

General Instructions :

1. You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2. **"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to the public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under IPC."**
3. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them.** In class-XII, while evaluating two competency based questions, please try to understand the given answer and even if the reply is not from the marking scheme but correct competency is enumerated by the candidate, marks should be awarded.
4. The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
5. Evaluators will mark(✓) wherever the answer is correct. For wrong answer 'X' be marked. Evaluators will not put the right kind of mark while evaluating which gives an impression that the answer is correct and no marks are awarded. **This is the most common mistake which evaluators are committing.**
6. If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
7. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
8. If a student has attempted an extra question, the answer of the question deserving more marks should be retained and the other answer scored out.
9. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
10. A full scale of marks 35 (example 0-35 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 30 answer books per day in main subjects and 35 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in the question paper.

12. Ensure that you do not make the following common types of errors committed by the Examiner in the past :-

- Leaving the answer or part thereof unassessed in an answer book.
- Giving more marks for an answer than assigned to it.
- Wrong totaling of marks awarded on a reply.
- Wrong transfer of marks from the inside pages of the answer book to the title page.
- Wrong question wise totaling on the title page.
- Wrong totaling of marks of the two columns on the title page.
- Wrong grand total.
- Marks in words and figures not tallying.
- Wrong transfer of marks from the answer book to online award list.
- Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answers.)
- Half or a part of the answer was marked correct and the rest as wrong, but no marks awarded.

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

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

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

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

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

Specific Instructions:

- The answers given in the marking scheme are SUGGESTIVE. Examiners are requested to award marks for all alternative correct Solutions/Answers conveying a similar meaning.
- All programming questions have to be answered with respect to Python only.
- In Python, ignore case sensitivity for identifiers/ Variables / Functions.
- In Python indentation is mandatory, however, the number of spaces used for indenting may vary.
- In SQL related questions - both ways of text/character entries should be acceptable for Example: "AMAR" and 'amar' both are acceptable.
- In SQL related questions - all date entries should be acceptable for Example: 'YYYY-MM-DD', 'YY-MM-DD', 'DD-Mon-YY', "DD/MM/YY", 'DD/MM/YY', "MM/DD/YY", 'MM/DD/YY' and {MM/DD/YY} are correct.
- In SQL related questions - semicolon should be ignored for terminating the SQL statements.
- In SQL related questions, ignore case sensitivity.

General Instructions :

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

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

2.	(i)	Expand the following : VoIP, PPP	1																		
	Ans	VoIP : Voice over Internet Protocol PPP : Point to Point Protocol																			
		(½ mark each for writing correct expansion)																			
	(ii)	Riya wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth technology to connect two devices. Which type of network (PAN/LAN/MAN/WAN) will be formed in this case?	1																		
	Ans	PAN/ Personal Area Network																			
		(1 mark for correct type of network)																			
3.		Differentiate between the terms Attribute and Domain in the context of Relational Data Model.	2																		
	Ans	<table border="1"> <thead> <tr> <th>Attribute</th> <th>Domain</th> </tr> </thead> <tbody> <tr> <td>The column/field of a table/relation is known as an attribute.</td> <td>It is a set of permissible values from which attributes can take/obtain required value.</td> </tr> </tbody> </table> <p>For example: Table: Student</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Class</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>aaa</td> <td>XII</td> <td>90</td> </tr> <tr> <td>bbb</td> <td>X</td> <td>99</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Name, Class and Marks are attributes</th> <th>The attribute class has domain of X, XII</th> </tr> </thead> </table>	Attribute	Domain	The column/field of a table/relation is known as an attribute.	It is a set of permissible values from which attributes can take/obtain required value.	Name	Class	Marks	aaa	XII	90	bbb	X	99	Name, Class and Marks are attributes	The attribute class has domain of X, XII				
Attribute	Domain																				
The column/field of a table/relation is known as an attribute.	It is a set of permissible values from which attributes can take/obtain required value.																				
Name	Class	Marks																			
aaa	XII	90																			
bbb	X	99																			
Name, Class and Marks are attributes	The attribute class has domain of X, XII																				
		(1 mark each for writing any correct explanation of Attribute and Domain)																			
4.		Consider the following SQL table MEMBER in a SQL Database CLUB: Table: MEMBER	2																		
		<table border="1"> <thead> <tr> <th>M_ID</th> <th>NAME</th> <th>ACTIVITY</th> </tr> </thead> <tbody> <tr> <td>M1001</td> <td>Amina</td> <td>GYM</td> </tr> <tr> <td>M1002</td> <td>Pratik</td> <td>GYM</td> </tr> <tr> <td>M1003</td> <td>Simon</td> <td>SWIMMING</td> </tr> <tr> <td>M1004</td> <td>Rakesh</td> <td>GYM</td> </tr> <tr> <td>M1005</td> <td>Avneet</td> <td>SWIMMING</td> </tr> </tbody> </table>	M_ID	NAME	ACTIVITY	M1001	Amina	GYM	M1002	Pratik	GYM	M1003	Simon	SWIMMING	M1004	Rakesh	GYM	M1005	Avneet	SWIMMING	
M_ID	NAME	ACTIVITY																			
M1001	Amina	GYM																			
M1002	Pratik	GYM																			
M1003	Simon	SWIMMING																			
M1004	Rakesh	GYM																			
M1005	Avneet	SWIMMING																			

