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HS/XII/A.Sc.Com/IP/24

2 0 2 4

INFORMATICS PRACTICES

Full Marks : 70

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

- (i) Write all the answers in the Answer Script.
- (ii) Attempt multiple choice questions and very short answer-type questions serially.
- (iii) Attempt all parts of a question together at one place.

1. Choose the correct option for the following questions :

1×6=6

(a) Pyplot is an interface of Python's _____ library.

- (i) seaborn
- (ii) plotly
- (iii) ggplot
- (iv) matplotlib

(2)

- (b) Which of the following is not an aggregate function?
- (i) avg()
 - (ii) sum()
 - (iii) with()
 - (iv) min()
- (c) Which of the following is not a valid data type in SQL?
- (i) char (n)
 - (ii) string (n)
 - (iii) varchar (n)
 - (iv) float (n)
- (d) Which network topology requires a central controller or hub?
- (i) Star
 - (ii) Bus
 - (iii) Mesh
 - (iv) Tree
- (e) NIC stands for
- (i) Network Information Centre
 - (ii) Network Interface Card
 - (iii) Network Integration Card
 - (iv) Network Integration Centre

(3)

- (f) The legal term to describe the rights of a creator of original creative or artistic work is called
- (i) Copyright
 - (ii) Copyleft
 - (iii) GPL
 - (iv) None of the above

2. Answer the following questions in brief : 1×6=6

- (a) For the dataset [125, 92, 87, 65], declare a panda series having name 'packets'.
- (b) What is a constraint?
- (c) Explain SELECT command briefly.
- (d) What is the purpose of using router?
- (e) How long are digital footprints stored on a server?
- (f) What are open source based softwares?

3. Answer the following questions (any *three*) : 2×3=6

- (a) Given a series that stores the area of few States. Write a code to display the first three largest areas of State from the series. Given series is created as :
ser1=pd.Series ([34567, 890, 450, 67892, 34677, 78902, 256711]).

(4)

- (b) Write code statements for a DataFrame df for the following :
- (i) Delete the column 'density' from it
 - (ii) Delete the row from 3 to 6 from it
- (c) What is the difference between 'iat' and 'at' with respect to a DataFrame?
- (d) What is histogram? How is it useful?
- (e) What is data visualization? What is its significance?

4. Answer the following questions (any *four*) : 2×4=8

- (a) Write the output produced by the following SQL commands :
- (i) Select POW(2, 3);
 - (ii) Select LENGTH("Informatics Practices");
- (b) In SQL, write the query—
- (i) to modify the column Job of table EMPL to have new width of 30 characters;
 - (ii) to select all snakes or birds of column species from the table PET.
- (c) What is the default sort order of ORDER BY clause? What is the use of ORDER BY clause?

(5)

(d) Predict the output of the following queries :

(i) Select 9 mod 2;

(ii) Select CONCAT('catch', 'a', 'falling', 'star');

(e) What is UPDATE command in SQL? Give one example.

(f) What is equi-join? Give one example.

5. Answer the following questions (any *two*) :

2×2=4

(a) What are the two types of modems?

(b) Compare tree and star topology.

(c) Discuss the structure of an email message in brief.

(d) Discuss VoIP protocol.

6. Answer the following questions (any *two*) :

2×2=4

(a) Why should intellectual property rights be protected?

(b) What is anti-virus software?

(c) What is the need for secure passwords?

(d) Differentiate between active and passive digital footprints.

(6)

7. Answer the following questions :

3×3=9

- (a) Write a program to create a DataFrame to store weight, age and name of 3 people. Print the DataFrame and transpose the DataFrame.

Or

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

['S101', 'Amy', 70], ['S102', 'Bandhi', 69], ['S104', 'Cathy', 75], ['S105', 'Gundaho', 82]

- (b) What will be the output of the following?

```
list1=[100, 98.7, 98.4, 97.7]
```

```
list2=[100, 100, 100, 85.4]
```

```
index_list=['T1', 'T2', 'T3', 'T4']
```

```
a={"column1": pd.Series(list1, index=index_list),
   "column2": pd.Series(list2, index=index_list)}
df2=pd.DataFrame(a)
print(df2)
```

Or

Create the following Dataframe allDf and export the contents of DataFrame to pywork folder of C: drive as filename 'all.csv' :

	Name	Product	Target
Zone A	Purba	Oven	56000
Zone B	Rural	Tubewell	NAN
Zone C	Uttar	TV	NAN

(7)

(c) Four sequences are given below :

X=[1, 2, 3, 4]
Y=[10, 20, 25, 30]
A=[0.3, 3.8, 1.5, 2.5]
B=[11, 25, 9, 26]

Write a program to plot them in the same chart as—

- (i) a line graph plotted with X and Y with blue color and having line width as 3;
- (ii) a line graph plotted with A and B with triangular marker of magenta color with linestyle 'dashed'.

