

**SAMPLE QUESTION PAPER**  
**CLASS XII (2023-24)**  
**INFORMATICS PRACTICES (065)**

**TIME: 03 HOURS**

**M.M.: 70**

**General Instructions:**

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

<b>SECTION A</b>		
1.	A _____ is a device that connects the organisation's network with the outside world of the Internet. i. Hub ii. Modem iii. Gateway iv. Repeater	1
2.	When e-waste such as electronic circuit boards are burnt for disposal, the elements contained in them create a harmful chemical called _____ which causes skin diseases, allergies and an increased risk of lung cancer. i. Hydrogen ii. Beryllium iii. Chlorine iv. Oxygen	1
3.	Copyright, Patent and Trademark comes under: i. Intellectual Property Right ii. Individual Property Right iii. Industrial Property Right iv. None of the above	1
4.	Predict the output of the following query: <b>SELECT MOD (9,0) ;</b> i. 0 ii. NULL iii. NaN iv. 9	1

5.	<p>Which of the following SQL functions does not belong to the Math functions category?</p> <ul style="list-style-type: none"> <li>i. POWER()</li> <li>ii. ROUND()</li> <li>iii. LENGTH()</li> <li>iv. MOD()</li> </ul>	1
6.	<p>_____ is not a FOSS tool.</p> <ul style="list-style-type: none"> <li>i. Libre Office</li> <li>ii. Mozilla Firefox</li> <li>iii. Google Chrome</li> <li>iv. Python</li> </ul>	1
7.	<p>CSV stands for:</p> <ul style="list-style-type: none"> <li>i. Column Separated Value</li> <li>ii. Class Separated Value</li> <li>iii. Comma Separated Value</li> <li>iv. None of the above</li> </ul>	1
8.	<p>Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query:</p> <pre><b>SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) &gt; 5 GROUP BY DEPT;</b></pre> <p>Which of the following is a correct query to perform the given task?</p> <ul style="list-style-type: none"> <li>i. <code>SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) &gt; 5 GROUP BY DEPT;</code></li> <li>ii. <code>SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*) &gt; 5 GROUP BY DEPT;</code></li> <li>iii. <code>SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*) &gt; 5;</code></li> <li>iv. <code>SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) &gt; 5;</code></li> </ul>	1
9.	<p>Predict the output of the following query:</p> <pre><b>SELECT LCASE (MONTHNAME ('2023-03-05'));</b></pre> <ul style="list-style-type: none"> <li>i. May</li> <li>ii. March</li> <li>iii. may</li> <li>iv. march</li> </ul>	1

10.	<p>Which of the following command will show the last 3 rows from a Pandas Series named NP?</p> <ul style="list-style-type: none"> <li>i. NP.Tail()</li> <li>ii. NP.tail(3)</li> <li>iii. NP.TAIL(3)</li> <li>iv. All of the above</li> </ul>	1
11.	<p>With reference to SQL, identify the invalid data type.</p> <ul style="list-style-type: none"> <li>i. Date</li> <li>ii. Integer</li> <li>iii. Year</li> <li>iv. Month</li> </ul>	1
12.	<p>In Python Pandas, while performing mathematical operations on series, index matching is implemented and all missing values are filled in with _____by default.</p> <ul style="list-style-type: none"> <li>i. Null</li> <li>ii. Blank</li> <li>iii. NaN</li> <li>iv. Zero</li> </ul>	1
13.	<p>By restricting the server and encrypting the data, a software company's server is unethically accessed in order to obtain sensitive information. The attacker blackmails the company to pay money for getting access to the data, and threatens to publish sensitive information unless price is paid. This kind of attack is known as:</p> <ul style="list-style-type: none"> <li>i. Phishing</li> <li>ii. Identity Theft</li> <li>iii. Plagiarism</li> <li>iv. Ransomware</li> </ul>	1
14.	<p>In SQL, the equivalent of UCASE() is:</p> <ul style="list-style-type: none"> <li>i. UPPERCASE ()</li> <li>ii. CAPITALCASE()</li> <li>iii. UPPER()</li> <li>iv. TITLE ()</li> </ul>	1
15.	<p>Collection of hyper linked documents available on the internet is known as_____.</p> <ul style="list-style-type: none"> <li>i. Website</li> <li>ii. Webpage</li> <li>iii. Web Server</li> <li>iv. Web Hosting</li> </ul>	1

