



Delhi Public School, Howrah

PERIODIC TEST – I (2025-2026)

CLASS – XII

Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.

SUBJECT: INFORMATICS PRACTICES (065)

Time Allowed:- 3 Hours

F.M.-70

General Instructions:

- Please check this question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- The paper is divided into 5 Sections- A, B, C, D and 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 case study type questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

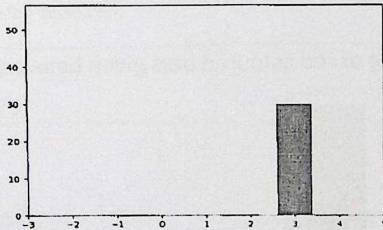
SECTION - A

1.	Which of the following commands is used to install Pandas? (A) pip install python-pandas (B) pip install pandas (C) Python install pandas (D) pip pandas install	(1)
2.	A two dimensional labelled array that is an ordered collection of columns to store heterogeneous data type is _____. (A) series (B) NumPy array (C) DataFrame (D) Panel	(1)
3.	In a dataframe, axis = 0 is for – (A) Columns (B) Rows (C) Rows and columns (D) only the index column	(1)
4.	Which of the following statement is false? (A) Dataframe is size-mutable (B) Dataframe is value-mutable (C) Dataframe is mutable (D) Dataframe is not capable of holding multiple types of data	(1)
5.	The following statement will _____. df = df.drop(['Name', 'Class', 'Rollno'], axis = 1) #df is a DataFrame object (A) delete three columns having labels 'Name', 'Class', 'Rollno' (B) delete three rows having labels 'Name', 'Class', 'Rollno' (C) delete any three columns (D) return error	(1)
6.	A CSV is a _____ file that can be created and edited using any word processor. (A) text (B) spreadsheet (C) .py (D) .xlsx	(1)
7.	Which attribute of dataframe is used to get the number of axes? (A) T (B) Ndim (C) Empty (D) Shape	(1)
8.	Fill in the blank: Matplotlib allows us to create _____.	(1)
9.	Which of the following is not a visualization under matplotlib? (A) Line plot (B) Histogram (C) Barplot (D) Table plot	(1)
10.	Answer in one word: This function of python pandas is used to fill values in the areas which are of the type of missing values.	(1)

11.	Fill in the blank: The part of a chart which identifies different sets of data plotted by using different colours is called _____.	(1)
12.	Identify the incorrect example of savefig() function. (A) plt.savefig ("bar1.pdf") (B) plt.savefig ("bar1.png") (C) plt.savefig ("bar1.eps") (D) plt.savefig ("bar1.ppt")	(1)
13.	Which of the following plots makes it easy to visualize a trend in data over intervals of time? (A) Box plot (B) Histogram (C) Line chart (D) Bar chart	(1)
14.	I am a graphical technique for representing a dataset, usually a graph, showing the relationship between two or more variables. Who am I?	(1)
15.	State whether the following statement is True or False. Rewrite the statement if false. To add a title to the plot, we have to call the function header().	(1)
16.	State whether the following statement is True or False. Rewrite the statement if false. The iteritems() iterate over vertical subset in the form of (col_index, series) pair.	(1)
17.	Choose the correct statement to create a histogram of 'step' type of 20 bins. (A) plt.hist (x, bins = 20, histype = "barstacked") (B) plt.hist (x, bins = 20) (C) plt.hist (x, bins = 20, histype = "step") (D) plt.hist (x, bins = 20, histype = hist())	(1)
18.	Fill in the blank: _____ function saves the data of dataframe to a CSV file.	(1)
19.	Python matplotlib _____ is used to compare different categorical or discrete variables. (A) line plot (B) bar graph (C) histogram (D) boxplot	(1)
Q20 and Q21 are ASSERTION (A) AND REASONING (R) based questions. Mark the correct choice as- (A) Both A and R are true but R is not the correct explanation for A. (B) Both A and R are true and R is the correct explanation for A. (C) A is false but R is true. (D) A is true but R is false.		
20.	Assertion (A): Pandas dataframe has both row and column index. Reason (R): Dataframe is a two-dimensional labelled data structure like a table of MySQL.	(1)
21.	Assertion (A): A histogram is used to represent data provided in the form of groups spread in non-continuous ranges Reason (R): matplotlib.pyplot.hist() function is used to compute and create histogram of a variable.	(1)
SECTION – B (2 X 7 = 14 Marks)		
22.	(i) What do you understand by the term Series in Python Pandas? Give a suitable example to support your answer. OR (ii) What is the importance of a library in Python? Mention one use for each of the following libraries: (a) Pandas (b) Matplotlib	(2)
23.	A small business needs to keep a digital record of its products. For each product, they want to store its ProductID (e.g., 'P001'), ProductName (e.g., 'Laptop'), and Price (e.g., 75000.50). Explain the use of a Dataframe in Python Pandas library in this regard. Represent the above case in a Dataframe form.	(2)
24.	In Pandas, S is a series with the following result: S = pd.Series ([5, 10, 15, 20, 25]) The series object is automatically indexed as 0, 1, 2, 3, and 4. Rewrite the above statement to assign the index as a, b, c, d and e explicitly.	(2)
25.	(i) Write a single line Pandas statement to declare a Pandas series named R having the range (1, 15, 3) and index having the range in 'abcde'. OR (ii) Define the term NaN related to missing data. Write a code snippet that shows creation of a Series using NaN.	(2)
26.	A school maintains a Pandas DataFrame named student_grades which stores marks for various subjects. Before generating the final report cards, the school wants to ensure that no subject marks are left blank (i.e., contain missing values) for any student.	(2)

