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कक्षा बारहवीं प्री-बोर्ड I परीक्षा 2025-26

Pre Board I Examination 2025-26 for Class XII

Subject: Informatics Practices (065) (SET B)

TIME: 03 HOURS

M.M.: 70

General Instructions:

- All questions are compulsory.
- The examination paper contains five sections, from Section A to Section 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.
- There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

SECTION - A

- 1 Which attribute of a DataFrame gives the number of rows and columns? 1
A. df.size B. df.count() C. df.shape D. df.ndim
- 2 To display **multiple line graphs** in a single chart, you should: 1
a) Use multiple plt.plot() statements before plt.show()
b) Use multiple plt.show() statements
c) Use plt.subplot() function
d) Use plt.lines()
- 3 Which of the following is **true** about WHERE and HAVING? 1
a) Both are used for rows
b) WHERE filters rows; HAVING filters groups
c) HAVING filters rows; WHERE filters groups
d) Both can use aggregate functions
- 4 A teacher wants to export a DataFrame named marks into a CSV file named "marks.csv". Which statement should be used? 1
a) marks.to_csv("marks.csv")
b) marks.to_csv("marks.csv", index=False)
c) marks.save_csv("marks.csv")
d) marks.export_csv("marks.csv", index=False)

- 5 Which of the following correctly defines **Intellectual Property Rights (IPR)**? 1
 a) Rights given to individuals to use the Internet safely.
 b) Legal rights given to creators for their inventions and artistic works.
 c) Rules for protecting confidential data on the Internet.
 d) Regulations for cybercrime prevention.
- 6 Which aggregate function returns the total number of non-NULL values in a column? 1
 a) COUNT(*) b) COUNT(column_name)
 c) Both a and b d) None of the above
- 7 A school computer lab has all computers connected to a single **switch** in the center. If the switch stops working, the entire network fails. Identify the topology used. 1
 a) Bus b) Star c) Tree d) Mesh
- 8 If df is a DataFrame, what does df.head() do? 1
 a. Returns the last 3 rows of the DataFrame
 b. Returns the first 4 rows of the DataFrame
 c. Returns the first 5 columns of the DataFrame
 d. Returns the first 5 rows of the DataFrame
- 9 An email appears to be from your bank asking you to verify your account by clicking a link to credit Rs. 50000/- in your account. The link leads to a fake login page. This is an example of: 1
 a) Hacking b) Phishing c) Cyberstalking d) Data Mining
- 10 Given a Pandas series called p_series, the command which will display the last 4 rows is _____ 1
 a. print (p_series.Tail(4)) b. print (p_series.Tails(4))
 c. print (p_series.tail(4)) d. print (p_series.Tails(4))
- 11 The command
 SELECT MID('INFORMATICS', 3, 4);
 will return: 1
 a) FORM b) O c) F d) ORMA
- 12 If a DataFrame df has 10 rows and 4 columns, what will df.size return? 1
 A. 10 B. 4 C. 40 D. (10, 4)
- 13 A programmer writes: 1
 plt.plot([1,2,3,4], [10,20,25,30], linestyle='--', color='r')
 plt.show()
 How will the line appear on the graph?
 a) Dotted black line b) Solid blue line
 c) Dashed red line d) Green line with dots
- 14 Which of the following represents correct matching between network type and its typical range? 1
- | Network Type | Typical Range |
|--------------|-----------------------------|
| (i) LAN | Up to few meters |
| (ii) MAN | Up to a few kilometers |
| (iii) PAN | With in a city |
| (iv) WAN | Across countries/continents |
- Which of the following option is correct?
 a) (i) & (iii) b) (ii) & (iii) c) (iv) only d) (iii) only
- 15 What will be the content of the Series "S1"? 1
 S1 = pd.Series(range(5))
 a. 1, 2, 3, 4, 5
 b. 5