		<p>Assume that the required library for establishing the connection between Python and MySQL is already imported in the given Python code. Also assume that DB is the name of the database connection for table MEMBER stored in the database CLUB.</p> <p>Predict the output of the following code:</p> <pre>MYCUR = DB.cursor() MYCUR.execute("USE CLUB") MYCUR.execute("SELECT * FROM MEMBER WHERE ACTIVITY='GYM'") R=MYCUR.fetchone() for i in range(2): R=MYCUR.fetchone() print(R[0], R[1], sep ="#")</pre>																																					
	Ans	M1002#Pratik M1004#Rakesh																																					
		(1 mark for writing each correct line of output)																																					
		(Note: Deduct ½ mark for missing # or writing the output in a single line OR writing any additional line along with the correct output)																																					
5.		<p>Write the output of the SQL queries (a) to (d) based on the table VACCINATION_DATA given below:</p> <p style="text-align: center;">TABLE: VACCINATION DATA</p> <table border="1"> <thead> <tr> <th>VID</th><th>Name</th><th>Age</th><th>Dose1</th><th>Dose2</th><th>City</th></tr> </thead> <tbody> <tr> <td>101</td><td>Jenny</td><td>27</td><td>2021-12-25</td><td>2022-01-31</td><td>Delhi</td></tr> <tr> <td>102</td><td>Harjot</td><td>55</td><td>2021-07-14</td><td>2021-10-14</td><td>Mumbai</td></tr> <tr> <td>103</td><td>Srikanth</td><td>43</td><td>2021-04-18</td><td>2021-07-20</td><td>Delhi</td></tr> <tr> <td>104</td><td>Gazala</td><td>75</td><td>2021-07-31</td><td>NULL</td><td>Kolkata</td></tr> <tr> <td>105</td><td>Shiksha</td><td>32</td><td>2022-01-01</td><td>NULL</td><td>Mumbai</td></tr> </tbody> </table>	VID	Name	Age	Dose1	Dose2	City	101	Jenny	27	2021-12-25	2022-01-31	Delhi	102	Harjot	55	2021-07-14	2021-10-14	Mumbai	103	Srikanth	43	2021-04-18	2021-07-20	Delhi	104	Gazala	75	2021-07-31	NULL	Kolkata	105	Shiksha	32	2022-01-01	NULL	Mumbai	2
VID	Name	Age	Dose1	Dose2	City																																		
101	Jenny	27	2021-12-25	2022-01-31	Delhi																																		
102	Harjot	55	2021-07-14	2021-10-14	Mumbai																																		
103	Srikanth	43	2021-04-18	2021-07-20	Delhi																																		
104	Gazala	75	2021-07-31	NULL	Kolkata																																		
105	Shiksha	32	2022-01-01	NULL	Mumbai																																		
	(a)	SELECT Name, Age FROM VACCINATION_DATA WHERE Dose2 IS NOT NULL AND Age > 40;																																					
	Ans	<table border="1"> <thead> <tr> <th>Name</th><th>Age</th></tr> </thead> <tbody> <tr> <td>Harjot</td><td>55</td></tr> <tr> <td>Srikanth</td><td>43</td></tr> </tbody> </table>	Name	Age	Harjot	55	Srikanth	43																															
Name	Age																																						
Harjot	55																																						
Srikanth	43																																						
		(½ mark for the correct output) (Note: Ignore column heading of the output and order of the output rows)																																					
	(b)	SELECT City, COUNT(*) FROM VACCINATION_DATA GROUP BY City;																																					

