केन्द्रीय विद्यालय संगठन, बेंगलुरु क्षेत्र
KENDRIYA VIDYALAYA SANGATHAN, BENGALURU REGION
प्रथम प्री-बोर्ड परीक्षा 2024-2025
FIRST PRE-BOARD EXAMINATION 2024-2025

CLASS: XII   **MAX MARKS: 70**

SUB: INFORMATICS PRACTICES   **TIME: 3 HRS**

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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 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 case study type 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 (21 x 1 = 21 Marks)	Marks
1	State whether the following statement is True or False: Series are size and value mutable.	1
2	With respect to databases, a field in a relation is also known as a/an _____. a. Record b. Tuple c. Attribute d. Degree	1
3	Which among the following hardware devices is capable of connecting networks belonging to different network protocols? a. Modem b. Repeater c. Hub d. Gateway	1
4	Pick the odd one out of the following? a. update b. select c. drop d. delete	1
5	Which among the following is not an impact of e-waste on the environment? a. Global Warming b. Deforestation	1

	c. Soil erosion d. Heavy metals in water and soil	
6	Which of the following command is used to display first three rows of a DataFrame 'DF' ? a. DF.head() b. DF.header() c. DF.head(3) d. DF.Head(3)	1
7	Which of the following is used to save a graph plotted using matplotlib.pyplot library? a. savefigure() b. savegraph() c. savefig() d. None of the above	1
8	State whether the following statement is True or False: The Order By Clause in SQL helps to permanently sort and save the contents in a table of a database.	1
9	Which of the following functions is used to import a dataframe from csv file? a. read_csv() b. import_csv() c. to_csv() d. export_csv()	1
10	The practice of sending fraudulent communications that appears to come from a reputable source. It is usually done through email. The goal is to steal sensitive data like credit card and login information. a. Bullying b. Plagiarism c. Phishing d. Licensing	1
11	Which SQL statement do we use to find the total salary of all the employees from Employee table? a. SELECT * FROM Employee; b. SELECT COUNT (Salary) FROM Employee; c. SELECT SUM (Salary) FROM Employee; d. SELECT SUM () FROM Employee;	1
12	Which among the following topology has Central Node dependency? a. Bus b. Star c. Tree d. Mesh	1

13	Which among the following method is used to remove a row or column from a given DataFrame?
	   a. del()
	   b. delete()
	   c. drop()
	   d. None of the above
		1

14	Violation of intellectual property right may happen by
	   a. Plagiarism
	   b. Copyright Infringement
	   c. Trademark Infringement
	   d. All the above
		1

15	Which of the following command will display the row labels of the DataFrame?
	   a. print(df.index())
	   b. print(df.rows())
	   c. print(df.index)
	   d. print(df.rows)
		1

16	Consider the following query
	SELECT * FROM employee ORDER BY salary _____, name _____;
	To display the salary from largest to smallest and name in alphabetical order which of the following options should be used?
	   a. Ascending, Descending
	   b. Asc, Desc
	   c. Desc, Asc
	   d. Descending, Ascending
		1

17	With _____ function of pandas module you can iterate over dataframe row-wise where each rows values are returned in form of a series type object.
	   a. iterrows()
	   b. iteritems()
	   c. iteraterow()
	   d. IterRows()
		1

18	Which is the default position of legends in a graph?
	   a. upper left
	   b. upper right
	   c. lower left
	   d. lower right
		1

19	Name the type of network which is formed by connecting two smart phones?
	   a. WAN
	   b. LAN
		1

	c. MAN d. PAN	
	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 attribute loc of dataframe can be used to add new rows and columns. Reason (R): In a dataframe new rows and columns can be added after creating a dataframe.	1
21	Assertion (A): The ALTER TABLE query can be used to add a column in a table. Reason (R): ALTER is a DML query and is used to make changes in the table design.	1
Q No.	**Q No. Section-B (7 x 2 = 14 Marks)**	**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. Name the module to which the following functions belong to: (i) hist() (ii) DataFrame()	2
23	What is open-source software? Give an example of an open-source programming language.	2
24	Consider the string: "First Pre Board Examination 2024". Write suitable SQL queries for the following: a. To extract and display the string "Exam" from the above string. b. Display the entire string in upper case.	2
25	A. What is the difference between website and a web page? **[OR]** B. Give an example for a commonly used browser? What are add-ons in a browser?	2
26	Differentiate between primary key and alternate key with respect to a table in SQL?	2
27	Your friend has used a poetry written by you and posted online claiming her own. i. What is the cybercrime mentioned above?	2

