

CBSE AISSE 2023 Marking Scheme for Informatics Practices

Series Σ HEFG

(Sub Code: 065 Paper Code 90)

SET-4

Marking Scheme Strictly Confidential (For Internal and Restricted use only) Senior School Certificate Examination, 2023 SUBJECT NAME INFORMATICS PRACTICES (SUBJECT CODE 65) (PAPER CODE 90) (Series: ΣHEFG)	
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 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.

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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).
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 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.

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.

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General Instructions:

- (i) This question paper contains five Parts, Part A to E.
- (ii) All questions are compulsory.
- (iii) Part A has 18 questions carrying 1 mark each.
- (iv) Part B has 7 Very Short Answer type questions carrying 2 marks each.
- (v) Part C has 5 Short Answer type questions carrying 3 marks each.
- (vi) Part D has 3 Long Answer type questions carrying 5 marks each.
- (vii) Part E has 2 questions carrying 4 marks each. One internal choice is given in Q. 35 against Part E only.
- (viii) All programming questions are to be answered using python language only.

Part - A			
1		Which of the following topologies is very efficient and all nodes are connected to a central hub? (i) Star (ii) Tree (iii) Bus (iv) Ring	1
	Ans	(i) Star	
		(1 Mark for correct answer)	
2		Ramandeep is a young woman with great aspirations and has a good team of like-minded people. She along with her team members started a company to sell handicrafts online and also designed a logo for their company. What type of intellectual property does this logo represent? (i) Patents (ii) Copyright (iii) Design (iv) Trademark	1
	Ans	(ii) Copyright OR (iv) Trademark	
		(1 Mark for correct answer)	
3		Which of the following is a type of cybercrime where objectionable and demeaning comments are posted on social media platform about a person, such that he/she is mentally harassed ? (i) Phishing (ii) Hacking (iii) Cyber bullying (iv) Identity Theft	1
	Ans	(iii) Cyber bullying	
		(1 Mark for correct answer)	
4		Which of the following is the correct output of the following SQL command? SELECT ROUND (7876.4568, 2) ; (i) 7876.46 (ii) 7876.45 (iii) 7900 (iv) 7900.4568	1
	Ans	(i) 7876.46	
		(1 Mark for correct answer)	

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5		Aggregate functions are also known as: (i) Scalar Functions (ii) Single Row Functions (iii) Multiple Row Functions (iv) Hybrid Functions	1
	Ans	(iii) Multiple Row Functions	
		(1 Mark for correct answer)	
6		Primary law in India for matters related to e-commerce and cyber crime is : (i) IT Act 1995 (ii) IT Act 2000 (iii) IT Act 1998 (iv) IT Act 2010	1
	Ans	(ii) IT Act 2000	
		(1 Mark for correct answer)	
7.		Ravisha has stored the records of all students of her class in a MYSQL table. Suggest a suitable SQL clause that she should use to display the names of students in alphabetical order. (i) SORT BY (ii) ALIGN BY (iii) GROUP BY (iv) ORDER BY	1
	Ans	(iv) ORDER BY	
		(1 Mark for correct answer)	
8		To remove the leading and trailing space from data values in a column of MySql Table, we use (i) Left() (ii) Right() (iii) Trim() (iv) Ltrim()	1
	Ans	(iii) Trim ()	
		(1 Mark for correct answer)	
9		If the substring is not present in a string, the INSTR() returns: (i) - 1 (ii) 1 (iii) NULL (iv) 0	1
	Ans	(iv) 0	
		(1 Mark for correct answer)	
10		What will be the output of the following code ? <pre>import pandas as pd myser = pd.Series([0, 0,0]) print(myser)</pre> (i) 0 0 0 0 0 0 (ii) 0 1 0 1 0 2 (iii) 0 0 1 0 2 0 (iv) 0 0 1 1 2 2	1

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	Ans	(iii) 0 0 1 0 2 0	
		(1 Mark for correct answer)	
11		Which of the following is a two-dimensional labelled data structure of Python ? (i) Relation (ii) Dataframe (iii) Series (iv) Square	1
	Ans	(ii) Dataframe	
		(1 Mark for correct answer)	
12		To compare data values of commission earned by salesmen over a year, which of the following type of graph should preferably be used ? (i) line (ii) area (iii) bar (iv) scatter	1
	Ans	(i) line OR (iii) bar OR (iv) scatter	
		(1 Mark for correct answer)	
13		Which of the following is not a web browser ? (i) Opera (ii) Google Chrome (iii) Linux (iv) Mozilla Firefox	1
	Ans	(iii) Linux	
		(1 Mark for correct answer)	
14		Which of the following is not a valid aggregate function in MYSQL ? (i) COUNT () (ii) SUM () (iii) MAX () (iv) LEN ()	1
	Ans	(iv) LEN ()	
		(1 Mark for correct answer)	
15		The digital footprint that we leave online unintentionally is called (i) Active digital footprint (ii) Passive digital footprint (iii) True digital footprint (iv) False digital footprint	1
	Ans	(ii) Passive digital footprint	
		(1 Mark for correct answer)	

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16		E-waste is responsible for the degradation of our environment if not properly treated or disposed of. Some of the feasible methods of e-waste management are reduce,___and recycle. <table><tr><td>(i)</td><td>reuse</td><td>(ii)</td><td>recheck</td></tr><tr><td>(iii)</td><td>resubmit</td><td>(iv)</td><td>regular</td></tr></table>	(i)	reuse	(ii)	recheck	(iii)	resubmit	(iv)	regular	1
(i)	reuse	(ii)	recheck								
(iii)	resubmit	(iv)	regular								
	Ans	(i) reuse									
		(1 Mark for correct answer)									
		Q. 17 and 18 are ASSERTION (A) and REASONING (R) based questions. Mark the correct choice as (i) Both (A) and (R) are true and (R) is the correct explanation for (A). (ii) Both (A) and (R) are true and (R) is not the correct explanation for (A). (iii) (A) is true and (R) is false. (iv) (A) is false but (R) is true.									
17		Assertion (A) : A static webpage does not change for each person visiting the web page. Reason (R) : When a web server receives a request for a dynamic web page, it locates and updates the page and sends it to the browser of the client.	1								
	Ans	(ii) Both (A) and (R) are true but (R) is not the correct explanation for (A).									
		(1 Mark for correct answer)									
18		Assertion (A) : The output of addition of two series will be NaN, if one of the elements or both the elements have no value(s). Reason (R) : While performing mathematical operations on a series, by default all missing values are filled in with 0.									
	Ans	(iii) (A) is true but (R) is false.									
		(1 Mark for correct answer)									
		PART - B									
19		What is a web server ? How is it different from web browser ?	2								
	Ans	A web server is used to store and deliver the contents to clients that request it. <table><tr><td>Web Browser</td><td>Web Server</td></tr><tr><td>A web browser sends requests to the server for content.</td><td>Web server receives requests from the web browser and sends the requested content in response.</td></tr></table> OR Any other equivalent correct difference	Web Browser	Web Server	A web browser sends requests to the server for content.	Web server receives requests from the web browser and sends the requested content in response.					
Web Browser	Web Server										
A web browser sends requests to the server for content.	Web server receives requests from the web browser and sends the requested content in response.										
		(1 Mark for writing correct definition of web server) (1 Mark for writing correct difference) NOTE : Full 2 marks to be awarded if definition of web server is not written separately BUT is reflected in the difference.									
		OR What do you understand by the term cookies ? Give any two benefits of cookies.	2								