	Ans	<table border="1"> <thead> <tr> <th>City</th><th>COUNT (*)</th></tr> </thead> <tbody> <tr> <td>Delhi</td><td>2</td></tr> <tr> <td>Mumbai</td><td>2</td></tr> <tr> <td>Kolkata</td><td>1</td></tr> </tbody> </table>	City	COUNT (*)	Delhi	2	Mumbai	2	Kolkata	1												
City	COUNT (*)																					
Delhi	2																					
Mumbai	2																					
Kolkata	1																					
	<i>(½ mark for the correct output)</i> <i>(Note: Ignore column heading of the output and order of the output rows)</i>																					
	(c) SELECT DISTINCT City FROM VACCINATION_DATA;																					
	<table border="1"> <thead> <tr> <th>City</th> </tr> </thead> <tbody> <tr> <td>Delhi</td> </tr> <tr> <td>Mumbai</td> </tr> <tr> <td>Kolkata</td> </tr> </tbody> </table>	City	Delhi	Mumbai	Kolkata																	
City																						
Delhi																						
Mumbai																						
Kolkata																						
		<i>(½ mark for the correct output)</i> <i>(Note: Ignore column heading of the output and order of the output rows)</i>																				
		(d) SELECT MAX(Dose1),MIN(Dose2) FROM VACCINATION_DATA;																				
	Ans	<table border="1"> <thead> <tr> <th>MAX(Dose1)</th> <th>MIN(Dose2)</th> </tr> </thead> <tbody> <tr> <td>2022-01-01</td> <td>2021-07-20</td> </tr> </tbody> </table>	MAX(Dose1)	MIN(Dose2)	2022-01-01	2021-07-20																
MAX(Dose1)	MIN(Dose2)																					
2022-01-01	2021-07-20																					
	<i>(½ mark for the correct output)</i> <i>(Note: Ignore column heading of the output and order of the output rows)</i>																					
6	Ans	Write the output of SQL queries (a) and (b) based on the following two tables DOCTOR and PATIENT belonging to the same database : Table: DOCTOR																				
		<table border="1"> <thead> <tr> <th>DNO</th> <th>DNAME</th> <th>FEES</th> </tr> </thead> <tbody> <tr> <td>D1</td> <td>AMITABH</td> <td>1500</td> </tr> <tr> <td>D2</td> <td>ANIKET</td> <td>1000</td> </tr> <tr> <td>D3</td> <td>NIKHIL</td> <td>1500</td> </tr> <tr> <td>D4</td> <td>ANJANA</td> <td>1500</td> </tr> </tbody> </table>	DNO	DNAME	FEES	D1	AMITABH	1500	D2	ANIKET	1000	D3	NIKHIL	1500	D4	ANJANA	1500	2				
DNO	DNAME	FEES																				
D1	AMITABH	1500																				
D2	ANIKET	1000																				
D3	NIKHIL	1500																				
D4	ANJANA	1500																				
	 Table: PATIENT																					
	<table border="1"> <thead> <tr> <th>PNO</th> <th>PNAME</th> <th>ADMDATE</th> <th>DNO</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>NOOR</td> <td>2021-12-25</td> <td>D1</td> </tr> <tr> <td>P2</td> <td>ANNIE</td> <td>2021-11-20</td> <td>D2</td> </tr> <tr> <td>P3</td> <td>PRAKASH</td> <td>2020-12-10</td> <td>NULL</td> </tr> <tr> <td>P4</td> <td>HARMEET</td> <td>2019-12-20</td> <td>D1</td> </tr> </tbody> </table>	PNO	PNAME	ADMDATE	DNO	P1	NOOR	2021-12-25	D1	P2	ANNIE	2021-11-20	D2	P3	PRAKASH	2020-12-10	NULL	P4	HARMEET	2019-12-20	D1	
PNO	PNAME	ADMDATE	DNO																			
P1	NOOR	2021-12-25	D1																			
P2	ANNIE	2021-11-20	D2																			
P3	PRAKASH	2020-12-10	NULL																			
P4	HARMEET	2019-12-20	D1																			
	(a) SELECT DNAME, PNAME FROM DOCTOR NATURAL JOIN PATIENT ;																					