	ii. Which Information Technology act violation has been committed by her?	
28	A. Manav is writing a Python program to create a DataFrame using a list of dictionaries. However, his code contains some mistakes. Help him to identify the errors, rewrite the correct code, and underline the corrections made. import Pandas as pd D1={"Country":"USA","Medals":126} D2={"Country":"China","Medals":91} D3=["Country":"India","Medals":6] D=[D1,D2,D3] Olympics=pd.Dataframe(d) print(Olympics) **[OR]** B. Complete the given Python code to get the required output (ignore the dtype attribute) as: Science 121 Commerce 50 Humanities 34 Arts 40 import _____ pd data=[121,50,34,40] values=["Science","_____","Humanities","Arts"] S=pd.Series(data,index=_____) print(_____)	2
Q No	**Q No Section-C (4 x 3 = 12 Marks)**	**Marks**
29	A new mall in the city has launched a new range of smartphones creating a buzz among technology enthusiasts. However, the introduction of these new devices has also raised concerns about the increasing generation of e-waste in the community. Answer the following questions based on above extract : a. Define e-waste. b. Give any one environmental challenge posed by e-waste, including its impact on air, water, and soil quality. **c.** Imagine you are a part of a local environment organization. Provide any two strategies that could be implemented to minimize the negative environmental effects of e-waste.	3
30	A. Write a Python program to create the following DataFrame using a list of dictionaries.	3

	Sportsid	SportsName	Region
0	1001	Cricket	Agra
1	1020	Football	Lucknow
2	1031	Swimming	Delhi

[OR]

B. Write a Python Program to create a Pandas Series "Houses" as shown below using a dictionary. Note that the left column indicates the indices and the right column displays the data.

Shivaji	500
Tagore	525
Ashoka	512
Raman	526

| 31 | I. Write an SQL statement to create a table named TEACHER, with thefollowing specifications:

Column Name	Data Type	Constraint
Tid	int(10)	primary key
Tname	Varchar(20)	not null
Dept	Varchar(20)	
DOJ	Date	not null
Salary	int(10)	

II. Write SQL Query to insert the following data in the Teachers Table

2825, Minaxi Prasad, Science,2010-09-28, 75000 | 3 |

| 32 | A. Consider the following tables given below:

Table: Trainer

Tid	Tname	City	Salary
101	SUNITA	MUMBAI	8000
102	ANAMIKA	DELHI	9000
103	VARUN	MUMBAI	7000

Table: Course

Cid	Cname	Fees	Startdate	Tid	discount
10001	PGDCA	12000	2018-10-15	101	500
10002	DCA	5000	2018-05-17	101	
10003	CCNA	9000	2019-05-20	102	300
10004	CCNA	13000	2020-10-01	103	
10005	PGDCA	15000	2018-10-10	103	400

Write appropriate SQL queries for the following:

I. Display Course name-wise total Fees.

II. List all trainer names in the decreasing order of Salary. | 3 |

III. Display Course name along with their corresponding Trainer Names.

[OR]

B. Write the outputs of the SQL queries (i) to (iv) based on the relations Teacher and Placement given below:

Table : Teacher

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Arunan	34	Computer Sc	2019-01-10	12000	M
2	Saman	31	History	2017-03-24	20000	F
3	Randeep	32	Mathematics	2020-12-12	30000	M
4	Samira	35	History	2018-07-01	40000	F
5	Raman	42	Mathematics	2021-09-05	25000	M
6	Shyam	50	History	2019-06-27	30000	M
7	Shiv	44	Computer Sc	2019-02-25	21000	M
8	Shalakha	33	Mathematics	2018-07-31	20000	F

