KENDRIYA VIDYALAYA SANGATHAN TINSUKIA REGION

पूर्व परिषदीय परीक्षा 2025-26 / PRE-BOARD EXAMINATION 2025-26

विषय/Subject :- Informatics Practices विषय कोड (सीबीएसई)/Subject Code(CBSE):- 065

कक्षा/ Class:- बारहवीं-XII

प्रश्न पत्र कोड /Q.P. Code:- QP12AIP01PB25

निर्धारित समय/Time Allowed:- 3 घंटे अधिकतम अंक/Maximum Marks :- 70

सामान्य निर्देश/ GENERAL INSTRUCTIONS:-

निम्नलिखित निर्देशों को ध्यानपूर्वक पढ़िए एवं उनका पालन कीजिये :

Read the following instructions carefully and follow them:

(i) All questions are compulsory.

(ii) The examination paper contains five sections, from Section A to Section E.

(iii) Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.

(iv) Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.

(v) Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.

(vi) Section D consists of 2 questions (33 to 34). Each question carries 4 Marks.

(vii) Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.

(viii) There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.

(ix) All programming questions are to be answered using Python Language only.

(x) In case of MCQ, text of the correct answer should also be written.

प्रश्न क्र./ Q. No.	SECTION – A (21 × 1 = 21 MARKS)	अंक/ Marks
1	tail() function returns last n rows based on the value of n passed as a parameter. (True/False)	1
2	What will be the result of the following SQL query? SELECT SUBSTR("INFORMATICS PRACTICES", 3,4); (A) ORMA (B) FO (C) FORM (D) FOR	1
3	Samridhi has recently changed his school so she is not aware of the people, but someone is posting negative, demeaning comments on her social media profile. She is also getting repeated mails from unknown people. Every time she goes online, she finds someone chasing her online. Smaridhi is a victim of _____ (A) Eavesdropping (B) Stolen identity (C) Phishing (D) Cyber stalking	1
4	CSV stands for: (A) Column Separated Value (B) Class Separated Value	1

	(C) Comma Separated values (D) None of the above	
5	For web pages where the information is changed frequently, for example, stock, prices, weather information which out of the following options would you advice? (A) Static webpage (B) Dynamic webpages (C) Both A and B (D) None of the above	1
s6	What is the purpose of the INSTR(str, sub_str) in SQL. Assuming str is string and sub_str is sub string. (A) Replace string with sub string (B) Find the position of sub string in given string (C) Insert substring in string (D) None of the above	1
7	The term 'Intellectual property Rights' covers: (A) Copyrights (B) Trademarks (C) Patents (D) All of these	1
8	In Python Pandas, while performing mathematical operations on series, index matching is implemented and all missing values are filled in with _____by default. (A) Null (B) Blank (C) NaN (D) Zero	1
9	Consider a table named Students that has one primary key and three alternate keys. How many candidate keys does the table have? (A) 1 (B) 2 (C) 3 (D) 4	1
10	Ramanpreet has to work on his science project which deals with electromagnetic waves. A lot of research works required by him for the same. He uses Google Chrome to search the relevant matter. He finally locates some useful information and clicks on the link provided to access the website. The link is actually known as _____. (A) Domain name (B) Web Page (C) URL (D) IP address	1
11	Fill in the Blank The COUNT(*) function provides the total number of _____ within a relation (table) in a relational database. (A) Columns (B) Unique values (C) Not-null values (D) Rows	1