- c. 0, 1, 2, 3, 4
d. None of the above
- 16 You need to modify the data type of the Phone column in the table CUSTOMER from INT to VARCHAR(15). Which SQL command is correct? 1
a) ALTER TABLE CUSTOMER MODIFY Phone VARCHAR(15);
b) UPDATE TABLE CUSTOMER MODIFY Phone VARCHAR(15);
c) CHANGE TABLE CUSTOMER Phone VARCHAR(15);
d) ALTER CUSTOMER Phone TO VARCHAR(15);
- 17 A school's computer lab uses a device that allows multiple computers to connect and share data on the same network. However, the device **broadcasts data to all connected systems**. Identify the device. 1
a) Switch b) Hub c) Router d) Gateway
- 18 A table **EMPLOYEE** has the fields: EID, ENAME, DEPT, SALARY. To display employees who earn between 40000 and 60000, the correct SQL query is: 1
a) SELECT * FROM EMPLOYEE WHERE SALARY BETWEEN 40000 TO 60000;
b) SELECT * FROM EMPLOYEE WHERE SALARY BETWEEN 40000 AND 60000;
c) SELECT * FROM EMPLOYEE HAVING SALARY BETWEEN 40000 AND 60000;
d) SELECT * FROM EMPLOYEE HAVING SALARY BETWEEN 40000 TO 60000;
- 19 A company collects its used electronics and sends them to a certified recycling unit instead of throwing them away. This practice follows which environmental principle? 1
a) Reduce b) Reuse c) Recycle d) Recover
- 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):** The loc[] in a DataFrame is used for label-based selection of rows and columns. 1
Reason (R): The iloc[] is used for integer-based selection of rows and columns.
- 21 **Assertion (A):** The ORDER BY clause arranges query results in ascending order by default. 1
Reason (R): The keyword ASC must always be specified to sort in ascending order.

SECTION - B

- 22 Write SQL queries to perform the following: 2
a. Display the **month name** for the date '2025-12-25'.
b. Find the **length of the string** 'DataScienceRocks'.
- 23 Describe 2
a. Cyber bullying b. Cyber stalking.
- OR**
- Expand the following terms related to Computer Networks:
a. SMTP b. POP c. FTP d. TCP
- 24 Neelam, a database administrator needs to display Class wise total number of students of 'XI' and 'XII' house. She is encountering an error while executing the following query: 2

SELECT CLASS, COUNT. (*) FROM STUDENT ORDER BY CLASS HAVING
CLASS='XI' OR CLASS= 'XII';

Help her in identifying the reason of the error and write the correct query by suggesting the possible correction (s).

- 25 List any four benefits of e-waste management. 2

OR

What is IPR? Why should it be protected?

- 26 What will be the output of the following code: 2

```
>>> import pandas as pd
>>> mydata=pd.Series( ['rajesh', 'amit', 'tarun', 'Radhika'] )
>>> print(mydata < 'rajesh' )
```

- 27 Write a program in to create a series 'Emp' using a dictionary having Employee name as key and salary as value with following data - 2

Employee Name	Salary
Ashok	10000
Ravi	7500
Dinesh	12500
Akram	8000

OR

Write a program in Python Pandas to create a series named as "stu_marks" which stores marks of 4 subjects of a student in class XII B of your school.

- 28 Write any four net etiquettes. 2

SECTION - C

- 29 Ritika, a database administrator, needs to create a table named **EMPLOYEE** to store details of employees working in her company. The structure of the table is given below: 2
+
1

Column Name	Data Type	Constraint / Description
EmpID	INT	Primary Key
FirstName	VARCHAR(30)	—
LastName	VARCHAR(30)	—
Department	VARCHAR(20)	—
Salary	DECIMAL(8,2)	—

(i) Write an SQL statement to create the above table named EMPLOYEE.

(ii) Write an SQL statement to insert the following record into the EMPLOYEE table:

EmpID: 101, FirstName: Riya, LastName: Mehta, Department: HR, Salary: 55000.00

- 30 A company maintains two tables in its database: 3

Table: EMPLOYEE

EmpID	EmpName	Department	Salary
1	Riya	HR	50000
2	Aarav	IT	60000
3	Meena	HR	52000

4	Karan	IT	65000
5	Priya	Sales	55000

Table: DEPARTMENT

DeptID	Department	Manager
101	HR	Anil
102	IT	Sneha
103	Sales	Rohit

- Write an SQL query to find the **total salary** and **average salary** of all employees.
- Write an SQL query to display the **EmpName**, **Department**, and **Manager** of each employee.
- Write an SQL query to display the **Department** and **total salary** of employees **in each department**.

