

केन्द्रीय विद्यालय संगठन तिनसुकिया संभाग
KENDRIYA VIDYALAYA SANGATHAN TINSUKIA REGION
पूर्वपरीषदीयपरीक्षा2025-26 / PRE-BOARD EXAMINATION 2025-26

विषय/Subject :- INFORMATICS PRACTICES

विषयकोड (सीबीएसई)/Subject Code(CBSE):-065

कक्षा/ Class:-बारहवीं-XII

प्रश्नपत्रकोड /Q.P. Code:- QP12AIP02PB25

निर्धारितसमय/Time Allowed:- 3 घंटे

अधिकतमअंक/Maximum Marks :-70

General Instructions:

- Please check 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 carries1Mark.
- Section B consists of 7 questions(22 to 28).Each question carries 2 Marks.
- Section C consists of 4 questions(29to32). Each question carries 3 Marks.
- Section D consists of 2 case study type 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.

QNo.	Section-A(21x1=21Marks)	Marks
1	Missing data in Pandas object is represented through: (A) Null (B) None (C) NaN (D) Missing	1
2	Write the output of the following SQL Query: <code>SELECT INSTR('Sangathan', 'San');</code> (A) 0 (B) 1 (C) error (D) cannot be predicted	1
3	_____ help in data protection through copyrights, patents and trademarks: (A) Data Privacy Right (B) Right to Innovation (C) Intellectual Property Rights (IPR) (D) Right to Data Protection	1
4	What will be the output of <code>pd.DataFrame([1, 2, 3])</code> ? A) A DataFrame with one column and three rows B) A DataFrame with three columns and one row C) An error D) A Series	1
5	Inwhichofthenetworktopologiesdoalldevicesconnecttoacentralpoint,such as a switch or hub? (A)Star (B)Bus (C)Tree (D)Mesh	1

6	Which of the following is the correct output of the following SQL command? SELECT ROUND(1876.45693,3); (A) 1876.457 (B) 1876.456 (C) 1900 (D) 1900.45693	1
7	Online posting of rumours, giving threats online, posting the victim's personal information, comments aimed to publicly ridicule a victim is termed as _____. (A) Cyber bullying (B) Cyber crime (C) Cyber insult (D) All of the above.	1
8	What will be the output? import pandas as pd data = {'Name': ['John', 'Alice'], 'Age': [25, 30]} df = pd.DataFrame(data) print(df['Name'][1]) A) John B) Alice C) 25 D) Error	1
9	State whether the following statement is True or False: In SQL, the HAVING clause is used to apply filter on groups formed by the GROUP BY clause.	1
10	The device used to connect two networks using different protocols is: (A) Router (B) Repeater (C) Gateway (D) Hub	1
11	Which of the following is the correct output of the following SQL command? SELECT UCASE(SUBSTR("Project Management",9,6)); (A) Manag (B) Manage (C) MANAGE (D) manage	1
12	In a Pandas DataFrame, if the tail() function is used without specifying the optional argument indicating the number of rows to display, what is the default number of rows displayed, considering the DataFrame has 10 entries? (A) 0 (B) 1 (C) 4 (D) 5	1
13	Contract or agreement between user and creator permitting to use creation with limitations is: (A) Copyright (B) License (C) Mutual Deed (D) None of these	1
14	If the substring is not present in a string, the INSTR() returns: (A) -1 (B) 1 (C) NULL (D) 0	1
15	What will be the output of the following code? import pandas as pd s = pd.Series([10, 20, 30], index=['a', 'b', 'c']) print(s['b']) A.10 B. 20 C. b D. Error	1
16	A _____ is a document commonly written and is accessible through the internet or other network using a browser? (A) accounts (B) data (C) web page (D) search	1

17	Which aggregate function returns the number of rows in a result set, including rows with NULL values? (A) COUNT(column) (B) COUNT(*) (C) SUM(column) (D) AVG(column)	1
18	Which attribute checks the existence of NaN value in a Series? A. len() B. count() C. values() D. hasnans()	1
19	What does RIGHT('EXAMINATION', 6) return? (A) ATION (B) TION (C) NATION (D) INATION	1
Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as:		

	<p>(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A)</p> <p>(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)</p> <p>(C) Assertion (A) is True, but Reason (R) is False</p> <p>(D) Assertion (A) is False, but Reason (R) is True</p>	
--	---	--