12	Pandas series is size _____ and value _____. . (A) mutable, mutable (B) immutable, immutable (C) mutable, immutable (D) immutable, mutable	1
13	A software company purchases new computers every year and discards the old ones into the local dumping yard. Write the name of the most appropriate category of waste that the organisation is creating every year, out of the following options: (A) E-Waste (B) Business Waste (C) Commercial Waste (D) Solid Waste	1
14	Match the following SQL functions/clauses with their descriptions: SQL Function / Description P. MAX() — 1. Find the position of a substring in a string. Q. SUBSTRING() — 2. Returns the maximum value in a column. R. INSTR() — 3. Sorts the data based on a column. S. ORDER BY — 4. Extracts a portion of a string. (A) P-2, Q-4, R-3, S-1 (B) P-2, Q-4, R-1, S-3 (C) P-4, Q-3, R-2, S-1 (D) P-4, Q-2, R-1, S-3	1
15	To display 3rd, 4th 5th columns from 6th to 9th rows of a dataframe DF, you can write _____. (A) DF.loc[3:5 , 6:9] (B) DF.loc[6:10 , 3:6] (C) DF.iloc[6:10 , 3:6] (D) DF.iloc[5:9 , 2:5]	1
16	In which of the network topology all nodes on the network is connected to a central device, such as a hub, switch, or router? (A) Star (B) Tree (C) Mesh (D) Bus	1
17	The MIN() function in MySQL is an example of _____. (A) Math Fucntion (B) Text Fucntion (C) Date Fucntion (D) Aggregate Function	1
18	Fill in the blank Boolean indexing in Pandas DataFrame can be used for _____. (A) Creating a new dataframe (B) Sorting data based on index labels (C) Joining data using labels (D) Filtering data based on condition	1
19	Which one of the following is a DDL command? (A) CREATE (B) SELECT (C) UPDATE	1

	(D) DELETE	
	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) : .loc() is a lable based data selecting method to select a specific row(s) or column(s) which we want to select. Reason (R) : .iloc( ) cannot be used with default indices if customized indices are provided.	1
21	Assertion (A) : The UNIQUE and PRIMARY KEY constraints are similar but not the same. Reason (R) : There can be only one column with PRIMARY KEY constraint, in a table.	1
प्रश्न क्र./ Q. No.	SECTION – B (7 × 2 = 14 MARKS)	अंक/ Marks
22	A. What is a Series in Python Pandas? Which module you need to import in your program to create a Series? **OR** B. What is a DataFrame in Python Pandas? Explain with an example.	2
23	What is data protection? Write two steps to protect your data.	2
24	Consider a given Series, S1. Write a program in Python Pandas to create the series using dictionary. Term1 67 Term2 56 Term3 77 Term4 89	2
25	A. Alisha needs a network device that should regenerate the signal over the same network before the signal becomes too weak or corrupted. Chris needs a network device to connect two different networks together that work upon different networking models so that the two networks can communicate properly. Name the device that should be used by Alisha and Chris. **OR** B. Shivansh is confused between the tern Web Server and Web Hosting. Help him by given two points of difference between Web Server and Web Hosting.	2
26	Consider the string “Computer Science and Engineering”. Write a suitable SQL queries for the following: i. To extract and display Engine from the string. ii. To find the number of characters in the string.	2
27	What is E-waste management? Write any two advantages of E-waste management.	2
28	A. Sonali is writing a Python program to create a DataFrame using a list of dictionaries. However, her code contains some mistakes. Rewrite the correct code, and underline the corrections made. import Panda as pd D1 = {'Name': 'Rabin', 'Mark': 25} D2 = {'Name': 'Piyush', 'Mark': 30} D3 = {'Name': 'Ayush'', 'Mark': 28} data = (D1,D2,D3) df = pd.Dataframe(data) Print(Df)	2

OR

B. Complete the given Python code to get the required output (ignore the dtype attribute)

Output:

```
Odisha      BBSR
MP          Bhopal
WB          Kolkata
```

Code:

```
import _______ as pd
data = ['_________','_______','Kolkata']
indx = ['Odisha', 'MP', 'WB']
s = pd.Series(_______, indx)
print(_______)
```

Q. No.	SECTION – C (4 × 3 = 12 MARKS)	Marks
29	Explain the following: (a) Plagiarism (b) Cyber bullying (c) FOSS	3
30	A. (i) Write a Python program to create the following DataFrame using a list of dictionaries	3

	COMPANY	CITY
CI	MICROSOFT	SAN FRANCISCO
C2	COCA-COLA	NEWYORK
C3	INFOSYS	BANGLORE
C4	TVS	DELHI

(ii) Write command to delete CITY column without function.

