

KENDRIYA VIDYALAYA SANGATHAN REGIONAL OFFICE LUCKNOW
PRE-BOARD EXAMINATION 2025-26

CLASS: XII
TIME: 3 HOURS

SUBJECT: INFORMATICS PRACTICES
M. MARKS: 70

General Instructions:

- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- The paper is divided into 5 Sections - A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 marks.
- Section C consists of 4 questions (29 to 32). Each question carries 3 marks.
- Section D consists of 2 questions (33 to 34). Each question carries 4 marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 marks.
- All programming questions are to be answered using Python language only.
- In case of MCQ, text of the correct answer should also be written.

Q No	Section-A (21x1 = 21 marks)	Marks
1	To display 3 rd element of a Series object S, you will write..... (a) S[:3] (b) S[2] (c) S[3] (d) S[:2]	1
2	What is the output of following Mysql function: MOD(13,-5) (a) 2 (b) -2 (c) 3 (d) -3	1
3	In which of the following topology all nodes are connected to a central hub: (a) Bus (b) Mesh (c) Star (d) Ring	1
4	Ravisha has stored the records of all students in a MYSQL table. Suggest her suitable clause to sort the data : (a) SORT BY (b) ORDER BY (c) GROUP BY (d) None of these	1
5	Primary law in India for matters related to e-commerce and cybercrime is: (a) IT Act 1995 (b) IT Act 2000 (c) IT Act 1998 (d) IT Act 2008	1
6	Which library is imported to draw charts in Python: (a) csv (b) numpy (c) matplotlib (d) Tkinter	1
7	To change the width of bars in a bar chart, which of the following arguments with a float value is used? (a) hwidth (b) width (c) breath (d) barwidth	1

8	Predict the output of the following: SELECT MID('OnlineEducation',2,4) (a)line (b) nlin (c) ine (d) None of these	1
9	To store Dataframe as csv file we use: (a)tocsv() (b) to_csv() (c) save_csv() (d) None of these	1
10	Stealing someone else's intellectual work and represent as own, is called: (a)Intellectual Steal (b) Plagiarism (c) Pickism (d) Hacking	1
11	In SQL, which function is used to display current date and time: (a) Date() (b) NOW() (c) TODAY() (d) TIME()	1
12	During an international exchange programme the students need to connect to a classroom in Russia using Skype. Samarth helps the students to connect. Which type of network service is being used ? a. Instant messaging b. Email messaging c. VoIP d. WWW	1
13	To get transpose of dataframe D1, you can write: (a)D1.T (b) D1.transpose() (c) D1.Transpose() (d) D1.Tilt	1
14	Legal term to describe the rights of a creator of original creative artistic work is: (a)Copyright (b)GPL (c)FOSS (d) Watermark	1
15	To create an empty series object, we use: (a)pd.Series(empty) (b) pd.Series() (c) both (d) None of these	1
16	Which of the following is not a valid Aggregate Function of MYSQL: (a)SUM() (b)COUNT() (c)LEN() (d) MAX()	1
17	Which method is used to Delete row(s) from DataFrame: (a).drop() (b) .delete() (c) .del() (d) .remove()	1
18	Which of the following is used to create a line graph? (a)line() (b) plot() (c) graph() (d) chart()	1
19	Which type of network is formed when you connect two mobiles via bluetooth to transfer a file: (a)LAN (b)MAN (c) PAN (d) WAN	1
	Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as: (A) Both A and R are True, and R correctly explains A. (B) Both A and R are True, but R does not correctly explain A. (C) A is True, but R is False. (D) A is False, but R is True.	

20	Assertion (A): In SQL, INSERT INTO is a Data Definition Language (DDL) Command. Reason (R): DDL commands are used to create, modify, or remove database structures, such as tables.	1
21	Assertion (A):- To use the Pandas library in a Python program, one must import it. Reasoning (R): - The only alias name that can be used with the Pandas library is pd.	1
	Section - B (7x2 = 14 marks)	
22	A Series S1 consists of 50 rows of data. Write python statement to print following data: (i) First 10 rows of data (ii) Last 5 rows of data OR Write two differences between Series and Dataframe.	2
23	Give two examples of responsible e-behaviour.	2
24	(a) Write a query to concatenate three strings :”We”,”are”,”Indians”. (b) Write a query to extract “67” from string “abc/ur7/367/109”	2
25	Define the terms: (a) Firewall (b) FOSS OR What is a protocol? Which protocol is used to search information from Internet using an Internet browser?	2
26	Define the term Primary Key in a database. Explain how it is different from a Candidate Key.	2
27	What are intellectual property rights (IPR), and why are they important in the digital world?	2
28	Sneha is writing a Python program to create a DataFrame using a list of dictionaries. However, her code contains some mistakes. Identify the errors, rewrite the correct code, and underline the corrections made. import Pandas as pd D1 = {'Name': 'Rakshit', 'Age': 25} D2 = {'Name': 'Paul', 'Age': 30} D3 = {'Name': 'Ayesha", 'Age': 28} data = [D1,D2,D3) df = pd.DataFrame(data) print(df) OR	2