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	Ans	A cookie is a small piece of data that is transferred to the user's computer along with the content requested by the user. Benefits (Any two) A. To analyze how the user is using the website B. To enhance the website's usability. C. To help the website recognize the user's computer activity (website's login ids, shopping carts, surfing activity) D. To customize the website's experience for a user																	
		<i>(1 Mark for writing correct definition of cookie)</i> <i>(½ Mark for each correct benefit)</i> NOTE: Full 2 marks to be awarded if definition and benefits are explained with the help of an example.																	
20		Keshav has written the following query to find out the sum of bonus earned by the employees of WEST zone : SELECT zone, TOTAL (bonus) FROM employee HAVING zone = 'WEST' ; But he got an error. Identify the errors and rewrite the query by underlining the correction(s) done.	2																
	Ans	SELECT zone, <u>SUM</u>(bonus) FROM employee <u>WHERE</u> Zone = 'WEST' ; OR SELECT <u>SUM</u>(bonus) FROM employee <u>WHERE</u> Zone = 'WEST' ; OR SELECT zone, <u>SUM</u>(bonus) FROM employee <u>GROUP BY zone HAVING</u> Zone = 'WEST' ;																	
		<i>(1 Mark each for both the corrections)</i> Note: No marks to be deducted if correct query is written but underlining is not done																	
21		Differentiate between COUNT () and COUNT (*) functions in MYSQL. Give suitable examples to support your answer.	2																
	Ans	<table><tr><td>COUNT (Column_Name)</td><td>COUNT (*)</td></tr><tr><td>It returns the number of non-null values in the column used in COUNT()</td><td>It returns the number of rows in the table</td></tr></table> Example: SALES <table><tr><td>SCode</td><td>SName</td><td>Commission</td></tr><tr><td>S001</td><td>Amit</td><td>2500</td></tr><tr><td>S002</td><td>Jones</td><td></td></tr><tr><td>S003</td><td>Ahmed</td><td>2600</td></tr></table>	COUNT (Column_Name)	COUNT (*)	It returns the number of non-null values in the column used in COUNT()	It returns the number of rows in the table	SCode	SName	Commission	S001	Amit	2500	S002	Jones		S003	Ahmed	2600	
COUNT (Column_Name)	COUNT (*)																		
It returns the number of non-null values in the column used in COUNT()	It returns the number of rows in the table																		
SCode	SName	Commission																	
S001	Amit	2500																	
S002	Jones																		
S003	Ahmed	2600																	

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		<code>SELECT COUNT(Commission) FROM Sales;</code> will return 2 <code>SELECT COUNT(*) FROM Sales;</code> will return 3	
		<i>(1 Mark for stating correct difference)</i> <i>(1 Mark for writing any one example explaining the difference)</i> NOTE: • Full 2 marks to be awarded if the difference is explained with the help of an example. • 1 mark to be awarded if COUNT() is mentioned as an error.	
22		Write a Python program to create a series object, country using a list that stores the capital of each country. Note: Assume four countries to be used as index of the series object are India, UK, Denmark, and Thailand having their capitals as New Delhi, London, Copenhagen, and Bangkok respectively.	2
	Ans	<pre>capital = ['New Delhi', 'London', 'Copenhagen', 'Bangkok'] country = pd.Series(capital, index = ['India', 'UK', 'Denmark', 'Thailand'])</pre> OR <pre>import pandas as pd capital = ['New Delhi', 'London', 'Copenhagen', 'Bangkok'] c = ['India', 'UK', 'Denmark', 'Thailand'] country = pd.Series(capital, index = c)</pre>	
		<i>(½ Mark for defining list of capitals)</i> <i>(½ Mark for pd.Series)</i> <i>(1 Mark for assigning the index values)</i> NOTE: import pandas as pd and print(country) to be ignored as part of answer	
23		Explain plagiarism with an example.	2
	Ans	Plagiarism refers to using someone else's work/ideas without giving them credit. Example : A student copies a poem written by his friend and submits it as his own for the School magazine.	
		<i>(1 Mark for definition)</i> <i>(1 Mark for any valid example)</i> OR <i>(Full 2 Marks for explanation through any valid example)</i>	
		OR Nowadays all of us frequently use social media to connect with our friends. Give any two netiquettes that we should follow while communicating on social media.	
	Ans	We should • not post embarrassing or incriminating contents(photos/videos) on social-media sites. • not bully anyone online. • not post either our's or someone else's private information online. • verify the source as credible before forwarding or posting something.	

