HALF YEARLY EXAMINATION, 2025 -26

INFORMATICS PRACTICES

Time –3:00 Hrs. **Class – XII** **M.M. : 70**

Date – 14.09.2024 (Saturday)

Name of the student _____Section _____

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 Long Answer type 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 (Multiple Choice Based Questions)

Q1 Which of the following is a two - dimensional labelled data structure of Python? **[1]**

a) Square b) Relation c) Series d) Dataframe

Q2 Which of the following is not Pandas data structure? **[1]**

a) Queue b) Series c) Data Frame d) Sequence

Q3 Find the output of given code: **[1]**

```
import pandas as pd
s=pd.Series([ 'a','s','r'] , index=[ 2,6,9] )
print(s>='s')
```

a)	b)	c)	d)
2 False	2 False	2 True	2 False
6 False	6 True	6 False	6 False
9 False	9 False	9 True	9 True

Q4 Which attribute of a dataframe is used to get number of axis? **[1]**

a) Shape b) Ndim c) T d) Empty

Q5 We can delete rows and columns from data frame ResultDF using the method **[1]**

a) ResultDF.remove() b) ResultDF.terminate()

c) ResultDF.drop() d) ResultDF. delete()

Q6 When we create a DataFrame from a list of Dictionaries the columns labels are formed by the **[1]**

a) union of the keys of the dictionaries

b) union of the values of the dictionaries

c) intersection of the keys of the dictionaries

d) intersection of the values of the dictionaries

Q7 To get the number of dimensions of a Series object. _____ attribute is displayed. **[1]**

a) index b) itemsize c) size d) ndim

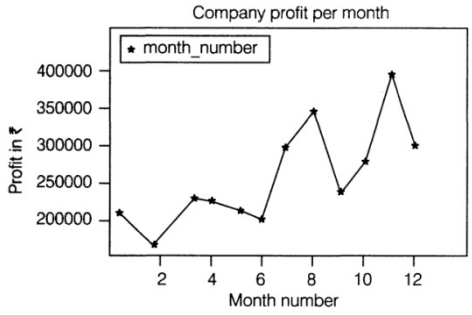
Q8 In DataFrame, by default new column added as the _____ column. **[1]**

a) First(Left Side) b) Anywhere in dataframe c) Last (Right Side) d) Second

Q9 Which argument of bar() lets you set the thickness of bar? **[1]**

a) thick b) thickness c) width d) barwidth

Q10 Ms. Kalpana is working with an IT company and she wants to create charts from the data provided to her. She generates the following graph: **[1]**



Which statement is used to mark the line as given in the above graph?

a) plt.plot(x, y, marker='star', markersize=10,color='black')

b) plt.plot(x, y, marker='*', markersize=10,color='black')

c) plt.plot(x, y, marker='#', markersize=10,color='black', linestyle='dashdot')

d) plt.plot(x, y, marker='@', markersize=10,color='black', linestyle='dashdot')

Q11 The datapoints plotted on a graph are called _____. **[1]**

a) Ticks b) Markers c) Values d) Pointers

Q12 A histogram is used: **[1]**

a) for time series data b) for grouped data

c) to compare two sets of data d) for continuous data

Q13 The correct statement to read from a CSV file in a dataframe is: **[1]**

a) = pandas.read() b) .read_csv()() c) .read_csv() d) = pandas.read_csv()

Q14 **Assertion (A):** We can read specific rows from a CSV file. **[1]**

Reason (R): The nrows attribute of to_csv() is used to read specific rows from a CSV file.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Q15 If the substring is not present in a string, the **INSTR ( )** returns: **[1]**

a) NULL b) 1 c) 0 d) - 1

Q16 What will be returned by the given query? **[1]**

SELECT ROUND(153.669,2);

a) 153.7 b) 153.66 c) 153.6 d) 153.67

Q17 What will be returned by the given query? **[1]**

SELECT INSTR('INDIA', 'DI');

a) -2 b) -3 c) 3 d) 2

Q18 What will be returned by the given query? **[1]**

SELECT month('2020 - 05 - 11');

a) 11 b) November c) May d) 5

SECTION – B (Very Short Answer Type Questions)

Q19 Write the syntax to sort the series values using indexes in descending order. **[2]**

