BUDHA DAL PUBLIC SCHOOL, PATIALA

PRE-BOARD EXAM JAN.2025 (CLASS – XII) Set-A

INFORMATICS PRACTICES (SUBJECT CODE-065)

Time Allowed:-3 hours **Maximum Marks: 70**

General Instructions:

1. Please check this question paper contains 37 questions.
2. All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
3. The paper is divided into 5 Sections- A, B, C, D and E.
4. Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
5. Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
6. Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
7. Section D consists of 2 case study type questions (33 to 34). Each question carries 4 Marks.
8. Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
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.

Section –A **[21x1=21]**

1. State whether the following statement is True and False:

   A pandas Series can be sliced using index ranges similar to a Python list.

2. Which of the following clause cannot be used with ALTER command?

   (a) CHANGE (b) UPDATE (c) MODIFY (d) ADD

3. A is a network device that connects multiple devices together, allowing them to communicate with each other.

   (a) modem (b) hub (c) switch (d) router

4. The return type of POWER() function is

   (a) String (b) Date (c) Numeric (d) None of these

5. is the filling of mailbox with unnecessary and junk mail.

   (a) Phishing (b) Spamming (c) Spying (d) Adware attack

6. Which method would you use to sort a DataFrame by the values of a specific column in ascending order?

   (a) sort() (b) order() (c) sort_values() (d) sort_index()

7. Which argument must be set with plotting functions for legend() to display the legends?

   (a) data (b) label (c) name (d) sequence

8. State whether the following statement is True and False:

The SQL UPDATE statement can be used to modify existing records in a table.

9. Which of the following reads data from csv files?

(a) get_csv() (b) read_csv() (c) csv_read() (d) read()

10. The include right to copy (reproduce) a work, right to distribute copies of the work to the public, and right to publicly display or perform the work.

(a) Copyright (b) Patent (c) Create right (d) None of these

11. Fill in the blank:-

The SQL command used to remove a table from the database is

(a) DELETE (b) REMOVE (c) DROP TABLE (d) TRUNCATE

12. Which of the following allows you to connect and login to a remote computer?

(a) SMTP (b) HTTP (c) FTP (d) Telnet

13. Given a Pandas Series called Sequences, the command which will display the first 4 rows is

(a) print (Sequences.head(4)) (b) print (Sequences. Head (4))

(c) print (Sequences.heads (4)) (d) print (Sequences. Heads (4))

14. The digital data trail we leave online intentionally is called

(a) Active digital footprints (b) Passive digital footprints

(c) Current digital footprints (d) None of these

15. Given the series s1-p.Series([10.20.30.40.50]). >>>print(s1[0:]) shows

(a) [10,20,30,40,50] (b) [10,20,30] (c) [10] (d) [ ]

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

SQL Function	Description
P. COUNT()	1. Returns the average value in a column.
Q. AVG()	2. Counts the number of rows in a result set.
R. CONCAT()	3. Joins two strings together.
S. DISTINCT	4. Removes duplicate rows from the result set.

(a) P-2, Q-1, R-3, S-4 (b) P-1, Q-2, R-4, S-3 (c) P-3, Q-4, R-2, S-1 (d) P-4, Q-1, R-3, S-2

17. In Pandas, the DataFrame column. method is used to return the number of unique elements in a

(a) value_counts() (b) unique() (c) nunique() (d) count()

18. Which of the following is the attribute used to change the color of bars in a Bar Chart?

(a) colour (b) color (c) clr (d) colours

19. What kind of transmission medium is most appropriate to carry data in a computer network that is exposed to electrical interferences?

(a) Unshielded twisted pair (b) Optical fiber (c) Coaxial cable (d) Microwave

Directions (Q. Nos. 20 and 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)** DataFrame has both a row and column index.

Reason (R) A DataFrame is a two-dimensional labelled data structure like a table of MySQL.

21. **Assertion (A)** The 'TRUNCATE' command in SQL deletes all rows from a table.

Reason (R) The 'TRUNCATE' command can be rolled back using a transaction.

Section B [7×2=14]

22. (A) How can you check for missing values in a Pandas DataFrame?

Or

(B) What is the purpose of the groupby() function in Pandas? Provide an example.

23. What is data protection? Write two steps to protect your data.

24. Consider the string: "Computer Science and Engineering". Write suitable SQL queries for the following:

I. To extract and display "Engineering" from the string.

II. Convert the entire string to uppercase.

25. (A) List some benefits of networking. Name any two components required for networking.

Or

(B) Give an example of each static web page and dynamic web page.

26. What is the purpose of ORDER BY clause in SQL? Explain with the help of suitable example.

27. Explain the concept of "intellectual property rights" (IPR).

28. (A) The Python code written below has syntactical errors. Rewrite the correct code and underline the corrections made.

```
Import pandas as pd
Emp{‘a’: 10000. ‘b’: 15000, ‘c’: 12000}
 Sr=Pd. Series (Emp)
Print(sr)
```

Or

(B) Complete the given Python code to get the required output as: 16

```
Import_____ as np
data [1. 4. 9. 16]
 series_data = np. _____(data)
 print(series_data[_____])
```

Section C [4×3=12]

29. Raj has been receiving emails claiming that he has won a lottery from an unknown sender. The emails ask for personal information and bank details to claim the prize. Raj is unsure about the legitimacy of these emails but is tempted by the promise of a large sum of money.

