

PRAGYA GIRLS SCHOOL



Half Yearly Examination

Name: _____

Roll No. _____

Date: 30/09/2023

Duration: 03 Hours

Subject: Informatics Practices

Academic Session: 2023-24

Grade: XII

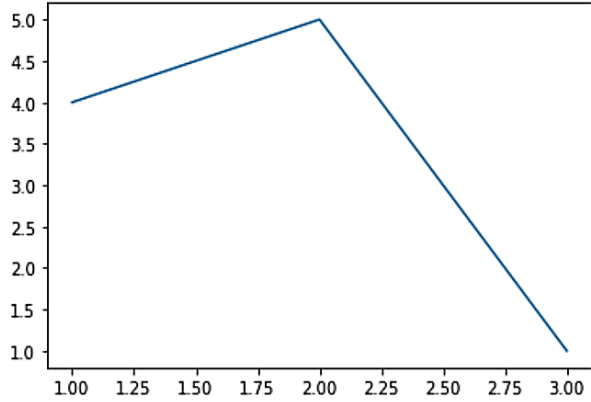
Maximum Marks: 70

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.

Q. No.	Section A	Marks
1.	CSV stands for: i. Column Separated Value ii. Class Separated Value iii. Comma Separated Value iv. Comma Segregated Value	1
2.	Which of the following command will show the last 3 rows from a Pandas Series named NP? i. NP.Tail() ii. NP.tail(3) iii. NP.TAIL(3) iv. All of the above	1
3.	With reference to SQL, identify the invalid data type. i. Date ii. Integer iii. Varchar iv. Month	1
4.	In Python Pandas, while performing mathematical operations on series, index matching is implemented and all missing values are filled in with ____ by default. i. Null ii. Blank iii. NaN iv. Zero	1
5.	ASSERTION AND REASONING based question. Mark the correct choice as: Assertion (A):- To use the Pandas library in a Python program, one must import it. Reasoning (R): - The only alias name that can be used with the Pandas library is pd. i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True	1

6.	ASSERTION AND REASONING based question. Mark the correct choice as: Assertion (A):- DataFrame has both a row and column index. Reasoning (R): - A DataFrame is a two-dimensional labelled data structure like a table of MySQL. i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True	1
7.	Which of the following can be used to specify the data while creating a DataFrame? i. Series ii. List of Dictionaries iii. Structured ndarray iv. All of these	1
8.	Which of the following statement will import pandas library? i. Import pandas as pd ii. import Pandas as py iii. import pandas as pd iv. import panda as pd	1
9.	The name “Pandas” is derived from the term: a. Panel Data b. Panel Series c. Python Document d. Panel Data Frame	1
10.	The command to install the pandas is: a. install pip pandas b. install pandas c. pip pandas d. pip install pandas	1
11.	Python pandas was developed by: a. Guido van Rossum b. Travis Oliphant c. Wes McKinney d. Brendan Eich	1
12.	Pandas Series is: a. 2 Dimensional b. 3 Dimensional c. 1 Dimensional d. Multidimensional	1
13.	Pandas is a: a. Package b. Language c. Library d. Software	1
14.	We can analyse the data in pandas with a. Series b. Data Frame c. Both of the above d. None of the above	1
15.	Out of the following, which function cannot be used for customization of charts in Python? a. xlabel() b. colour() c. title() d. xticks()	1
16.	What is the minimum number of arguments required for plot() function in matplotlib? a. 1 b. 2 c. 3 d. 4	1
17.	Method or function to add a new row in a data frame is: a. .loc() b. .iloc() c. join d. add()	1
18.	_____ is the function to save the graph. a. Savefig() b. Savefigure() c. Savegraph() d. Savechart()	1
Section B		
19.	The python code written below has syntactical errors. Rewrite the correct code and underline the corrections made. Import pandas as pd df={"Technology":["Programming","Robotics","3DPrinting"],"Time(inmonths)":[4,4,3]} df= Pd.dataframe(df) Print(df)	2