20	<p>Assertion (A): DataFrame has both a row and column index.</p> <p>Reason (R): A DataFrame is a two-dimensional labeled data structure like a table of MySQL</p>	1
21	<p>Assertion (A) : The COUNT(column_name) and COUNT(*) functions can produce different results when used with GROUP BY.</p> <p>Reason (R) : COUNT(column_name) counts only non-NULL values in the specified column, while COUNT(*) counts all rows regardless of NULL values.</p>	1

QNo.	Section-B(7x2=14Marks)	Marks
-------------	-------------------------------	--------------

22	<p>(A) What is a Series in Python Pandas? Also, give a suitable example to support your answer.</p> <p style="text-align: center;">OR</p> <p>(B) Give the output of the following code: import pandas as pd df=pd.DataFrame(['Apple','Banana','Orange','Grapes','Guava']) print(df[2:4:2])</p>	2
----	---	---

23	What is identity theft? Explain with example.	2
----	---	---

24	What will be the output of the following code: <pre>import pandas as pd df = pd.Series([0, 1, 2, 3, 4, 5, 6, 7, 8, 9], index = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']) print(df[0:-2:-2])</pre>	2
25	(A) Explain the terms Web Page and Home Page. OR (B) Compare and contrast – STAR and BUS topologies.	2
26	Consider the given SQL string: “Informatics Practices Exam” Write suitable SQL queries for the following: I. Returns the position of the first occurrence of the substring “mat” in the given string. II. To extract last six characters from the string	2
27	List any two benefits of e-waste management.	2
28	(A) Consider the following code and answer the questions that follow <pre>import pandas as pd data = { 2021: {'A':10, 'B':12, 'C':10, 'D':14}, 2022: {'A':8, 'B':9, 'C':11, 'D':12}, 2023: {'A':10, 'B':10, 'C':11, 'D':12}, 2024: {'A':6, 'B':12, 'C':14, 'D':16} } profit = pd.DataFrame(data) i)print(profit.head(2)) ii) print(profit.loc['A'])</pre> OR (B) Consider the following dataframe, product, answer the questions that Follow <pre> prodid pname qty price 0 1 pen 2 300 1 2 pencil 10 20 2 3 eraser 10 50 3 4 color 30 40 4 5 sharpener 10 15</pre> i) Display the names of products. ii) Rename the column ‘price’ as ‘newprice’	2
QNo	Section-C(4x3=12Marks)	Marks
29	Sumit got good marks in all subjects. His father gifted him a laptop. He would like to make Sumit aware of health hazards associated with inappropriate and excessive use of laptop. Help his father to list the points which he should discuss with Sumit.	3

30	(A)	<p>Consider the given DataFrame ' Stock'</p> <table border="1"> <thead> <tr> <th></th> <th>Name</th> <th>Price</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>BSE</td> <td>220</td> </tr> <tr> <td>1</td> <td>NCDEX</td> <td>115</td> </tr> <tr> <td>2</td> <td>MCX</td> <td>145</td> </tr> <tr> <td>3</td> <td>INX</td> <td>285</td> </tr> </tbody> </table> <p>Write suitable Python statements for the following:</p> <ol style="list-style-type: none"> i. Add a column called Special_Price with the following data: [250,150,185,320]. ii. Add a new Stock of Name 'NSE' having Price as 295 iii. Remove the column Price. <p>OR</p>		Name	Price	0	BSE	220	1	NCDEX	115	2	MCX	145	3	INX	285	3
	Name	Price																
0	BSE	220																
1	NCDEX	115																
2	MCX	145																
3	INX	285																
31	(B)	<p>Write a Python Program to create a Pandas Series as shown below using a dictionary. Note that the left column indicates the indices and the right column displays the data.</p> <table border="1"> <tbody> <tr> <td>Karnataka</td> <td>Bengaluru</td> </tr> <tr> <td>Bihar</td> <td>Patna</td> </tr> <tr> <td>Jharkhand</td> <td>Ranchi</td> </tr> </tbody> </table>	Karnataka	Bengaluru	Bihar	Patna	Jharkhand	Ranchi	3									
Karnataka	Bengaluru																	
Bihar	Patna																	
Jharkhand	Ranchi																	

