



INDIAN SCHOOL SOHAR
TERM I EXAMINATION (2022-23)
INFORMATICS PRACTICES (065)

No of printed pages: 8

CLASS: XII

DATE: 28/09/2022

MAX MARKS: 70

TIME: 3 hours

GENERAL INSTRUCTIONS:

1. This question paper contains two parts- A and B.
2. **Part-A** has two sections:
 - a. **Section – I** consists of 15 questions (1-15). Each question carries 1 mark.
 - b. **Section – II** consists of 2 case studies questions (16- 17). Each question carries 4 marks.
3. **Part- B** has three sections:
 - a. **Section-I** consists of 10 questions (18-27). Each question carries 2 marks.
 - b. **Section-II** consists of 4 questions (28-31). Each question carries 3 marks.
 - c. **Section-III** consists of 3 questions (32-34). Each question carries 5 marks.
4. All the questions are compulsory.

PART – A

Section - I (15 Marks)

1. Anna has given the following command to delete a column 'code' from 'item' dataframe: 1
`item.drop('code')`
But she does not get the desired output, help her select the correct statement.
 - a. `item.drop(['code'])`
 - b. `item.drop('code',axis=1)`
 - c. `item.drop('code',axis=0)`
 - d. `drop item('code')`
2. Read the statements given below. Identify the right option from the following. 1
Statement A: Boolean indexing is a type of indexing.
Statement B: `DataFrame.loc[False]` function can be used to find the relative values where index value is False.
 - a. Statement A is correct, but Statement B is incorrect
 - b. Statement A is incorrect, but Statement B is correct
 - c. Both the statements are correct
 - d. Both the statements are incorrect
3. Data Visualization helps to: 1
 - a. Understand data easily
 - b. Take decisions
 - c. Improve the past performance
 - d. All the above
4. Write the names of any two TCL commands of SQL. 1
5. Which SQL command is used to modify the existing structure of a table? 1
6. Write the correct output on execution of the following Pandas code: 1
`import pandas as pd`
`df=pd.DataFrame([("Om",93), ("Jay",91)],columns=['Name', 'Mark'])`
`print(df.sort_values('Name', ascending=True))`

7. Which one of the following is an attribute of the series in Pandas to set the index label for the given object? 1
 a. label b. index c. loc d. All of the above
8. Using Python Matplotlib _____ can be used to display information as a series of data points. 1
 a. line chart b. bar graph c. histogram d. All the above
9. Which of the following is not a text function? 1
 a. TRUNCATE() b. TRIM() c. LEFT() d. MID ()

10. Read the statements given below. Identify the right option from the following. 1

Statement A: A Series is a one-dimensional array containing a sequence of values of any data type (int, float, list, string etc).

Statement B: Pandas Series can be imagined as a column in a spreadsheet.

- a. Statement A is correct, but Statement B is incorrect
 b. Statement A is incorrect, but Statement B is correct
 c. Both the statements are correct
 d. Both the statements are incorrect
11. 'EMPLOYEE' table has a column named 'CITY' that stores city in which each employee resides. Write SQL query to display the details of all rows except those rows that have 'CITY' as 'DELHI' or 'MUMBAI' or 'CHANDIGARH'. 1
12. Consider the table 'DRIVER' and answer the following question. 1

Table : DRIVER

DRIVERID	DRIVERNAME	DRIVERGRADE	PHONE
D101	Radhey Shyam	A	981234567
D102	Jagat Singh		981017897
D103	Timsy Yadav	B	
D104	Zoravar Singh	A	981107887

Can the column 'PHONE' be set as the primary key of the table DRIVER? Give reason(s).

13. Pandas Series can be created from: 1
 a. Scalar values b. NumPy arrays c. Dictionary d. All of the above
14. By default, read_csv() uses the value of first row as column headers in dataframes. Which argument will you give to ensure that the top/first row's data is used as data and not as column headers? 1
15. Which attribute is used to check the emptiness of a series object? 1
 a. isnull b. empty c. hasnans d. isempty

Section – II (8 Marks)

16. Ms. Anusha is working in a hospital as data analyst. She uses Python Pandas for the same. She got a dataset of covid patients for the year 2020 to 2022 for January, April and September. Her superior wants certain information from her, but she is facing some problems. Help her by answering few

questions based on the dataframe 'df' given below:

4

	Year	Month	Patients
0	2020	Jan	30
1	2020	Apr	70
2	2021	Sep	90
3	2022	Jan	40
4	2022	Apr	25

(i) She wants to print the details of "April" month along with the number of patients.