    (i) What is happening to Raj?

    (ii) What immediate action should he take to handle it?

    (iii) Is there any law in India to handle such issues? Discuss briefly.

30. (A) Write a small Python code to create a DataFrame with headings (a and b) from the list given below

    [[10, 20], [30, 40], [50, 60], [70, 80]]

    Or

    (B) Write a Python program to create the following DataFrame using a list of dictionaries.

	A	B	C
0	21	12	69
1	45	45	84
2	23	86	70
3	17	33	78

31. Given the following table "Drinks" storing details of soft drinks.

Did	Dname	Brand	Price
D01	Black Masala	Coca-Cola	45
D02	Sweet Mango	Pepsi	55
D03	Instant Energy	Maaza	75
D04	Roman Blue	Coca-Cola	NULL
D05	Green Drink	Coca-Cola	85

    Answer the following questions:

    (i) If 2 rows are added to the table, what will be the degree of the table?

    (ii) Can Brand be the Primary key of the table? Why?

    (iii) Write a query to display average price of products of brand "Coca-Cola".

32. (A) Consider the table DOCTOR given below.

Table: DOCTOR

ID	DOCName	Department	DOJ	Gender	Salary
1	Amit Kumar	Orthopaedics	1993-02-12	M	35000
2	Anita Hans	Paediatrics	1998-10-16	F	30000
3	Sunita Maini	Gynaecology	1991-08-23	F	40000
4	Joe Thomas	Surgery	1994-10-20	M	55000
5	Gurpreet Kaur	Paediatrics	1999-11-24	F	52000
6	Anandini Burman	Oncology	1994-03-16	F	31000
7	Siddharth Bang	Surgery	1995-09-08	M	47000
6	Rama Mukherjee	Oncology	2004-06-27	F	54500

Table :Docdetails

DocID	Visitdays	Fees
1	MWF	1200
2	WFS	1000
3	WFS	600
4	MWF	700
5	TWS	800
6	TWS	1200
7	MWF	1600
8	TWS	1900

Write SQL queries for the following:

(i) Display the names and salaries of doctors in descending order of salaries.

(ii) Display names of each department along with total salary being given to doctors of that department.

(iii) Display the number of doctors in each department.

Or

(A Consider the following tables:

Table 1: EMPLOYEE

EmployeeID	Name	Department
201	Alice	HR
202	Bob	IT
203	Charlie	Finance
204	Diana	IT
205	Eve	HR

Table 2: PROJECTS

EmployeeID	Project	Hours
201	Recruitment	30
202	Development	40
203	Audit	25
204	Development	20
205	Hiring	35

Write appropriate SQL queries for the following:

(i) Display the total number of hours worked on each project.

(ii) Display the names of all employees who have worked on more than 30 hours.

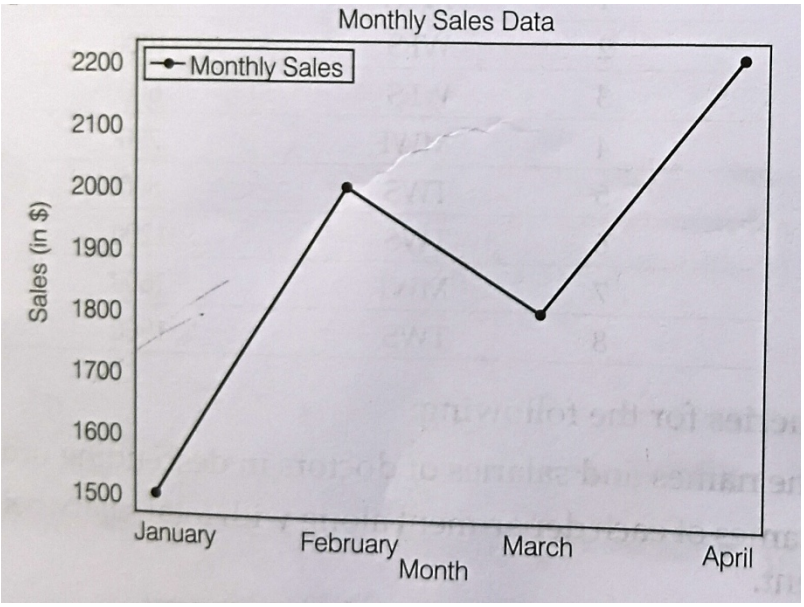
(iii) Display the employee names along with their corresponding projects.

Section D [2x4=8]

33. During a practical exam, a student, Ravi, has to fill in the blanks in a Python program that generates a line chart. This line chart represents the monthly sales of a store over four months.

