KENDRIYA VIDYALAYA SANGATHAN REGIONAL OFFICE LUCKNOW

1ST PRE-BOARD EXAMINATION 2024-25

CLASS: XII **SUBJECT: INFORMATICS PRACTICES**

TIME: 3 HOURS **M. MARKS: 70**

General Instructions:

- 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 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.
- In case of MCQ, text of the correct answer should also be written.

Q No	Section-A (21x1 = 21 marks)	Marks
1	Pandas Series is: _____ a. 2-Dimensional b. 3-Dimensional c. 1 Dimensional d. Multidimensional	1
2	The purpose of WHERE clause in a SQL statement is to: (A) Create a table (B) Filter rows based on a specific condition (C)Specify the columns to be displayed (D)Sort the result based on a column	1
3	Identify the networking device responsible for routing data packets based on their destination addresses. (A) Modem (B) Hub (C)Repeater (D)Router	1
4	Which of the following SQL function will display the current time and date. a. now() b. year() c. day() d. All of the above	1
5	e-waste refers to: (A) Software that has become obsolete (B) Data that has been deleted from a storage device (C)Viruses that infect computers (D)Electronic devices that are no longer in use	1
6	Write a python code to create empty DataFrame	1

7	……. is the function to save the graph. a. save.figure() b. savefig() c. Save.figure() d. Savechart()	1
8	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
9	Which of the following Python statements is used to import data from a CSV file into a Pandas DataFrame (Note: pd is an alias for pandas)? (A) pd.open_csv('filename.csv') (B) pd.read_csv('filename.csv') (C)pd.load_csv('filename.csv') (D)pd.import_csv('filename.csv')	1
10	What is plagiarism? (A) Using copyrighted material without giving proper acknowledgement to the source (B) Downloading illegal software. (C)Spreading misinformation online. (D)Hacking into computer systems	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	Which of the following statements is false about topologies? (i) In bus topology, several devices are connected to a main long cable. (ii) A fully connected mesh network has n(n-1)/2 links, where n is the total number of connecting nodes. (iii) Tree topology cannot be implemented when bus and star topology are not implemented individually. (iv) In ring topology, signal is transmitted only in one direction.	1
13	Pandas is a: _____ a. Package b. Language c. Library d. Software	1
14	IPR stands for (i) Intellect Property Rights (ii) Internet Privacy Rights (iii) Information Privacy Rights (iv) Intellectual Property Rights	1
15	What will be the output of the following code: >>>import pandas as pd >>>A=pd.Series(data=[35,45,55,40])	1

	>>>print(A==data) a. True b. False c. [35,45,55,40] d. Error	
16	What will be the output of the following function? SELECT ROUND (99.02355,3); (i) 99.0235 (ii) 99.023 (iii) 99.02355 (iv) 99.024	1
17	Which of the following commands will show the total number of rows and columns present in a DataFrame named as df? (i) df.size (ii) df.shape (iii) df.Shape (iv) df.shape()	1
18	Which Matplotlib plot is best suited to represent changes in data over time? (A) Bar plot (B) Histogram (C)Line plot (D)Histogram & Bar plot	1
19	What is the function of a router in a network? a) Amplify network signals b) Connect devices within a LAN c) Determine the best path for data packets d) Broadcast data to all devices on the network	1
20	If a Dataframe is created using a List of dictionary, then the column labels are formed from _____. a) Dictionary's values b) Dictionary's keys c) Required to give separate Labels as a list d) None of these	1
21	Which of the following commands will give the output as 10? (i) SELECT MONTH ("1993-10-09"); (ii) SELECT DATE ("09-10-1993"); (iii) SELECT MONTH ("1993-09-10"); (iv) SELECT MONTHNAME ("1993-10-09");	1
	Section - B (7x2 = 14 marks)	
22	What is a Series in Python Pandas? Also, give a suitable example to support your answer. **OR** What does the term 'library' signify in Python? Mention one use for each of the following libraries: • Pandas • Matplotlib	2

23	What is Software Licensing and Copyright? Write any one advantage of licensed software.	2
24	Differentiate between Order By and Group By clause.	2
25	What is Internet and how does it differ from World Wide Web (WWW)? OR Explain the concept of browser cookies and mention one advantage of using them.	2
26	Define the term Primary Key in a database. Explain how it is different from a Candidate Key	2
27	What is Phishing?	2
28	Write a Python code to create a DataFrame 'Stock' by using dictionary: Name Price 0 Nancy Drew 150 1 Hardy boys 180 2 Diary of a wimpy kid 225 3 Harry Potter 550 **OR** Write a program to create a series object F1 using a dictionary that stores the number of furniture in each lab of your school. Note: Assume four furniture names are Table, Sofa, Chair and stool having 40, 2, 45, 26 items respectively and pandas library has been imported as pd.	2
	Section - C (4x3 = 12 marks)	
29	Ayesha's family is replacing their old computer with a new one. They decide to throw the old computer in a nearby empty field/plot. I. Explain any one potential environmental hazard associated with improper e-waste disposal. II. Suggest one responsible way to Ayesha's family for proper disposal of their old computer. III. Describe the importance of recycling in e-waste management.	3
30	Consider the given DataFrame 'Species': Name Height(m) 0 Kiara 2-3 1 Bidara 1-1.5 2 Balsa 2-3 3 Lame 3-4 (i) Rename the column 'Name' to 'Local_Name'. (ii) Add a column called 'Numbers' with data: [10, 100, 100, 30]. (iii) Delete the column 'Height (m)'. **OR** Consider the following code. Write appropriate words to complete Line1: import pandas as pd Line2: import_____ # Library name	3