	Ans	<table border="1"> <tr><td>DNAME</td><td>PNAME</td></tr> <tr><td>AMITABH</td><td>NOOR</td></tr> <tr><td>ANIKET</td><td>ANNIE</td></tr> <tr><td>AMITABH</td><td>HARMEET</td></tr> </table>	DNAME	PNAME	AMITABH	NOOR	ANIKET	ANNIE	AMITABH	HARMEET								
DNAME	PNAME																	
AMITABH	NOOR																	
ANIKET	ANNIE																	
AMITABH	HARMEET																	
	<p>(1 mark for writing correct output)</p> <p>Note: Deduct ½ mark for any additional row along with the correct rows Ignore column heading of the output and order of the output rows</p>																	
	(b)	<pre>SELECT PNAME, ADMDATE, FEES FROM PATIENT P, DOCTOR D WHERE D.DNO = P.DNO AND FEES > 1000;</pre>																
	Ans	<table border="1"> <tr><td>PNAME</td><td>ADMDATE</td><td>FEES</td></tr> <tr><td>NOOR</td><td>2021-12-25</td><td>1500</td></tr> <tr><td>HARMEET</td><td>2019-12-20</td><td>1500</td></tr> </table>	PNAME	ADMDATE	FEES	NOOR	2021-12-25	1500	HARMEET	2019-12-20	1500							
PNAME	ADMDATE	FEES																
NOOR	2021-12-25	1500																
HARMEET	2019-12-20	1500																
	<p>(1 mark for writing correct output)</p> <p>Note: Deduct ½ mark for any additional row along with the correct rows Ignore column heading of the output and order of the output rows</p>																	
7.		Differentiate between Candidate Key and Primary Key in the context of Relational Database Model.	2															
	Ans	<p>A table may have more than one or a combination of attribute(s) that identifies a tuple uniquely. All such attribute(s) are known as Candidate Keys.</p> <p>Out of all the Candidate keys, the most appropriate one, which is used for unique identification of the Tuples, is called the Primary Key.</p> <p>Example: Table: BANK</p> <table border="1"> <thead> <tr><th>ACNO</th><th>NAME</th><th>PHONE</th></tr> </thead> <tbody> <tr><td>10001</td><td>RISHABH</td><td>9810876677</td></tr> <tr><td>10031</td><td>ARNAV</td><td>9810876123</td></tr> <tr><td>10064</td><td>ARNAV</td><td>9810875577</td></tr> <tr><td>10076</td><td>GURSHARAN</td><td>9810871144</td></tr> </tbody> </table> <p>Candidate Keys: ACNO, PHONE Primary Key: ACNO</p>	ACNO	NAME	PHONE	10001	RISHABH	9810876677	10031	ARNAV	9810876123	10064	ARNAV	9810875577	10076	GURSHARAN	9810871144	
ACNO	NAME	PHONE																
10001	RISHABH	9810876677																
10031	ARNAV	9810876123																
10064	ARNAV	9810875577																
10076	GURSHARAN	9810871144																
	<p>(2 marks for correct explanation OR example given to differentiate the keys)</p> <p>OR</p> <p>(1 mark for writing only the correct explanation/example of candidate key) (1 mark for writing only the correct explanation/example of primary key)</p>																	