OR

B. (i) 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.

INDIA	NEW DELHI
SRI LANKA	COLOMBO
NEPAL	KATHMANDU
BHUTAN	THIMPU

(ii) Write command to delete value at index Nepal.

31	Write an SQL statement to create a table named **PRODUCT**, with the following specifications.		2+1

Column Name	**Data Type**	**Key**
P_id	Integer	Primary key
P_name	Varchar(25)	-
Brand	Char(15)	-
Price	Decimal (8,2)	-

(ii) Write a query to insert a record in above table as (105, "Refrigerator", "Onida", 22499.00)

32	A. Nikhil electronics maintain the following tables for his products:		3

Table : ITEM

Item_code	**Item_name**	**Price**
111	Refrigerator	75000
222	Television	45000
333	Computer	55000
444	Washing machine	30000

Table : BRAND

Item_code	**Brand_name**
1111	LG
222	Sony

333	Dell
444	Samsung

Write SQL queries for the following:

i. To display Item_code, Item_name and corresponding Brand_name of those items, whose price is between 20000 to 50000 (both values included).

ii. To display Item_name, price and Brand_name of the item which has item_name as Television.

iii. To increase the price of all the items by 10%.

OR

B. Consider the following tables:

Table : EMPLOYEE

E_id	E_name	Dept
201	Anish	HR
202	Angel	IT
203	Akshita	Finance
204	Vedda	IT
205	Nishi Priya	HR

Table : PROJECT

E_id	Project	Hours
201	Recruitment	30
202	Development	40
203	Audit	25
204	Development	20
205	Hiring	35

Write appropriate queries for the following:

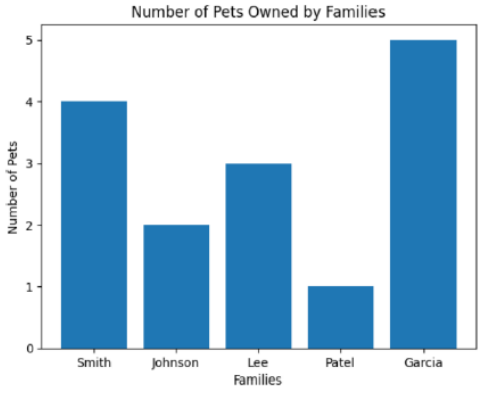
(i) Display the total numbers of hours worked on each project.

(ii) Display the name of all the employees who have worked on more than 30 hours.

(iii) Display the employees names along with their corresponding projects.

प्रश्न क्र./ Q. No.	SECTION – D (2 × 4 = 8 MARKS)	अंक/ Marks

33 Write a python code to plot below bar graph using appropriate title, x and y labels and save the figure. 4



34 A. Based on below table write SQL queries for below questions: 4

Minerals

MineralId	Name	Hardness	Color	Density
1	Quartz	7	Clear	2.65
2	Diamond	10	Colorless	3.52
3	Talc	1	Green	2.7

4	Feldspar	6	White/Grey	2.56
5	Calcite	3	White	2.71

i. Write a query to find the average density of all the minerals.
ii. Write a query to find maximum and minimum hardness of minerals in the table.
iii. Write a query to calculate the total hardness of minerals.
iv. Write a query to count number of minerals for each hardness level.

OR

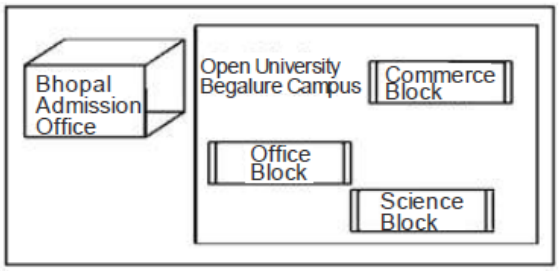
B. Consider the following table and write the output of the following SQL queries.