	Month	Patients
1	Apr	70
4	Apr	25

- i. `df[['Month','Patients']][df['Month']=='Apr']`
- ii. `df.loc[['Month','Patients']][df['Month']=='Apr']`
- iii. `df[['Month','Patients']][df['Month']=='Apr']`
- iv. `df.iloc[['Month','Patients']][df['Month']=='Apr']`

Identify the correct statement:

- a. only ii
- b. only iii
- c. both ii and iii
- d. ii, iii and iv

(ii) She wants to update the dataframe. Which command will be used to add a new row to a dataframe 'df'?

- i. `df.loc[len(df)]=[2020,'Sep',20]`
- ii. `df.iloc[len(df)]=[2020,'Sep',20]`
- iii. `df[-1]=[2020,'Sep',20]`
- iv. `df.assign[2020,'Sep',20]`

Choose the correct statement:

- a. only i
- b. only iii
- c. both i and ii
- d. i, ii and iv

(iii) Which of the following command would rename the column 'Patients' to 'Covidcases' in the dataframe 'df'?

- a. `df.rename(['Patients':'Covidcases'],inplace=True)`
- b. `df.rename({'Patients':'Covidcases'},inplace=True)`
- c. `df.rename(columns=['Patients':'Covidcases'],inplace=True)`
- d. `df.rename(columns={'Patients':'Covidcases'},inplace=True)`

(iv) Which of the following statement/s will give the exact number of values in each column of the dataframe?

- i. `print(df.count())`
- ii. `print(df.count(0))`
- iii. `print(df.count(1))`
- iv. `print(df.count(axis=index))`

Choose the correct option:

- a. only iii
- b. both i and ii
- c. i, ii and iii
- d. i, ii and iv

17. Consider the table STUDENT given below:

4

<i>RollNo</i>	<i>Name</i>	<i>Class</i>	<i>Gender</i>	<i>City</i>	<i>Marks</i>
1	Anand	XI	M	Agra	430
2	Chetan	XII	M	Mumbai	460
3	Geet	XI	F	Agra	470
4	Preeti	XII	F	Mumbai	492
5	Saniyal	XII	M	Delhi	360
6	Maakhiy	XI	F	Dubai	256
7	Neha	X	F	Moscow	324
8	Nishant	X	M	Moscow	429

(i) State the command that will give output as:

<i>Name</i>
Anand
Chetan
Geet
Preeti

- SELECT NAME FROM STUDENT WHERE CLASS= 'XI' AND CLASS= 'XII';
- SELECT NAME FROM STUDENT WHERE NOT CLASS= 'XI' AND CLASS= 'XII';
- SELECT NAME FROM STUDENT WHERE CITY = 'AGRA' OR CITY = 'MUMBAI';
- SELECT NAME FROM STUDENT WHERE CITY IN ('AGRA', 'MUMBAI');

Choose the correct option:

- a. only iii b. both i and ii c. both iii and iv d. i, ii and iv

(ii) State the command to display the minimum marks scored by students of each class who are from Delhi.

- SELECT CLASS, MIN(MARKS) FROM STUDENT WHERE CITY= 'DELHI' GROUP BY CLASS;
- SELECT CLASS, MIN(MARKS) FROM STUDENT GROUP BY CLASS WHERE CITY= 'DELHI';
- SELECT CLASS, MIN(MARKS) GROUP BY CLASS FROM STUDENT HAVING CITY= 'DELHI';
- SELECT CLASS, MIN(MARKS) FROM STUDENT GROUP BY CLASS HAVING CITY= 'DELHI';

Choose the correct option:

- a. only i b. only iii c. both ii and iv d. both i and iv

(iii) State the command to display the details of all students having marks in range 400 to 450.

- SELECT * FROM STUDENT WHERE MARKS BETWEEN 400 AND 450;
- SELECT * FROM STUDENT WHERE MARKS >400 AND MARKS<450;
- SELECT * FROM STUDENT WHERE MARKS>=400 && MARKS<=450;
- SELECT * FROM STUDENT WHERE MARKS <= 400 && MARKS>=450;

Choose the correct option:

- a. only i b. both i and iii c. both i and ii d. i, ii and iii

(iv) State the command to display the number of cities available in the table student.