		OR																		
	<p>Consider the following table PLAYER :</p> <p>Table: PLAYER</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>PNO</th> <th>NAME</th> <th>SCORE</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>RISHABH</td> <td>52</td> </tr> <tr> <td>P2</td> <td>HUSSAIN</td> <td>45</td> </tr> <tr> <td>P3</td> <td>ARNOLD</td> <td>23</td> </tr> <tr> <td>P4</td> <td>ARNAV</td> <td>18</td> </tr> <tr> <td>P5</td> <td>GURSHARAN</td> <td>42</td> </tr> </tbody> </table>	PNO	NAME	SCORE	P1	RISHABH	52	P2	HUSSAIN	45	P3	ARNOLD	23	P4	ARNAV	18	P5	GURSHARAN	42	2
PNO	NAME	SCORE																		
P1	RISHABH	52																		
P2	HUSSAIN	45																		
P3	ARNOLD	23																		
P4	ARNAV	18																		
P5	GURSHARAN	42																		
	(a) Identify and write the name of the most appropriate column from the given table PLAYER that can be used as a Primary key.																			
	Ans PNO																			
	<p><i>(1 mark for mentioning PNO)</i></p> <p><i>(Note: Don't deduct marks, if any additional column name is also mentioned along with PNO)</i></p>																			
	(b) Define the term Degree in relational data model. What is the Degree of the given table PLAYER ?																			
	Ans Total number of columns/attributes in a table/relation is known as its Degree. The Degree of the given table is 3.																			
	<p><i>(½ mark for writing/explaining with example the correct meaning of Degree)</i></p> <p><i>(½ mark writing correct Degree of the given table)</i></p>																			
	<p>Section -B</p> <p>(Each question carries 3 marks)</p>																			
8.	<ul style="list-style-type: none"> Write the definition of a user defined function PushNV(N) which accepts a list of strings in the parameter N and pushes all strings which have no vowels present in it, into a list named NoVowel. Write a program in Python to input 5 Words and push them one by one into a list named All. <p>The program should then use the function PushNV() to create a stack of words in the list NoVowel so that it stores only those words which do not have any vowel present in it, from the list All.</p> <p>Thereafter, pop each word from the list NoVowel and display the popped word. When the stack is empty, display the message "EmptyStack".</p> <p>For example:</p> <p>If the Words accepted and pushed into the list All are ['DRY', 'LIKE', 'RHYTHM', 'WORK', 'GYM']</p>	3																		

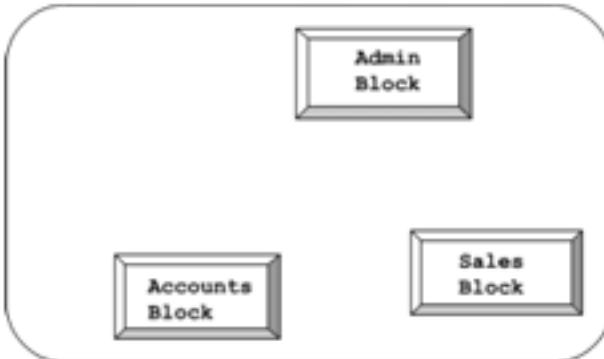
	<p>Then the stack NoVowel should store ['DRY', 'RHYTHM', 'GYM']</p> <p>And the output should be displayed as</p> <p>GYM RHYTHM DRY EmptyStack</p>	
Ans	<pre>def PushNV(N): for W in N : for C in W : if C.upper() in 'AEIOU': break else: NoVowel.append(W) All=[] NoVowel=[] for i in range(5) : All.append(input('Enter a Word: ')) PushNV(All) while NoVowel : print(NoVowel.pop(), end=' ') else : print('EmptyStack') OR Any other correct equivalent code</pre>	
	<p>(½ mark for checking vowels correctly, ignore case sensitivity)</p> <p>(½ mark for pushing strings into the stack NoVowel)</p> <p>(½ mark for reading 5 words from the users)</p> <p>(½ mark for assigning 5 words into All)</p> <p>(½ mark for writing correct code to pop and display the words from NoVowel)</p> <p>(½ mark for writing correct code to check empty stack and display the message 'EmptyStack')</p>	
	OR	
	<ul style="list-style-type: none"> Write the definition of a user defined function Push3_5(N) which accepts a list of integers in a parameter N and pushes all those integers which are divisible by 3 or divisible by 5 from the list N into a list named Only3_5. Write a program in Python to input 5 integers into a list named NUM. The program should then use the function Push3_5() to create the stack of the list Only3_5. Thereafter pop each integer from the list Only3_5 and display the popped value. When the list is empty, display the message "StackEmpty". 	