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		Use proper language and avoid casual abbreviations (lol, ttyl, brb) that could be misunderstood or misinterpreted.	
		<i>(1 Mark each for ANY two valid netiquettes)</i>	
24		What will be the output of the following code: <pre>import pandas as pd s1=pd.Series(data=2*(3,10)) print(s1)</pre>	2
	Ans	<pre>0 3 1 10 2 3 3 10</pre>	
		NOTE: Full 2 marks to be awarded for attempting the question/mentioning error in question/out of curriculum	
25		Carefully observe the following code: <pre>import pandas as pd dic={'pid': [101, 102, 103, 104, 105], 'pname': ['Shyam', 'Roushan', 'Archit', 'Medha', 'Lalit'], 'sports': ['Cricket', 'Tennis', 'Football', 'Cricket', 'Cricket'], 'points': [45000, 20000, 15000, 53000, 60000]} player=pd.DataFrame (dic) print (player)</pre> Write Python statements for the following:	2
	(i)	In the dataframe player created above, set the row labels as 'Player1', 'Player2', 'Player3', 'Player4', 'Player5'.	
	Ans	<pre>player=pd.DataFrame (dic,index=['Player1','Player2','Player3','Player4','Player5'])</pre> OR <pre>I=['Player1','Player2','Player3','Player4','Player5'] player=pd.DataFrame (dic,index=I)</pre>	
		<i>(½ Mark for creating DataFrame)</i> <i>(½ Mark for index)</i>	
	(ii)	Rename the column 'points' to 'netpoint' in the DataFrame player.	
	Ans	<pre>player=player.rename({'points':'netpoints'},axis='columns')</pre> OR <pre>player.rename({'points':'netpoints'},axis='columns',inplace=True)</pre> OR <pre>player=player.rename({'points':'netpoints'},axis=1)</pre> OR <pre>player=player.rename(columns={'points':'netpoints'})</pre> OR <pre>player.rename({'points':'netpoints'},axis=1,inplace=True)</pre>	

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		OR player.rename(columns={'points': 'netpoints'}, inplace=True)																																					
		(1 Mark for any correct Python statement)																																					
		SECTION - C																																					
26		Consider the table Patient given below and write SQL commands. Table: Patient <table><tr><th>Patientid</th><th>Name</th><th>City</th><th>Phone</th><th>Dateofadm</th><th>Department</th></tr><tr><td>1000001</td><td>Ritvik Garg</td><td>Delhi</td><td>68476213</td><td>2021-12-10</td><td>Surgery</td></tr><tr><td>1000002</td><td>Rahil Arora</td><td>Mumbai</td><td>36546321</td><td>2022-01-08</td><td>Medicine</td></tr><tr><td>1000003</td><td>Mehak Bhatt</td><td>Delhi</td><td>68421879</td><td>2022-02-02</td><td>Cardiology</td></tr><tr><td>1000004</td><td>Soumik Rao</td><td>Delhi</td><td>26543266</td><td>2022-01-11</td><td>Medicine</td></tr><tr><td>1000005</td><td>Suresh Sood</td><td>Bangalore</td><td>65432442</td><td>2021-03-09</td><td>Surgery</td></tr></table>	Patientid	Name	City	Phone	Dateofadm	Department	1000001	Ritvik Garg	Delhi	68476213	2021-12-10	Surgery	1000002	Rahil Arora	Mumbai	36546321	2022-01-08	Medicine	1000003	Mehak Bhatt	Delhi	68421879	2022-02-02	Cardiology	1000004	Soumik Rao	Delhi	26543266	2022-01-11	Medicine	1000005	Suresh Sood	Bangalore	65432442	2021-03-09	Surgery	3
Patientid	Name	City	Phone	Dateofadm	Department																																		
1000001	Ritvik Garg	Delhi	68476213	2021-12-10	Surgery																																		
1000002	Rahil Arora	Mumbai	36546321	2022-01-08	Medicine																																		
1000003	Mehak Bhatt	Delhi	68421879	2022-02-02	Cardiology																																		
1000004	Soumik Rao	Delhi	26543266	2022-01-11	Medicine																																		
1000005	Suresh Sood	Bangalore	65432442	2021-03-09	Surgery																																		
	(i)	Display the details of all patients who were admitted in January.																																					
	Ans	SELECT * FROM Patient WHERE MONTHNAME(Dateofadm)="January";																																					
		(½ Mark for correctly using SELECT ... FROM) (½ Mark for correctly using WHERE ... clause)																																					
	(ii)	Count the total number of patients from Delhi.																																					
	Ans	SELECT city, count(city) FROM Patient WHERE City='Delhi'; OR SELECT count(city) FROM Patient WHERE City='Delhi'; OR SELECT count(*) FROM Patient WHERE City='Delhi'; OR SELECT count(3) FROM Patient WHERE City='Delhi'; OR Any other which gives the same result.																																					
		(½ Mark for correctly using SELECT ... FROM) (½ Mark for correctly using WHERE ... clause)																																					
	(iii)	Display the last 2 digits of the Patientid of all patients from Surgery Department.																																					
	Ans	SELECT RIGHT(Patientid,2) FROM Patient; OR SELECT SUBSTR(Patientid,length(Patientid)-1,2) FROM Patient;																																					
		(½ Mark for correctly using SELECT ... FROM) (½ Mark for correctly extracting 2 digits of Patientid)																																					
27		Kavyanjali, a chemical analyst, needs to arrange data of few elements in the form of two series containing symbols and their atomic numbers respectively. Thereafter, the data of these two series has to be arranged and displayed in the form of Data Frame as shown below <table><tr><td></td><td>Symbol</td><td>Atomic Number</td></tr><tr><td>Hydrogen</td><td>H</td><td>1</td></tr><tr><td>Helium</td><td>He</td><td>2</td></tr><tr><td>Lithium</td><td>Li</td><td>3</td></tr><tr><td>Beryllium</td><td>Be</td><td>4</td></tr></table> Help her in writing suitable Python code to complete the task.		Symbol	Atomic Number	Hydrogen	H	1	Helium	He	2	Lithium	Li	3	Beryllium	Be	4	3																					
	Symbol	Atomic Number																																					
Hydrogen	H	1																																					
Helium	He	2																																					
Lithium	Li	3																																					
Beryllium	Be	4																																					

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	Ans	<pre>import pandas as pd I=['Hydrogen','Helium','Lithium','Beryllium'] D1=['H','He','Li','Be'] D2=[1,2,3,4] S1=pd.Series(D1,I) print("First Series: ") print(S1) S2=pd.Series(D2,I) print("Second Series: ") print(S2) D = {'Symbol': S1,'Atomic Number': S2} DF=pd.DataFrame(D) print("DataFrame:") print(DF) OR import pandas as pd D={'Symbol':['H','He','Li','Be'],'Atomic Number':[1,2,3,4]} DF=pd.DataFrame(d,index=['Hydrogen','Helium','Lithium','Berillium']) print(DF)</pre>	
		(½ Mark for correctly interpreting 'Hydrogen','Helium','Lithium','Beryllium') (½ Mark for correctly interpreting ['H','He','Li','Be'] & [1,2,3,4]) (½ Mark for correctly interpreting Symbols as implicit/explicit series) (½ Mark for correctly interpreting Atomic Numbers as implicit/explicit series) (½ Mark for correctly creating DataFrame) (½ Mark for displaying all/some content using print)	
28		Consider the given DataFrame 'health'. <pre> Diseasename Agent 0 Common cold Virus 1 Chickenpox Virus 2 Cholera Bacteria 3 Tuberculosis Bacteria </pre> Write suitable Python statements for the following:	3
	(i)	Remove the row containing details of disease named Tuberculosis.	
	Ans	<pre>I = DF[DF['Diseasename'] == 'Tuberculosis'].index DF.drop(I, inplace = True) OR DF.drop('Tuberculosis',axis=0) OR DF=DF[(DF.diseasename!='Tuberculosis')]</pre>	
		(1 Mark for mentioning DF.drop() OR DF.drop(3)) <i>Note: Conditional deletion is not in curriculum</i>	
	(ii)	Add a new disease named 'Malaria' caused by 'Protozoa'	
	Ans	<pre>DF.loc[4]=['Malaria','Protozoa'] OR DF.loc[4,:] = ['Malaria','Protozoa'] OR DF = DF.append({'Diseasename':'Malaria','Agent':'Protozoa'}, ignore_index=True)</pre>	