- 31 Riti received a message that she needs to update the KYC for her Bank Account therefore she should upload her Aadhar Card, Bank Account Number and the OTP on the link given in her message.

2
+
1

Answer the following questions:

- Should Riti upload the documents and give the OTP on the link?
- Should Riti call her bank immediately to recheck the validity of the message received?
- What is the act mentioned in the message known as?

- 32 Aarav, a geography student, wants to arrange data of a few countries in the form of three series containing their **Country Name**, **Capital City**, and **Population (in millions)** respectively.

3

Thereafter, the data of these three series has to be arranged and displayed in the form of a **DataFrame** as shown below:

Help him in writing suitable Python code to complete the task.

Country	Capital	Population (millions)
India	New Delhi	1420
USA	Washington D.C.	332
Japan	Tokyo	125
Germany	Berlin	84

OR

Kavyanjali, a chemical analyst, needs to arrange data of few elements in the form of two series containing symbols and their atomic numbers respectively. Thereafter, the data of these two series has to be arranged and displayed in the form of Data Frame as shown below:

	Symbol	Atomic Number
Hydrogen	H	1
Helium	He	2
Lithium	Li	3

Beryllium	Be	4
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Help her in writing suitable Python code to complete the task.

SECTION – D

33 (A) Consider the following table:

1X
4
= 4

Table: EMPLOYEE

Ecode	Ename	Area	Salary	Dept	Doj
S001	Ramesh	North	12000	Sales	2015-12-01
S002	Rohit	South	10500	Finance	2012-08-01
S003	Sunil	South	6800	Front Office	2018-02-01
S004	Sambhav	West	28000	Back Office	2010-04-01
S005	Ankit	East	9000	NULL	2018-10-01
S006	Rishu	North	25000	Finance	2019-02-01

Predict the output for the following SQL queries:

- (i) SELECT MAX(Salary), FROM EMPLOYEE;
- (ii) SELECT COUNT(Dept) FROM EMPLOYEE;
- (iii) SELECT UCASE(Ename) FROM EMPLOYEE WHERE MONTH(Doj)=2;
- (iv) SELECT Ename FROM EMPLOYEE WHERE Right(Ecode,1)=5;

OR

(B)Based on the given table EMPLOYEE write SQL queries to perform the following operations:

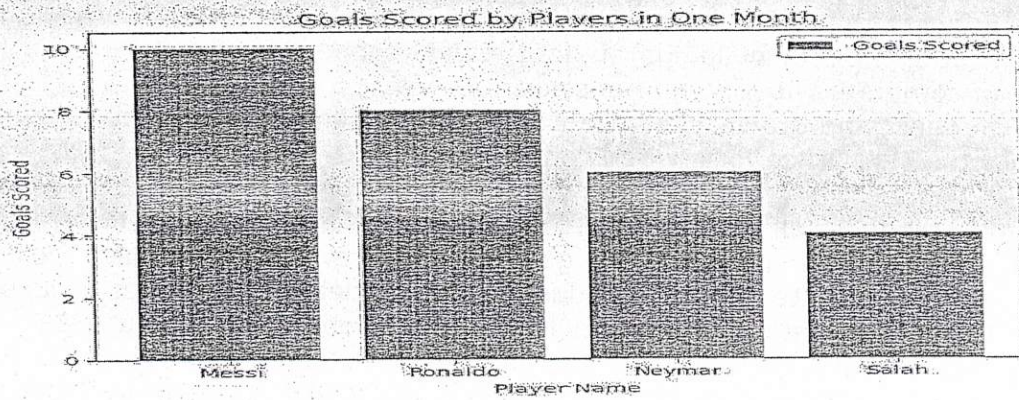
- (i) Count the total number of employees.
- (ii) Display the minimum salary from each area.
- (iii) Display the average salary from each department where number of employees is more than 1.
- (iv) Display all the records in descending order of date of joining

34 A teacher wants to visualize the number of goals scored by four football players in a month using a bar chart.

4

Data Table:

Player Name	Goals Scored
Messi	10
Ronaldo	8
Neymar	6
Salah	4



Python Code with Blanks:

```
import _____ as plt # Statement-1
players = ['Messi', 'Ronaldo', 'Neymar', 'Salah']
goals = [10, 8, 6, 4]
plt.bar(_____, _____, label='Goals Scored') # Statement-2
plt.xlabel('Player Name')
plt._____('Goals Scored') # Statement-3
plt.title('_____') # Statement-4
plt.legend()
plt.show()
```