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

	(ii)	Categorize the following SQL commands into DDL and DML : CREATE, UPDATE, INSERT, DROP	2																																																		
	Ans	DDL Commands : CREATE, DROP DML Commands : INSERT, UPDATE																																																			
		(½ Mark each for writing the correct DDL/DML commands)																																																			
10.		Rohan is learning to work upon Relational Database Management System (RDBMS) application. Help him to perform following tasks:	3																																																		
	(a)	To open the database named "LIBRARY".																																																			
	Ans	USE LIBRARY ;																																																			
		(1 Mark for writing correct SQL command)																																																			
	(b)	To display the names of all the tables stored in the opened database.																																																			
	Ans	SHOW TABLES; OR SHOW TABLES FROM LIBRARY;																																																			
		(1 Mark for writing correct SQL command)																																																			
	(c)	To display the structure of the table "BOOKS" existing in the already opened database "LIBRARY".																																																			
	Ans	DESCRIBE BOOKS ; OR DESC BOOKS ;																																																			
		(1 Mark for writing correct SQL command)																																																			
		Section - C (Each question carries 4 marks)																																																			
11.		Write SQL queries for (a) to (d) based on the tables PASSENGER and FLIGHT given below: Table : PASSENGER <table border="1" style="margin-top: 5px;"> <thead> <tr> <th>PNO</th> <th>NAME</th> <th>GENDER</th> <th>FNO</th> </tr> </thead> <tbody> <tr> <td>1001</td> <td>Suresh</td> <td>MALE</td> <td>F101</td> </tr> <tr> <td>1002</td> <td>Anita</td> <td>FEMALE</td> <td>F104</td> </tr> <tr> <td>1003</td> <td>Harjas</td> <td>MALE</td> <td>F102</td> </tr> <tr> <td>1004</td> <td>Nita</td> <td>FEMALE</td> <td>F103</td> </tr> </tbody> </table> Table: FLIGHT <table border="1" style="margin-top: 5px;"> <thead> <tr> <th>FNO</th> <th>START</th> <th>END</th> <th>F_DATE</th> <th>FARE</th> </tr> </thead> <tbody> <tr> <td>F101</td> <td>MUMBAI</td> <td>CHENNAI</td> <td>2021-12-25</td> <td>4500</td> </tr> <tr> <td>F102</td> <td>MUMBAI</td> <td>BENGALURU</td> <td>2021-11-20</td> <td>4000</td> </tr> <tr> <td>F103</td> <td>DELHI</td> <td>CHENNAI</td> <td>2021-12-10</td> <td>5500</td> </tr> <tr> <td>F104</td> <td>KOLKATA</td> <td>MUMBAI</td> <td>2021-12-20</td> <td>4500</td> </tr> <tr> <td>F105</td> <td>DELHI</td> <td>BENGALURU</td> <td>2021-01-15</td> <td>5000</td> </tr> </tbody> </table>	PNO	NAME	GENDER	FNO	1001	Suresh	MALE	F101	1002	Anita	FEMALE	F104	1003	Harjas	MALE	F102	1004	Nita	FEMALE	F103	FNO	START	END	F_DATE	FARE	F101	MUMBAI	CHENNAI	2021-12-25	4500	F102	MUMBAI	BENGALURU	2021-11-20	4000	F103	DELHI	CHENNAI	2021-12-10	5500	F104	KOLKATA	MUMBAI	2021-12-20	4500	F105	DELHI	BENGALURU	2021-01-15	5000	4
PNO	NAME	GENDER	FNO																																																		
1001	Suresh	MALE	F101																																																		
1002	Anita	FEMALE	F104																																																		
1003	Harjas	MALE	F102																																																		
1004	Nita	FEMALE	F103																																																		
FNO	START	END	F_DATE	FARE																																																	
F101	MUMBAI	CHENNAI	2021-12-25	4500																																																	
F102	MUMBAI	BENGALURU	2021-11-20	4000																																																	
F103	DELHI	CHENNAI	2021-12-10	5500																																																	
F104	KOLKATA	MUMBAI	2021-12-20	4500																																																	
F105	DELHI	BENGALURU	2021-01-15	5000																																																	

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

12.	(i)	Differentiate between Bus Topology and Tree Topology. Also, write one advantage of each of them.	2								
	Ans	<table border="1"> <thead> <tr> <th style="text-align: center;">Bus Topology</th> <th style="text-align: center;">Tree Topology</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td>In bus topology, each communicating device connects to a single transmission medium, known as bus.</td> <td>It is a hierarchical topology, in which there are multiple branches and each branch can have one or more basic topologies like star, ring and bus.</td> </tr> <tr> <td>Advantage: It is very cost-effective as compared to other network topologies.</td> <td>Advantage: It is easier to set-up multi-level plans for the network.</td> </tr> </tbody> </table> <p>OR Any other correct difference/definition/advantages</p>	Bus Topology	Tree Topology			In bus topology, each communicating device connects to a single transmission medium, known as bus.	It is a hierarchical topology, in which there are multiple branches and each branch can have one or more basic topologies like star, ring and bus.	Advantage: It is very cost-effective as compared to other network topologies.	Advantage: It is easier to set-up multi-level plans for the network.	
Bus Topology	Tree Topology										
											