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		(½ Mark for mentioning/identifying proper location) (½ Mark for mentioning 'Malaria' , 'Protozoa' correctly) OR (1 Mark for the last option of the answer)	
	(iii)	Display the last 2 rows.	
	Ans	<code>print(DF.iloc[3:5])</code> OR <code>print(DF.tail(2))</code> OR <code>print(DF.iloc[-2::])</code>	
		(½ Mark for using iloc/tail) (½ Mark for correct index)	
29		Manohar received an email from a company, named Makemoney Pvt. Ltd., claiming that Manohar has won ₹ 20 lakhs in a survey done online. In order to claim the prize money, he was required to answer few security questions such as his Name, Account number, PAN card details, Phone number and OTP for verification purposes. For this, he had to click on the link provided in the email. Answer the following questions:	3
	(i)	Should Manohar give the required details to the company?	
	Ans	No	
		(1 Mark for correct answer)	
	(ii)	What is the activity depicted above?	
	Ans	Phishing	
		(1 Mark for correct answer)	
		Note: • Cyber Crime should also be accepted as the correct answer.	
	(iii)	What should he do with this email?	
	Ans	Delete OR Ignore It OR Block OR Report OR Any other appropriate action	
		(1 Mark for any of the above answer)	
		OR	
		What do you understand by the term Hacking? Write any two measures that one should take to avoid being the victim of hacking.	3
	Ans	It is the unauthorized access to a computer/computer network. OR Any other equivalent correct definition ----- • Logging out from account after finishing work • Using incognito/private window while using public computer • Not sharing password with anyone OR	

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		Any other appropriate measure																													
		(1 Mark for correctly defining Hacking) (1 Mark for correctly mentioning each measure)																													
30		Write the output (i-iii) for the following SQL commands. Table: FASHION	3																												
		<table border="1"> <thead> <tr> <th>ID</th><th>Product</th><th>Price</th><th>Qty</th></tr> </thead> <tbody> <tr> <td>F01</td><td>Kajal</td><td>970</td><td>10</td></tr> <tr> <td>F02</td><td>Foundation</td><td>2100</td><td>15</td></tr> <tr> <td>F03</td><td>Night Cream</td><td>1700</td><td>20</td></tr> <tr> <td>F04</td><td>Day Cream</td><td>1400</td><td>10</td></tr> <tr> <td>F05</td><td>Shampoo</td><td>1200</td><td>25</td></tr> <tr> <td>F06</td><td>Lipstick</td><td>850</td><td>32</td></tr> </tbody> </table>	ID	Product	Price	Qty	F01	Kajal	970	10	F02	Foundation	2100	15	F03	Night Cream	1700	20	F04	Day Cream	1400	10	F05	Shampoo	1200	25	F06	Lipstick	850	32	
ID	Product	Price	Qty																												
F01	Kajal	970	10																												
F02	Foundation	2100	15																												
F03	Night Cream	1700	20																												
F04	Day Cream	1400	10																												
F05	Shampoo	1200	25																												
F06	Lipstick	850	32																												
	(i)	SELECT COUNT(Product) FROM FASHION;																													
	Ans	6																													
		(1 Mark for correct answer)																													
	(ii)	SELECT SUM (Price*Qty) FROM FASHION WHERE Product="Night Cream";																													
	Ans	34000																													
		(1 Mark for correct answer)																													
	(iii)	SELECT LEFT (Product, 4) FROM FASHION WHERE Price>1500;																													
	Ans	Foun Nigh																													
		(½ Mark for first line of correct answer) (½ Mark for second line of correct answer)																													
		OR																													
		Find the output of the following SQL queries :																													
	(i)	SELECT SUBSTR ("CLIMATE CHANGE" , 4 , 4) ;																													
	Ans	MATE																													
		(1 Mark for correct answer)																													
	(ii)	SELECT UCASE (RIGHT ("Pollution" , 3)) ;																													
	Ans	ION																													
		(1 Mark for correct answer)																													
	(iii)	SELECT LENGTH ("HAPPY") +3 ;																													
	Ans	8																													
		(1 Mark for correct answer)																													
		SECTION - D																													
31		Write the SQL queries which will perform the following operations:	5																												
	(i)	To display the year from your Date of Admission which is '2023-05-15'.																													
	Ans	SELECT YEAR ('2023-05-15') ; OR SELECT YEAR(DOA) FROM XYZ ; (Any column name for Date of admission and any table name to be accepted)																													
		(½ Mark for SELECT) (½ Mark for correct use of YEAR)																													
	(ii)	To convert your email id 'ABC@XYZ.com' to lowercase.																													

