

**General Instructions**

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A has 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 02 questions carrying 04 marks each.
7. Section E has 03 questions carrying 05 marks each.
8. All programming questions are to be answered using Python Language only.

**Section - A**

1. What is the correct syntax to return both first row and second row in a pandas dataframe df
  - i. `df.loc[[0,1]]`
  - ii. `df.[[0,1]]`
  - iii. `df.loc[[0-1]]`
  - iv. `df.[[0-1]]`
2. \_\_\_\_\_ are messages that a web server transmits to a web browser so that the web server can keep track of the user's activity on a specific website.
  - i. text
  - ii. cookies
  - iii. email
  - iv. chat
3. The command to install pandas is
  - i. `install pandas`
  - ii. `install pip pandas`
  - iii. `pip install pandas`
  - iv. `pip pandas`
4. The command can be used to insert a new row in a table in SQL.
  - i. `add()`
  - ii. `append`
  - iii. `insert into`
  - iv. `alter table.`
5. State whether True or False :
  - i. Copying and pasting data from internet or other digital resources is ethical.
  - ii. E-waste is very hazardous if not handled carefully.
6. Rohan wants to print the row labels of the dataframe. He should use the \_\_\_\_\_ attribute of a dataframe.
  - i. `column`
  - ii. `columns`
  - iii. `index`
  - iv. `rowname`
7. Write the output of the following SQL command.  
`select pow(2,-2);`
  - i. -4
  - ii. 4
  - iii. 0.25
  - iv. -0.25
8. What is e-waste?
  - i. electronic waste
  - ii. environmental waste
  - iii. earth waste
  - iv. energy waste
9. What will be the output of the following code?  
`mysql> select lcase ('INFORMATICS PRACTICES CLASS 12TH');`
10. Which of these is not an example of unguided media?
  - i. Optical Fibre Cable
  - ii. Radio wave
  - iii. Bluetooth
  - iv. Satellite
11. Stealing someone's intellectual work and representing it as your own is known as \_\_\_\_\_.
  - i. Phishing
  - ii. Spamming
  - iii. plagiarism
  - iv. hacking
12. Which of the following is not the correct aggregate functions in SQL.
  - i. `AVG()`
  - ii. `MAX()`
  - iii. `COUNT()`
  - iv. `TOTAL()`
13. A URL can specify the IP address of the Web \_\_\_\_\_ that houses a Web page?
  - i. server
  - ii. client
  - iii. e-mail recipient
  - iv. None

14. The digital data trail that we leave online intentionally is called\_\_\_\_\_.
- active digital footprint
  - passive digital footprint
  - current digital footprint
  - none of these
15. To mention conditions along with group by function .....clause is used.
- Where
  - having
  - distinct
  - select
16. Jhilmalini has stolen a credit card. She used that credit card to purchase a laptop. What type of offence has she committed?
- online fraud
  - cyber bullying
  - cyber stalking
  - All of the above.

Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as

- Both A and R are true and R is the correct explanation for A
- Both A and R are true and R is not the correct explanation for A
- A is True but R is False
- A is false but R is True

17. Assertion (A) : import matplotlib.pyplot as plt is used to import pyplot .  
Reason (R) :It is python library so it is imported for using its function.
18. Assertion (A):- Series store data row wise.  
Reasoning (R): - A Series is a one-dimensional labelled data structure.

### Section – B

19. Explain the terms Web page and Home Page.  
OR  
Mention any four networking goals.
20. Rashmi, a database administrator needs to display house wise total number of records of 'Red' and 'Yellow' house. She is encountering an error while executing the following query:  
SELECT HOUSE, COUNT (\*) FROM STUDENT GROUP BY HOUSE WHERE HOUSE='RED' OR HOUSE= 'YELLOW';  
Help her in identifying the reason of the error and write the correct query by suggesting the possible correction (s).
21. What is the purpose of Order By clause in SQL? Explain with the help of suitable example.
22. Write a program to create a series object using a dictionary that stores the number of students in each house of class 12D of your school.  
Note: Assume four house names are Beas, Chenab, Ravi and Satluj having 18, 2, 20, 18 students respectively and pandas library has been imported as pd.
23. List any four benefits of e-waste management.  
OR  
Mention any four net etiquettes.
24. What will be the output of the following code:  
>>>import pandas as pd  
>>>A=pd.Series(data=[35,45,55,40])  
>>>print(A>45)
25. Carefully observe the following code:  
import pandas as pd  
Year1={'Q1':5000,'Q2':8000,'Q3':12000,'Q4': 18000}  
Year2={'A' :13000,'B':14000,'C':12000}  
totSales={1:Year1,2:Year2}  
df=pd.DataFrame(totSales)  
print(df)  
Answer the following:  
i. List the index of the DataFrame df  
ii. List the column names of DataFrame df.