Table : Doctor

Doc_id	Dname	Dept	Charges	VisitDays
D01	R. Sharma	ENT	1000	Mon
D02	C. Basak	ENT	1500	Wed
D03	M. Agarwal	PAED	6000	Sat
D04	D. Joseph	Ortho	1200	Sun
D05	M. Fernandes	Ortho	4000	Thu

(i) Select Dname from doctor where visitdays IN ('Mon', 'Thu');
(ii) Select dept, count(*) from doctor group by dept;
(iii) Select right(Dname, 4) from doctor where charges >4000;
(iv) Select MOD(charges, 5) from doctor where Dname like (%p_);

प्रश्न क्र./ Q. No.	SECTION – E (3 × 5 = 15 MARKS)	अंक/ Marks
35	Open University of India is starting its first campus in Bengaluru with its centre, admission office in Bhopal. The university has three major blocks comprising Office block, Science block and Commerce block is in a 5 km area campus.	5



As a network expert, you need to suggest the network plan as per (a) to (e) to the authorities keeping in mind the distance and other given parameters.

Expected wire distance between various locations

Blocks	Distance
Office Block to Science Block	90 m
Office Block to Commerce Block	80 m
Science Block to Commerce Block	15 m
Bhopal Admission Office to Bengaluru Campus	1400 km

Expected number of computers to be installed at various locations in the university are as follows:

Blocks	Number of Computers
Office Block	10
Science Block	140
Commerce Block	30

a. Suggest the authorities, the cable layout amongst various blocks inside university campus

<table>
<tr><td></td><td>for connecting the blocks.
b. Suggest the most suitable place (i.e. block) to house the server for this university with a suitable reason.
c. Suggest an efficient device form the following to be installed in each of the blocks to connect all the computers.
(i) Modem (ii) Switch (iii) Gateway
d. Suggest the most suitable (very high speed) service to provide data connectivity between admission office located in Bhopal and the campus located in Bengaluru form the following options:
● Telephone line
● Fixed Line dial-up connection
● Coaxial cable network
● GSM
● Leased line
● Satellite connection.
e. University is planning to connect its campus in Bhopal, which is more than 1400 km. Which type of network will be formed?</td><td></td></tr>
<tr><td>36</td><td>Consider the DataFrame df shown below.
<table><tr><th></th><th>PlayerID</th><th>P_Name</th><th>Year</th><th>AVG</th></tr><tr><td>0</td><td>1</td><td>Sachin</td><td>2010</td><td>55.0</td></tr><tr><td>1</td><td>2</td><td>Saurabh</td><td>2009</td><td>45.0</td></tr><tr><td>2</td><td>3</td><td>Rahul</td><td>2011</td><td>46.0</td></tr><tr><td>3</td><td>4</td><td>Virat</td><td>2020</td><td>50.0</td></tr><tr><td>4</td><td>5</td><td>M S Dhoni</td><td>2015</td><td>47.0</td></tr></table>
Write Python statements for the DataFrame df to :
I. Remove the column Year.
II. Rename the column name 'P_Name' to 'Player'.
III. Print the first three rows of the DataFrame df.
IV. Display the data of the ‘P_Name' column from indexes 1 to 3 (both included)
V. Display P_Name of all the players.</td><td>5</td></tr>
<tr><td>37</td><td>(A) Write suitable SQL query for the following:
i. Display 7 characters extracted from 7th left character onwards from the string ‘INDIA SHINING’.
ii. Display the position of occurrence of string ‘COME’ in the string ‘WELCOME WORLD’.
iii. Round off the value 78.779 to 2nd decimal place.
iv. Display the remainder of 149 divided by 6.
v. Remove all the expected leading and trailing spaces from a column username of the table ‘USERS’ and convert to lowercase.
OR
(B) Write suitable SQL query for the following:
(i) Display the string "Intel" from the string “Artificial Intelligence”.
(ii) Trim the blanks from both ends from the string " madam " .
(iii) To display the name of the current month e.g.- December or January from the current date.
(iv) To convert the string "lower" into uppercase letters.
(v) To Find the first occurrence of ‘O’ in "HELLO WORLD".</td><td>5</td></tr>
</table>