i) Sarah is a victim of which type of cybercrime ? (ii) Write any two precautions that one should take to protect oneself from being the victim of cybercrime. (iii) Should Sarah immediately change the password of her email account ?	
		(i) Hacking ***(1 Mark for correct answer)***	
		(ii) • Keep strong password(s) and change them regularly. • Do not click on any untrusted link(s) • Do not share personal information with strangers. • Always use updated Antivirus • Always use licensed software. • Lock or log off from the computer when you step away. • Use secure Wi-Fi connection ***(½ Mark each for any 2 correct precautions)***	
		(iii) Yes, Sarah should immediately change the password of her email account . ***(1 Mark for correct answer)***	
		OR	
	(b)	At a local electronics store, a new range of smartphones has been launched, creating a buzz among technology enthusiasts. However, the introduction of these new devices has also raised concerns about the increasing generation of e-waste in the community.	3
		Answer the following questions based on above extract : (i) Define e-waste. (ii) Give any one environmental challenge posed by e-waste, including its impact on air, water, and soil quality. (iii) Imagine you are a part of a local environment organization. Provide any two strategies that could be implemented to minimize the negative environmental effects of e-waste.	
		(i) E-Waste is the term used for electrical and electronic equipment and their parts that have been discarded as waste. ***(1 Mark for correct definition)*** (ii) • E-waste releases harmful pollutants into the air, contributing to air pollution and posing respiratory health risks.	

- E-waste releases heavy metals in the groundwater making it toxic and unsafe for consumption.
- E-waste makes harmful chemicals leach into the soil and groundwater. These toxins persist in the soil for a long time adversely affecting ecosystems and human health.

(1 Mark for any one correct environmental challenge)

(iii)

- Facilitate/Encourage the reuse of electronics by promoting donation, use of second-hand /refurbished equipment, exchanges.
- Promote policies and initiatives that support the right to repair electronics.
- Launch educational campaigns to raise awareness about the environmental impacts of e-waste and promote Reuse, Recycle and Reduce

(½ Mark each for any two correct strategies)

30. Consider the following DataFrame Cricket : 3

	Won	Lost	Played
A	9	11	20
B	12	5	17
C	10	6	16
D	7	7	14
E	6	6	12

Write suitable Python statements to perform the following tasks :

(i) Add a new column Rating to the DataFrame having the following values : `3, 1, 2, 4, 5`

(ii) Change the row labels from `A, B, C, D, E` to `Team A, Team B, Team C, Team D` and `Team E`.

(iii) Change the column label of first column from `'Won'` to `'Matches won'`.

Ans (i)
```
Cricket['Rating']=[3,1,2,4,5]
```

(1 Mark for correct answer)

(ii)
```
Cricket.rename(index={"A":"Team A", "B":"Team B",
"C":"Team C", "D":"Team D", "E":"Team E"}, inplace=True)
```

(1 Mark for correct answer)

(iii)
```
Cricket.rename(columns={"Won":"Matches won"}, inplace=True)
```

(1 Mark for correct answer)

Note: Deduct ½ mark if inplace=True is not mentioned in (ii) and (iii)

SECTION D

31. Ms. Sridevi is a placement head in a reputed engineering institute and has created the following table to store the records of students getting placement in various companies : 4

Table: Placement

Compid	Company Name	Vacancies	Appeared	Department	DoJ	City
CP01	Rising Star	20	300	Networking	2020-07-02	Bengaluru
CP02	Smoke Ring	30	350	Web Development	2019-07-12	Chennai
CP03	Pilot	15	421	Cloud	2020-08-12	Bengaluru
CP04	Jingle	10	145	Servers	2019-01-23	Hyderabad
CP05	Neel Zone	17	568	Data Analytics	2018-09-02	Bengaluru
CP06	Hard Talk	12	276	Marketing	2020-07-02	Hyderabad

Based on the given table, help Ms. Sridevi to write SQL queries for performing the following tasks :

(i) To list names of those companies where department is either Marketing or Networking.

(ii) To display the joining month name for Rising Star company.