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	Ans	SELECT LOWER('ABC@XYZ.com'); OR SELECT LCASE('ABC@XYZ.com');																																								
		(1/2 Mark for SELECT) (1/2 Mark for correct use of LOWER/LCASE)																																								
	(iii)	To remove leading spaces from a string ' my country'.																																								
	Ans	SELECT LTRIM(' my country'); OR SELECT TRIM(' my country');																																								
		(1/2 Mark for SELECT) (1/2 Mark for correct use of LTRIM/TRIM)																																								
	(iv)	To display current date.																																								
	Ans	SELECT CURDATE(); OR SELECT SYSDATE(); OR SELECT CURRENT_DATE(); OR SELECT CURRENT_TIMESTAMP();		OR SELECT NOW(); OR SELECT DATE(NOW()); OR SELECT LOCALTIME(); OR SELECT LOCALTIMESTAMP();																																						
		(1/2 Mark for SELECT) (1/2 Mark for correct use of any of the above mentioned DATE functions)																																								
	(v)	To display the value of 10 ⁶																																								
	Ans	SELECT POWER(10,6); OR SELECT POW(10,6)																																								
		(1/2 Mark for SELECT) (1/2 Mark for correct use of POWER/POW function)																																								
		OR																																								
		Consider a table PRODUCT with the following data: Table: PRODUCT				5																																				
		<table><tr><th>SNO</th><th>Itemname</th><th>Company</th><th>Stockdate</th><th>Price</th><th>Discount</th></tr><tr><td>1</td><td>Monitor</td><td>HP</td><td>2021-12-20</td><td>15499.739</td><td>15</td></tr><tr><td>2</td><td>Webcam</td><td>Logitech</td><td>2020-02-03</td><td>4890.90</td><td>5</td></tr><tr><td>3</td><td>Keyboard</td><td>Logitech</td><td>2022-08-19</td><td>1878.985</td><td>30</td></tr><tr><td>4</td><td>Mouse</td><td>HCL</td><td>2021-05-16</td><td>1200.00</td><td>7</td></tr><tr><td>5</td><td>Speakers</td><td>iBall</td><td>2021-10-19</td><td>NULL</td><td>25</td></tr></table>				SNO	Itemname	Company	Stockdate	Price	Discount	1	Monitor	HP	2021-12-20	15499.739	15	2	Webcam	Logitech	2020-02-03	4890.90	5	3	Keyboard	Logitech	2022-08-19	1878.985	30	4	Mouse	HCL	2021-05-16	1200.00	7	5	Speakers	iBall	2021-10-19	NULL	25	
SNO	Itemname	Company	Stockdate	Price	Discount																																					
1	Monitor	HP	2021-12-20	15499.739	15																																					
2	Webcam	Logitech	2020-02-03	4890.90	5																																					
3	Keyboard	Logitech	2022-08-19	1878.985	30																																					
4	Mouse	HCL	2021-05-16	1200.00	7																																					
5	Speakers	iBall	2021-10-19	NULL	25																																					
		Write SQL queries using SQL functions to perform the following operations :																																								
	(i)	Display the first 3 characters of all Itemnames.																																								
	Ans	SELECT LEFT(ITEMNAME,3) FROM PRODUCT; OR SELECT MID(ITEMNAME,1,3) FROM PRODUCT; OR SELECT SUBSTR(ITEMNAME,1,3) FROM PRODUCT; OR SELECT SUBSTRING(ITEMNAME,1,3) FROM PRODUCT;																																								