- i. SELECT COUNT(CITY) FROM STUDENT;
- ii. SELECT DISTINCT COUNT(CITY) FROM STUDENT;
- iii. SELECT COUNT(DISTINCT CITY) FROM STUDENT;
- iv. SELECT COUNT(CITY) FROM STUDENT GROUP BY CITY;

Choose the correct option:

- a. only i b. only iii c. both ii and iii d. both i and iv

Part B

Section I (20 Marks)

18. Explain each of the following with illustrations using a table: 2
(i) Candidate Key (ii) Foreign Key
19. What will be the output of following code? 2

```
import pandas as pd
dt={'Name':['Akshit','Bharat','Chetan','Dhaval','Gauri'], 'InternalMarks':[18,19,20,18,19],
   'AnnualExam':[76,78,80,76,73]}
stud=pd.DataFrame(dt)
print(stud.iloc[0:2,0:2])
print(stud[['Name','AnnualExam']])
```
20. Consider the decimal number x with value 9375.683. Write commands in SQL to: 2
(i) Round it to 2 places before the decimal.
(ii) Truncate it to ten's place.
21. Consider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40, 90, 110. What will be the output of the following two statements considering that the above objects have been created already? 2
(i) print (x+2) (ii) print(y+2)
Justify your answer.
22. A table 'STUDENT' has the columns RNO and SCORE. It has 3 rows in it. Following two SQL statements were entered that produced the output, AVG(SCORE) as 45 and COUNT(SCORE) as 2:
(i) SELECT AVG(SCORE) FROM STUDENT;
(ii) SELECT COUNT(SCORE) FROM STUDENT;
The data in SCORE column is same in two rows.
What data is present in the three rows of the SCORE column? 2
23. Differentiate between 'at' and 'iat' with respect to a dataframe. 2
24. 2
(i) Shaun wanted to display the list of employees (Table: EMP) who did not get commission or have been assigned a 'DESIGNATION' that ends with 'MANAGER'. Therefore, he wrote the following query in SQL:
SELECT EMP_NAME FROM EMP WHERE COMM=NULL OR DESIGNATION = '% MANAGER';
He did not get the correct answer. Identify the error and write the correct SQL statement.

(ii) Shaun wants to change the 'EMP_NAME' and 'SALARY' of employee (Table: EMP) from Sales department to 'Ram' and '20000' respectively. He has entered the following SQL statement. An error is being displayed. Help him to correct the statement.

```
UPDATE TABLE EMP SET EMP_NAME= 'RAM' AND SALARY= 20000 WHERE DEPARTMENT ='SALES';
```

25. Consider the following series 'S'.

2

```
0 a1
1 b1
2 NaN
3 d1
4 e1
5 f1
dtype: object
```

(i) Write code to display the output given below:

```
3 d1
2 NaN
1 b1
0 a1
dtype: object
```

(ii) Write code to count the number of missing or unknown values from the series 'S'.

26. Can we use WHERE clause after GROUP BY clause? Name the clause which is used to restrict the number of records returned by the GROUP BY clause.

2

27. Consider the following dataframe 'Shop':

2

	Billno	Item	Price
0	101	Pen	100.0
1	102	Pencil	50.0
2	103	Book	NaN
3	104	Paper	70.0

Write the output of the given command:

- (i) print(Shop.Price /2)
- (ii) print(Shop.shape)

Section II (12 Marks)

28. Consider the following 'Class12.csv' file containing the data as given below:

3

Rollno	Name	English	Maths	IP
1	Ritu	88	67	97
2	Mridul	67	78	87
3	Yash	87	89	82
4	Jatin	57	82	98

- (i) Read the CSV file into a dataframe 'Classdf' which is stored with tab ("\t") separator.
- (ii) Write the code to find the total marks (Total_marks) for each student and add it to the newly-created dataframe.
- (iii) Also calculate the percentage obtained by each student under a new column "Average" in the dataframe and display it.