Line3: A=np._____([2,11,2]) # function name to get numpy array
Line 4: S=pd.Series(_____, index=[_____]) # Data name and indexes
Line 5: print(S)

31 Write MySQL statements for the following: 3

TABLE: CHOCOLATE_BOX

BOX_ID	BOX_COLOUR	COST
H123	RED	42

(i) To create a database named Chocolatiers.
(ii) To create a table given above named CHOCOLATE_BOX applying suitable constraints on the columns of the table and inserting records for the same as shown above.

32 Based on the SQL table University_of_Melbourne, write suitable queries for the following: 3

Table: University_of_Melbourne

Course	EXAM_ACCEPTED	DURATION(years)	NUMBER_OF_SCHOLARSHIPS	FEES
Data Science	IELTS	1.5	2	29.87
Computer Science	TOEFL	2	0	32.63
Industrial Leadership	TOEFL	1.5	3	21.63
Information Technology	IELTS	2	2	27.08
Managemen t	IELTS	1.5	1	25.28

(i) Display the courses with duration less than 2 years.
(ii) Display the record of courses in the ascending order of Fees.
(iii) Display the courses and the qualifying exam required for taking admission in the university for which the fees is between 20 to 25 lakhs and number_of_scholarships is not equal to 0.

OR

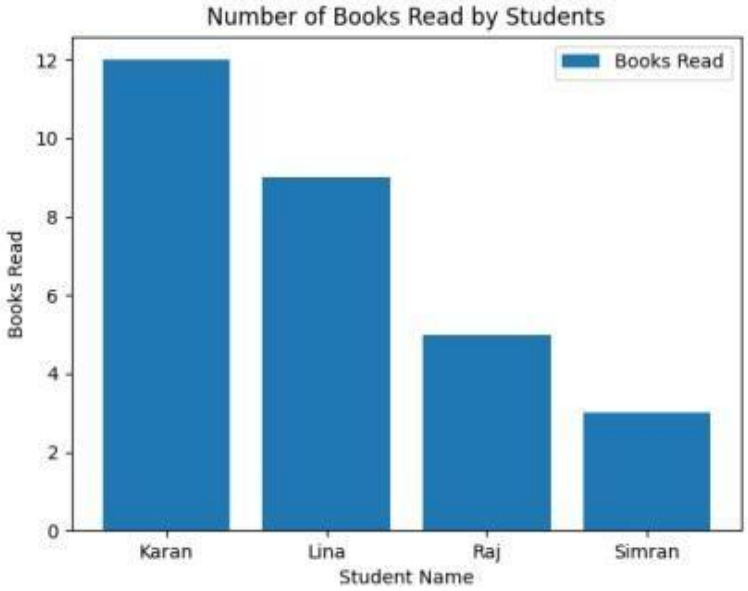
Predict the output of the following queries based on the table University_of_Melbourne given above:

(i) SELECT LEFT(COURSE,8) FROM University_of_Melbourne WHERE EXAM_ACCEPTED = "TOEFL";
(ii) SELECT MIN(FEES) as "MINIMUM FEES" FROM University_of_Melbourne WHERE EXAMS_ACCEPTED = "IELTS";
(iii) SELECT COUNT(COURSE), EXAMS_ACCEPTED FROM

	University_of_Melbourne GROUP BY EXAM_ACCEPTED;	
	Section - D (2x4 = 8 marks)	
33	During a practical exam, a student Ankita has to fill in the blanks in a Python program that generates a bar chart. This bar chart represents the number of books read by four students in one month.	4

Student Name	Books
Karan	12
Lina	9
Raj	5
Simran	3

Help Ankita to complete the code.




```
import _____ as plt #Statement-1
students = ['Karan', 'Lina', 'Raj', 'Simran']
books_read = [12, 9, 5, 3]
plt.bar( students, _____, label='Books Read') #Statement-2
plt.xlabel('Student Name')
plt._____('Books Read') #Statement-3
plt.legend()
plt.title('_____') #Statement-4
plt.show()
```