**Section – C**

26. Ms Malini is working in a school and stores the details of all students in a table SCHOOLDATA.

TABLE : **SCHOOLDATA**

Admno	Name	Class	House	Percent	Gender	Dob
20150001	Aditya Das	10	Green	86	Male	2006-02-20
20140212	Harsh Sharma	11	Red	75	Male	2004-10-05
20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21
20130216	Soumen Rao	9	Red	91	Male	2006-04-10
20190227	Rahil Arora	10	Blue	70	Male	2005-05-14
20120200	Akasha Singh	11	Red	64	Female	2004-12-16

Find the output :

- i. SELECT LENGTH(NAME) FROM SCHOOLDATA WHERE HOUSE='Red';
- ii. SELECT LEFT (Gender, 1), Name FROM SCHOOLDATA WHERE YEAR (Dob) = 2005;
- iii. SELECT MID(UPPER(NAME),5,4) FROM SCHOOLDATA WHERE GENDER = 'Male';

**OR**

Briefly explain the difference between count( ) and count(\*) with help of an example.

27. Write a Python code to create a DataFrame with appropriate column headings from the list given below:

```
[['Nidhi','Business Studies',95],['Gurjeet','Informatics Practices',97], ['Pahul','Accountancy',88], ['Divya','English',72]]
```

28. Consider the given DataFrame **shop**

	APPLIANCE_NAME	DISCOUNT	PRICE
0	REFRIGERATOR	15	19800
1	SMART PHONE	20	22300
2	TELEVISION	22	12900
3	AIR CONDITIONER	15	23500
4	WASHING MACHINE	18	18900
5	WASHING MACHINE	15	20110

Write the commands for the following:

- i. Add a column called Special\_Quantity with the following data: [62,26,12,32,48,52,35].
- ii. Add a new Electronics item named 'TELEVISION',12 having price 35600.
- iii. Remove the column Special\_Quantity.

29. Sutapa received an email from her bank stating that there is a problem with her account. The email provides instructions and a link, by clicking on which she can logon to her account and fix the problem.

- i. What is this happening to Sutapa?
- ii. What immediate action should she take to handle it?
- iii. Is there any law in India to handle such issues? Discuss briefly.

**OR**

What do you understand by hacking? Why is it a punishable offence? Mention any two ways to avoid hacking.

30. Based on table **SCHOOL** given here, write suitable SQL queries for the following:

CODE	TEACHERNAME	SUBJECT	Category	DOJ	PDS	EXP
1001	RAVI SHANKAR	ENGLISH	PGT	12/03/2000	24	10
1009	PRIYA RAI	PHYSICS	TGT	03/09/1998	26	12
1203	LISA ANAND	ENGLISH	TGT	09/04/2000	27	5
1045	YASHRAJ	MATHS	PGT	24/08/2000	24	15
1123	GANAN	PHYSICS	TGT	16/07/1999	28	3
1167	HARISH B	CHEMIST RY	PGT	19/10/1999	27	5
1215	UMESH	PHYSICS	TGT	11/05/1998	22	16

- i. Display subject wise highest experience.
- ii. Display category wise lowest experience.
- iii. Display total number of PGT and TGT teachers.

**Section - D**

31. Write SQL queries for the following:

**Table: Account**

Ano	ANAME	ADDRESS
101	Nirja Singh	Bangalore
102	Rohan Gupta	Chennai
103	Ali Raja	Hydrabad
104	Rishabh Jain	Chennai
105	Simran Kaur	Chandigarh

**Table:TRANSACT**

TRNO	ANO	AMOUNT	TYPE	DOT
T001	101	2500	Withdraw	2017-12-21
T002	103	3000	Deposit	2017-06-01
T003	102	2000	Withdraw	2017-05-12
T004	103	1000	Deposit	2017-10-22
T005	102	12000	Deposit	2017-11-06

- i. To display details of all transactions of TYPE Withdraw from TRANSACT table
- ii. To display ANO and AMOUNT of all Deposit and Withdrawals done in month of 'May' 2017 from table TRANSACT
- iii. To display first date of transaction (DOT) from table TRANSACT for Account having ANO as 102
- iv. To display ANO, ANAME, AMOUNT and DOT of those persons from ACCOUNT and TRANSACT table who have done transaction less than or equal to 3000.