Ms. Sridevi has written following queries. Write the output of each query :

(iii)
```
SELECT LEFT (CompanyName, INSTR(CompanyName,"R"))
FROM Placement where vacancies >=20;
```

(iv)
```
SELECT CompanyName FROM Placement WHERE Vacancies < 20 AND
Appeared >300;
```

Ans (i)
```
SELECT CompanyName FROM Placement
WHERE Department = 'Marketing' OR Department = 'Networking';
                  OR
SELECT CompanyName FROM Placement
WHERE Department IN ('Marketing', 'Networking');
```

(½ Mark for SELECT and ½ mark for WHERE clause)

(ii)
```
SELECT MONTHNAME(DoJ) FROM Placement
WHERE CompanyName = 'Rising Star';
```

(½ Mark for SELECT and ½ mark for WHERE clause)

(iii)

LEFT (CompanyName, INSTR(CompanyName,"R"))
R
Smoke R

(½ Mark each for each row of output)

Note: SmokeR also to be accepted for second row of output

(iv)

CompanyName
Pilot
Neel Zone

(½ Mark each for each row of output)

32. Ms. Shambhavi, a data analyst working on a college admission project, has created the following DataFrame Sub_Details to store subjectwise details : 4

	Subject	Total Students	Seat Availability
1	English	50	No
2	IT	45	Yes
3	AI	40	Yes
4	CS	50	No
5	CA	47	Yes

Help her by answering the following questions :

(i) Write suitable Python command to display the row having index value 3.

(ii) Predict the output of the following Python statement :
`print(Sub_Details.loc[2:3,'Total Students'])`

(iii) (a) Write suitable Python statement to display the list of various subjects along with their corresponding seat availability.

OR [option for part (iii) only]

(b) Ms. Shambhavi has just created a folder named Project in the E: drive of her computer to store necessary files related to the project. Write suitable Python statement to export the given DataFrame into the file stud.csv, created inside project folder in E: drive.

Ans (i)
```
print(Sub_Details[2:3])
```
OR
```
print(Sub_Details.loc[3])
```
(1 Mark for correct answer)

(ii)
```
2     45
3     40
Name: Total Students, dtype: int64
```
(½ Mark each for each column)

(iii) (a)
```
print(Sub_Details[['Subject','Seat Availability']])
```
(2 marks for correct answer)

OR

(b)
```
Sub_Details.to_csv("E:\project\stud.csv")
```
OR
```
Sub_Details.to_csv("E:/project/stud.csv")
```
OR
```
Sub_Details.to_csv("E:\\project\\stud.csv")
```

OR

```
Sub_Details.to_csv(r"E:\project\stud.csv")
```

(1 Mark for Sub_Details.to_csv and 1 marks for correct path)

SECTION E

33. Consider the tables Faculty and Batch given below : 5

Table : Faculty

F_Id	FacName	DoJ	Qualification	Salary
Emp01	Neeta Khanna	2013-07-01	MCA	85000
Emp02	Sonia Chawla	2023-05-05	MA	35000
Emp03	Sheetal	2015-06-28	MSc	90000
Emp04	Bindu	2016-03-30	M.Com	80000
Emp05	Sunidhi	2002-06-28	BA	100000
Emp06	Ashish	1999-07-01	B.Com	120000

Table : Batch

Batchid	BatchName	F_Id	Daysperweek	Subjects
B01	TXAlpha	Emp01	3	English
B02	TXBeta	Emp05	5	Chemistry
B03	TXGama	Emp02	4	Physics
B04	Super30	Emp03	3	Mathematics
B05	G-20	EMp04	2	Economics
B06	LXAlpha	Emp01	4	Accountancy

Write SQL queries for the following :

(a)
(i) Display name and salary of all faculties in alphabetical order of their names.
(ii) Display details of faculties who joined on Monday.
(iii) Display names of faculties, their salary and BatchName from both the tables.
(iv) Display the details of all faculties whose salary is more than 60000 and have joined before the year 2007.
(v) Display the name of faculty who is taking **TXAlpha Batch.**

OR

(b) 5
(i) Display maximum days per week for each F_Id from the table Batch.
(ii) Display names of faculties after removing leading and trailing spaces.
(iii) Display total number of records in the table Faculty.
(iv) Increase the salary by 25% of those employees whose qualification is MCA.
(v) Delete the records of batches whose subject is English.

Ans (a) (i)

```
SELECT FacName,Salary FROM Faculty ORDER BY FacName;
                        OR
SELECT FacName,Salary FROM Faculty ORDER BY FacName ASC;
```

(½ Mark for SELECT and ½ mark for ORDER BY clause)

(ii)

```
SELECT * FROM Faculty WHERE DAYNAME(DoJ)='Monday';
                        OR
```

```
SELECT * FROM Faculty WHERE DAYOFWEEK(DoJ)=2;
```

(½ Mark for SELECT and ½ mark for WHERE clause)

(iii)
```
SELECT FacName, Salary, BatchName FROM Faculty,Batch
WHERE Faculty.F_Id = Batch.F_Id;
                    OR
SELECT FacName,Salary,BatchName FROM Faculty F,Batch B
WHERE F.F_Id = B.F_Id;
                    OR
SELECT FacName,Salary,BatchName
FROM Faculty NATURAL JOIN Batch;
```