20.	What will be the output of the given code? <pre>import pandas as pd s = pd.Series([1,2,3,4,5], index=['akram','brijesh','charu','deepika','era']) print(s['charu'])</pre>	2
21.	Assuming the given series, named stud, which command will be used to print 5 as output? <pre>Amit 90 Ramesh 100 Mahesh 50 John 67 Abdul 89 Name: Student, dtype: int64</pre> <p>a. stud.index b. stud.length c. stud.values d. stud.size</p>	2
22.	A social science teacher wants to use a pandas series to teach about Indian historical monuments and its states. The series should have the monument names as values and state names as indexes which are stored in the given lists, as shown in the code. Choose the statement which will create the series: <pre>import pandas as pd Monument=['Qutub Minar','Gateway of India','Red Fort','Taj Mahal'] State=['Delhi','Maharashtra','Delhi','Uttar Pradesh']</pre> <p>a. S=df.Series(Monument,index=State) b. S=pd.Series(State,Monument) c. S=pd.Series(Monument,index=State) d. S=pd.series(Monument,index=State)</p>	2
23.	Observe the following figure. Identify the coding for obtaining this as output.  <p>a. import matplotlib.pyplot as plt plt.plot([1,2],[4,5]) plt.show() b. import matplotlib.pyplot as plt plt.plot([1,2,3],[4,5,1]) plt.show() c. import matplotlib.pyplot as plt plt.plot([2,3],[5,1]) plt.show() d. import matplotlib.pyplot as plt plt.plot([1,3],[4,1]) plt.show()</p>	2

24.	Write the output of the given program: import pandas as pd S1=pd.Series([5,6,7,8,10],index=['v','w','x','y','z']) l=[2,6,1,4,6] S2=pd.Series(l,index=['z','y','a','w','v']) print(S1-S2)	2																																			
25.	Which graph should be used where each column represents a range of values, and the height of a column corresponds to how many values are in that range? a. plot b. line c. bar d. histogram	2																																			
Section C																																					
26.	Ritika is a new learner for the python pandas, and she is aware of some concepts of python. She has created some lists, but is unable to create the data frame from the same. Help her by identifying the statement which will create the data frame. import pandas as pd Name=['Manpreet','Kavil','Manu','Ria'] Phy=[70,60,76,89] Chem=[30,70,50,65] a. df=pd.DataFrame({"Name":Name,"Phy":Phy,"Chem":Chem}) b. d=({"Name":Name,"Phy":Phy,"Chem":Chem}) df=pd.DataFrame(d) c. df=pd.DataFrame([Name,Phy,Chem],columns=['Name',"Phy","Chem","Total"]) d. df=pd.DataFrame({Name:"Name", Phy : "Phy",Chem: "Chem"})	3																																			
27.	Consider the given DataFrame 'Genre': <table><tr><td></td><td>Type</td><td>Code</td></tr><tr><td>0</td><td>Fiction</td><td>F</td></tr><tr><td>1</td><td>Non Fiction</td><td>NF</td></tr><tr><td>2</td><td>Drama</td><td>D</td></tr><tr><td>3</td><td>Poetry</td><td>P</td></tr></table> Write suitable Python statements for the following: i. Add a column called Num_Copies with the following data: [300,290,450,760]. ii. Add a new genre of type 'Folk Tale' having code as "FT" and 600 number of copies. iii. Rename the column 'Code' to 'Book_Code'.		Type	Code	0	Fiction	F	1	Non Fiction	NF	2	Drama	D	3	Poetry	P	3																				
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1	Non Fiction	NF																																			
2	Drama	D																																			
3	Poetry	P																																			
28.	Consider the following DataFrame, classframe <table><tr><td></td><td>Rollno</td><td>Name</td><td>Class</td><td>Section</td><td>CGPA</td><td>Stream</td></tr><tr><td>St1</td><td>1</td><td>Aman</td><td>IX</td><td>E</td><td>8.7</td><td>Science</td></tr><tr><td>St2</td><td>2</td><td>Preeti</td><td>X</td><td>F</td><td>8.9</td><td>Arts</td></tr><tr><td>St3</td><td>3</td><td>Kartikey</td><td>IX</td><td>D</td><td>9.2</td><td>Science</td></tr><tr><td>St4</td><td>4</td><td>Lakshay</td><td>X</td><td>A</td><td>9.4</td><td>Commerce</td></tr></table> Write commands to : i. Add a new column 'Activity' to the Dataframe having values as ['Swimming','Dancing','Cricket','Singing'] ii. Add a new row with values (5 , Mridula ,X, F , 9.8, Science)		Rollno	Name	Class	Section	CGPA	Stream	St1	1	Aman	IX	E	8.7	Science	St2	2	Preeti	X	F	8.9	Arts	St3	3	Kartikey	IX	D	9.2	Science	St4	4	Lakshay	X	A	9.4	Commerce	3
	Rollno	Name	Class	Section	CGPA	Stream																															
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St3	3	Kartikey	IX	D	9.2	Science																															
St4	4	Lakshay	X	A	9.4	Commerce																															
29.	Write a code in Python to search for a given value in a list of elements(Without using inbuilt function) Example: If the List contains: [20,30,40,50,60,80,120] and the element to be searched is:60. Then the output should be: Found at position 4	3																																			