32

(A)

Consider the table 'Graduate' given below and write SQL commands:

RollNo	Name	Stipend	Subject	Percent	DIV
101	Karan	4000	Physics	78.5	III
102	Diwakar	4500	Chemistry	88.5	II
103	Rekha	3000	Accounts	92.5	I
104	John	5000	Economics	95	I
105	Vikas	4000	Biology	76.5	III

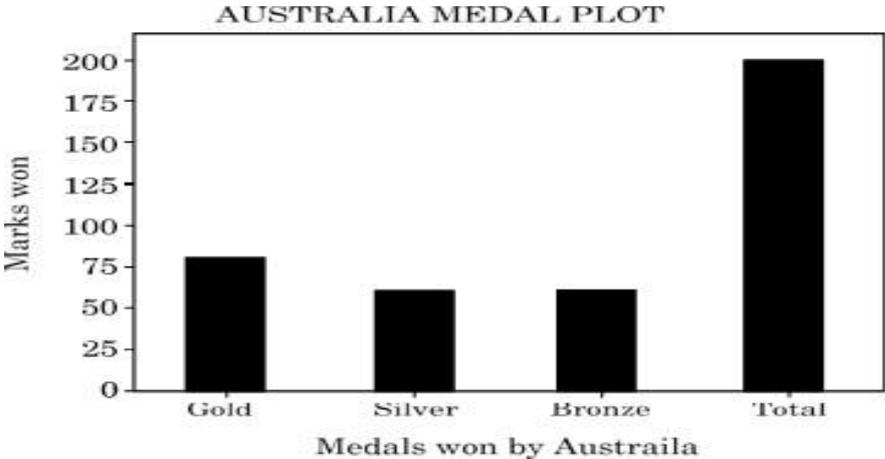
3

- To display the roll number, name and subject in increasing order of percent.
- To display the roll number, name, stipend and division of those student who are having 'a' in their name.
- To display the first 3 characters of name for all the students.

OR

(B)

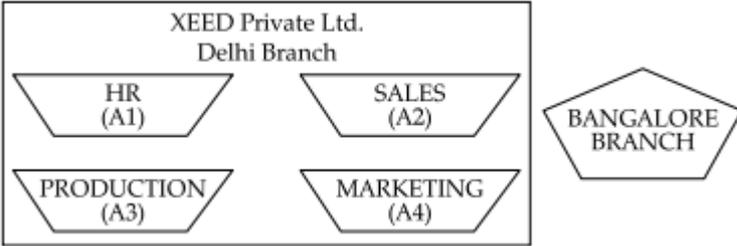
- SELECT Name, LENGTH(Name) FROM Graduate WHERE Percent < 85;
- SELECT LEFT(Name,5) FROM Graduate;
- SELECT MAX(Percent), MIN(Percent) FROM Graduate;

QNo.	Section-D(2 x4=8 Marks)	Marks										
33	<p>Write code to draw the following bar graph representing the total number of medals won by Australia. Also write the command to give title, label (x and y axis),show and save it.</p> <div style="text-align: center;">  <table border="1"> <caption>AUSTRALIA MEDAL PLOT</caption> <thead> <tr> <th>Medal Type</th> <th>Marks won</th> </tr> </thead> <tbody> <tr> <td>Gold</td> <td>75</td> </tr> <tr> <td>Silver</td> <td>60</td> </tr> <tr> <td>Bronze</td> <td>60</td> </tr> <tr> <td>Total</td> <td>200</td> </tr> </tbody> </table> </div> <pre> import _____ .pyplot as plt #line1 medal=['Gold','Silver','Bronze','Total'] marks=[75,60,60,200] plt.bar(medal,marks) plt.title("_____") #line2 plt.xlabel("Medals won by Australia") plt._____ ("Marks won") #line3 plt.plot() plt._____ ("Australia.png") #line4 </pre> <ol style="list-style-type: none"> i) Write the suitable library to be imported. ii) Write the suitable Title for the graph. iii) Write the function used for labeling y axis. iv) Write the function used to save the graph. 	Medal Type	Marks won	Gold	75	Silver	60	Bronze	60	Total	200	4
Medal Type	Marks won											
Gold	75											
Silver	60											
Bronze	60											
Total	200											