OR

Fill in the blank with the correct statement to plot a bar graph using a matplotlib method, so that Company ABC can see the graphical presentation of its Profit figures for the 2nd quarter

of the financial year 2019 (i.e. August, September, October, November).

```
import matplotlib.pyplot as mtp
Months = [ 'AUG', 'SEP', 'OCT', 'NOV'] #X Axis
Profits = [ 125, 220, 230, 175] #Y Axis
_____ mtp.show()
```

Q20 Write a program to create a series to print scalar value "5"four times. **[2]**

Q21 Write the symbol for following markers: **[2]**

1. circle 2. vline marker

Q22 What is the use of multiple bar plot? **[2]**

Q23 Write python code to write DataFrame data into "a.csv"file. **[2]**

Q24 Predict the output of the following SQL queries from the below Table: **SCHOOL**Table : **[2]**

Admid	Sname	Grade	House	Per	Gender	Dob
20150001	Aditya Das	10	Green	86	Male	2006-02-20
20140212	Harsh Sharma	11	Red	50	Male	2004-10-05
20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21
20130216	Soumen Rao	9	Red	90	Male	2006-04-10
20190227	Rahil Arora	10	Blue	70	Male	2005-05-14
20120200	Akasha Singh	11	Red	70	Female	2004-12-16

Write the output of the following SQL statements from the given table to:

1. **SELECT AVG** (Per) **FROM** SCHOOL **WHERE** House="Red";
2. **SELECT** Sname, Per **FROM** SCHOOL **WHERE MONTH** (Dob)=11;

Q25 Find the output of the following SQL queries: **[2]**

1. SELECT MID("YOUNG INDIA",5);
2. SELECT INSTR("MACHINE INTELLIGENCE","IN");

SECTION – C (Long Answer Type Questions)

Q26 Consider the series object **srl** that stores the salary of teacher, as shown below. Here Teacher's name represents by their initial names. **[3]**

R 15000

K 12000

N 20000

L 22000

Write the code to modify the salary of K as 18000 and for N and L as 25000. Print the changed Series.

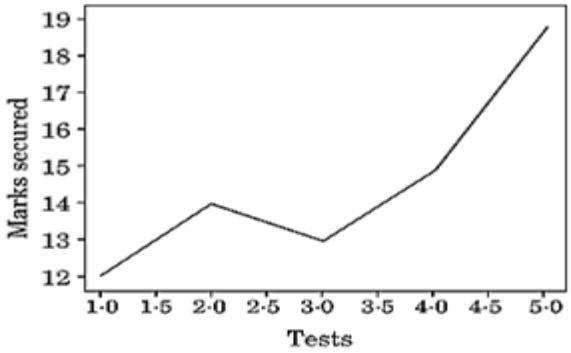
Q27 Consider the following DataFrame **dfn** that contain vegetables. **[3]**

	Colour	Quantity	Price
Capsicum	Red	12	60
Capsicum	Green	22	100
Chilli	Red	50	40
Chilli	Green	65	55
Lime	Green	20	35

Write the code statement to the following:

1. Find all rows with the label **Chilli** . Extract all columns.
2. List 2nd, 3rd and 4th rows.
3. List only the columns Quantity and Price using loc.

Q28 Consider the following graph. Write the code to plot it. Also label the X and Y axis. **[3]**



Q29 **[3]**

	A	B	C
Order	450	180	350
Purchase	330	550	610
Sell	250	410	380
Target	1050	980	1250

Consider the above DataFrame **dfn** and Write the output of the following statement.

a) dfn.loc [: ,['A', 'B']]
b) dfn.loc ['Purchase', :]
c) dfn.iloc[0:2,1:2]

Q30 Help Renu in predicting the output of the following queries. **[3]**

1. SELECT ROUND(8.72,3);
2. SELECT ROUND(9.8);

OR

What is the difference between the functions DAYNAME() and DAYOFWEEK()?

SECTION – D (Case Study Based Questions)

Q31 Consider the following DataFrame **'mdf'**. **[4]**

	Rollno	Name	English	Hindi	Maths
0	1	Aditya	23	20	28
1	2	Balwant	18	1	25
2	3	Chirag	27	23	30
3	4	Deepak	11	3	7
4	5	Eva	17	21	24

1. Write Python statements for the DataFrame '**mdf**':
   a. To display the records of the students having roll numbers 2 and 3.
   b. To increase the marks of subject Math by 4, for all students.
2. Write Python statement to display the name and Hindi marks for roll no. 2 and 5.