	Complete the given Python code to get the required output (ignore the dtype attribute) as Output: Tamil Nadu Chennai Uttar Pradesh Lucknow Manipur Imphal Code: <pre>import _____ as pd data = ['Chennai','_____', 'Imphal'] indx = ["Tamil Nadu","Uttar Pradesh","Manipur"] s = pd.Series(_____, indx) print(_____)</pre>																
	Section - C (4x3 = 12 marks)																
29	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. Based on the given information, answer the questions given below. - Identify the type of cybercrime she is a victim of. - Under which act, she can lodge a complaint to the relevant authorities? - Suggest her any two precautionary measures which she should take in future while being online to avoid any such situations.	3															
30	Consider the given DataFrame 'Genre': <table> <thead> <tr> <th></th> <th>Type</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Fiction</td> <td>F</td> </tr> <tr> <td>1</td> <td>Non Fiction</td> <td>NF</td> </tr> <tr> <td>2</td> <td>Drama</td> <td>D</td> </tr> <tr> <td>3</td> <td>Poetry</td> <td>P</td> </tr> </tbody> </table> Write suitable Python statements for the following: - Add a column called Num_Copies with the following data: [300,290,450,760]. - Add a new genre of type 'Folk Tale' having code as "FT" and 600 number of copies. - Rename the column 'Code' to 'Book_Code'. OR Predict the output of the given Python code: <pre>import pandas as pd list1=[-10,-20,-30] ser = pd.Series(list1*2) print(ser) print(ser*2) print(ser[:2])</pre>		Type	Code	0	Fiction	F	1	Non Fiction	NF	2	Drama	D	3	Poetry	P	3
	Type	Code															
0	Fiction	F															
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31	Write MySQL statements for the following: - To create a database named FOOD. - To create a table named Nutrients based on the following specification: <table border="1"> <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																																				
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Food_Item	Varchar(20)	Primary Key																																													
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32	Based on the SQL table CAR_SALES, write suitable queries for the following: <table border="1"> <thead> <tr> <th>NUMBE R</th> <th>SEGMENT</th> <th>FUEL</th> <th>QT1</th> <th>QT2</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Compact HatchBack</td> <td>Petrol</td> <td>56000</td> <td>70000</td> </tr> <tr> <td>2</td> <td>Compact HatchBack</td> <td>Diesel</td> <td>34000</td> <td>40000</td> </tr> <tr> <td>3</td> <td>MUV</td> <td>Petrol</td> <td>33000</td> <td>35000</td> </tr> <tr> <td>4</td> <td>MUV</td> <td>Diesel</td> <td>14000</td> <td>15000</td> </tr> <tr> <td>5</td> <td>SUV</td> <td>Petrol</td> <td>27000</td> <td>54000</td> </tr> <tr> <td>6</td> <td>SUV</td> <td>Diesel</td> <td>18000</td> <td>30000</td> </tr> <tr> <td>7</td> <td>Sedan</td> <td>Petrol</td> <td>8000</td> <td>10000</td> </tr> <tr> <td>8</td> <td>Sedan</td> <td>Diesel</td> <td>1000</td> <td>5000</td> </tr> </tbody> </table> - Display fuel wise average sales in the first quarter. - Display segment wise highest sales in the second quarter. - Display the records in the descending order of sales in the second quarter. OR Predict the output of the following queries based on the table CAR_SALES given above: - SELECT LEFT(SEGMENT,2) FROM CAR_SALES WHERE FUEL= "PETROL"; - SELECT (QT2-QT1)/2 "AVG SALE" FROM CAR_SALES WHERE SEGMENT= "SUV"; - SELECT SUM(QT1) "TOT SALE" FROM CAR_SALES WHERE FUEL= "DIESEL";	NUMBE R	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	3
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7	Sedan	Petrol	8000	10000																																											
8	Sedan	Diesel	1000	5000																																											
	Section - D (2x4 = 8 marks)																																														
33	The heights of 10 students of eighth grade are given below: Height_cms=[145,141,142,142,143,144,141,140,143,144]	4																																													