16.	<p>_____ is a non-profit organization that aims to build a publicly accessible global platform where a range of creative and academic work is shared freely.</p> <ol style="list-style-type: none"> <li>i. Creative Cost</li> <li>ii. Critical Commons</li> <li>iii. Creative Commons</li> <li>iv. Creative Common</li> </ol>	1
17.	<p><b>Assertion (A):-</b> MODEM stands for modulator-demodulator.  <b>Reasoning (R):</b> - It is a computer hardware device that converts data from a digital format to analog and vice versa.</p> <ol style="list-style-type: none"> <li>i. Both A and R are true and R is the correct explanation for A</li> <li>ii. Both A and R are true and R is not the correct explanation for A</li> <li>iii. A is True but R is False</li> <li>iv. A is false but R is True</li> </ol>	1
18.	<p><b>Assertion (A):-</b> To use the Pandas library in a Python program, one must import it.  <b>Reasoning (R):</b> - The only alias name that can be used with the Pandas library is pd.</p> <ol style="list-style-type: none"> <li>i. Both A and R are true and R is the correct explanation for A</li> <li>ii. Both A and R are true and R is not the correct explanation for A</li> <li>iii. A is True but R is False</li> <li>iv. A is false but R is True</li> </ol>	1
<b>SECTION B</b>		
19.	<p>Briefly explain the basic concepts of a web server and web hosting.</p> <p style="text-align: center;"><b>OR</b></p> <p>Rati is doing a course in networking. She is unable to understand the concept of URL. Help her by explaining it with the help of suitable example.</p>	2
20.	<p>The python code written below has syntactical errors. Rewrite the correct code and underline the corrections made.</p> <pre> Import pandas as pd df ={"Technology":["Programming","Robotics","3D Printing"],"Time(in months)":[4,4,3]} df= Pd.dataframe(df) Print(df) </pre>	2
21.	<p>Consider the given SQL string:  "12#All the Best!"</p> <p>Write suitable SQL queries for the following:</p> <ol style="list-style-type: none"> <li>i. Returns the position of the first occurrence of the substring "the" in the given string.</li> <li>ii. To extract last five characters from the string.</li> </ol>	2

22.	Predict the output of the given Python code: <pre>import pandas as pd list1=[-10,-20,-30] ser = pd.Series(list1*2) print(ser)</pre>	2
23.	Differentiate between the active digital footprint and passive digital footprints.	2
24.	Complete the given Python code to get the required output as: <b>Rajasthan</b> <pre>import _____ as pd di = {'Corbett': 'Uttarakhand', 'Sariska': 'Rajasthan', 'Kanha': 'Madhya Pradesh', 'Gir':'Gujarat'} NP = _____. Series( _____ ) print(NP[ _____ ])</pre>	2
25.	What are aggregate functions in SQL? Name any two.	2
<b>SECTION C</b>		
26.	Based on the SQL table CAR_SALES, write suitable queries for the following: <pre>+-----+-----+-----+-----+-----+   NUMBER   SEGMENT            FUEL     QT1     QT2     +-----+-----+-----+-----+-----+        1   Compact HatchBack   Petrol   56000   70000          2   Compact HatchBack   Diesel   34000   40000          3   MUV                  Petrol   33000   35000          4   MUV                  Diesel   14000   15000          5   SUV                  Petrol   27000   54000          6   SUV                  Diesel   18000   30000          7   Sedan                Petrol    8000   10000          8   Sedan                Diesel    1000    5000   +-----+-----+-----+-----+-----+</pre> <p>i. Display fuel wise average sales in the first quarter.  ii. Display segment wise highest sales in the second quarter.  iii. Display the records in the descending order of sales in the second quarter.</p> <p style="text-align: center;"><b>OR</b></p> <p>Predict the output of the following queries based on the table CAR_SALES given above:  i. SELECT LEFT(SEGMENT,2) FROM CAR_SALES WHERE FUEL="PETROL";  ii. SELECT (QT2-QT1)/2 "AVG SALE" FROM CAR_SALES WHERE SEGMENT="SUV";  iii. SELECT SUM(QT1) "TOT SALE" FROM CAR_SALES WHERE FUEL="DIESEL";</p>	3