Table : Placement

P_ID	Department	Place
1	History	Ahmedabad
2	Mathematics	Jaipur
3	Computer Sc	Nagpur

I. Display Gender wise average salary.
II. List all teacher names in Upper case.
III. Display Name of Teacher, Age along with the place of placement.

| Q No.	Section-D (2 x 4 = 8 Marks)	Marks
33	Jhanvi needs to compare the medal won by different Countries in the recent Olympics. She needs to create a bar chart for this purpose. Help her to complete the blanks so that the python code for creating the bar chart executes successfully. This bar chart represents the total number of medals secured by 4 countries in Olympics 2024.	4

Country	Medals
JAPAN	45
CHINA	91
INDIA	6
USA	126

Help Jhanvi to complete the code.
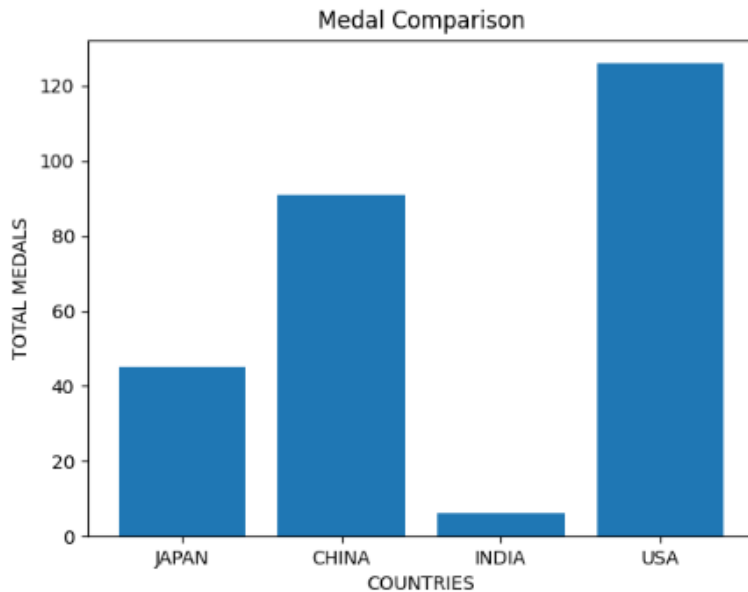
Medal Comparison

```
import _____ as plt  #Statement1
X=["JAPAN","CHINA","INDIA","USA"]
Y=[45,91,6,126]
plt.xlabel("COUNTRIES")
plt._____ ("TOTAL MEDALS") #Statement2
plt._____ (X,Y)   #Statement3
plt._____("Medal Comparison")# Statement 4
plt.show()
```

| 34 | A. Raj is a Database administrator managing the Databases of his company. He has created the following table Employee. Based on the following table answer the given questions: | 4 |

Table: Employee

EmpNo	Name	Gender	Doj	Salary	Dept
111	Sapan	M	2023-10-12	5000.75	HR
112	Sunita	F	2012-06-15	7000.54	Finance
113	Rohan	M	2006-05-21	8000.36	Finance
114	Ratna	F	2012-05-12	8500.57	HR
115	Asha	F	2006-06-16	9000.92	Tech
116	Raja	M	2023-04-10	5000.55	HR

Write the following SQL queries:

   i)   Write a SQL query to display the first three alphabets of name in upper case.

   ii)   Write a SQL query to display salary rounded to 1 decimal place for all employees who are in HR department.

   iii)   Write a query to display the entire details of employee table in descending order of name.

   iv)   Write a query to display name, gender and name of the month for all employees who get salary more than 6000.

[OR]

B. Neha is running a travel agency. In order to keep track of her daily business activity she has created the following Travel table. Based on the table Travel, write the output of the following SQL queries.