(½ Mark for SELECT and ½ mark for WHERE clause)

(iv)
```
SELECT * FROM Faculty
WHERE Salary>60000 AND YEAR(DoJ)<2007;
                    OR
SELECT * FROM Faculty
WHERE Salary>60000 AND DoJ<"2007-01-01";
```

(½ Mark for SELECT and ½ mark for WHERE clause)

(v)
```
SELECT FacName FROM Faculty, Batch
WHERE BatchName = "TXAlpha"
AND Faculty.F_Id = Batch.F_Id;
                    OR
SELECT FacName FROM Faculty, Batch
WHERE Faculty.F_Id = Batch.F_Id
      AND BatchName = "TXAlpha";
                    OR
SELECT FacName FROM Faculty F, Batch B
WHERE F.F_Id = B.F_Id AND BatchName = "TXAlpha";
                    OR
SELECT FacName FROM Faculty NATURAL JOIN Batch
WHERE BatchName = "TXAlpha";
```

(½ Mark for SELECT and ½ mark for WHERE clause)

OR

(b) (i)
```
SELECT F_Id, MAX(Daysperweek)FROM Batch GROUP BY F_Id;
```

(½ Mark for SELECT and ½ mark for GROUP BY clause)

(ii)
```
SELECT TRIM(FacName) FROM Faculty;
```

(1 Mark for correct SQL query)

(iii)
```
SELECT COUNT(*) FROM Faculty;
                    OR
SELECT COUNT(FID) FROM Faculty;
```

(1 Mark for correct SQL query)

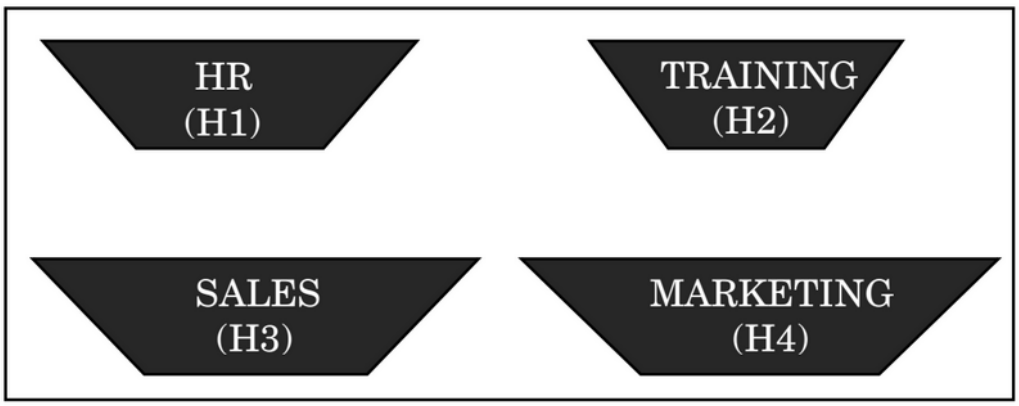
(iv)
```
UPDATE Faculty SET Salary = Salary+(25/100)*Salary
WHERE Qualification = "MCA";
                    OR
UPDATE Faculty SET Salary = Salary*1.25
WHERE Qualification = "MCA";
```

(½ Mark for UPDATE and ½ mark for WHERE clause)

(v)
```
DELETE FROM Batch WHERE Subject = "English";
```

(½ Mark for DELETE and ½ mark for WHERE clause)

34. Classpoint Pvt. Ltd., Pune is a company that deals with development and training of software. They have different divisions HR (H1), Training (H2), Sales (H3) and Marketing (H4). The layout of the Pune branch is : 5



The management wants to connect all the divisions as well as all the computers of each division (H1, H2, H3 and H4).

Distance between the divisions are as follows :

H1 to H2	90m
H1 to H3	145m
H1 to H4	88m
H2 to H3	110m
H2 to H4	80m
H3 to H4	160m

Number of computers in each division :

Division	Number of Computers
H1	100
H2	220
H3	160
H4	140

Based on the above specifications, answer the following questions :

(i) Suggest the topology and draw the most suitable cable layout for connecting all the divisions.

