



# Indian School Al Wadi Al Kabir

## Assessment 1

### INFORMATICS PRACTICES (Code: 065)

Class : XII  
Date : 22/09/2022

Time: 3 Hours  
Max. Marks : 70

#### General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
  - a. Section – I is short answer questions, to be answered in one word or one line.
  - b. Section – II has two case studies questions. Each case study has 5 case-based sub-parts.  
An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
  - a. Section-I is short answer questions of 2 marks each with one internal choice.
  - b. Section-II is long answer questions of 3 marks each with two internal choices.
  - c. Section-III is very long answer questions of 5 marks each with one internal choice.

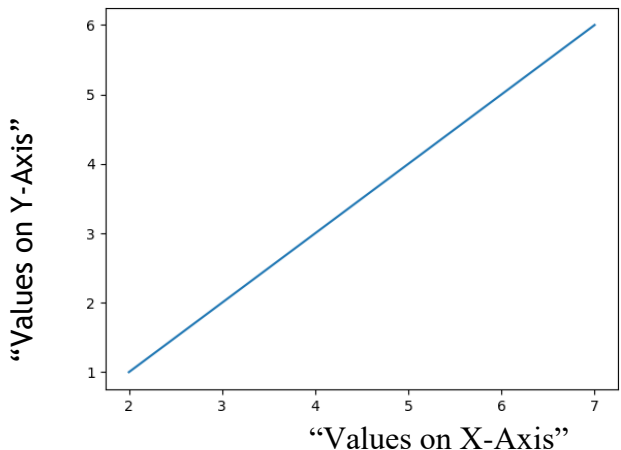
<b>Part - A</b>		
<b>Section - I</b>		
<b>Attempt any 15 questions from questions 1 to 21</b>		
1.	State whether True or False :  i. We can assign user-defined labels to the index of the series?(T/F)_____ ii. To handle missing values while performing mathematical operation, we can use fill_na()_____	[1]
2.	Write a command to install pandas .	[1]
3.	Which of the following statement is wrong? a. We can create Series from Dictionary in Python. b. Keys of dictionary become index of the series. c. Order of indexes created from Keys may not be in the same order as typed in dictionary. d. All are correct	[1]
4.	In given code dataframe 'D1' has _____ rows and _____ columns. import pandas as pd LoD = [{'a':10, 'b':20}, {'a':5, 'b':10, 'c':20},{'a':7, 'd':10, 'e':20}] D1 = pd.DataFrame(LoD)	[1]
5.	Given the following Series A and B:	[1]

	<p>A                      B</p> <p>a 45                    a 32</p> <p>b 23                    b 12</p> <p>c 12                    e 17</p> <p>d 4                      g 10</p> <p>Write the command to find the multiplication of 2 series using a function.</p>	
6.	<p>Write the output of the following:</p> <pre>import pandas as pd S = pd.Series("HE", index=range(1,3)) print(S[1])</pre>	[1]
7.	<p>What is the correct syntax to return both the first row and the second row in a Pandas DataFrame df?</p> <p>a. df.loc[0,1]  b. df[[0,1]]  c. df.loc[[0:1]]  d. df.loc[[0,1]]</p>	[1]
8.	To get the number of bytes of the Series data , _____ attribute is displayed.	[1]
9.	Given a Pandas series called Sequences, _____ command which will display the first 4 rows is	[1]
10.	To iterate over horizontal subsets of DataFrame , _____ method is used.	[1]
11.	<p>What will be the output for the following code ?</p> <pre>import pandas as pd import numpy as np S= pd.Series(np.array([3,4,5,6]) print (s.ndim)</pre>	[1]
12.	_____function will create a horizontal bar chart.	[1]
13.	In Pandas the attribute used to check that dataframe is empty or not is _____	[1]
14.	<p>Which argument must be set with plotting functions for legend () to display the legends?</p> <p>(a) data (b) label (c) name (d) sequence</p>	[1]