Or

Consider the following codes and figure out what these are trying to do. The pandas library has been imported as pd :

- (i) `pd.read_csv('data.csv', nrows=20)`
- (ii) `pd.read_csv('data.csv', skiprows=[1, 2, 3, 4])`
- (iii) `pd.read_csv('data.csv', header=None)`

8. Answer the following questions :

3×3=9

- (a) What is SQL? What are the different categories of commands available in SQL? Explain briefly each category of commands.

(8)

(b) Explain the following SQL functions with example :

(i) MID()

(ii) NOW()

(iii) COUNT(*)

Or

What is the significance of GROUP BY clause in SQL query? What is the difference between WHERE clause and HAVING clause of SQL SELECT statement?

(c) Write the SQL commands to do the following :

(i) To view the structure of 'Empl' table

(ii) To view the existing databases

(iii) To add a column 'mobile_No' in the table 'Empl'

Or

Write suitable SQL queries for the following :

(i) To calculate the exponent for 3 raised to the power of 4

(ii) To remove all the leading and trailing spaces from the column user_ID of the table USER

(iii) To convert the email_ID 'ABC@XYZ.COM' to lowercase

(9)

9. What are the different types of networking/internet-working devices? 3

Or

What is URL? How is an absolute URL different from a relative URL?

10. Compare Freeware and Shareware. 3

Or

What is data privacy? Websites that you visit collect what type of information about you?

11. Answer the following questions : 4×2=8

(a) Find the error in the following code fragments :

(i) `S2=pd.Series ([101, 102, 102, 104])`
`print (S2.index)`
`S2.index=[0, 1, 2, 3, 4, 5]`
`S2[5]=220`
`print (S2)`

(ii) `S=pd.Series (2, 3, 4, 5, index=range (4))`

(iii) `S1=pd.Series (1, 2, 3, 4, index=range (7))`

(iv) `S2=pd.Series ([1, 2, 3, 4], index=range (4))`

(10)

Or

Consider the following DataFrame 'Sales' containing yearwise sales figures for five Salespersons in INR. Here year is column labels and Salesperson name is row labels :

	2014	2015	2016	2017
Madhu	100.5	12000	20000	50000
Kusum	150.8	18000	50000	60000
Kinshuk	200.9	22000	17000	70000
Ankit	30000	30000	35000	80000
Shruti	40000	45000	12500	9000

Write the statements for the following :

- (i) Display the sales made by all salesperson in the year 2017.
 - (ii) Display the sales made by Shruti in 2016.
 - (iii) Add the data to Sales for Salesperson Sumeet where the sales made are [192, 37800, 52000, 74438] in the years [2014, 2015, 2016, 2017] respectively.
 - (iv) Delete the data for the year 2014 from the DataFrame 'Sales'.
- (b) Write a program that reads from a csv file marks.csv stored in 'data' folder of C: drive having data as 'Name' and 'Marks' in three subjects in a DataFrame. Then the program should add a column 'Total' storing total of marks in three subjects and another column storing average marks. Print the DataFrame after adding these columns.

(11)

Or

Write a program to create a horizontal bar chart from two data sequences as given below :

means=[20, 35, 30, 35, 27]
stds=[2, 3, 4, 1, 2]

Make sure to show legends.

12. Answer the following questions :

4

Consider the following table FITNESS with details about fitness products being sold in the store. Write commands of SQL for (a) to (d) :

Table : FITNESS

PCODE	PNAME	PRICE	MANUFACTURER
P1	Treadmill	21000	Coscore
P2	Bike	20000	Aone
P3	Cross Trainer	14000	Reliable
P4	Multi Gym	34000	Coscore
P5	Massage Chair	5500	Regrosene
P6	Belly Vibrator Belt	6500	Ambawya

- (a) To display the names of all the products with price more than 20000
- (b) To display the names of all products by the manufacturer "Aone"
- (c) To change the price data of all the products by applying 25% discount reduction
- (d) To add new row for product with the following details :

"P7", "Vibro Exerciser", "28000", "Aone"

(12)

Or

Consider the following table GAMES. Write SQL commands for the following statements :

Table : GAMES

GCode	Game Name	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

- (a) To display the names of all GAMES with their GCodes
- (b) To display details of those GAMES which are having Prize Money more than 7000
- (c) To display the content of the GAMES table in ascending order of Schedule Date
- (d) To display sum of Prize Money for each type of GAMES