34	(A)	<p>Write suitable SQL queries for the following:</p> <ol style="list-style-type: none"> Display 4 characters from third position of string "Computer Lab". Round off the value 2.372 to one decimal place. Display today's day name Remove the extra spaces from both side of the string " Python is Dangerous ". <p>OR</p> <p>(B) Sanya has created following table named exam:</p> <table border="1"> <thead> <tr> <th>RegNo</th> <th>Name</th> <th>Subject</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Dhanya</td> <td>Computer Science</td> <td>98</td> </tr> <tr> <td>2</td> <td>Sanjay</td> <td>IP</td> <td>100</td> </tr> <tr> <td>3</td> <td>Vimala</td> <td>CS</td> <td>85</td> </tr> <tr> <td>4</td> <td>Sneha</td> <td>IP</td> <td>75</td> </tr> <tr> <td>5</td> <td>Akshay</td> <td>IP</td> <td>100</td> </tr> </tbody> </table> <p>Help her in writing SQL queries to perform the following task:</p> <ol style="list-style-type: none"> Insert a new record in the table having following values: [6,'Arnav','CS',76] To change the value "IP" to "Informatics Practices" in subject column. To remove the records of those students whose marks are less than 50 To add a new column Grade of suitable datatype. 	RegNo	Name	Subject	Marks	1	Dhanya	Computer Science	98	2	Sanjay	IP	100	3	Vimala	CS	85	4	Sneha	IP	75	5	Akshay	IP	100	4
RegNo	Name	Subject	Marks																								
1	Dhanya	Computer Science	98																								
2	Sanjay	IP	100																								
3	Vimala	CS	85																								
4	Sneha	IP	75																								
5	Akshay	IP	100																								

--	--	--

QNo.	Section-E(3x 5 =15 Marks)	Marks
------	----------------------------------	--------------

35	<p>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:</p> <div style="text-align: center;">  </div> <p>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). Number of computers in each of the wing:</p> <table border="1"> <thead> <tr> <th>Wings</th> <th>No of Computers</th> </tr> </thead> <tbody> <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> </tbody> </table>	Wings	No of Computers	A1	50	A2	40	A3	110	A4	60	5
Wings	No of Computers											
A1	50											
A2	40											
A3	110											
A4	60											

Distance between the wings are as follows:

A1 to A2	40 m
A1 to A3	25 m
A1 to A4	170 m
A2 to A3	30 m
A2 to A4	25 m
A3 to A4	20 m
Delhi Head Office to Bangalore Office	2154 km

Based on the above specifications, answer the following questions:

- (i) Suggest the topology and draw the most suitable cable layout for connecting all the divisions of Delhi branch.
- (ii) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting Production (A3) with the Bangalore branch.
- (iii) Which device can be used to connect the network of Delhi Branch to the Internet? This device should be able to receive data, analyze it and then transmit it to the network.
- (iv) Suggest the placement of switch/hub with 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

36

Wizbiz Corporation is recording the quarterly sales data of its three products through different departments.in a dataframe named "Sales":

	Qtr1	Qtr2	Qtr3	Qtr4
Product1	3500	4200	4800	5100
Product2	2800	3100	3600	3900
Product3	1500	1800	2100	2400

- i) Write a suitable python statement to display details of Product1 and Product2 only.
- ii) Write a suitable python statement to rename the column Qtr4 as "Annual".
- iii) Write suitable python statement to export this data into a csv file in a file "SalesReport.csv".
- iv) Write Python statement to display total sales done in 'Qtr1' and 'Qtr2' for each product.

(1+1+1+2)

37	(A)	<p>Write suitable SQL query for the following:</p> <ol style="list-style-type: none"> Display the position of “VIDYALAYA” in the string “KENDRIYA VIDYALAYA SANGATHAN” Extract 3 characters from position 4 from the string“ ELECTRICITY DEPARTMENT ” after removing leading and trailing spaces from the string. Display the square of the length of the number “153.76”. Display the remainder of day of our International yoga day (21 june 2015) divided by it’s month. Display today’s day name. <p>OR</p>	5
	(B)	<p>Explain the following SQL functions using suitable examples</p> <ol style="list-style-type: none"> MOD() MONTHNAME() DAYNAME() ROUND() INSTR() 	