15.	<p>Consider a DataFrame Df1</p> <pre> 0 1 2 one 2 4 5 two 3 2 5 three 5 6 4 </pre> <p>Which of the following statements results in Value Error?</p> <p>a. Df1[3]=[3,4,5]  b. Df1[3]=[10,2]  c. Df1[4]=[9,9,9]  d. Df1['Three']=[8,6,5]</p>	[1]																														
16.	To delete a row, the parameter axis of drop( ) function is assigned the value _____	[1]																														
17.	We can add a new row to a DataFrame df using the _____	[1]																														
18.	We can add a new column to a DataFrame df using the _____	[1]																														
19.	_____ function is used to save the figure/chart.	[1]																														
20.	Write a statement to display “Amount” on X-Axis (consider plt as an alias name for matplotlib.pyplot)	[1]																														
21.	Statement to plot a line chart for data stored in a DataFrame ‘df’ is _____	[1]																														
	<p>a. df.plot(line)  b. plot(df, line)  c. df.plot(kind = “line”)  d. None of the above</p>																															
<p><b>Section -II</b></p> <p><b>Both the case study-based questions (22 &amp; 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</b></p>																																
22.	<p>Assume a data frame df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indexes shown below and give the output of any four questions from (i) to (v).</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>City</th> <th>MaxTemp</th> <th>MinTemp</th> <th>RainFall</th> </tr> </thead> <tbody> <tr> <td>C1</td> <td>Delhi</td> <td>40</td> <td>32</td> <td>24.1</td> </tr> <tr> <td>C2</td> <td>Bengaluru</td> <td>31</td> <td>25</td> <td>36.2</td> </tr> <tr> <td>C3</td> <td>Chennai</td> <td>35</td> <td>27</td> <td>40.8</td> </tr> <tr> <td>C4</td> <td>Mumbai</td> <td>29</td> <td>21</td> <td>35.2</td> </tr> <tr> <td>C5</td> <td>Kolkata</td> <td>39</td> <td>23</td> <td>41.8</td> </tr> </tbody> </table> <p>Write the output for the given statement.</p> <p>i) df1.shape  ii) df1[1:2]  iii) df1.loc['C1':'C3','City']  iv) df1.iloc[2]  v) df1['City']</p>		City	MaxTemp	MinTemp	RainFall	C1	Delhi	40	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	[4]
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C5	Kolkata	39	23	41.8																												
23.	<p>Consider the following series object namely S:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>0</td> <td>0.4576</td> </tr> <tr> <td>1</td> <td>0.5455</td> </tr> <tr> <td>2</td> <td>0.2345</td> </tr> <tr> <td>3</td> <td>0.3545</td> </tr> <tr> <td>4</td> <td>0.8654</td> </tr> </tbody> </table>	0	0.4576	1	0.5455	2	0.2345	3	0.3545	4	0.8654	[4]																				
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	<p>What will be returned by the following statement?</p> <p>i) S*100  ii) S &gt; 0.5  iii) S=pd.Series(S) +4  print(S)  iv) S[0:2]=1  print(S)  v) print(S.index)</p>	
	<b>Part - B</b>	
	<b>Section – I</b>	
24.	<pre>import numpy as np import pandas as pd L=np.array([10,20]) x=pd.Series(_____) #Statement 1 print(x)</pre> <p>Output of the above code is :</p> <pre>0 100 1 400</pre> <p>What should be written in statement 1 to get the given output?</p>	[2]
25.	<p>What will be the output of the following program.</p> <pre>import pandas as pd dic={'Name':['Sapna','Anmol','Rishul','Sameep'], 'Agg':[56,67,75,76],'Age':[16,18,16,19]} df=pd.DataFrame(dic,columns=['Name','Age']) print(df)</pre> <p style="text-align: center;"><b>OR</b></p> <p>What will be the output of the following program.</p> <pre>import pandas as pd a=pd.Series([34,54,12,54],index=[1,2,3,4]) b=pd.Series([65,67,55,34],index=[1,2,3,4]) df=pd.DataFrame({'Column 1':a,'Column2':b}) print(df)</pre>	[2]
26.	<p>Consider the following code:</p> <pre>import pandas as pd S1=pd.Series([23,24,35,56],index=['a','b','c','d']) S2=pd.Series([27,12,14,15],index=['a','b','c','d']) df=pd.DataFrame(S1+S2) print(df)</pre> <p>Write the output for a given code.</p>	[2]
27.	<p>Sushila has created a DataFrame with the help of following code:</p> <pre>import pandas as pd EMP={'EMPID':['E01','E02','E03','E04','E05'], 'EMPNAME':['KISHORI','PRIYA','DAMODAR','REEMA','MANOJ'],</pre>	[2]