Table name: Travel

Ticketno	Pname	Source	Destination	seats	cost	DOJ
100001	RAJAT	BLR	HYD	2	2000	2024-09-12
100002	OMVIR	MUM	KOL	3	5000	2024-08-02
100003	SUPRATEEK	BLR	CHE	3	3000	2024-09-08
100004	AHMED	CHE	HYD	2	2000	2024-08-02
100005	RAJMAN	MUM	KOL	4	3000	
100006	SUJATA	KOL	BAN	5	5000	2024-09-21
100007	AMAN	HYD	BAN	2	6000	
100008	JEESHAN	MUM	HYD	3	5000	2024-09-28

i)   SELECT Pname from Travel where cost between 5000 and 6000;

ii)   SELECT Source,Destination fromTravel where DOJ is NULL;

iii) SELECT left(Pname,3) from Travel where month(DOJ) =8

iv)   SELECT min(DOJ) from Travel;

Q No.	Section-E (3 x 5 = 15 Marks)	Marks
35	ABC Net Solutions are setting up their corporate centre at Chennai. They have four buildings on their campus.	5
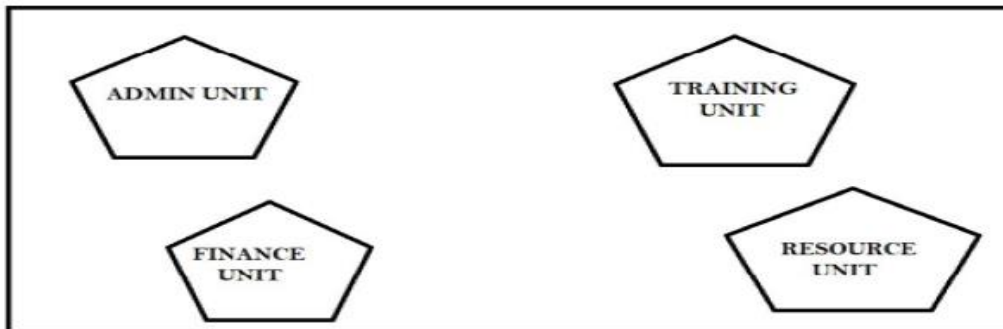
Distance between the various blocks is as follows:

Admin to Training	50 m
Admin to Finance	120 m
Admin to Resource	80 m
Training to Finance	110 m
Training to Resource	120m
Finance to Resource	70m

Numbers of computers in each block

Admin Unit	80
Training Unit	100
Finance Unit	200
Resource Unit	90

Based on the above information answer the following questions:
- a) Suggest the appropriate building that should host the server. Give reasons to justify your answer.
- b) Suggest the topology and network type(LAN, MAN, WAN) that is suitable for the cable layout in the Chennai campus to interconnect the buildings.
- c) Suggest the placement of the following devices:
  - i) Repeater
  - ii) Switch/hub
- d) Also draw a cable layout indicating the interconnection between the buildings.
- e) Which device should be used to connect to internet from the campus using a telephone line.

| 36 | Consider the DataFrame df shown below. | 5 |

	sno	social media	Year	Users(in billion)
0	1	Facebook	2021	2.85
1	2	Instagram	2022	2.00
2	3	Twitter	2023	1.00
3	3	Youtube	2024	2.50

Write Python statements for the DataFrame df to:

- I. Print the first two columns of the DataFrame df.
- II. Display the value 2.85 from the dataframe df.
- III. Display the data of the 'Social Media' column from indexes 1to 3 (both included)
- IV. Rename the indices of dataframe to A,B,C,D
- V. Remove the column Users from the dataframe df.

| 37 | | 5 |

A. Write suitable SQL query for the following:
- I. To display the total salary of employees in an employee table.
- II. To display the last four letters of author_name in the table books.
- III. To display the total number of characters in tname column of a teacher table.
- IV. To display the bookname column of Books table in upper case.
- V. To determine the cardinality of Library table.

[OR]

B. Write suitable SQL query for the following:
- I. Round the number 285.1254 to three decimal places
- II. Calculate the remainder when 225 is divided by 9.
- III. Display the String 'Class122024' after removing the leading spaces.
- IV. Display the result of expression 5^4
- V. Display the string 'for' from the string 'Informatics Practices'.