COMMON PRE-BOARD EXAMINATION

INFORMATICS PRACTICES-Code No. 065

Class-XII-(2025-26)

SET: 1

Time allowed: 3 Hrs. **Maximum Marks: 70**

General Instructions:

Read the following instructions very carefully and follow them:

1. All questions are compulsory.
2. The examination paper contains five sections, from Section A to Section E.
3. Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
4. Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
5. Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
6. Section D consists of 2 questions (33 to 34). Each question carries 4 Marks.
7. Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
8. There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
9. All programming questions are to be answered using Python Language only.
10. In case of MCQ, text of the correct answer should also be written.

Q. No.	Section-A (21 x 1 = 21 Marks)	Marks
1	State whether the following statement is True or False: The tail() function in Pandas is used to display the first few rows of a Series or DataFrame.	1
2.	What will be the result of the following SQL query? SELECT MOD(20, 3); (A) 6 (B) 1 (C) 2 (D) 6.67	1
3	A company downloads a photograph from a professional photographer's website and uses it in a national advertising campaign without permission or payment. This action is a form of: (A) Plagiarism (B) Fair Use (C) Copyright Infringement (D) Trademark Violation	1
4.	Given data = [{'Name': 'Arun', 'Age': 20}, {'Name': 'Bina', 'Age': 22}], which command creates a Pandas DataFrame? (A) pd.DataFrame(from_list=data) (B) pd.DataFrame(data) (C) pd.to_dataframe(data) (D) pd.create_df(data)	1
5.	Which network device is considered the least intelligent because it simply broadcasts any data it receives to all other connected devices? (A) Switch (B) Router (C) Hub (D) Gateway	1

6. What is the purpose of the LENGTH() function in SQL? 1
(A) To count the number of rows in a table.
(B) To determine the memory size of a column.
(C) To return the number of characters in a given string.
(D) To set the maximum length of a string column.

7. When a website uses your IP address and cookies to track which pages you visit, it is contributing to your: 1
(A) Active digital footprint (B) Passive digital footprint
(C) Digital identity (D) Cyber profile

8. When performing a mathematical operation like addition between two Pandas Series with non-aligned indices, what happens to the indices that do not overlap? 1
(A) An error is raised.
(B) The operation is only performed on common indices.
(C) The result contains NaN for non-overlapping indices.
(D) The indices of the second Series are ignored.

9. In the context of relational databases, what does the term 'degree' refer to? 1
(A) The number of rows in a table. (B) The number of tables in a database.
(C) The number of columns in a table. (D) The number of primary keys in a table.

10. A web page whose content remains the same for all users and only changes when a web developer manually edits its source code is called a: 1
(A) Dynamic Web Page (B) Static Web Page
(C) Hosted Web Page (D) Responsive Web Page

11. To find the number of unique cities present in a 'Customers' table, which SQL query should be used? 1
(A) SELECT COUNT(City) FROM Customers;
(B) SELECT UNIQUE(City) FROM Customers;
(C) SELECT COUNT(DISTINCT City) FROM Customers;
(D) SELECT DISTINCT(COUNT(City)) FROM Customers;

12. To select all rows from a DataFrame df where the value in the 'Score' column is greater than 90, which syntax is correct? 1
(A) df.select('Score' > 90) (B) df.where(df['Score'] > 90)
(C) df['Score' > 90] (D) df[df['Score'] > 90

13. A student copies a paragraph from a website and includes it in his project report without using quotation marks or citing the source. This is a clear example of: 1
(A) Hacking (B) Phishing (C) Plagiarism (D) Cyberbullying

14. Which SQL clause is used to filter the results of a query based on a specified condition? 1
(A) ORDER BY (B) GROUP BY (C) HAVING (D) WHERE

15. Which of the following Python commands correctly selects the row at integer position 0 and the column at integer position 1 of a DataFrame df? 1
(A) df.loc[0, 1] (B) df.iloc[1, 0] (C) df.loc[1, 0] (D) df.iloc[0, 1]

16. What is the primary function of a modem? 1
(A) To connect multiple devices within a LAN.
(B) To filter network traffic.
(C) To modulate and demodulate signals for transmission over telephone lines.
(D) To create a wireless network.

17. What is the purpose of the MID() function in SQL? 1
(A) To find the middle character of a string.
(B) To extract a substring from a given string.
(C) To find the position of a substring.
(D) To convert a string to lowercase.

