

KENDRIYA VIDYALAYA SANGATHAN, DELHI REGION
PREBOARD-I EXAMINATION-2025-26
SUBJECT: INFORMATICS PRACTICES (065)
Class - XII

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MM – 70

Subject – Informatics Practices
Time – 3 Hours

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 divide 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.

SECTION A (21 x 1 = 21 Marks)

1. Vaibhav has purchased a software license and distributed its copies to his friends. This act of him is an example of:

- | | |
|---------------------------|---------------------------|
| A. Trademark Infringement | C. Copyright Infringement |
| B. Copyleft Infringement | D. Identity theft |

2. To remove the table structure along with its data, we use:

- | | |
|-----------|-----------|
| A. Delete | C. Remove |
| B. Drop | D. Clear |

3. Diya was unable to understand how her teacher knows about her digital activity when she has not shared anything with them. The teacher might have checked_____ of Diya.

- | | |
|----------------------|----------------------|
| A. Online print | C. Offline Footprint |
| B. Digital Footprint | D. Carbon Footprint |

4. Which of the following device convert analog signals to digital signals and vice versa?

- | | |
|-----------|------------|
| A. Router | C. Bridge |
| B. Modem | D. Gateway |

5. Which clause is used with GROUP BY to filter groups based on a condition?

- | | |
|-----------|-------------|
| A. Where | C. Filter |
| B. Having | D. Order by |

6. Identify the function used for write data in a csv file.

- | | |
|-------------|---------------|
| A. to.csv() | C. read_csv() |
| B. to_csv() | D. csv_read() |

7. The method to drop a column named Age from DataFrame df is:

- A. df.drop('Age', axis=0, inplace=True)
- B. df.drop('Age', axis=1, inplace=True)
- C. df.remove('Age', inplace=True)
- D. df.delete(axis=1, 'Age', inplace=True)

8. Consider the following series in python:

```
data = pd.Series([5,2,3,7], index=['a', 'b', 'c', 'd'])
```

Which statement will display all values greater than 3?

- A. print(data>3)
- B. print(data[data>3])
- C. print(data great 3)
- D. print(data[data<3])

9. Given a Pandas series called SES, the command which will display the first 5 rows is _____

- A. print (SES.head(five))
- B. print (SES.Head(5))
- C. print (SES.head())
- D. print (SES.HEAD(5))

10. Identify the Topology: In this each node is connected with help of independent cable to a central switching.

- A. Bus Topology
- B. Star Topology
- C. Ring Topology
- D. Mesh Topology

11. Which of the following statement will install pandas library in python?

- A. Pip install pandaspd
- B. pip install pandas as pd
- C. pip install pandas.pd
- D. pip install pandas

12. In Pandas which of the following dataframe attribute can be used to know total number of values in a dataframe?

- A. size
- B. index
- C. count
- D. shape

13. In a table Book(Title, Price), which query lists books priced between 200 and 500 (inclusive)?

- A. SELECT * FROM Book WHERE Price IN (200,500);
- B. SELECT * FROM Book WHERE Price BETWEEN 200 AND 500;
- C. SELECT * FROM Book WHERE Price >=200 OR Price <=500;
- D. SELECT * FROM Book WHERE Price RANGE 200-500;

14. Match the following SQL functions/clauses with their descriptions:

	SQL Function		Description
W	MAX()	1	Fetch characters from right side of a String
X	RIGHT()	2	Returns the maximum value in a column
Y	MONTH()	3	Gives index of first occurrence of a string
Z	INSTR()	4	Extracts month from a given date

- A. W-2, X-4, Y-3, Z-1
- B. W-2, X-1, Y-4, Z-3
- C. W-4, X-3, Y-2, Z-1
- D. W-4, X-2, Y-1, Z-3

15. State whether the following statement is True or False:

In SQL, UPDATE TABLE command is used to add a new column in an existing table.

16. Which keyword is used to give an alternate name to a column or table in a query result?

- A. Rename
- B. Alias
- C. As
- D. Change

17. Identify FOSS from the following:

- A. MS-Word
- B. Adobe photoshop
- C. Linux
- D. Facebook

18. What will the query **SELECT COUNT(*) FROM Orders;** return?

- A. Number of columns in the Orders table
- B. Total rows in the Orders table
- C. Count of only non-null rows
- D. Count of unique rows

19. Which of the following is an application of VoIP Technology?

- A. e-mail
- B. Chat
- c. Internet Telephony
- d. Web Browsing

Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as:

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

20. Assertion(A) : The output of addition of two series will be NaN, if one of the elements or both the elements have no value(s)

Reason(R): While performing mathematical operations on a series, by default all missing values are filled in with 0.

21. Assertion(A) : In SQL, the DISTINCT keyword eliminates duplicate rows from the query result.

Reason(R): The DISTINCT keyword can only be applied to numeric columns.

SECTION B (7 x 2 = 14 Marks)

22. Write any 2 points of difference between Series and DataFrame.

OR

What is Series in Pandas? Write any two properties of a Series.