	Write a single line of Python code using Pandas that the school can use to quickly determine if there are any missing values in the student_grades DataFrame.	
27.	A dictionary grade contains the following data: Student = {"name": ["Rinku", "Deep", "Shaurya"], "English": [89, 78, 89], "Economics": [87, 80, 60], "IP": [89, 78, 67]} (a) Write the statement to create a dataframe called Res for the above data. (b) State the output for the statement Res.iat[1, 2]	(2)
28.	(i) Sheetal is writing a Python program to create a DataFrame using a list of dictionaries. However, her code contains some mistakes. Identify the errors and rewrite the correct code. Underline the corrections made. <pre>import Pandas as pd D1 = {'Name': 'Rakshit', 'Age': 25} D2 = {'Name': 'Paul', 'Age': 30} D3 = {'Name': 'Ayesha', 'Age': 28} data = [D1,D2,D3) df = pd.DataFrame(data) print(df)</pre> OR (ii) Complete the given Python code to get the required output (ignore the dtype attribute) as - Output: Tamil Nadu Chennai Uttar Pradesh Lucknow Manipur Imphal Code: import _____ as pd data = ['Chennai', '_____', 'Imphal'] indx = ['Tamil Nadu', 'Uttar Pradesh', 'Manipur'] s = pd.Series(_____, indx) print(_____)	(2)

SECTION - C (3 X 4 = 12 Marks)

29.	Smriti and Simran are siblings studying in the same school. Smriti is a class XII IP student and she needs to explain the concept of data visualization to her younger sister Simran who is studying in class IX. Help explain data visualization and its significance to Smriti. How is Python Matplotlib helpful in this regard?	(3)
30.	(i) Consider the code given below (all required libraries are imported) and the output produced by it (shown alongside). Why is the chart showing one bar only while the code is supposed to be plotting four values on the chart? <pre>a = [13, 6, 9, 12] b = [30, 48, 54, 48] plt.xlim (-3, 5) pit.bar (a, b) plt.show()</pre>  OR (ii) Why is the following code not producing any result? Why is it giving error? (Note that all required libraries have been imported and are available). <pre>a = range (10, 50, 12) b = range (90, 200, 20) matplotlib.pyplot.plot(a, b)</pre>	(3)
31.	Mr. Harry wants to draw a line chart using a list of elements named LIST. Complete the code for Mr. Harry in order to perform the following operation: (a) To import the suitable library to draw the line chart. (b) To plot a line chart using the given list. (c) To give Y-axis label to the line chart named "Sample Numbers".	(3)

```
import _____ as PLINE
LIST = [10, 20, 30, 40, 50, 60]
```