I. Statement: Write the suitable Python import statement to use for plotting.

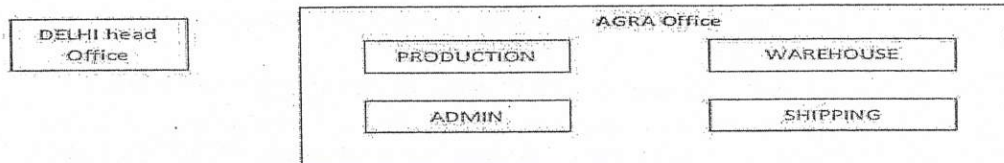
II. Statement: Fill in the blanks to plot the bars using the data.

III. Statement: Write the function to label the y-axis.

IV. Statement: Write a suitable title for the chart based on the data.

SECTION - E

- 35 Agra Shoes Pvt. Limited is an international shoe maker organization. It is planning to set up its India Office at Agra with its head office in Delhi The Agra office campus has four main buildings ADMIN, PRODUCTION, WAREHOUSE and SHIPPING. You as a network expert have to suggest the best network related solutions for their problems raised in (1) to (v), keeping in mind the distances between the buildings and other given parameters



Shortest distances between various buildings:

ADMIN to WAREHOUSE	50 Mtr
ADMIN to PRODUCTION	85 Mtr
ADMIN to SHIPPING	45 Mtr
WAREHOUSE to PRODUCTION	50 Mtr
WAREHOUSE to SHIPPING	45 Mtr
PRODUCTION to SHIPPING	40 Mtr
DELHI head office to AGRA Office	240 Km

Number of computers installed at various buildings are as follows:

ADMIN	120
WAREHOUSE	60
PRODUCTION	35
SHIPPING	18
Delhi Head Office	12

- Suggest the most appropriate location of the server inside the AGRA Office (out of the four buildings) to get the best connectivity for maximum number of computers. Justify your answer.
- Suggest and draw cable layout to efficiently connect various buildings within the AGRA Office for a wired connectivity.
- Which networking device will you suggest to be procured by the company to interconnect all the computers of various buildings of AGRA Office?
- Company is planning to get its website designed which will allow shopkeepers to see their products, shipping details themselves on its server. Out of the static or dynamic, which type of website will you suggest?
- Which of the following will you suggest to establish the online face to face communication between the people in the ADMIN office of AGRA and Delhi head office?

(A) Cable TV B) Email (C) Video conferencing (D) Text chat

- 36 XYZ Corporation maintains a record of its employees including their department, salary, and performance ratings. The HR manager wants to analyze this data to plan promotions and bonuses. Here's the current DataFrame: 55

Employee_Name	Department	Salary	Performance_Rating
Ria Sharma	IT	75000	4.5
Arjun Mehta	HR	68000	4.0
Kavya Singh	Finance	85000	4.8
Nikhil Rao	Marketing	72000	3.9
Meera Kapoor	IT	80000	4.2

Write python statement of following tasks:

- Print the details of employees who are **likely to get promoted**, i.e., those with a Performance_Rating above 4.2.
 - Add a new column "Years_in_Company" with values [5, 6, 10, 3, 7].
 - Delete the "Salary" column from the DataFrame.
 - Rename "Performance_Rating" to "Rating".
- Display only the "Employee_Name" and "Department" columns.

- 37 A company maintains several tables: Employees, Departments, Projects, and Salaries. You are required to write SQL queries for the following tasks. 5

Write suitable SQL query for the following:

- Extract the first three letters from the Department_Name column in the Departments table.
- Count the total number of employees in the Employees table.
- Display the month of the Joining_Date from the Employees table.
- Remove leading and trailing spaces from the Project_Name column in the Projects table.
- Display the current timestamp.

OR

Write suitable SQL query for the following:

- Find the length of the string 'HumanResources'.
 - Find the position of the first occurrence of the letter 'e' in the Employee_Name column of the Employees table.
 - Calculate the square root of the Salary column in the Salaries table.
 - Display the average Salary from the Salaries table.
- Display the total sum of the Salary from the Salaries table.