	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.																									
34	Write suitable SQL queries for the following: i. To calculate the exponent for 3 raised to the power of 4. ii. To display current date and time. iii. To round off the value -34.4567 to 2 decimal place. iv. To display the length of the string 'FIFA World Cup'. OR Kavita has created following table named exam: <table><tr><th>RegNo</th><th>Name</th><th>Subject</th><th>Marks</th></tr><tr><td>1</td><td>Sanya</td><td>Computer Science</td><td>98</td></tr><tr><td>2</td><td>Sanchay</td><td>IP</td><td>100</td></tr><tr><td>3</td><td>Vinesh</td><td>CS</td><td>90</td></tr><tr><td>4</td><td>Sneha</td><td>IP</td><td>99</td></tr><tr><td>5</td><td>Akshita</td><td>IP</td><td>100</td></tr></table> Help her 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 remove the records of those students whose marks are less than 30 . iii. To add a new column Grade of suitable datatype. iv. To display records of “Informatics Practices” subject.	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	4
RegNo	Name	Subject	Marks																							
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3	Vinesh	CS	90																							
4	Sneha	IP	99																							
5	Akshita	IP	100																							
	Section - E (3x5 = 15 marks)																									
35	XYZ Media house campus is in Delhi and has 4 blocks named Z1, Z2, Z3 and Z4. The tables given below show the distance in meters between different blocks and the number of computers in each block. <table><tr><td>Z1 to Z2</td><td>80</td></tr><tr><td>Z1 to Z3</td><td>65</td></tr><tr><td>Z1 to Z4</td><td>90</td></tr><tr><td>Z2 to Z3</td><td>45</td></tr><tr><td>Z2 to Z4</td><td>120</td></tr><tr><td>Z3 to Z4</td><td>60</td></tr></table> <table><tr><th>Block</th><th>Number of Computers</th></tr><tr><td>Z1</td><td>135</td></tr><tr><td>Z2</td><td>290</td></tr><tr><td>Z3</td><td>180</td></tr><tr><td>Z4</td><td>195</td></tr></table>	Z1 to Z2	80	Z1 to Z3	65	Z1 to Z4	90	Z2 to Z3	45	Z2 to Z4	120	Z3 to Z4	60	Block	Number of Computers	Z1	135	Z2	290	Z3	180	Z4	195	5		
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	The company is planning to form a network by joining these blocks. i. Out of the four blocks on campus, suggest the location of the server that will provide the best connectivity. Explain your response. ii. For very fast and efficient connections between various blocks within the campus, suggest a suitable topology and draw the same. iii. Suggest the placement of the following devices with justification (a) Repeater (b) Hub/Switch iv. VoIP technology is to be used which allows one to make voice calls using a broadband internet connection. Expand the term VoIP. 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.																																									
36	Thomas, 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: <table><tr><td>Store</td><td>Qtr1</td><td>Qtr2</td><td>Qtr3</td><td>Qtr4</td></tr><tr><td>0 Store1</td><td>300</td><td>240</td><td>450</td><td>230</td></tr><tr><td>1 Store2</td><td>350</td><td>340</td><td>403</td><td>210</td></tr><tr><td>2 Store3</td><td>250</td><td>180</td><td>145</td><td>160</td></tr></table> Answer the following questions: i. Predict the output of the following python statement: a. print(df.size) b. print(df[1:3]) ii. Delete the last row from the DataFrame. iii. Write Python statement to add a new column Total_Sales which is the addition of all the 4 quarter sales.	Store	Qtr1	Qtr2	Qtr3	Qtr4	0 Store1	300	240	450	230	1 Store2	350	340	403	210	2 Store3	250	180	145	160	5 (2+1+2)																				
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1 Store2	350	340	403	210																																						
2 Store3	250	180	145	160																																						
37	Satyam, a database analyst has created the following table: Table: Student <table><tr><th>RegNo</th><th>SName</th><th>Stream</th><th>Optional</th><th>Marks</th></tr><tr><td>S1001</td><td>Akshat</td><td>Science</td><td>CS</td><td>99</td></tr><tr><td>S1002</td><td>Harshit</td><td>Commerce</td><td>IP</td><td>95</td></tr><tr><td>S1003</td><td>Devika</td><td>Humanities</td><td>IP</td><td>100</td></tr><tr><td>S1004</td><td>Manreen</td><td>Commerce</td><td>IP</td><td>98</td></tr><tr><td>S1005</td><td>Gaurav</td><td>Humanities</td><td>IP</td><td>82</td></tr><tr><td>S1006</td><td>Saurav</td><td>Science</td><td>CS</td><td>NULL</td></tr><tr><td>S1007</td><td>Bhaskar</td><td>Science</td><td>CS</td><td>96</td></tr></table> He has written following queries: (a) select sum(MARKS) from student where OPTIONAL= 'IP' and	RegNo	SName	Stream	Optional	Marks	S1001	Akshat	Science	CS	99	S1002	Harshit	Commerce	IP	95	S1003	Devika	Humanities	IP	100	S1004	Manreen	Commerce	IP	98	S1005	Gaurav	Humanities	IP	82	S1006	Saurav	Science	CS	NULL	S1007	Bhaskar	Science	CS	96	5
RegNo	SName	Stream	Optional	Marks																																						
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S1002	Harshit	Commerce	IP	95																																						
S1003	Devika	Humanities	IP	100																																						
S1004	Manreen	Commerce	IP	98																																						
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S1006	Saurav	Science	CS	NULL																																						
S1007	Bhaskar	Science	CS	96																																						

	STREAM= 'Commerce'; (b) select max(MARKS)+min(MARKS) from student where OPTIONAL= 'CS'; (c) select avg(MARKS) from student where OPTIONAL= 'IP'; (d) select length(SNAME) from student where MARKS is NULL; (e) select avg(MARKS) from student group by stream; Help him in predicting the output of the above given queries. OR Based on the above given table named 'Student', Satyam has executed following queries: a) Select count(*) from student; b) Select count(*) from student group by stream; c) Select count(MARKS) from student; d) select max(MARKS)+min(MARKS) from student where OPTIONAL= 'IP'; e) Select * from student where marks is NULL; Predict the output of the above given queries.	
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