

20.12.25

BUDHA DAL PUBLIC SCHOOL, PATIALA

PRE-BOARD EXAM (CLASS – XII)

INFORMATICS PRACTICES (SUBJECT CODE-065)

Time Allowed: -3 hours

Maximum Marks: 70

General Instructions:

- All questions are compulsory.
- The examination paper contains five sections, from Section A to Section 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.
- There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- All programming questions are to be answered using Python Language only.

Section -A 21x1 =21

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

Slicing can be used to extract a specific portion from a Pandas Series.

2. In MySQL, Reena and Zebi are getting the following output of SELECT statement on a table Employee.

Reena	Zebi
Lucknow	Lucknow
Delhi	Delhi
Mumbai	Mumbai
Delhi	Kanpur
Kanpur	
Delhi	

Which keyword has Zebi used with a SELECT statement to get the above output?

- (a) COUNT (b) UNIQUE (c) DISTINCT (d) All of these
3. Which of the following is used to extend the range of a network by amplifying signals?
- (a) Router (b) Repeater (c) Modem (d) Switch
4. The AVG() function in MySQL is an example of
- (a) MATH() function (b) TEXT() function (c) DATE() function (d) Aggregate function
5. e-Waste causes which type of environmental damage?
- (a) Soil pollution (b) Deforestation (c) Biodiversity loss (d) Sound pollution
6. How can you add a new column new column with all values set to 0 to an existing DataFrame?
- (a) df.add_column('new_column', 0) (b) df['new_column'] = 0
- (c) df.insert_column('new_column', 0) (d) df.append_column('new_column', 0)
7. Which is the correct import statement to import pyplot?
- (a) import matplotlib.pyplot as plt (b) import pyplot from matplotlib

8. The _____ keyword in SQL is used to return only distinct (unique) rows, excluding duplicates.
9. Which function is used to save a DataFrame to a CSV file in pandas (Note: df is a DataFrame object)?
- (a) df.to_save('filename.csv') (b) df.write_csv('filename.csv')
- (c) df.save_csv('filename.csv') (d) df.to_csv('filename.csv')
10. Which of the following is not a violation of IPR?
- (a) Plagiarism (b) Copyright infringement (c) Patent (d) Trademark infringement
11. The constraint that ensures all values in a column are different is:
- (a) NOT NULL (b) CHECK (c) UNIQUE (d) FOREIGN KEY
12. Data Communication systems spanning states, countries or the whole world is
- (a) PAN (b) LAN (c) MAN (d) WAN
13. Radhika is working on a Pandas Series named week which contains data about sales for each day of the week. She wants to display only the first 4 rows of the series to review the initial data entries.
- Which of the following commands should she use?
- (a) print(week.head(4)) (b) print(week.Head(4)) (c) print(week.heads(4)) (d) print(week.Heads(4))
14. Which of the following is not a type of Cyber crime?
- (a) Data theft (b) Forgery of online documents
- (c) Damage to data and systems (d) Installing antivirus for protection
15. Which of the following will not display the data type of a series "s1"?
- (a) s1.index (b) s1.dtype (c) s1.shape (d) s1.values
16. Which SQL set operator returns rows present in both queries?
- (a) UNION (b) INTERSECT (c) EXCEPT (d) JOIN
17. When we create DataFrame from List of Dictionaries, then dictionary keys will become
- (a) Column labels (b) Row labels (c) Both (a) and (b) (d) None of these
18. Mohit is trying to create a histogram of "STEP" type with 10 bins. Help him to identify the correct statement from the following statements.
- (a) plt.hist(x, bins=10, histtype="barstacked") (b) plt.hist(x, bins=11)
- (c) plt.hist(x, bins=10, histtype="step") (d) plt.hist(x, bins=10, histtype="Dashed")
19. Two computers in the same part of a city, separated by a distance of 50KM, are connected. What kind of network is formed?
- (a) PAN (b) MAN (c) LAN (d) WAN
- 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) Assertion (A) is True, but Reason (R) is False
- c) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- d) Assertion (A) is False, but Reason (R) is True
20. Assertion (A) Elements of Series can be accessed using positional index.
- Reason (R) Positional index values range from 1 to n, if n is the size of the series.

21. Assertion (A) In SQL, the GROUP BY clause is used to aggregate data based on a specific column.

Reason (R) The GROUP BY clause helps in grouping similar data to apply aggregate functions such as SUM or COUNT.

Section B(7 Questions of 2 Marks each) 7x2=14

22. How can you drop rows or columns from a DataFrame in pandas?

Or

Explain the difference between indexing and slicing in a Pandas Series with suitable examples.