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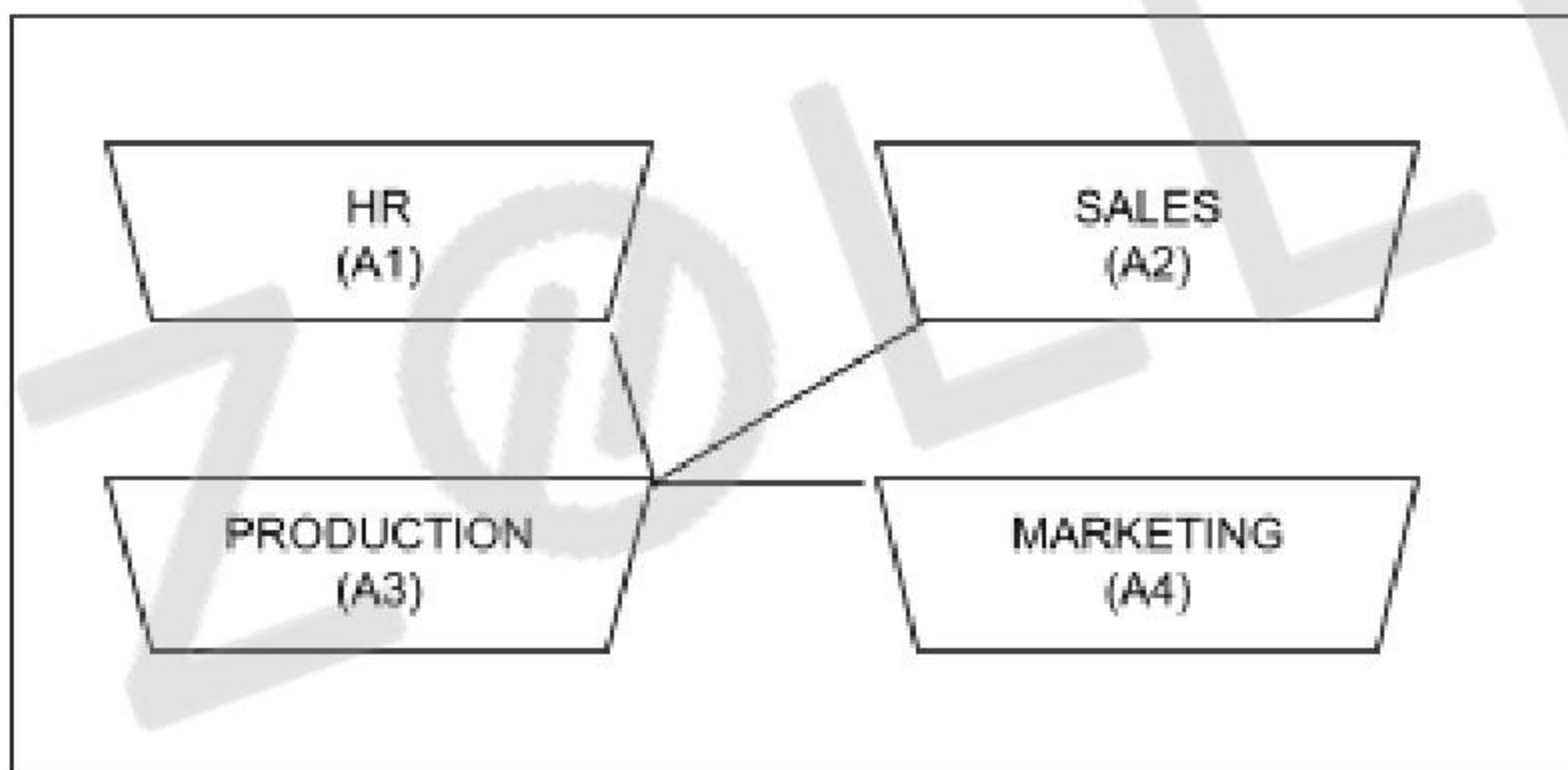
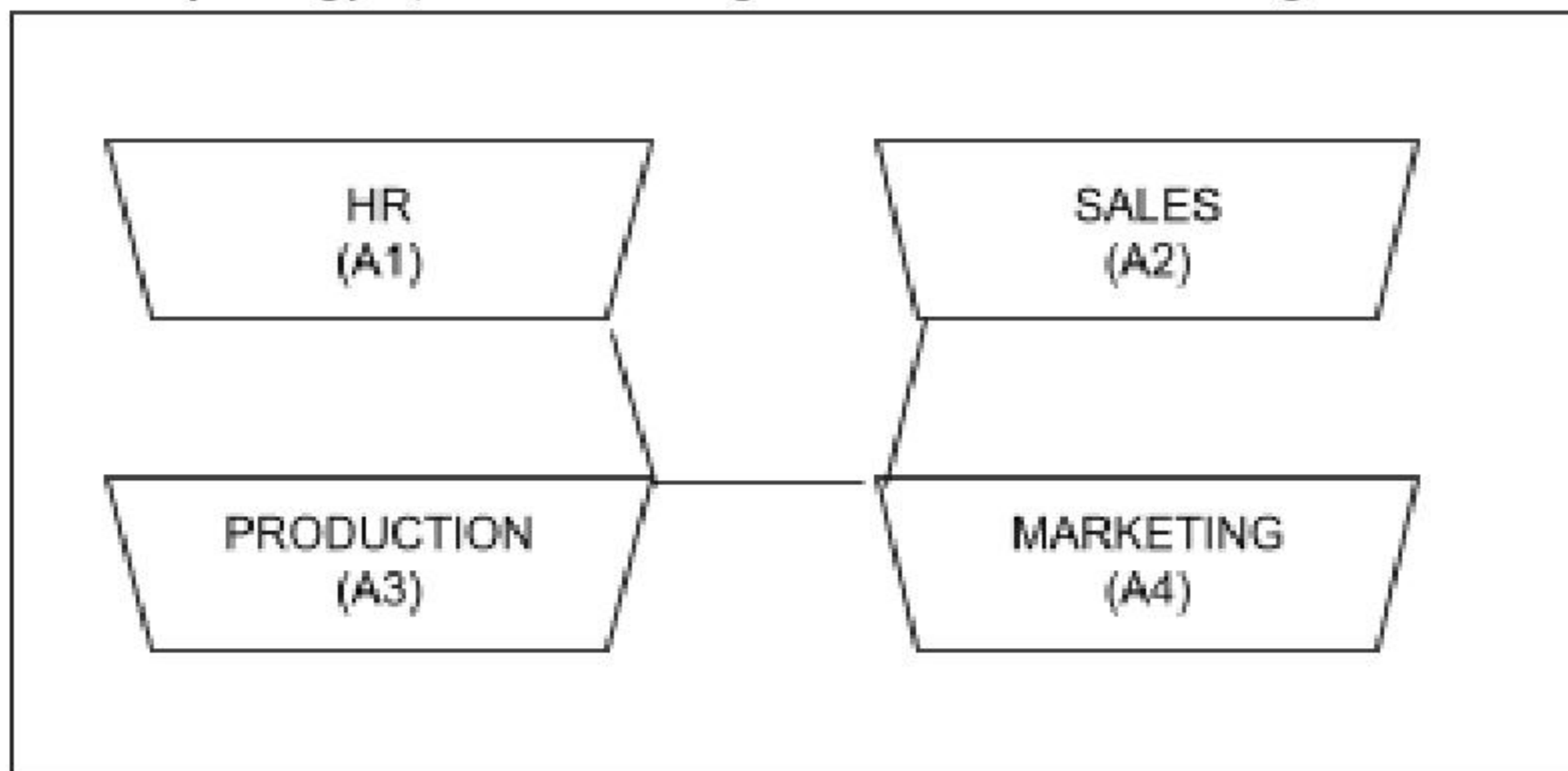
		(½ Mark for SELECT . . FROM PRODUCT) (½ Mark for correct use of LEFT/MID/SUBSTR/SUBSTRING function)			
	(ii)	Display the names of all items whose Stockday is "Monday"			
	Ans	SELECT ITEMNAME FROM PRODUCT WHERE DAYNAME (STOCKDATE) = 'MONDAY' ; OR SELECT ITEMNAME FROM PRODUCT WHERE DAYOFWEEK (STOCKDATE) =2 ;			
		(½ Mark for SELECT ITEMNAME FROM PRODUCT) (½ Mark for correct use of WHERE condition) Note: 1. Full 1 Mark to be awarded, if “Stockday” is considered as a column name. SELECT ITEMNAME FROM PRODUCT WHERE STOCKDAY= 'MONDAY' ; 2. Full 1 Mark to be awarded, if "No column with the name Stockday" is mentioned.			
	(iii)	Display the total price of all the products.			
	Ans	SELECT SUM (PRICE) FROM PRODUCT ;			
		(½ Mark for SELECT . . FROM PRODUCT) (½ Mark for correct use of SUM function)			
	(iv)	Display the maximum Price.			
	Ans	SELECT MAX (PRICE) FROM PRODUCT ;			
		(½ Mark for SELECT . . FROM PRODUCT) (½ Mark for correct use of MAX function)			
	(v)	Display the average Price of all the products by the company named 'Logitech'			
	Ans	SELECT AVG (PRICE) FROM PRODUCT WHERE COMPANY= 'Logitech' ;			
		(½ Mark for SELECT AVG (PRICE) FROM PRODUCT) (½ Mark for correct use of WHERE with appropriate condition)			
32		XEED Private Ltd., Delhi is a company that deals with educational toys. They have different divisions HR(A1), Sales(A2), Production(A3) and Marketing(A4). The layout of the Delhi branch is:	5		
		XEED Private Ltd. Delhi Branch HR (A1) SALES (A2) PRODUCTION (A3) MARKETING (A4) BANGALORE BRANCH			
		The company also has a branch in Bangalore. The management wants to connect all the divisions as well as all the computers of each division (A1,A2, A3, A4). Distance between the wings are as follows:			
		<table><tr><td>A3 to A1</td><td>25 m</td></tr></table>	A3 to A1	25 m	
A3 to A1	25 m				