Q32 Vidit wants to plot a bar graph for the given set of values of subject on X-axis and number of students who opted for that subject on Y-axis. **[4]**

x=['English','Physics','Chemistry','Mathematics']

y=[12,25,20,35]

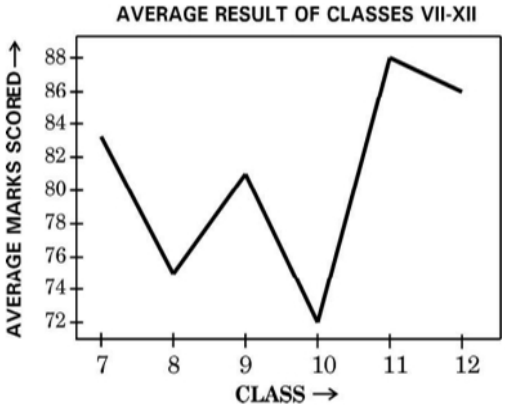
The width and colour for each bar should be different.

(width = 0.3, 0.5, 0.7, 0.9, Colour = orange, red, black, yellow)

OR

Consider the following graph. Write the Python code to plot it. Also add the Title and Label for X and Y axis. Use the following data to draw the graph.

Class	Marks
7	83
8	75
9	81
10	72
11	88
12	86



SECTION – E (Very Long Answer Type Questions)

Q33 (i) Write a program in Python Pandas to create the following DataFrame "popData" from a Dictionary: **[2+3]**

	country	population	percent
IT	Italy	61	0 . 83
ES	Spain	46	0 . 63
GR	Greece	11	0 . 15
FR	France	65	0 . 88
PO	Portugal	10	0 . 14

(ii) Perform the following operations on the DataFrame:

a. Display the columns country and population.

b. Display all the rows where population is more than 40.

c. Delete the last 2 rows.

Q34 a) Write python code to plot the following data using a line plot. **[4+1]**

Day	1	2	3	4	5	6	7
Tickets sold	2000	2800	3000	2500	2300	2500	1000

[5]

Before displaying the plot display “Monday”, “Tuesday”, “Wednesday”, “Thursday”, “Friday”, “Saturday” and “Sunday” also in place of Day 1, 2, 3, 4, 5, 6, 7.

b) Change the colour of the line to magenta.

OR

Draw the approximate graph which display the multiline in same plot.

```
import matplotlib.pyplot as plt
x1 = [ 10,20,40]
y1 = [ 20,50,10]
plt.plot(x1, y1, label = "line 1")
```

```
x2 = [ 10,20,30]
y2 = [ 40,10,20]
plt.plot(x2, y2, label = "line 2")
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Multiline')
plt.legend()
plt.show()
```

Q35 Give the output of following commands. **[5]**

1. mysql>SELECT TRUNCATE (200.91,1);
2. mysql>SELECT LEFT ('Swati', 4);
3. mysql>SELECT CHAR (83, 72, 85, 67, 72, 73);
4. mysql>SELECT RTRIM('!!!!! Study is important !!!!!');
   Where !!!!! denotes blank spaces
5. SELECT ROUND(3234.343, 1);

OR

Consider the table DOCTOR given below. Write commands in SQL for (i) to (ii) and output for (iii) to (v). **Table : DOCTOR**

ID	DOCName	Department	DOJ	Gender	Salary
1	Amit Kumar	Orthopaedics	1993-02-12	M	35000
2	Anita Hans	Paediatrics	1998-10-16	F	30000
3	Sunita Maini	Gynaecology	1991-08-23	F	40000
4	Joe Thomas	Surgery	1994-10-20	M	55000
5	Gurpreet Kaur	Paediatrics	1999-11-24	F	52000
6	Anandini Burman	Oncology	1994-03-16	F	31000
7	Siddharth Dang	Surgery	1995-09-08	M	47000
8	Rama Mukherjee	Oncology	2000-06-27	F	54500

1. Display the names and salaries of doctors where DOJ is in the year 1994.
2. Display the first five characters of the department for all the Male doctors.
3. Select Substr (DOCName, 3, 5) from Doctor;
4. Select Monthname (DOJ) from doctor where Salary >= 50000;
5. Select Dayofyear (DOJ) from doctor where Department= 'Orthopaedics';