23. Write any two steps towards awareness about health concerns related to the usage of technology.

24. Consider the string: "Database Normalization Techniques". Write suitable SQL queries for the following:

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

II. Display the position of the first occurrence of "Techniques" in the given string.

25. Navya has just created a website for her company and now need to host it. Briefly discuss the role of a web server in hosting a website.

Or

Write one advantage each of star and bus topology used in networking. Draw a network layout of bus topology to connect six computers.

26. Why is the GROUP BY clause used for?

27. List two health hazards related to excessive use of Technology. Also list two precautions to be taken while using computers to avoid any health hazard.

28. Riya wrote the following Python code to create a DataFrame but it has some syntax errors. Help her rewrite the correct code and underline the corrections made:

```
import pandas as pd
data {Name [Riya', 'Preeti', 'Neeta'], 'Age': [25, 30, 22]}
df=pd.DataFrame (Data)
for row in df:
print(row)
```

Or

Complete the given Python code: Create a pandas Series from a scalar value '10' and display the last 3 elements of the Series.

```
import _____ as pd
series_data pd. Series(_____)
print(series_data._____(_____))
```

Section C (4 Questions of 3 Marks each) 4 x 3=12

29. Ms. Jayita found that her 17 year old child studying in class XII Science, is using the digital media for her studies. She came to know that children who use technology more, may be effected by psychological problems.

(i) How can excessive use of digital media impact students' psychological well-being?

- (ii) What are some strategies for balancing digital media use and maintaining mental health?
- (iii) Why is it important for students to be mindful of their digital media usage?

30. Rahul has written a code with a DataFrame and a CSV file "Emp.csv" containing records of employees as follows:

Index	Eno	Ename	Eage	Esal
0	1	Ritesh	15	56000
1	2	Aakash	16	170000
2	3	Sumit	17	12500
3	4	Ria	20	18000

Write the Python code to read the data from the CSV file, display its first two records and then rewrite the data to a new CSV file.

Or

Write a Python program to create a Pandas Series using the following dictionary. Note that the left column indicates the indices and the right column displays the data.

Japan	Tokyo
South Korea	Seoul
China	Beijing

31. I. Write an SQL statement to create a table named TRAIN, with the following specifications:

Column Name	Data Type	Key
TrainID	Numeric	Primary Key
TrainName	Varchar(30)	
Seats	Numeric	
Departure	Date	

II. Write an SQL Query to insert the following data into the TRAIN table: 1032, Express, 120, 2024-09-10

32. Consider the following tables SCHOOL and ADMIN and answer this question :-

Table : SCHOOL

CODE	TEACHER NAME	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	Ravi Shankar	English	12/3/2000	24	10
1009	Priya Rai	Physics	03/09/1998	26	12
1203	Lisa Anand	English	09/04/2000	27	5
1045	Yashraj	Maths	24/08/2000	24	15
1123	Ganan	Physics	16/07/1999	28	3
1167	Harish B	Chemistry	19/10/1999	27	5
1215	Umesh	Physics	11/05/1998	22	16

Table : ADMIN

CODE	GENDER	DESIGNATION
1001	Male	Vice Principal
1009	Female	Co-ordinator
1203	Female	Co-ordinator
1045	Male	HOD
1123	Male	Senior Teacher
1167	Male	Senior Teacher

Write SQL statements for the following:

- (i) To display TEACHERNAME, PERIODS of all teachers whose periods are more than 25.
- (ii) To display DESIGNATION without duplicate entries from the table ADMIN.
- (iii) To display TEACHERNAME, CODE and corresponding DESIGNATION from tables SCHOOL and ADMIN of Male teachers.

Or

Write SQL commands for (i) to (iii) based on the tables Watches' and Sale given below.

Table : Watches

WatchId	Watch_Name	Price	Type	Qty_Store
W001	High Time	10000	Unisex	100
W002	Life Time	15000	Ladies	150
W003	Wave	20000	Gents	200
W004	High Fashion	7000	Unisex	250
W004	Golden Time	25000	Gents	100

Table : Sale

WatchId	Qty_Sold	Quarter
W001	10	1
W003	5	1
W002	20	2
W003	10	2
W001	15	3
W002	20	3
W005	10	3
W003	15	4

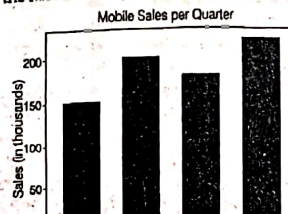
Section D(2 Questions of 4 Marks each)

2x4=8

33. Amit wants to visualize mobile sales data for four quarters using Python. Help him write the code to plot a bar chart for the sales and save the chart as 'Mybar'.