#Line 1

#Line 2

```
PLINE.show()
```

SECTION – D (2 X 4 = 8 Marks)

32. (i) Write a Pandas program that will produce the output given below to get first three records of a dataframe with three columns as col1, col2 and col3. (4)

Output: Original DataFrame

	col1	col2	col3
0	1	4	7
1	2	5	5
2	3	6	8
3	4	9	12
4	7	5	1
5	11	0	11

First three rows of the said DataFrame:

	col1	col2	col3
0	1	4	7
1	2	5	5
2	3	6	8

OR

- (ii) Write a program in Python to plot a bar chart to depict the weekly changing onion prices for four weeks as given below. Give appropriate axes label.

week = [1, 2, 3, 4]

price = [40, 80, 100, 70]

33. Assume a dataframe df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indices and give the output of the questions that follow. (4)

	City	MaxTemp	MinTemp	RainFall
C1	Delhi	24	32	24.1
C2	Bengaluru	31	25	36.2
C3	Chennai	35	27	40.8
C4	Mumbai	29	21	35.2
C5	Kolkata	39	23	41.8

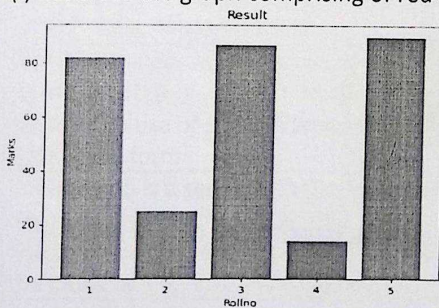
(a) print (df1.shape)

(b) print (df1[1:2])

(c) print (df1.loc['C1' : 'C3', 'City'])

(d) print (df1.iloc[2])

34. (i) Consider the graph comprising of red coloured bars given below and fill in the blanks: (4)



```
import matplotlib.pyplot as plt1
```

```
x=[1, 2, 3, 4, 5]
```

```
y=[82, 25, 87, 14, 90]
```

```
plt1.bar (x, y , _____)
```

```
plt1.title('_____')
```

```
plt1._____('Rollno')
```

```
plt1.ylabel('_____')
```

```
plt1.show()
```

OR

(ii) On the basis of the given marks array, fill in the blanks to complete the code that will produce a histogram:

```
import matplotlib.pyplot as plt
marks = [30, 10, 55, 70, 50, 25, 75, 49, 28, 81]
plt._____ (marks, bins = 'auto', color = 'green')
plt._____ ('marks')
plt.ylabel('_____')
plt._____ ('Result')
plt.show()
```

35. Consider the dataset given below. Write Python script to create separate series for each columns and create a single dataframe for the entire dataset using the separate series.

(4)

Name	Age	Designation
Seema	36	Manager
Nikshav	40	Clerk
Rajni	39	Accountant

SECTION – E (5 X 2 = 10 Marks)

36. The Winners, a cricket team bidding agency maintains the following data set.

(5)

Player	Team	Category	BidPrice	Runs
Hardil Pandya	Mumbai Indians	Batsman	13	1000
Jasprit Bumrah	Mumbai Indians	Bowler	10	200
Andre Russel	Kolkata Knight Riders	Batsman	7	900
Virat Kohli	RCB	Batsman	17	3600

Write a Python script to create a dataframe named IPL for the above data set and retrieve the first two rows using indexing.

37. (i) Write a Python program to plot two or more lines with legends, different widths and colours. Consider the following coordinates for the lines.
 For line_1: x1 = [10, 20, 30]
 y1 = [20, 40, 10]
 For line_2: x2 = [10, 20, 30]
 y2 = [40, 10, 30]

(5)

OR

(ii) Write a program in Python to create a bar plot of scores by group and gender. Use multiple X values on the same chart for men and women.

Sample data:

Means (Men) = (22, 30, 35, 35, 26)

Means (Women) = (25, 32, 30, 35, 29)