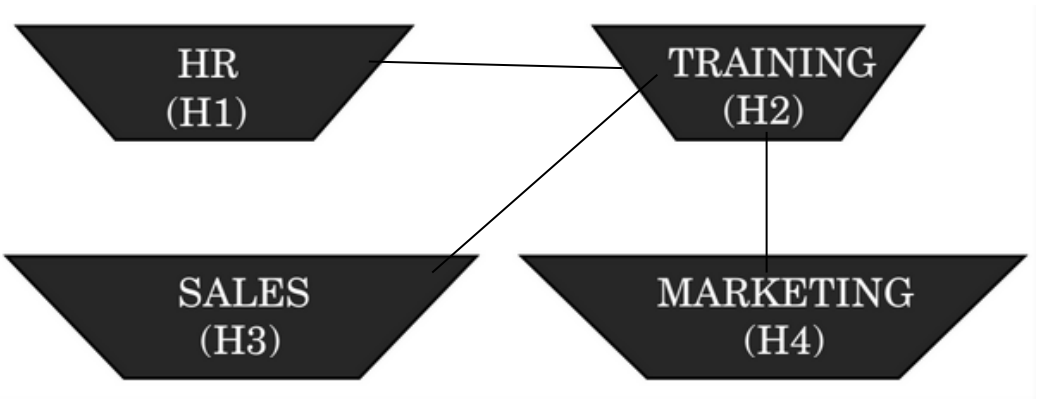
(ii) Classpoint Pvt. Ltd. plans to establish a new office in Dubai. Out of LAN, MAN and WAN, what kind of network will be created to connect Pune office with Dubai office ?

(iii) Suggest the division for the placement of server in Pune office. Explain the reason for your selection.

(iv) Suggest the placement of switch/hub with justification.

(v) Ms. Abhilasha, working in Dubai office, is creating a software for conducting program for the employees of Pune branch. Which protocol would help her in voice transmission over a computer network ?

Ans (i) **STAR TOPOLOGY**



(½ Mark for writing topology and ½ mark for cable layout)

(ii) WAN

(1 Mark for correct Answer)

(iii) Server should be placed in H2 division as it has the maximum number of computers.

(½ Mark for the correct placement of Server and ½ mark for correct reason)

(iv) Switch/hub should be placed in all blocks as it is used to connect computers within each building.

(½ Mark for correct placement of Switch/ Hub and ½ mark for justification)

(v) VOIP/Voice over Internet Protocol

(1 Mark for correct Answer)

35. (a) Akriti keeps the calorie count of different food items as follows : 5

```
Food=['Apple','Banana','Rice','Wheat','Carrot']
Calorie=[72,105,204,455,52]
```

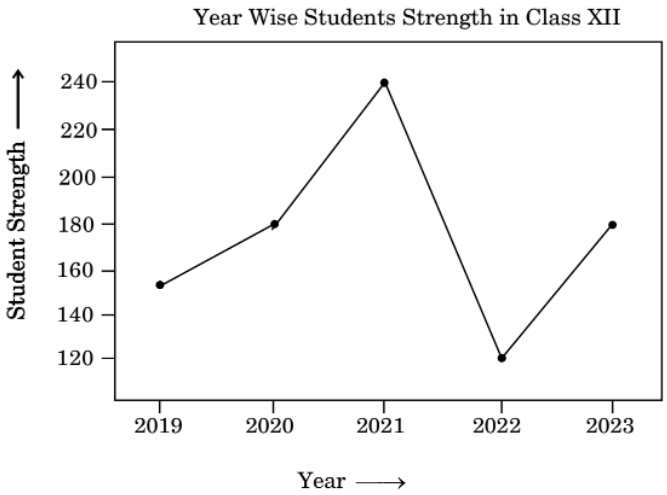
Write a Python code to generate a Bar Chart on the given data, having suitable Chart Title and labels for X and Y axis. Also add suitable statement to save this chart with the name **calorie.png.**

OR

(b) Consider the following data : 5

Year	Student Strength
2019	150
2020	180
2021	240
2022	120
2023	180

Write a Python code to draw the following line chart having title and labels for x and y axis as shown below :



Also give suitable Python statement to save this chart with name, **stud.png**.

Ans (a)

```
import matplotlib.pyplot as plt
Food=['Apple','Banana','Rice','Wheat','Carrot']
Calorie=[72,105,204,455,52]
plt.bar(Food, Calorie)
plt.title("Calorie count of different food items")
plt.xlabel("Food")
plt.ylabel("Calorie")
plt.savefig("calorie.png")
plt.show()
```

(1 Mark for `plt.bar(Food, Calorie)` *and ½ mark each for rest of the Python statements)*

OR

(b)

```
import matplotlib.pyplot as plt
Year=['2019', '2020', '2021', '2022', '2023']
Strength=[150, 180, 240, 120, 180]
plt.plot(Year, Strength)
plt.title("Year Wise Students Strength in Class XII")
plt.xlabel("Year")
plt.ylabel("Student Strength")
plt.savefig("stud.png")
plt.show()
```

(1 Mark for `plt.plot(Year, Strength)` *and ½ mark each for rest of the Python statements)*