Sales	Quarters
150	Q1
200	Q2
180	Q3
220	Q4

This Bar chart represents the Mobile Sales(In thousand) for Quarters.



```

import _____ as plt
quarters = ['Q1', 'Q2', 'Q3', 'Q4']
sales = [150, 200, 180, 220]
plt. _____ (quarters, sales, color='blue')
plt.xlabel('Quarters')
plt. _____ ('Sales (in thousands)')
plt.title('Mobile Sales per Quarter')
plt. _____ ('Mybar.png')
plt.show()

```

#Statement-1

#Statement-2

#Statement-3

#Statement-4

- 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 Python statement.
34. Aditya has a table named Bookhouse containing details of books. Help him write SQL queries for the following tasks:

Table : Bookhouse

No	Title	Author	Subject	Publisher	Qty	Price
1	Data Structure	Lips chute	DS	McGraw	4	217.00
2	DOS Guide	Nortron	OS	PHI	3	175.00
3	Turbo C++	Robert Lafore	Prog	Galgotia	5	270.00
4	Dbase Dummies	Palmer	DBMS	PustakM	7	130.00
5	Mastering Windows	Cowart	OS	BPB	1	225.00
6	Computer Studies	French	FND	Galgotia	2	75.00
7	COBOL	Stern	Prog	John W	4	1000.00
8	Guide Network	Freed	NET	Zpress	3	200.00
9	Basic for Beginners	Norton	Prog	BPB	3	40.00
10	Advanced Pascal	Schildt	Prog	McGraw	4	350.00

- (i) Display Publisher wise total stock value (Qty* Price).
- (ii) Display Title of the book which is costliest.
- (iii) Display number of books and total Price for each type of Publisher.
- (iv) Display all the books where subject starts with "D" and Qty is less than 3.

Or

Consider the table SUPPLIER given below. Write the output for (i) to (iv).

Scode	Pname	Supname	Qty	City	Price
101	Coffee	Nestle	200	Kolkata	55.00
102	Biscuit	Hide and Seek	100	Delhi	10.00
103	Jam	Kissan	110	Kolkata	25.00
104	Maggi	Nestle	150	Mumbai	10.00
105	Chocolate	Cadbury	170	Delhi	25.00
106	Sauce	Maggi	56		

- (i) SELECT Pname FROM SUPPLIER WHERE Supname IN ('Bread', 'Maggi');
(ii) (SELECT COUNT AS DISTINCT City FROM SUPPLIER:
(iii) (SELECT MAX(Price) FROM SUPPLIER WHERE City Kolkata';
(iv) SELECT Pname FROM SUPPLIER WHERE Qty = 200;

Section E (3 Questions of 5 Marks each) 3x5=15

35. Granuda consultants are setting up a secured network for their office campus at Faridabad for their day-to-day office and web based activities. They are planning to have connectivity between 3 buildings and the head office situated in Kolkata.

Answer the questions (i) to (v) after going through the building positions in the campus and other details, which are given below.

Distance between various buildings

Building RAVI to Building JAMUNA	120 m
Building RAVI to Building GANGA	50 m
Building GANGA to Building JAMUNA	65 m
Faridabad Campus to Head Office	1460 km

Number of computers

Building RAVI	25
Building JAMUNA	150
Building GANGA	51
Head Office	10

- Suggest the most suitable place (i.e. Building) to house the server of this organisation. Also, give a reason to justify your suggested location.
- Suggest a cable layout of connections between the building inside the campus.
- Suggest the placement of the following devices with justification
(a) Switch (b) Repeater
- Consultancy is planning to connect its office in Faridabad which is more than 10 km from head office. Which type of network will be formed?
- State the use of HUB?

36. Given a DataFrame House with columns: Housename, Location and Boys:

Index	House		Boys
	Housename	Location	
0	Ganga	East	20
1	Yamuna	West	30
2	Saraswati	North	56

- (a) What will be the output of the following code?
(i) print(House.shape)(ii) House.pop("Location")
(c) print(tail(2))

(c) To display total number of elements in the dataframe.

(d) She wants to see the number of columns. Write the statement which will display the number of columns.

37. Write suitable SQL queries for the following:

(i) To display the total quantity from the quantity_sold column in the Sales table.

(ii) To display the last five characters of the phone_number column in the Contacts table.

(iii) To display the address column in the Customers table, after trimming any extra spaces at the beginning and end.

(iv) To display the minimum value from the purchase_date column in the Transactions table.

(v) To determine the total number of rows in the Inventory table.

Or

Write suitable SQL query for the following:

(i) Display 7 characters extracted from 7th left character onwards from the string 'SHINING WORLD'.

(ii) Display the position of occurrence of string 'COME' in the string 'WELCOME TO NEW ERA'

(iii) Round off the value 53.78 to one decimal place.

(iv) Display the remainder of 100 divided by 9.

(v) Remove all the expected leading and trailing spaces from a column EMPID of the table "EMP"