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

II. Refer to the graph shown above and fill in the blank in Statement-2 with suitable Python code.

III. Fill in the blank in Statement-3 with the name of the function to set the label on the y-axis.

IV. Refer the graph shown above and fill the blank in Statement-4 with suitable Chart Title.

34 | Observe the table student carefully and answer questions given below. | 4

Table : Student

SID	SNAME	CLASS	HOUSE	FEES	ADMYEAR
S1021	AMAN	12	RED	2400	2016
S1022	SUNIL	11	RED	2400	2015
S1023	REENA	10	BLUE	1800	2014
S1024	MOHIT	12	BLUE	3150	2016
S1025	VINIT	11	GREEN	2700	2021
S1026	MAYA	10	GREEN	1800	2022
S1027	JAMES	12	YELLOW	2900	2020
S1028	DIPAK	11	YELLOW	2900	2019

a. Write SQL query to print records in descending order of year of admission.
b. Write SQL query to display house and number of students in each house.
c. Write SQL query to display CLASS wise highest fees.
d. Predict output.
SELECT LENGTH(SNAME) FROM STUDENT;

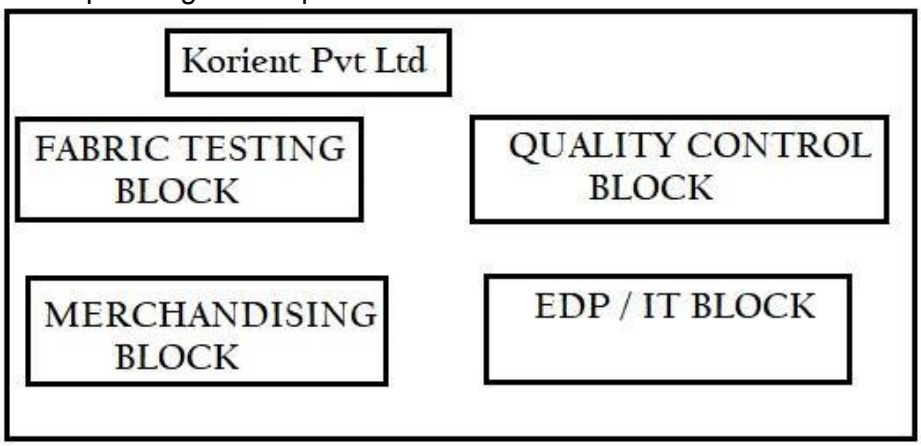
OR

Write suitable SQL query for the following:

i. Display name of the Month from your date of birth.
ii. Convert email-id to lowercase.
iii. Count the number of characters in your name.
iv. To remove leading spaces from the ‘ VANDE BHARAT ‘.

Section - E (3x5 = 15 marks)

35 | Korient Pvt Ltd, Noida has four blocks as shown in the below diagram and is now planning to set up a network. | 5



Distance between each block is given as follows:

BLOCK(from)	BLOCK(to)	DISTANCE(in metre)
Merchandising	Fabric Testing	50
Merchandising	Quality Control	90
Merchandising	EDP / IT	115
Fabric testing	Quality Control	40
Fabric testing	EDP / IT	45
Quality control	EDP / IT	25

The number of computers in each block is as follows:

BLOCKS	NUMBER OF COMPUTERS
Merchandising	17
Quality Control	42
EDP/IT	117
Fabric Testing	27

(i) Suggest the most suitable block to install the server. Justify your answer.

(ii) Suggest the ideal cable layout for connecting these blocks physically.

(iii) Which device would you suggest to connect each computer in each of the given blocks?

(iv) Suggest the placement of the 'Repeater' in the layout with a justification.

(v) The company is planning to connect the Noida Branch office to its Delhi Head office, which is 35 km away. Which type of network will be formed?

36 Consider the Data Frame df shown below. 5

	Movie ID	Title	Year	Rating
0	1	LAGAAN	2001	8.4
1	2	TAARE ZAMEEN PAR	2007	8.5
2	3	3 IDIOTS	2009	8.4
3	4	DANGAL	2016	8.4
4	5	ANDHADHUN	2018	8.3

Write Python statements for the DataFrame df to:

I. Print the first two rows of the DataFrame df.

II. Display titles of all the movies.

III. Remove the column rating.

	IV. Display the data of the 'Title' column from indexes 2 to 4 (both included) V. Rename the column name 'Title' to 'Name'.	
37	Write suitable SQL queries for the following: i. Returns the position of the substring “SUCCESS” from the given string “WORKING HARD IS THE ONLY KEY TO SUCCESS, SHORTCUTS ARE FOR LOSERS”. ii. Returns the string in upper case. iii. To calculate the exponent for 5 raised to the power of -2. iv. Return the current date and time. v. To calculate the modulus of 35 and 45 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 'Informatics Practices'. v. Display details from 'email' column (attribute), in the 'Students' table, after removing any leading and trailing spaces.	5