	<pre> ‘EMP_SALARY’:[67000,34000,68000,90000,43000]} df=pandas.DataFrame (EMP , index=[‘001’,’002’,’003’,’004’,’005’] print(df.loc[0:3, : ]) #Statement_1 </pre> <p>She wants to get the following output, Write the correct code for statement_1 to get the following output.</p> <pre>       EMPID  EMPNAME  EMP_SALARY 001    E01    KISHORI    67000 002    E02    PRIYA     34000 003    E03    DAMODAR    68000 </pre>	
28.	<p>Mr.Raman created a DataFrame :</p> <pre> import pandas as pd df=pd.DataFrame([[2,3,4],[2,3,9],[4,16,64]], index=[‘one’,’two’,’three’]) print (df) </pre> <p>Write a command to add a customized column labels to the above DataFrame and display the output.</p>	[2]
29.	<p>Mr. Sanjay wants to plot a line graph for the given set of values of subject on x-axis and number of students who opted for that subject on y-axis. Write a code to plot a line graph with proper labelling.</p> <pre> Subject=[‘IP’,’ACC’,’ENG’,’MATHS’,’ECO’] Marks=[45,67,87,67,54] </pre>	[2]
30.	<p>The following amounts were the hourly collection from Big market:</p> <pre> [23,45,65,43,23,67,87,66,75,45,1,23,43,21,22,34,65,65,45,65,43,34,21,32] </pre> <p>Write a python code to plot a histogram to see how many are falling in each category.</p> <pre> Bins=[0,10,20,30,40,50,60,70,80,90] </pre>	[2]
31.	<p>Consider the following Series in python:</p> <pre> data=pd.Series([5,2,3,7],index=[‘a’,’b’,’c’,’d’]). </pre> <p>i) Write a statement to display first and last value from a given series. ii) Write a statement to display all the elements of a series in reverse order.</p>	[2]
32.	<p>Write a program to plot a bar chart to depict the changing weekly onion prices for four weeks. Give appropriate axes labels, legend and title.</p> <pre> week=[1,2,3,4] price=[40,80,100,70] </pre>	[2]
33.	<p>Write the output for the following code:</p> <pre> import pandas as pd s=pd.Series([1,2,3,4,5],index=[‘a’,’b’,’c’,’d’,’e’]) print(s*3) print(s[s&gt;2]) s[‘e’]=6 print(s) </pre>	[2]
<b>Section -II</b>		
34.	<p>Write a program to create a series S1 that stores the area of some states in km<sup>2</sup> , write code to find out the largest and the smallest three areas from the given series. The given series has to be created from these values: [34567,890,450,6545,9876,5686,0976])</p>	[3]
35.	<p>A dictionary Grade contains the following data:</p> <pre> Grade={‘Name’:[‘Ram’,’Hari’,’Ganga’,’Parul’],’Grade’:[‘A’,’C’,’B’,’A’]} </pre>	[3]