29. Susmi is working with functions of MySQL. Explain her the following:

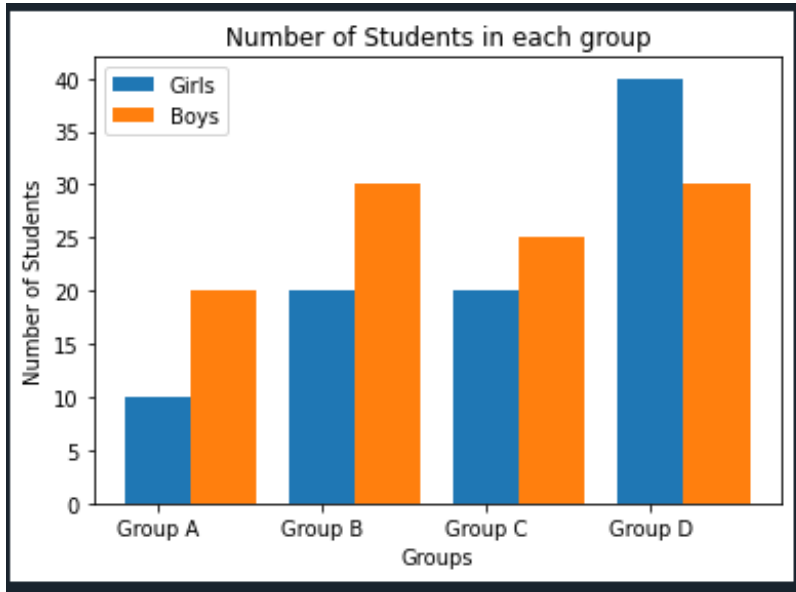
3

- (i) What is the purpose of now() function?
- (ii) How many parameters does it accept?
- (iii) What is the general format of its return type?

30. Consider the following bar graph representing the number of students in each group.

3

Write the code to plot it.



31. Mr. Kishore, an HR Manager in Medicity Hospital has created the following table to store the records of Doctors.

3

Table: Doctor

ID	Docname	Department	DOJ	Gender	Salary
1	Amit Kumar	Surgery	1993-02-12	F	35000
2	Anita Hans	Pediatrics	1998-10-16	M	39000
3	Sunita Maini	Dermatology	1991-06-23	F	45000
4	Joe Thomas	Surgery	1994-10-24	M	52000
5	Gurpreet Kaur	Immunology	2000-06-27	M	47000

He needs to perform the following tasks on the table:

- (i) Display the doctor's name in uppercase along with their departments in lowercase of all doctors whose department name does not contain a substring 'ol'.
- (ii) Extract 3 characters from the 2nd position of the names of all Surgeons.
- (iii) Display the number characters in the name of all female doctors joined before 1998.

Suggest suitable SQL function for the same. Also write the query to achieve the desired task.

SECTION – III (15 Marks)

32. Consider the Dataframe 'Workshop' given below:

5

	Title	Platform	NumSpeakers
0	Robotics	Online	4
1	AI	NaN	2
2	Humanoids	Online	7
3	Python	NaN	2
4	Cloud	Online	3

Write Python codes for the following questions:

- (i) Add a new column 'City' with data 'Mumbai'.
- (ii) Display the details of online workshops.
- (iii) Display the 2nd and 3rd row details.
- (iv) Display the rows with number of speakers more than 3.
- (v) What will be the result of the following code statement?
`Workshop['NumSpeakers']=[4,7,3]`

33. Ankit, a database analyst has created a 'BANKEMPLOYEE' table as given below:

5

Table: BANKEMPLOYEE

Bno	Ename	Bname	Dojoin	Sal
B101	Karan	HSBC	2020-02-10	25000
B102	Puneet	Bank Muscat	2020-10-18	50000
B103	Sunny	Bank Muscat	1998-01-15	60000
B104	Jayant	HSBC	2010-11-25	50000
B105	Nima	Bank Muscat	1998-09-20	20000
B106	Anto	Oman Arab Bank	2020-10-12	45000
B107	Kunal	HSBC	2010-08-30	30000

Help him to write SQL queries for Q(i) –(iii) and predict the output for Q(iv) –(v):

- (i) Display the total salary paid to Bank Muscat and HSBC employees in descending order of their salary.
- (ii) Display the average salary paid by the bank with atleast 2 employees.
- (iii) List the joining date of the junior most employee in HSBC.
- (iv) `SELECT COUNT(BNAME) FROM BANKEMPLOYEE WHERE SAL NOT BETWEEN 30000 AND 50000;`
- (v) `SELECT ENAME FROM BANKEMPLOYEE ORDER BY BNAME, SAL DESC;`

34. Predict the output of the following queries:

5

- (i) `SELECT MOD(DAYOFWEEK(CURDATE()), MONTH(SYSDATE()) +2) AS Value;`
- (ii) `SELECT CONCAT(LTRIM(' INDIA '),MID('IS MY COUNTRY',-10)) OUTPUT;`
- (iii) `SELECT CHAR('68.5',101.4,115,103.7);`
- (iv) `SELECT POWER(INSTR('TERM EXAMINATION','A'),SIGN(0)) FROM DUAL;`
- (v) `SELECT TRIM(LEADING 'X' FROM 'XX XEXAMINATIONXXX');`