18 When creating a Pandas DataFrame from a list of lists, which parameter is used to specify the column headers? (A) index (B) headers (C) names (D) columns 1

19. To select only the 'Name' and 'Marks' columns from a DataFrame df, which syntax should be used? 1
(A) df('Name', 'Marks') (B) df['Name', 'Marks']
(C) df[['Name', 'Marks']] (D) df.get('Name' & 'Marks')

Direction : For questions 20 and 21, two statements are given: one labeled Assertion (A) and the other labeled Reason (R). Choose the correct option. (A) Both A and R are True, and R is the correct explanation of A. (B) Both A and R are True, but R is not the correct explanation of A. (C) A is True, but R is False. (D) A is False, but R is True.

20 Assertion (A): The drop() method in Pandas can remove both rows and columns from a DataFrame. 1
Reason (R): The axis=1 specifies rows to be removed and axis=0 specifies columns to be removed in drop method.

21 Assertion (A): The GROUP BY clause in SQL is always used with aggregate functions. 1
Reason (R): The GROUP BY clause groups rows that have the same values in specified columns into summary rows, on which an aggregate function can be applied.

Section-B (7X2 = 14 Marks)

Q No. Marks

22. (A) What are missing values in a dataset ? Write two methods generally used for handling missing values in DataFrames? 2

OR

(B) What is the difference between loc and iloc? Explain with example.

23. List any two health hazards caused due to the overuse of technology. 2

24. Abhay wants to Complete the given Python code: to read data from the CSV file 'data.csv' from D drive into a DataFrame df and display the first 5 rows. 2

```
import _____ as pd
df = _____# to read data from the CSV file
print(df._____(_____))  # to display first five rows
```

25. Rajesh, a freelance website developer, has been tasked with designing several web pages for a bookshop. Help Rajesh decide whether to create static or dynamic web pages by clearly outlining at least two points of difference between static and dynamic web pages. 2

OR

Priyanka, a beginner in IT field has just started learning web technologies. Help her in understanding the difference between website and web pages with the help of a suitable general example of each.

26. Write the SQL commands for the following: 2
    i. To get the position of 'bot' in 'Waterbottle'
    ii. To get the week's dayname for the date "2020-09-12"

27. What is meant by FOSS? Write the names of any two FOSS tools. 2

28. Give the output of the following code: 2

```
import pandas as pd
df = pd.DataFrame({'name':['Riya', 'Shlok', 'Varun'], 'age':[25, 30, 22], 'score':[85, 78, 92]})
df.rename(columns={'score':'points','name':'studname'}, inplace=True)
selected_rows = df[(df['points'] >80) &  (df['age'] <30)]
print(selected_rows)
```

OR

```
import pandas as pd
S1=pd.Series([5,6,7,8,10],index=['v','w','x','y','z'])
L=[2,6,1,4,6]
S2=pd.Series(L,index=['z','y','a','w','v'])
print(S1-S2)
```

Q No	**Section-C (4X3 = 12 Marks)**	Marks

29. Samridh has recently changed his school, so he is not aware of the people, but someone is posting negative, demeaning comments on his social media profile. He is also getting repeated mails from unknown people. Every time he goes online, he finds someone chasing him online. 3

(i) Samridh is a victim of _____ .
(ii) What immediate action should Samridh take to handle it?
(iii) Is there any law in India to handle such issues? Discuss briefly.

30. Rajat wants to create a Pandas series as shown below using dictionary where left column indicates the indices and right column indicates values in the series. 3

India	New Delhi
Russia	Moscow
Japan	Tokyo
Switzerland	Bern

OR

Ritika is a new learner for the Python Pandas and she is aware of some concepts of Python but is unable to create the DataFrame. Help her by writing proper statements which will create the following DataFrame .

	Name	Physics	Chemistry
0	Manpreet	70	30
1	Kavya	60	70
2	Manu	76	50
3	Ria	89	65

31. Write SQL commands to: 2+1
a) Create a table PRODUCT with the following specification and constraint

Column name	**Data type**	**Key**	**Description**
Pcode	Varchar(4)	Primary key	Product code
Pname	Varchar(20)		Product name
Uprice	Decimal(8,2)		Unit price
D_of_Exp	Date		Date of Expiry

b) Add a new record to the table PRODUCT with values P01,Shampoo,85.50,2025-10-12.

32. **Consider** the table ***Book*** : 3

TABLE : BOOK				
Book_id	**Book name**	**Author**	**Price**	**Type**
C0001	Fast Cook	Lata Kapoor	450	Cookery
F0001	The Tears	William H	600	Fiction
T0002	Brain works	Rossaine	350	Text
F0002	Thunderbolts	Anna Job	750	Fiction

Write SQL query for the following :
i) To show book name, Author name of books within the price range 350 -600.

ii) To find the number of different type books from the table.
iii) To increase the price of Fiction type books by 50.