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		<table><tr><td>A1 to A2</td><td>40 m</td></tr><tr><td>A2 to A4</td><td>25 m</td></tr><tr><td>A4 to A3</td><td>20 m</td></tr><tr><td>A3 to A2</td><td>30 m</td></tr><tr><td>A1 to A4</td><td>170 m</td></tr><tr><td>Delhi Head Office to Bangalore Office</td><td>2154 km</td></tr></table>	A1 to A2	40 m	A2 to A4	25 m	A4 to A3	20 m	A3 to A2	30 m	A1 to A4	170 m	Delhi Head Office to Bangalore Office	2154 km	
A1 to A2	40 m														
A2 to A4	25 m														
A4 to A3	20 m														
A3 to A2	30 m														
A1 to A4	170 m														
Delhi Head Office to Bangalore Office	2154 km														
		Number of computers in each of the wing: <table><tr><td>A1</td><td>50</td></tr><tr><td>A2</td><td>40</td></tr><tr><td>A3</td><td>110</td></tr><tr><td>A4</td><td>60</td></tr></table> Based on the above specifications, answer the following questions:	A1	50	A2	40	A3	110	A4	60					
A1	50														
A2	40														
A3	110														
A4	60														
	(i)	Suggest the topology and draw the most suitable cable layout for connecting all the divisions of Delhi branch.													
	Ans	Star topology (Connecting from the building with max. number of computers)  Bus Topology (considering minimum building to building distance) 													
		(½ mark for correct topology) (½ mark for correct layout)													
	(ii)	Suggest the kind of network required (out of LAN, MAN, WAN) for connecting Production (A3) with the Bangalore branch.													
	Ans	WAN													
		(1 mark for correct answer)													
	(iii)	Which device can be used to connect the network of Delhi branch to the internet? This device should be able to receive data, analyse it and then transmit it to the network.													
	Ans	Router													

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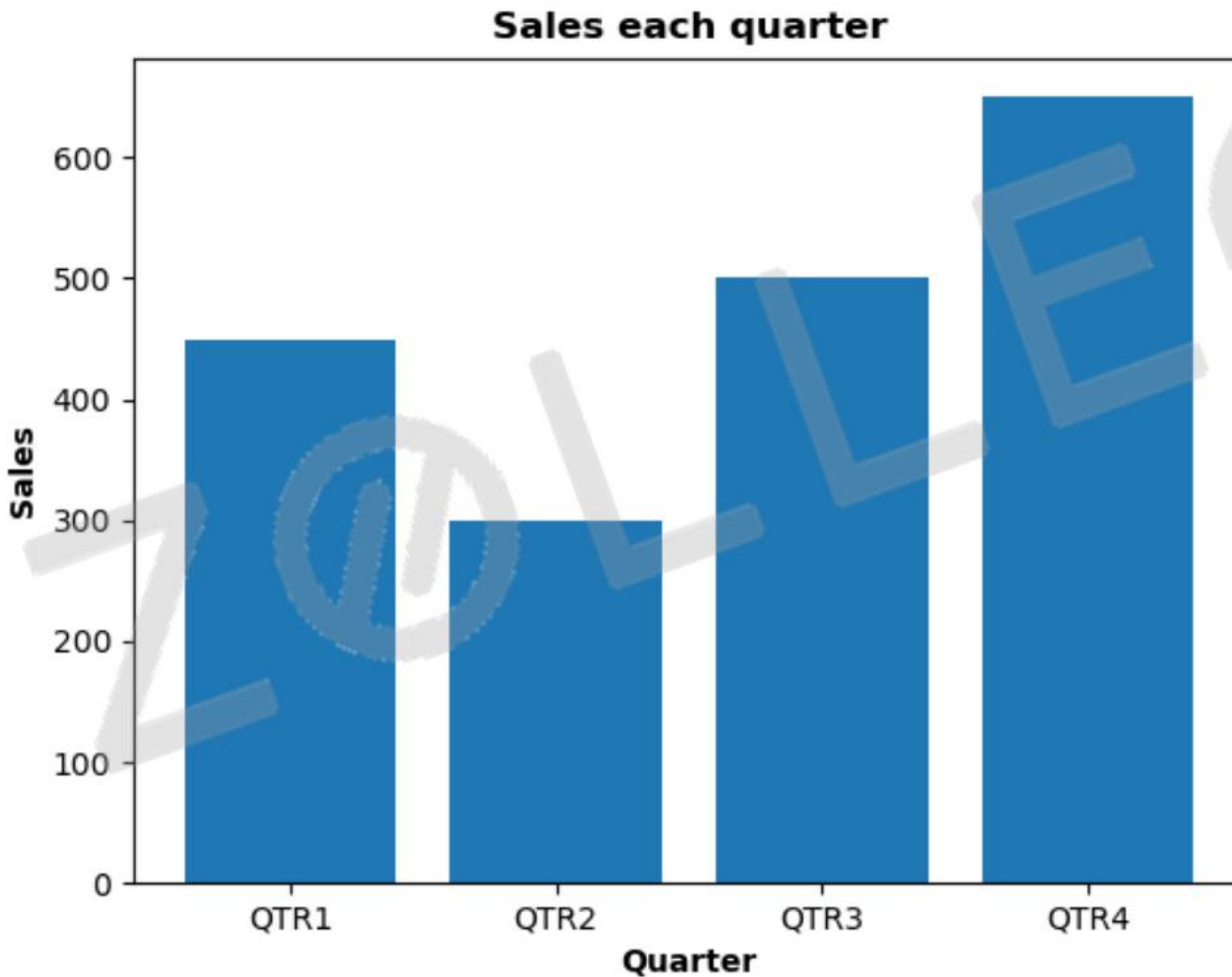
		(1 mark for correct answer) Note: • ½ Mark to be awarded for writing Modem as answer													
	(iv)	Suggest the placement of Switch/Hub with justification. • Switch/Hub should be placed in all the buildings • To interconnect nodes in each building													
		(½ mark for correct placement) (½ mark for correct justification)													
	(v)	Many employees were finding it difficult to cope up with work pressure and hence were showing stress related symptoms. In order to improve the mental health of its employees, HR planned to conduct an online session with a mental health expert from Mumbai. Out of the options given below, suggest the protocol that will help to send the voice signals over Internet to conduct the session successfully. (a) FTP (b) SMTP (c) VOIP (d) POP													
	Ans	(c) VOIP													
		(1 mark for correct answer)													
33		Consider the following graph. Write the Python code to plot it. Also add the Title, label for X and Y axis. Use the following data for plotting the graph smarks=[10,40,30,60,55] sname=["Sahil","Deepak","Anil","Ravi","Riti"]	5												
		Marks secured by students in Term - 1 <table><thead><tr><th>Student Name</th><th>Marks Scored</th></tr></thead><tbody><tr><td>Sahil</td><td>10</td></tr><tr><td>Deepak</td><td>40</td></tr><tr><td>Anil</td><td>30</td></tr><tr><td>Ravi</td><td>60</td></tr><tr><td>Riti</td><td>55</td></tr></tbody></table>	Student Name	Marks Scored	Sahil	10	Deepak	40	Anil	30	Ravi	60	Riti	55	
Student Name	Marks Scored														
Sahil	10														
Deepak	40														
Anil	30														
Ravi	60														
Riti	55														
	Ans	<pre>import matplotlib.pyplot as plt smarks=[10,40,30,60,55] sname=["Sahil","Deepak","Anil","Ravi","Riti"] plt.plot(sname,smarks) plt.title("Marks secured by students in Term - 1") plt.xlabel('Student Name') plt.ylabel('Marks Scored') plt.show()</pre>													