30. **Create a DataFrame in Python from the given list:**
[[‘Divya’,‘HR’,95000],['Mamta’,‘Marketing’,97000],['Payal’,‘IT’,980000],
[‘Deepak’,‘Sales’,79000]]
Also give appropriate column headings as shown below:

```

      Name Department  Salary
0   Divya           HR   95000
1   Mamta  Marketing   97000
2   Payal           IT  980000
3  Deepak           Sales  79000

```

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Section D

31. **Write the code in pandas to create the following dataframes :**

```

      df1                df2
      mark1 mark2      mark1 mark2
0    10     15    0    30     20
1    40     45    1    20     25
2    15     30    2    20     30
3    40     70    3    50     30

```

Write the commands to do the following operations on the dataframes given above :

- (i) To add dataframes df1 and df2.
- (ii) To subtract df2 from df1
- (iii) To rename column mark1 as marks1in both the dataframes df1 and df2.
- (iv) To change index label of df1 from 0 to zero and from 1 to one.

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32. **Consider the table FANS and answer the following:**

FANS

FAN_ID	FAN_NAME	FAN_CITY	FAN_DOB	FAN_MODE
F001	SUSHANT	MUMBAI	1998-10-02	MAIL
F002	RIYA	MUMBAI	1997-12-12	LETTER
F003	ANIKA	DELHI	2001-06-30	BLOG
F004	RUDRA	AJMER	2005-08-22	MAIL
F006	MIARA	KOLKATTA	1998-11-01	BLOG

Write MySQL queries for the following:

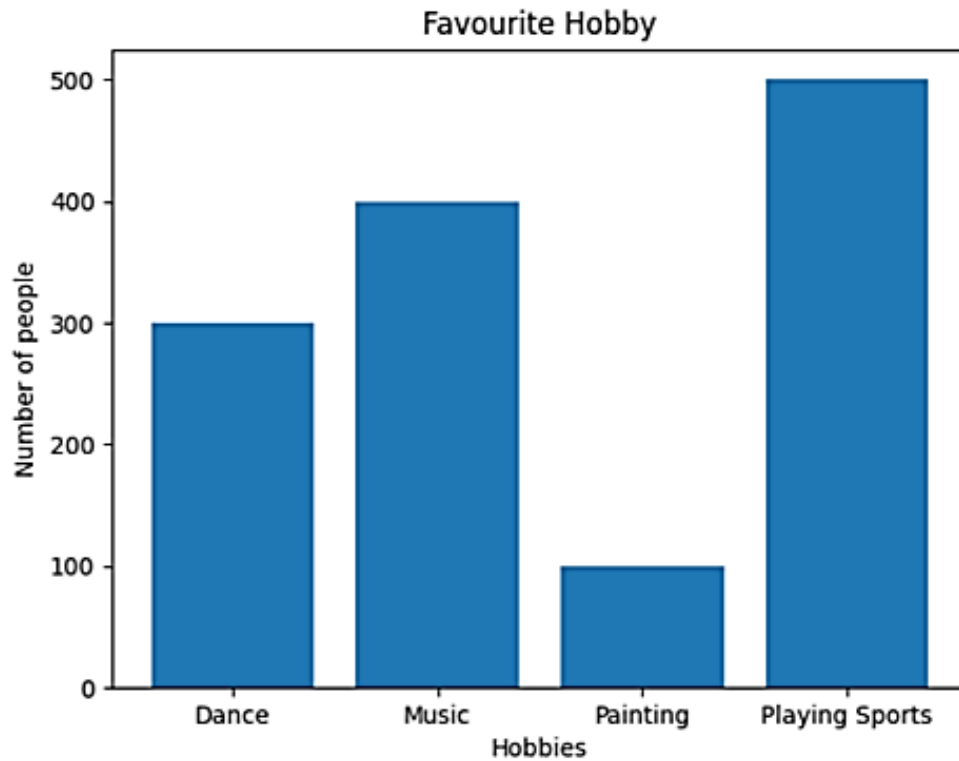
- i. To display the details of fans in decending order of their DOB
- ii. To display the details of FANS who does not belong to AJMER
- iii. To count the total number of fans of each fan mode
- iv. To display the dob of the youngest fan.