27.	<p>Create a DataFrame in Python from the given list:  [[‘Divya’,’HR’,95000],[‘Mamta’,’Marketing’,97000],[‘Payal’,’IT’,980000],  [‘Deepak’,’Sales’,79000]]</p> <p>Also give appropriate column headings as shown below:</p> <pre> Name Department Salary 0 Divya HR 95000 1 Mamta Marketing 97000 2 Payal IT 980000 3 Deepak Sales 79000 </pre>	3									
28.	<p>Write MySQL statements for the following:</p> <ol style="list-style-type: none"> <li>To create a database named FOOD.</li> <li>To create a table named Nutrients based on the following specification:</li> </ol> <table border="1" data-bbox="512 703 1254 842"> <thead> <tr> <th>Column Name</th> <th>Data Type</th> <th>Constraints</th> </tr> </thead> <tbody> <tr> <td>Food_Item</td> <td>Varchar(20)</td> <td>Primary Key</td> </tr> <tr> <td>Calorie</td> <td>Integer</td> <td></td> </tr> </tbody> </table>	Column Name	Data Type	Constraints	Food_Item	Varchar(20)	Primary Key	Calorie	Integer		3
Column Name	Data Type	Constraints									
Food_Item	Varchar(20)	Primary Key									
Calorie	Integer										
29.	<p>Richa, recently started using her social media account. Within a few days, she befriends many people she knows and some that she does not know. After some time, she starts getting negative comments on her posts. She also finds that her pictures are being shared online without her permission.</p> <p>Based on the given information, answer the questions given below.</p> <ol style="list-style-type: none"> <li>Identify the type of cybercrime she is a victim of.</li> <li>Under which act, she can lodge a complaint to the relevant authorities?</li> <li>Suggest her any two precautionary measures which she should take in future while being online to avoid any such situations.</li> </ol> <p style="text-align: center;"><b>OR</b></p> <p>Mention any three health hazards associated with inappropriate and excessive use of gadgets.</p>	3									
30.	<p>Consider the given DataFrame ‘Genre’:</p> <pre> Type Code 0 Fiction F 1 Non Fiction NF 2 Drama D 3 Poetry P </pre> <p>Write suitable Python statements for the following:</p> <ol style="list-style-type: none"> <li>Add a column called Num_Copies with the following data:  [300,290,450,760].</li> <li>Add a new genre of type ‘Folk Tale’ having code as “FT” and 600 number of copies.</li> <li>Rename the column ‘Code’ to ‘Book_Code’.</li> </ol>	3									

<b>SECTION D</b>																																					
31.	<p>Preeti manages database in a blockchain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries:</p> <p style="text-align: center;">TABLE: BLOCKCHAIN</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>id</th> <th>user</th> <th>value</th> <th>hash</th> <th>transaction_date</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Steve</td> <td>900</td> <td>ERTYU</td> <td>2020-09-19</td> </tr> <tr> <td>2</td> <td>Meesha</td> <td>145</td> <td>@345r</td> <td>2021-03-23</td> </tr> <tr> <td>3</td> <td>Nimisha</td> <td>567</td> <td>#wert5</td> <td>2020-05-06</td> </tr> <tr> <td>4</td> <td>Pihu</td> <td>678</td> <td>%rtyu</td> <td>2022-07-13</td> </tr> <tr> <td>5</td> <td>Kopal</td> <td>768</td> <td>rrt4%</td> <td>2021-05-15</td> </tr> <tr> <td>7</td> <td>Palakshi</td> <td>534</td> <td>wer@3</td> <td>2022-11-29</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>i. Write a query to display the year of oldest transaction.</li> <li>ii. Write a query to display the month of most recent transaction.</li> <li>iii. Write a query to display all the transactions done in the month of May.</li> <li>iv. Write a query to count total number of transactions in the year 2022.</li> </ol>	id	user	value	hash	transaction_date	1	Steve	900	ERTYU	2020-09-19	2	Meesha	145	@345r	2021-03-23	3	Nimisha	567	#wert5	2020-05-06	4	Pihu	678	%rtyu	2022-07-13	5	Kopal	768	rrt4%	2021-05-15	7	Palakshi	534	wer@3	2022-11-29	<b>4</b>
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32.	<p>Ekam, a Data Analyst with a multinational brand has designed the DataFrame df that contains the four quarter's sales data of different stores as shown below:</p> <pre> Store Qtr1 Qtr2 Qtr3 Qtr4 0 Store1 300 240 450 230 1 Store2 350 340 403 210 2 Store3 250 180 145 160 </pre> <p>Answer the following questions:</p> <ol style="list-style-type: none"> <li>i. Predict the output of the following python statement: <ol style="list-style-type: none"> <li>a. print(df.size)</li> <li>b. print(df[1:3])</li> </ol> </li> <li>ii. Delete the last row from the DataFrame.</li> <li>iii. Write Python statement to add a new column Total_Sales which is the addition of all the 4 quarter sales.</li> </ol> <p style="text-align: center;"><b>OR</b></p> <p style="text-align: center;"><b>(Option for part iii only)</b></p> <p>Write Python statement to export the DataFrame to a CSV file named data.csv stored at D: drive.</p>	<b>4</b>																																			
<b>SECTION E</b>																																					
33.	<p>Write suitable SQL queries for the following:</p> <ol style="list-style-type: none"> <li>i. To calculate the exponent for 3 raised to the power of 4.</li> <li>ii. To display current date and time.</li> <li>iii. To round off the value -34.4567 to 2 decimal place.</li> <li>iv. To remove all the probable leading and trailing spaces from the column userid of the table named user.</li> <li>v. To display the length of the string 'FIFA World Cup'.</li> </ol>	<b>5</b>																																			