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		(1 Mark for import statement) (1 Mark for plot()) (1 Mark for title) (1 Mark for labels) (1 Mark to display)	
		OR	
33.		Write Python code to draw the following bar graph representing the total sales in each quarter. Add the Title, Label for X-axis and Y-axis. Use the following data for plotting the graph: sales=[450,300,500,650] qtr=["QTR1","QTR2","QTR3","QTR4"] 	5
	Ans	<pre>import matplotlib.pyplot as plt #-----# sales=[450,300,500,650] # ignore as part qtr=["QTR1","QTR2","QTR3","QTR4"] #-----# plt.bar(qtr,sales) plt.title("Sales each quarter") plt.xlabel("Quarter") plt.ylabel("Sales") plt.show()</pre>	
		(1 mark for import statement) (1 mark for bar()) (1 mark for title) (1 mark for labels)	

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		(1 mark to display)						
		SECTION - E						
34		Consider the following table Schooldata : Table: Schooldata						1+1+2
		Admno	Name	Grade	Club	Marks	Gender	
		20150001	Sargam Singh	12	STEM	86	Male	
		20140212	Alok Kumar	10	SPACE	75	Male	
		20090234	Mohit Gaur	11	SPACE	84	Male	
		20130216	Romil Malik	10	READER	91	Male	
		20190227	Tanvi Batra	11	STEM	70	Female	
		20120200	Nomita Ranjan	12	STEM	64	Female	
		Write SQL queries for the following:						
	(i)	Display the average Marks secured by each Gender.						
	Ans	SELECT Gender, AVG(marks) FROM Schooldata GROUP BY Gender;						
		(1/2 mark for SELECT. . FROM) (1/2 mark for GROUP BY)						
	(ii)	Display the minimum Marks secured by the students of Grade 10.						
	Ans	SELECT MIN(Marks) FROM Schooldata WHERE Class=10; OR SELECT MIN(Marks) FROM Schooldata WHERE Class='10';						
		(1/2 mark for using SELECT MIN(MARKS) FROM Schooldata) (1/2 mark for correct use of WHERE condition)						
	(iii)	Display the total number of students in each Club where number of students are more than 1.						
	Ans	SELECT Club, COUNT(*) FROM Schooldata GROUP BY Club HAVING COUNT(*)>1;						
		(1/2 mark for SELECT) (1/2 mark for COUNT(*)) (1/2 mark for GROUP BY) (1/2 mark for correct use of HAVING condition)						
		OR (Option for Part (iii) only)						
	(iii)	Display the maximum and minimum marks secured by each gender.						2
	Ans	SELECT MAX(Marks), MIN(Marks), Gender FROM Schooldata GROUP BY Gender;						
		(1/2 mark for SELECT) (1/2 mark for MAX()) (1/2 mark for MIN()) (1/2 mark for GROUP BY)						
35		Consider the following DataFrame 'mdf'.						1+1+2
			Rollno	Name	English	Hindi	Maths	
		0	1	Aditya	23	20	28	

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		<table><tr><td>1</td><td>2</td><td>Balwant</td><td>18</td><td>1</td><td>25</td></tr><tr><td>2</td><td>3</td><td>Chirag</td><td>27</td><td>23</td><td>30</td></tr><tr><td>3</td><td>4</td><td>Deepak</td><td>11</td><td>3</td><td>7</td></tr><tr><td>4</td><td>5</td><td>Eva</td><td>17</td><td>21</td><td>24</td></tr></table>	1	2	Balwant	18	1	25	2	3	Chirag	27	23	30	3	4	Deepak	11	3	7	4	5	Eva	17	21	24	
1	2	Balwant	18	1	25																						
2	3	Chirag	27	23	30																						
3	4	Deepak	11	3	7																						
4	5	Eva	17	21	24																						
(A)	Write Python statements for the DataFrame 'mdf' :																										
(i)	To display the records of the students having roll numbers 2 and 3.																										
Ans	<pre>print(mdf[2:4])</pre> OR <pre>print(mdf.loc[1:2,:])</pre> OR <pre>print(mdf.iloc[1:3,:])</pre>																										
	<i>(½ mark for mdf)</i> <i>(½ mark for mentioning correct range)</i>																										
(ii)	To increase the marks of subject Math by 4, for all students.																										
Ans	<pre>mdf['Maths']=mdf['Maths']+4</pre>																										
	<i>(1 mark for attempting the question)</i> <i>Note : Updation operation not in Curriculum</i>																										
(B)	Write Python statement to display the Rollno and Name of all students who secured less than 10 marks in Maths.																										
Ans	<pre>print(mdf[mdf['Maths'] <10][['Rollno' , 'Name']])</pre>																										
	<i>(Full 2 Marks for attempting like mentioning print or dataframe name or writing condition or mentioning appropriate column names)</i> <i>Note: Condition based retrieval is not in Curriculum</i>																										
	OR (Option for Part B only)																										
	Write Python statement to display the total marks i.e., sum of marks secured in English, Hindi and Maths for all students.					2																					
Ans	<pre>print(mdf[['English' , 'Hindi' , 'Maths']].sum())</pre> OR <pre>print(mdf[['English' , 'Hindi' , 'Maths']].sum(axis=1))</pre> OR <pre>print(mdf[['English' , 'Hindi' , 'Maths']].sum(axis=0))</pre>																										
	<i>(1 mark for using mdf)</i> <i>(½ mark for mentioning the columns)</i> <i>(½ mark for sum())</i>																										