32. Mr. Ravi, a data analyst has designed the DataFrame df that contains data about Car Sales with 'T1', 'T2', 'T3', 'T4', 'T5' as indexes shown below. Answer the following questions:

	Col1	Col2	Col3	Res
T1	62.893165	100.0	60.00	True
T2	94.734483	100.0	59.22	True
T3	49.090140	100.0	46.04	False
T4	38.487265	85.4	58.60	False

- A. Predict the output of the following python statement:
  - i. df.shape
  - ii. df[1:3]
- B. Write Python statement to display the data of Col3 column of indexes T2 to T4.

**OR (Option for part B only)**

Write Python statement to export the dataframe df to csv file named data.csv stored at f: drive.

**Section - E**

33. Consider the following table **STUDENT**. Write SQL commands for the following statements.

Rollno	Name	Dob	Class	Gender	Hobby	Fees
1001	BHAVYA	2001-01-02	11	F	Painting	100
1002	AARDRA	2002-10-21	1	F	Drama	200
1003	AJITH	2004-12-11	8	M	Cooking	150
1004	ARJUN	2001-02-22	10	M	Cooking	250
1005	KAVYA	2005-10-12	8	F	Sports	100
1006	ANAND	2000-02-01	1	M	Drama	120
1007	ATHUL	2006-10-11	6	M	Sports	150
1008	NEERAJA	2003-11-21	9	F	Sports	100
1009	REHNA	2003-08-07	8	F	Painting	NULL
1010	VAISAKH	2001-12-11	10	M	Cooking	120

- i. To display details of all the students in the descending order of their Name
- ii. To print the average fee for each hobby
- iii. To increase the fees of Cooking by 50 Rs
- iv. To store the fees of hobbies as 100 where fee is not available
- v. To display the name of students who were born after '01-01-2004'

**OR**

Explain the following functions with examples:

- i. SUBSTRING()
- ii. POWER()
- iii. DAYNAME()
- iv. LTRIM()
- v. LENGTH()

34. ABC company is working in 4 blocks- A, B, C and D. Following table shows the distance between blocks and the number of computers in each of the blocks. The company is planning to form a network of these blocks.

**Center to center distances between various blocks**

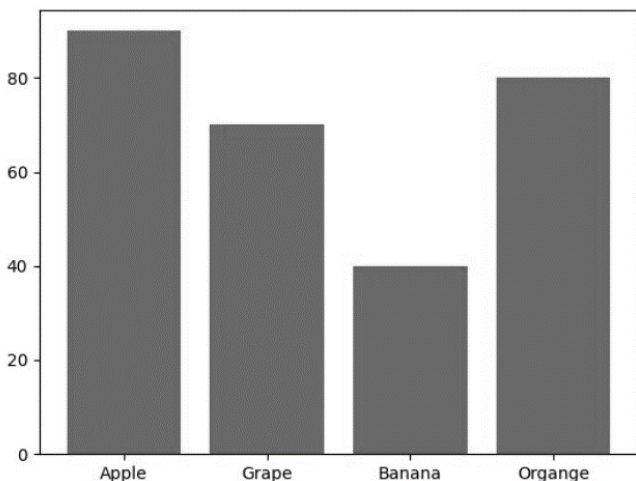
Block A to Block B	50 m
Block B to Block C	150 m
Block C to Block D	25 m
Block A to Block D	170 m
Block B to Block D	125 m
Block A to Block C	90 m

**Number of Computers**

Block A	25
Block B	50
Block C	125
Block D	10

- i. Suggest a cable layout of connections between the blocks.
- ii. Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason.
- iii. Suggest the placement of the following devices with justification (a) Repeater (b) Hub/Switch
- iv. The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?
- v. The organization is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

35. Write Python code to plot a bar chart as shown below:



Also give suitable python statement to save this chart.

**OR**

Write a python program to plot a line chart based on the given data

Days=[1,2,3,4]

Wages =[40,42,38,44]