Month	Sales (in $)
January	1500
February	2000
March	1800
April	2200

Help Ravi to complete the code.




```
import _________as plt                                    #Statement-1
months = ['January', 'February'. 'March', 'April']
sales [1500, 2000, 1800, 2200]
plt.plot(months,________ marker='o', label='Monthly Sales')   #Statement-2
plt.xlabel('Month')
plt._________ ('Sales (in $)')                            #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 to the graph shown above and fill the blank in Statement-4 with a suitable chart title.

34. (A) Predict the output of the following queries

Table: Doctor

Doctor ID	Dname	Dept	Charges	VisitDays
D01R.	Sharma	ENT	1000	Mon
D02	D. Basak	ENT	1500	Wed
D03	M. Agarwal	PAED	6000	Sat
D04E.	Joseph	Ortho	1200	Sun
D05	M. Fernandes	Ortho	4000	Thu

(i) Select Dname from Doctor where VisitDays IN ("Mon", "Wed");

(ii) Select Dept.Count(*) from Doctor Group by Dept:

(iii) Select right (Dname. 3) from Doctor where Charges >4000:

Or

(B) Tejasvi Sethi, a car dealer has stored the details of all cars in her showroom in a table CARMARKET. The table CARMARKET has attributes CARCODE which is a primary key, CARNAME, COMPANY, COLOR, COST (in lakh) of the car and DOM which is the Date of Manufacture of the car.

Table: CARMARKET

CARCODE	CARNAME	COMPANY	COLOR	COST	DOM
C01	BALENO	SUZUKI	BLUE	5.90	2019-11-07
C02	INDIGO	TATA	SILVER	12.90	2020-10-15
C03	GLC	MERCEDES	WHITE	62.38	2020-01-20
C04	A6	AUDI	RED5	8.55	2018-12-29
C05	INNOVA	TOYOTA	BLACK	32.82	2017-11-10
C06	WAGON-R	SUZUKI	WHITE	12.11	2016-11-11
C07	BREZZA	SUZUKI	GOLDEN	9.80	2016-10-03

Help her by writing answers of the following questions based on the given table.

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

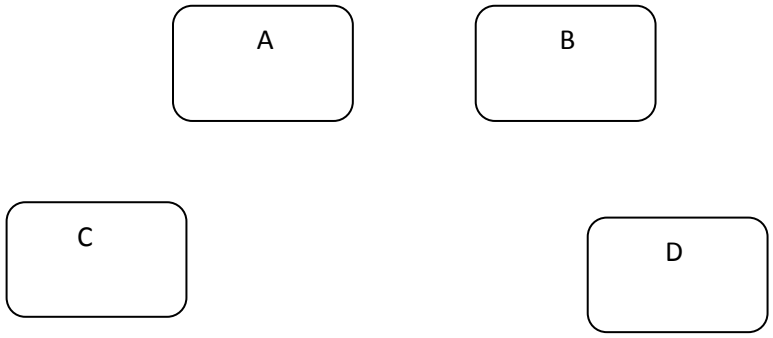
(ii) Display the carname, name of the company in lower case of all cars whose year (of dom) is 2020.

(iii) Display the number of cars manufactured each year.

(iv) Display the carname, color and position of the character 'E' in the color of all the cars.

Section E [3×5=15]

35. Green Valley Public School has 4 buildings in its campus. Distance between the buildings and the number of computers in each is given below



Building	Number of Computers
A	150
B	10
C	25
D	30

Building	Distance
A-B	10 m
A-C	1250 m
A-D	25 m
B-C	30 M
B-D	2000M

(i) Which building is best suitable for placement of server?

(ii) If building A to D is to be connected, which device will be required for strong signals?

(iii) Which building would need a switch/hub?

(iv) Which topology would you suggest for connecting computers in each building?

(v) Draw cable layout to efficiently connect various buildings within the school campus for a wired connectivity.

36. Consider the DataFrame df shown below.

	Year	Month	Passengers
0	2010	Jan	25
1	2010	Mar	50
2	2012	Jan	35
3	2010	Dec	55
4	2012	Dec	65

(i) What will be the output of the following statements?

(a) df.shape()

(b) df.index=["AirIndia". "Indigo". "Spicejet", "Jet". "Emirates"]

(ii) Write the code to get the following output:

	Month	Passengers
0	Jan	25
2	Jan	35

(iii) Predict the output of print (df[1: 3]).

(iv) Rename the column name 'Passengers' to 'Visitors'.

(v) Add a column 'Flights' to the DataFrame df.

37. Write suitable SQL query for the following:

(i) To display the name of the month for the current date.

(ii) To display the weekday name for the current date.

(iii) To display the position of the first occurrence of "ka" in "karnataka".

(iv) To display the string in Upper case 'Python Program'.

(v) To compute the remainder of numerator 117 and denominator 17.

Or

Explain the following SQL functions using suitable examples.

(i) LEFT()

(ii) INSTR()

(iii) SUBSTR()

(iv) MONTHNAME()

(v) MOD()