**OR**

Kabir has created following table named exam:

RegNo	Name	Subject	Marks
1	Sanya	Computer Science	98
2	Sanchay	IP	100
3	Vinesh	CS	90
4	Sneha	IP	99
5	Akshita	IP	100

Help him in writing SQL queries to the perform the following task:

- i. Insert a new record in the table having following values:  
[6,'Khushi','CS',85]
- ii. To change the value “IP” to “**Informatics Practices**” in subject column.
- iii. To remove the records of those students whose marks are less than 30 .
- iv. To add a new column **Grade** of suitable datatype.
- v. To display records of “**Informatics Practices**” subject.

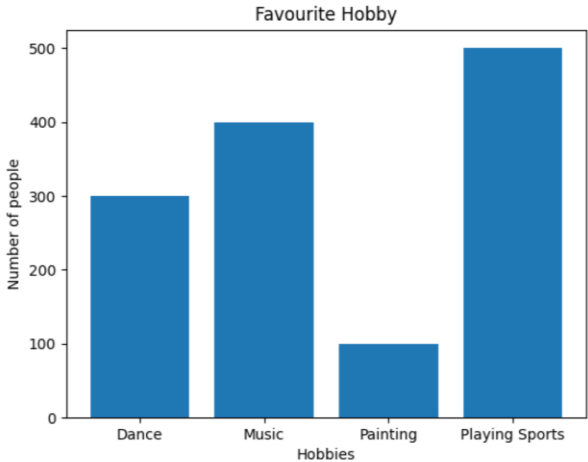
34. XYZ Media house campus is in Delhi and has 4 blocks named Z1, Z2, Z3 and Z4. The tables given below show the distance between different blocks and the number of computers in each block.

<b>Block Z1 to Block Z2</b>	<b>80 metres</b>
<b>Block Z1 to Block Z3</b>	<b>65 metres</b>
<b>Block Z1 to Block Z4</b>	<b>90 metres</b>
<b>Block Z2 to Block Z3</b>	<b>45 metres</b>
<b>Block Z2 to Block Z4</b>	<b>120 metres</b>
<b>Block Z3 to Block Z4</b>	<b>60 metres</b>

Block	Number of computers
Z1	135
Z2	290
Z3	180
Z4	195

5



	<p>The company is planning to form a network by joining these blocks.</p> <ol style="list-style-type: none"> <li>i. Out of the four blocks on campus, suggest the location of the server that will provide the best connectivity. Explain your response.</li> <li>ii. For very fast and efficient connections between various blocks within the campus, suggest a suitable topology and draw the same.</li> <li>iii. Suggest the placement of the following devices with justification             <ol style="list-style-type: none"> <li>(a) Repeater</li> <li>(b) Hub/Switch</li> </ol> </li> <li>iv. VoIP technology is to be used which allows one to make voice calls using a broadband internet connection. Expand the term VoIP.</li> <li>v. The XYZ Media House intends to link its Mumbai and Delhi centers. Out of LAN, MAN, or WAN, what kind of network will be created? Justify your answer.</li> </ol>											
35.	<p>The heights of 10 students of eighth grade are given below:</p> <p style="text-align: center;">Height_cms=[145,141,142,142,143,144,141,140,143,144]</p> <p>Write suitable Python code to generate a histogram based on the given data, along with an appropriate chart title and both axis labels. Also give suitable python statement to save this chart.</p> <p style="text-align: center;"><b>OR</b></p> <p>Write suitable Python code to create '<b>Favourite Hobby</b>' Bar Chart as shown below:</p> <div style="text-align: center;">  <table border="1" style="margin: 0 auto;"> <caption>Favourite Hobby</caption> <thead> <tr> <th>Hobbies</th> <th>Number of people</th> </tr> </thead> <tbody> <tr> <td>Dance</td> <td>300</td> </tr> <tr> <td>Music</td> <td>400</td> </tr> <tr> <td>Painting</td> <td>100</td> </tr> <tr> <td>Playing Sports</td> <td>500</td> </tr> </tbody> </table> </div> <p>Also give suitable python statement to save this chart.</p>	Hobbies	Number of people	Dance	300	Music	400	Painting	100	Playing Sports	500	5
Hobbies	Number of people											
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