OR

Consider the two tables DOCTORS and PATIENTS:

TABLE:DOCTORS			
DOCID	**DOCNAME**	**DEPT**	**OPD_DAYS**
101	M PANDAY	ENT	US
102	G P GUPTA	PAED	MWF
201	C K SHARMA	ORTHO	MWF

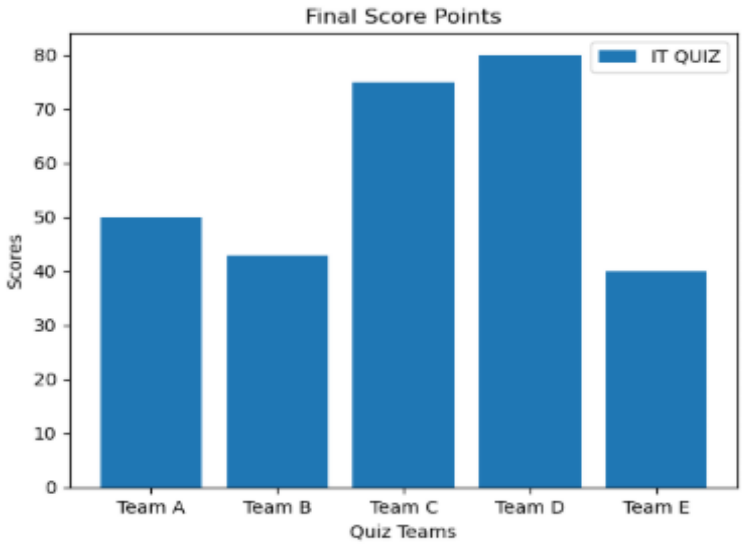
TABLE:PATIENTS		
PATNO	**PATNAME**	**DOCID**
1	NEERAJ	101
2	MOHIT	201
3	RAGINI	101
4	MANOJ	102
5	NANDINI	201

Write the SQL queries for the following:

I) To display Patno, PATname and DOCNAME from the two tables.
II) To insert a new column DATE_OF_ADM which is of date type in PATIENTS table.
III) To sort the records of DOCTORS table in descending order of DOCNAME.

Q No | **Section-D (2X4 = 8 Marks)** | Marks

33. Rahul is writing code to create the following graph: 4



Help Rahul to fill in the blanks of the following code as per instructions.

```
import _____ #Statement-1
Teams = ['Team A', 'Team B', 'Team C', 'Team D', 'Team E']
Scores = [50, 43, 75, 80, 40]
_____#Statement-2
plt.xlabel('Quiz Teams')
plt.ylabel('Scores')
_____ #Statement-3
_____ #Statement-4
plt.legend()
plt.show()
```

i) Write the suitable code for the import statement in the blank space in the line marked as Statement-1

ii) Write the suitable code for the blank spaces in the line marked as Statement-2, which plots the bar graph with the appropriate data and includes a label for the legend.

iii) Fill in the blank in Statement-3 with the correct Python code to set the title of the graph.

iv) Fill in the blank in Statement-4 with the appropriate Python code to save the graph as an image file named **quiz_result.png**.

34. Consider the table CARMARKET 4

Table : CARMARKET

CARCODE	CARNAME	COMPANY	COLOUR	COST	DOM
C01	BALENO	SUZUKI	BLUE	5.90	2019-11-07
C02	INDIGO	TATA	SILVER	12.90	2020-10-15
C03	GLC	MERCEDES	WHITRE	62.38	2020-01-20
C04	A6	AUDI	RED	58.55	2018-12-29
C05	INNOVA	TOYOTA	BLACK	32.84	2017-11-10
C06	WAGON-R	SUZUKI	WHITE	12.11	2016-11-11
C07	BREZZA	SUZUKI	GOLDEN	9.80	2016-10-03

Write SQL commands for the following :

i) Display the carname along with the cost rounded off to 1 digit after decimal place.

ii) Display the carname and name of the company both in lowercase of all cars whose year(of DOM) is 2020.

iii) Display the carname,colour and position of the character 'E' in the colour of all the cars.

iv) Display the number of cars manufactured by each company.

OR

Consider the table CLUB.

Table : CLUB					
COACH_ID	**COACH_NAME**	**AGE**	**SPORTS**	**Date_of_joining**	**PAY**
1	Rajesh	30	Karate	199-08-25	1000
2	Anuj	35	Swimming	2000-01-05	750
3	Shuchi	25	Basketball	2005-01-04	1200
4	Reetika	28	Badminton	2002-08-25	1400
5	Virendra	32	Cricket	1996-05-17	1500

What will be the output of the following SQL queries?