	<p>Gr=pd.DataFrame(Grade)</p> <p>Write statements for the following:</p> <ol style="list-style-type: none"> <li>1) Add a column called percentage with the following data :[92,89,None,68]</li> <li>2)Find the output of Gr.iloc[0:6] and Gr[0:6]</li> <li>3)Drop the column Grade.</li> </ol>																					
36.	<p>Consider the following graph. Write the code to plot it with an appropriate label given below: “Line Graph”</p>  <p style="text-align: center;"><b>OR</b></p> <p>Write a python code to plot a bar graph representing the number of students in each class for 6 such classes where class should be on X-axis and count should be on Y-Axis. Give an appropriate title and label.</p>	[3]																				
37.	<p>Create a dataframe ‘Student’ from two series A with Name and Roll no and series B with Roll no and Marks of five students.</p> <ol style="list-style-type: none"> <li>a) Display the first three records from student dataframe.</li> <li>b) Display the last two records from student dataframe.</li> </ol> <p style="text-align: center;"><b>OR</b></p> <p>Create a dataframe ‘Student’ from two series A with Name, Roll no and series B with Roll no, Marks of five students.</p> <ol style="list-style-type: none"> <li>a) Display the details of all students who have scored more than 50 marks.</li> <li>b) Write a command to change the marks of first student to 67.</li> </ol>	[3]																				
<b>Section -III</b>																						
38.	<p>Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary:</p> <table border="1" data-bbox="159 1579 734 1780"> <thead> <tr> <th>B_NO</th> <th>Name</th> <th>Score1</th> <th>Score2</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sunil Pillai</td> <td>90</td> <td>80</td> </tr> <tr> <td>2</td> <td>Gaurav Sharma</td> <td>65</td> <td>45</td> </tr> <tr> <td>3</td> <td>Piyush Goel</td> <td>70</td> <td>90</td> </tr> <tr> <td>4</td> <td>Kartik Thakur</td> <td>80</td> <td>76</td> </tr> </tbody> </table> <p>Perform the following operations on the DataFrame :</p> <ol style="list-style-type: none"> <li>1)Add both the scores of a batsman and assign to column “Total”</li> <li>2) Display the highest value from score1 for the given DataFrame.</li> <li>3)Display the DataFrame.</li> </ol>	B_NO	Name	Score1	Score2	1	Sunil Pillai	90	80	2	Gaurav Sharma	65	45	3	Piyush Goel	70	90	4	Kartik Thakur	80	76	[5]
B_NO	Name	Score1	Score2																			
1	Sunil Pillai	90	80																			
2	Gaurav Sharma	65	45																			
3	Piyush Goel	70	90																			
4	Kartik Thakur	80	76																			

39. Ms. Nandini has been assigned the task to analyze the performance of the students of Class X. She has written a snippet for maintaining student details using a dataframe for all the classes. Using DataFrame df. [5]

	AdmNo	StudName	English	Hindi	Maths	Science	SST
0	101	Kirti	87	80	90	65	68
1	102	Gunjan	76	79	76	65	70
2	103	Neetu	68	75	66	68	60
3	104	Pranjal	90	59	78	97	50
4	105	Kamal	88	60	86	68	66

1) She wants to add a new column 'Total' to calculate total marks. Write a command to add a new column.

2) What will be the output of the following command?

```
df.set_index(AdmNo,inplace = True)
print(df.iloc[1:3,1:2])
```

3) Write the command to write the above data frame in to a csv file "mark.csv".

4) She wants to reset the marks of Kirti to 0. Help her to write the command.

5) Write a command to generate bar graph for the given data frame.

**OR**

For a given dataframe df :

City	Maxtemp	MinTemp	RainFall
Delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
Kolkata	39	23	41.8

1) Write a command to display Rainfall of Delhi.

2) Write the output for the following command:

i)df.iloc[ :2,1:3]

ii)df.loc[ :2, : ]

iii)df[ : :-1]

iv)df[2]

40. Consider the sample python dictionary data : [5]  
Exam={'name':['Anastasia','Dima','kartik','james','emily'],'score':[12.5,9,16.5,None,20],  
'Attempts':[1,3,2,3,2],'Qualify':['yes','no','yes','no','no']}

i) create a dataframe exam\_Score from the given dictionary.

ii) Write a code to select the name and score from the dataframe.

iii) Write a code to select name and qualify columns in the rows 1 ,3 and 5.

iv) Write a command to rename score to Marks and qualify to Result for a given dataframe.

v) Write a code to sort the dataframe by name in descending order.