In bus topology, each communicating device connects to a single transmission medium, known as bus.	It is a hierarchical topology, in which there are multiple branches and each branch can have one or more basic topologies like star, ring and bus.										
Advantage: It is very cost-effective as compared to other network topologies.	Advantage: It is easier to set-up multi-level plans for the network.										
		<p>(1 Mark for mentioning any one correct difference between the topologies) (½ mark each for writing any one advantage of Bus and Tree Topologies)</p> <p>OR</p> <p>(½ mark each for conveying correct understanding of Bus and Tree Topology using/not using diagram) (½ mark each for writing any one advantage of Bus and Tree Topologies)</p>									
		OR									
		Differentiate between HTML and XML.									
	Ans	<table border="1"> <thead> <tr> <th style="text-align: center;">HTML</th> <th style="text-align: center;">XML</th> </tr> </thead> <tbody> <tr> <td>It stands for HyperText Markup Language.</td> <td>It stands for eXtensible Markup Language.</td> </tr> <tr> <td>It contains predefined tags which are used to design webpages.</td> <td>It contains user defined tags to describe and store the data.</td> </tr> </tbody> </table> <p>OR Any other valid difference/characteristic</p>	HTML	XML	It stands for HyperText Markup Language.	It stands for eXtensible Markup Language.	It contains predefined tags which are used to design webpages.	It contains user defined tags to describe and store the data.			
HTML	XML										
It stands for HyperText Markup Language.	It stands for eXtensible Markup Language.										
It contains predefined tags which are used to design webpages.	It contains user defined tags to describe and store the data.										

	<p>(Full 2 Marks for writing any one correct difference between HTML and XML)</p> <p>OR</p> <p>(1 Mark for writing correct explanation of HTML)</p> <p>OR</p> <p>(½ Mark for writing full form of HTML)</p> <p>(1 Mark for writing correct explanation of XML)</p> <p>OR</p> <p>(½ Mark for writing full form of XML)</p>									
	(ii) What is a web browser ? Write the names of any two commonly used web browsers.	2								
Ans	<p>A Web browser is a software/tool, which allows us to view/access the content of WebPages.</p> <p>OR</p> <p>It is a Client software program that is used to access various kinds of Internet resources using HTTP.</p> <p>Examples : Google Chrome, Microsoft Edge, Mozilla Firefox, Apple Safari, Opera, Chromium, etc. (ANY TWO)</p>									
	<p>(1 Mark for writing correct explanation of Web-Browser)</p> <p>(½ Mark for writing each correct name of two Web-Browsers)</p>									
13.	<p>Galaxy Provider Ltd. is planning to connect its office in Texas, USA with its branch at Mumbai. The Mumbai branch has 3 Offices in three blocks located at some distance from each other for different operations - ADMIN, SALES and ACCOUNTS.</p> <p>As a network consultant, you have to suggest the best network related solutions for the issues/problems raised in (a) to (d), keeping in mind the distances between various locations and other given parameters.</p> <p>Layout of the Offices in the Mumbai branch:</p>  <p>Shortest distances between various locations:</p> <table border="1"> <tbody> <tr> <td>ADMIN Block to SALES Block</td> <td>300 m</td> </tr> <tr> <td>SALES Block to ACCOUNTS Block</td> <td>175 m</td> </tr> <tr> <td>ADMIN Block to ACCOUNTS Block</td> <td>350 m</td> </tr> <tr> <td>MUMBAI Branch to TEXAS Head Office</td> <td>14000 km</td> </tr> </tbody> </table>	ADMIN Block to SALES Block	300 m	SALES Block to ACCOUNTS Block	175 m	ADMIN Block to ACCOUNTS Block	350 m	MUMBAI Branch to TEXAS Head Office	14000 km	4
ADMIN Block to SALES Block	300 m									
SALES Block to ACCOUNTS Block	175 m									
ADMIN Block to ACCOUNTS Block	350 m									
MUMBAI Branch to TEXAS Head Office	14000 km									