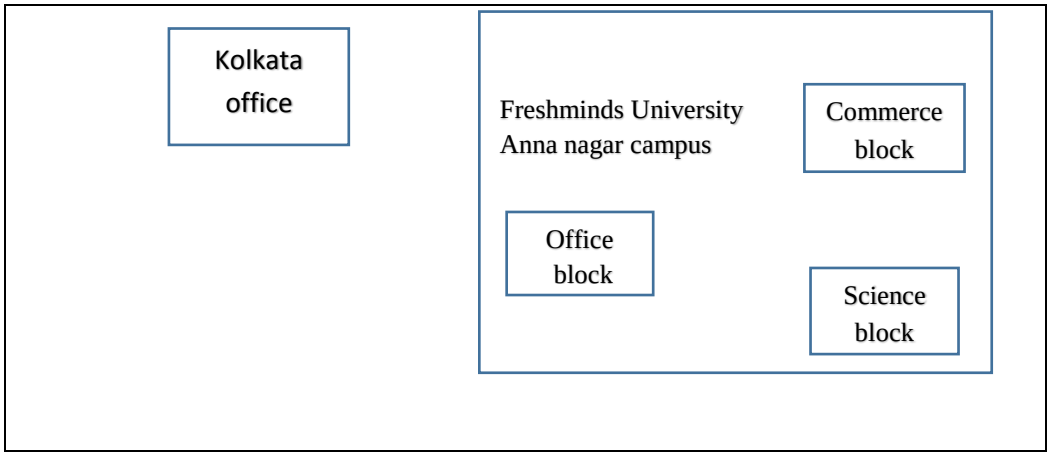
i) SELECT SUBSTR(COACH_NAME),2,4), AGE FROM CLUB WHERE PAY BETWEEN 1200 AND 1500;
ii) SELECT DAY(Date_of_joining),LEFT(COACH_NAME,3) FROM CLUB WHERE SPORTS='BADMINTON';
iii) SELECT PAY*0.25+1000 FROM CLUB WHERE COACHNAME LIKE 'R%';
iv) SELECT MIN(AGE),SUM(PAY) FROM CLUB;

Q No

Section-E (3X5 = 15 Marks)

Marks

35. Freshminds University of India is starting its first campus in Ana Nagar of South India with its centre admission office in Kolkata. The university has three major blocks comprising of Office block, Science block and Commerce block is in 5 km area campus. As a network expert, you need to suggest the network plan as per (i) to (iv) to the authorities keeping in mind the distance and other given parameters 5



Expected wire distance between various locations:

Blocks	**Distance**
Office Block to Science Block	90m
Office Block to Commerce Block	50m
Science Block to Commerce Block	15m
Kolkata Admission office to Anna nagar campus	2450 km

Expected No. of computers to be installed at various locations in the university are as follows:

Block	**No. of computers**
Office Block	20
Science Block	140
Commerce Block	45
Kolkata Admission office	15

i) Suggest the authorities, the cable layout amongst various blocks inside Anna nagar university campus for connecting the blocks.
ii) Suggest the most suitable place (i.e. block) to house the server for this university with a suitable reason.
iii) Suggest an efficient device from the following to be installed in each of the block to connect all the computers within each building.
(a) Modem
(b) Switch
(c) Gateway

iv)Suggest the type of network (LAN,WAN,MAN) to be used to connect Kolkata office with Anna Nagar university,

v)suggest the placement of the following devices with justification
a) Repeater b) Modem

36. Consider the following DataFrame dfn. Write the output of the Python statements : 5

	A	B	C
Order	450	180	350
Purchase	330	550	610
Sell	250	410	380
Target	1050	980	1250

(a) Write the output of print(dfn[[‘A’, ‘B’]])
(b)Write the output of print(dfn.loc [‘Purchase’, :])
(c) Write the Python statement to replace the existing indexes of the DataFrame with O, P, S and T, respectively.
(d) Write the statement to add a new column D with values 450,760,120,1000.
(e)Write the Python statement to delete column B.

37. Write suitable SQL query for the following: 5
I. To display the average score from the test_results column (attribute) in the Exams table
II. To display the last three characters of the registration_number column (attribute) in the Vehicles table. (Note: The registration numbers are stored in the format ‘DL-01-AV-1234’)
III. To display the data from the column (attribute) username in the Users table, after eliminating any leading and trailing spaces.
IV. To display the maximum value in the salary column (attribute) of the Employees table.
V. To determine the count of rows in the Suppliers table.

OR

Write suitable SQL query for the following:

I. Round the value of pi (3.14159) to two decimal places.

II. Calculate the remainder when 125 is divided by 8.

III. Display the number of characters in the word 'NewDelhi'.

IV. Display the first 5 characters from the word ‘Hakuna Matata’.

V. Display details from 'email' column (attribute), in the 'Students' table, after removing any leading and trailing spaces.