23. Vijay has just started using internet. Mention him any four net etiquette which he should follow in order to become a good netizen.

24. Write SQL queries to perform the following:

- (i) Display the name of the month (e.g. January, February) for the date 18 oct 2025.
- (ii) To Extract "cup" from "Preoccupied".

25. Kristen has typed the following text in the address bar:

http:// www.cbse-international.com/help.htm

Explain to her the main concept of URL and Domain name with reference to the example given above.

OR

Give one advantage and one disadvantage of using Star topology over Bus Topology.

26. 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:

```
import _____ as pd
data = ['Chennai','_____', 'Imphal']
indx = ['Tamil Nadu','Uttar Pradesh','Manipur']
s = pd.Series(_____, indx)
print(_____)
```

27. What do you understand by the term IPR? Write any two measures to protect IPR?

28. Write the output of the following code:

```
import pandas as pd
list1=[-10,-20,-30]
ser = pd.Series(list1*2)
print(ser)
```

OR

Write the output of the following code:

```
import pandas as pd
states=pd.Series(['Maharashtra','Gujarat','Bihar'])
capitals=pd.Series(['Mumbai','Gandhinagar', 'Patna'])
data={'State':states,'Capital':capitals}
df = pd.DataFrame(data)
df.drop(index=1, inplace=True)
print(df)
```

SECTION C (4 x 3 = 12 Marks)

29. Consider the following table STUDENT:

Table: STUDENT

Admno	Name	Class	Optional	Marks
1001	Tiya	10	AI	90
1002	Iram	11	IP	89
1003	Neha	10	IT	74
1004	Sandeep	11	IP	88
1005	Kavya	11	IP	92

Write SQL queries for the following:

- Display Total Marks secured by students of each class.
- Display the Average Marks secured by the students of IP optional subject.
- Display names of students whose name contains 'A' anywhere in name.

OR

Consider the Table FLIGHT given below:

Table: FLIGHT

FLCODE	START	DESTINATION	NO_STOPS	NO_FLIGHTS
IC101	DELHI	AGARTALA	1	5
IC102	MUMBAI	SIKKIM	1	3
IC103	DELHI	JAIPUR	0	7
IC105	KANPUR	CHENNAI	2	2
IC107	MUMBAI	KANPUR	0	4
IC431	INDORE	CHENNAI	3	2
IC121	DELHI	AHMEDABAD	2	6

Write SQL queries for the following:

- Display the total number of flights from each start city.
- Display sum of total number of flights starting from Delhi.
- Display the details of flights in the descending order of number of stops.

30. Write a Python program to create given DataFrame "STOCK" using Dictionary of Lists:

	Name	Price	Gain
A	BSE	240	Positive
B	NSE	140	Negative
C	INX	189	Positive
D	MCX	320	Negative

OR

Write a Python program to create given DataFrame "RESULT" using list of Dictionaries:

	Name	Class	Percentile
1	Rohit	X	99
2	Mohit	XI	78
3	Raman	XII	90
4	Aditya	X	88

31.

Rohan receives an email from a firm named QuickRich Pvt. Ltd., stating that he has won a cash prize of ₹20 lakh through an online survey. To

claim the reward, he is asked to share his name, bank account details, PAN number, mobile number, and the OTP sent to his phone by clicking a link provided in the email.

Answer the following:

- Should Rohan share these details with the sender? Also justify your answer.
- Identify the type of cybercrime involved.
- What action should Rohan take regarding this email?

32. Consider the tables given below and answer the questions that follow:

Table : Workshop

WorkshopId	Title	NumSpeakers	MeantFor	Fee
441	Time Management	3	Senior Manager	7000
443	App Development	1	Computer Programmer	9000
444	Planning	2	Senior Manager	8000
447	Marketing Strategies	2	Junior Manager	9000

Table : Participant

ParticipantId	Name	WorkshopId
100	Prabhu Shankar	441
101	Dev Sen	444
102	Fauzia Khan	443
103	Tom Winters	448

With reference to the above tables, Write SQL commands for following:

- Identify Primary key in Workshop table and foreign key in Participant table.
- To display Title, Fee and name of participants from the above tables whose fees is greater than 5000.

OR

Consider the following tables PATIENT and TEST and answer the questions that follow:

Table : PATIENT

PCODE	NAME	PHONE	DTADMIT	TESTID
6473	Amit Sharma	912356899	19-JUN-2017	T102
7134	Rose Mathew	886744536	12-NOV-2017	T101
8786	Tina Sharma Arora	889088765	06-DEC-2017	T102
6477	Vijay Shah	714567445	07-DEC-2017	T502
7658	Venkat Fazal	865545343	31-DEC-2017	T101

Table : TEST

TESTID	TESTNAME	COST
T101	Platelet Count	200.00
T102	Hemogram	190.00
T301	Malaria Detection	350.00
T502	Glucose Test	150.00

With reference to the above given tables, write commands in SQL for given parts:

- To display Names of Patients, TESTID and Test names for those Patients whose names are starting with 'V'.
- To decrease the cost of those tests in the table "TEST" by 40 that have cost below 200.