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Section E

33. Write suitable Python code to create 'Favourite Hobby' Bar Chart as shown below:

5



Also give suitable python statement to save this chart.

34.

Kabir has created following table named exam:

5

	RegNo		Name	
			Subject	
			Marks	
	1		Sanya	
	2		Sanchay	
	3		Vinesh	
	4		Sneha	
	5		Akshita	

Help him in writing SQL queries to the perform the following task:

- i. Insert a new record in the table having following values: [6,'Khushi','CS',85]
- ii. To change the value "IP" to "Informatics Practices" in subject column.
- iii. To remove the records of those students whose marks are less than 30 .
- iv. To add a new column Grade of suitable datatype.
- v. To display records of "Informatics Practices" subject.

35.

Question 35, consists of 6 Question (A to F). Attempt any 5 questions.

5

Case Study

Mr. Sharma is working with an IT company, and he has provided some data. On which he wants to do some operations, but he is facing some problem, help him:

Code:

```
import pandas as pd
ResultSheet={
'Naveen': pd.Series([90, 91, 97],
index=['Maths','Science','Hindi']),
'Rehana': pd.Series([92, 81, 96],
index=['Maths','Science','Hindi']),
'John': pd.Series([89, 91, 88],
index=['Maths','Science','Hindi']),
'Roja': pd.Series([81, 71, 67],
index=['Maths','Science','Hindi']),
'Mannat': pd.Series([94, 95, 99],
index=['Maths','Science','Hindi'])}
DF = pd.DataFrame(ResultSheet)
print(DF)
```

Output of the above code:

	Naveen	Rehana	John	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

Based on the given information, answer the questions No. A to E.

A. He wants to add a new column with name of student 'Prem' in above data frame choose the right command to do so:

- a. DF['Prem']=[89,78,76] b. df['Prem']=[89,78,76]
c. DF['Prem']=[89,78,76,67] d. DF['Name']=[89,78,76]

B. He wants to set all the values to zero in data frame, choose the right command to do so:

- a. DF=0 b. DF[]=0 c. DF[:]=0 d. DF[:]==0

C. He wants to delete the row of science marks:

- a. DF.drop('Science', axis=1) b. DF.drop('Science', axis=0)
c. DF.drop('Science', axis=-1) d. DF.drop('Science', axis==0)

D. The following code is to create another data frame, which he wants to add to the existing Data frame. Choose the right command to do so:

```
Sheet1={
'Aaradhya': pd.Series([90, 91, 97],
index=['Maths','Science','Hindi'])}
S1=pd.DataFrame(Sheet1)
```

- a. DF.append(S1,axis=0) b. DF.append(S1) c. DF.insert(S1) d. DF.join(S1)

E. What will be the output of the given command?

DF.index=['A','B','C']

a.

		Naveen	Rehana	John	Roja	Mannat
A	Maths	90	92	89	81	94
B	Science	91	81	91	71	95
C	Hindi	97	96	88	67	99

b.

	Naveen	Rehana	John	Roja	Mannat
A	90	92	89	81	94
B	91	81	91	71	95
C	97	96	88	67	99

c.

	A	B	C	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

d. Error, Index already exists and cannot be overwritten.

F. What will be the output of the given command?

	Naveen	Rehana	John	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

print(DF.size)

a. 15 b. 18 c. 21 d. 23