SECTION D (2 x 4 = 8 Marks)

33. City wise total number of buses are represented in the following table:

Delhi	Mumbai	Chennai	Kolkata
100	120	90	110

Write the Python code to draw the bar graph representing the number of buses in each city. Also give suitable x and y axis labels and title of the graph. Also, give suitable python statement to save this chart with name "house.png"

34. Consider table Clinic as given below and write MySQL queries for (i) to (iv)

PID	NAME	AGE	DEPARTMENT	DATEADM	CHARGES	GENDER
-----	------	-----	------------	---------	---------	--------

1	ARPIT	62	SURGERY	2022/12/25	1000	M
2	ZARIN	22	ORTHO	2023/11/22	500	F
3	KAREENA	32	CARDIOLOGY	2022/07/02	NULL	F
4	ARUN	12	ENT	2023/02/25	800	M
5	AMAR	30	SURGERY	2023/06/15	1200	M
6	ZEBA	16	CARDIOLOGY	2022/08/17	400	F

- (i) Show Name , Age of female patients whose year of admission is 2023
- (ii) Show number of characters in the name of patients whose age is more than 50.
- (iii) Show name, age, charges and discount of all patients. Discount is 10% of Charges.
- (iv) Decrease the Charges by 100 of Surgery department patients.

OR

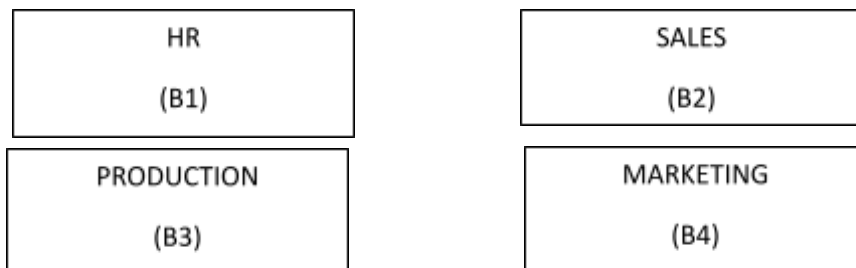
Write output for MySQL Queries (i) to (iv) based on CLINIC Table

- (i) SELECT NAME, AGE FROM CLINIC WHERE NAME LIKE 'Z%A';
- (ii) SELECT MONTHNAME(MAX(ATEADM)) FROM CLINIC;
- (iii) SELECT AGE,DEPARTMENT FROM CLINIC WHERE GENDER='F' ORDER BY AGE DESC;
- (iv)SELECT NAME, AGE FROM CLINIC WHERE CHARGES IS NULL;

SECTION E(3 x 5 = 15 Marks)

35. PERFECT Private Ltd, Delhi is a company that deals with software components. They have different divisions HR(B1), SALES(B2), PRODUCTION(B3) and Marketing(B4). They layout of the Delhi branch is:

DELHI



The company also has a branch in Chennai. The management want to connect all the divisions as well as the computers of each division (B1, B2, B3, B4).

Distance between the wings are as follows:

B3 to B1	32 M
B1 to B2	53 M
B2 to B4	29 M
B4 to B3	110 M
B3 to B2	750 M
B1 to B4	200 M
Delhi Head office to Chennai Office	1656 KM

Number of computers in each of the wings:

B1	70
----	----

B2	140
B3	55
B4	70

Based on the above information, answer the following questions:

- Suggest the topology and draw the most suitable cable layout for connecting all the divisions of the Delhi branch.
- In which wing would you place the server? Explain the reason for your selection.
- Suggest the kind of network required (out of LAN, MAN, WAN) for connecting Production(B3) with Sales(B2).
- Suggest the placement of the following devices with justification:
 - Repeater
 - Switch/Hub
- Suggest a device/software to be installed in the B2 to take care of data security.

36. Consider the DataFrame **EMPLOYEES** shown below:

	EID	EName	Department	Salary
0	E001	John	HR	42000
1	E002	Ria	SALES	30000
2	E003	Shobhit	IT	38000
3	E004	Aditya	MKT	48000
4	E005	Rashi	ADMIN	40000

Write suitable Python statements for the following operations:

- Print the last two rows of DataFrame EMPLOYEES.
- Rename the column name 'EName' to 'FirstName'.
- Add a new row with the following data : ["E006", "John", "HR", 34900]
- Display the data of the Name and Department column from indexes 1 to 3 (both included)
- Remove the column Department.

37. Write suitable SQL query for the following:

- To count unique values from PRODUCT column of SUPPLIER table.
- To display the average marks from MARKS Column of SCHOOL table.
- To display only year from current date.
- To display data from the password column in the User table after removing leading spaces only.
- To display last four characters from NAME column of STUDENT table.

OR

Write suitable SQL query for the following:

- To display the index of first occurrence of "YA" in string "VIDYALAYA".
- To display the remainder when 48 is divided by 9.
- To display sum of salary from SALARY column of STUDENT table.
- Round the value 90.324 to two decimal places.
- To display all values from PNAME column of PRODUCT table in upper case.
