 **Indian School Al Wadi Al Kabir**

**Assessment – 1**

**INFORMATICS PRACTICES (Code: 065)**

CLASS : XII **ANSWER KEY**  Max. Marks:70

Date: 21/09/2023 Time: 3 hours

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| --- | --- | --- |
|  | **SECTION A** |  |
| 1. |  Which plot is used to show results of continuous data?  a. Bar plot b. Line graph **c. Histogram** d. Pie chart | 1 |
| 2. | Which of the following is not an aggregate function?  a. Avg ()  **b. Trim ()**  c. Min ()  d. Sum ()  | 1 |
| 3. | Consider a DataFrame Df1  0 1 2 one 2 4 5 two 3 2 5 three 5 6 4 Which of the following statements results in ValueError? a. Df1[3]=[3,4,5]b**. Df1[3]=[10,2]** c. Df1[4]=[9,9,9] d. Df1[‘Three’]=[8,6,5]  | 1 |
| 4. | Which of the following function displays the unique values under the column DEPARTMENT in STAFF table?SELECT \_\_\_\_\_\_\_\_\_\_\_ FROM STAFF; a. **DISTINCT DEPARTMENT** b. UNIQUE DEPARTMENT c. DIFFERENT DEPARTMENT d. DEPARTMENT | 1 |
| 5. |  Which of the following is a DML command? a. DROP  b. **DELETE** c. DESC  d. ALTER | 1 |
| 6. | Consider the following series named color:  1 Red 2 Green 3 Orange 4 Yellow 5 Black dtype: objectWrite the command that generates the output as: 1 Red 3 Orange dtype: object a. color[0:4] b. color[1:3:2] **c. color[ :4:2]**  d. color[1,3] | 1 |
| 7. |  In Pandas the function used to get rows (or columns) with particular label index.a. iloc()b**. loc()**c. ilabel() d. id() | 1 |
| 8. | After writing all the command/functions to make a graph/chart we need to use\_\_\_\_\_\_\_ to display the graph. a. **plt.show()** b. plt.display() c. plt.title() d. pyplot.picture() | 1 |
| 9. | Which among the following argument is used in hist() to specify the number of intervalsa. intervalb. bin**c. bins**d. range | 1 |
| 10. |  Consider a dataframe df having 3 columns in it as name, salary and allowance  Write the code to add a new column namely comm with the value 500 for  all rows. a. df(‘comm’) =[500,500,500] b. df[‘comm’]=[500] **c. df[‘comm’]=500** d df(‘comm’) = 500 | 1 |
| 11. | Consider a Series ‘numbers’: a 20 b 30 c 10 d 40 e 50 dtype: int64What will be the output of the following command?print(numbers['e':'b':-2]-5) **i. e 45** **c 5** ii. a 20 c 10 iii. c 5 e 45 iv. Error | 1 |
| 12. | Write the command to write the dataframe Record in to a csv file “mark.csv”.**a. Record.to\_csv(“mark.csv”)**b. Record.read\_csv(“mark.csv”)c. Record.writecsv(“mark.csv”)d. mark.to\_csv(record.csv) | 1 |
| 13. | In a relation Employee, if a column “Emp\_name” contains the data set (“Raju”,“Shreya”, “Nitya”, “Raju”,“Nitya”, “Nikhil”, “Kavya”, “Raju”), what will be the output after the execution of the given query?SELECT COUNT (DISTINCT Emp\_name) FROM Employee;a. Error – cannot work on char data type b. **5** c. “Five” d. No output | 1 |
| 14. | Which of the following command will display all the records of a dataframe df in the reverse order. a. print(df[::1]) **b. print(df.iloc[::-1])** c. print(df[-1:]+df[:-1]) d. print(df.reverse()) | 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 will be the output of the following code?  import pandas as pd S1= pd.Series([21,42,35,54]) S2= pd.Series([7,8]) S3= S1 / S2 print (S3.count()) **a. 2** b. 4 c. 6 d. 8 | 1 |
| 17. |  Assertion (A): The shape attribute returns the total number of rows and columns  in the data frame.Reason (R): The shape attribute returns the values in the form of a list.  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 |
| 18. | Assertion (A): To display the first four elements of a Series object, you may  write S[:4]. Reason (R): To display the first five rows of a Series object S, you may use  tail() function. 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 |
|  | **SECTION B** |  |
| 19. |

|  |
| --- |
| Create a Series object with first five odd numbers as data and index as [‘a’, ‘b’, ‘c’, ‘d’, ‘e’]  |

 | 2 |
| 20. | What will be the output of the following code:import pandas as pdS=pd.Series(data=[12,9,3,15,25],index=[1,2,3,4,5])print(S[S>10]+S[2])**1 21****4 24****5 34****dtype: int64** | 2 |
| 21. | Write the output of the following code: import pandas as pd S1 = pd.Series([31, 28, 31, 30, 31], index = ["Jan", "Feb", "Mar", "Apr",  "May"]) print(S1[1:3]) print(S1["Jan":"Mar"])**Feb 28****Mar 31****dtype: int64****Jan 31****Feb 28****Mar 31****dtype: int64** | 2 |
| 22. |  What will be the output of the following code?import pandas as pddata= {'Name':['Sachin','Dhoni','Virat','Rohit'],'Age':[26,27,25,24],'Score':[87,89,89,55]}df=pd.DataFrame(data, index=['a','b','c','d'])print(df[df['Score']>=87]) **Name Age Score****a Sachin 26 87****b Dhoni 27 89****c Virat 25 89** | 2 |
| 23. |  Create a DataFrame in Python from the given list:[[‘Diya’,’HR’,95000],[‘Manoj’,’Accounts’,97000],[‘Priya’,’IT’,980000], [‘Deepak’,’Sales’,79000]] Also give appropriate column headings.import pandas as pdL= [[‘Diya’,’HR’,95000],[‘Manoj’,’Accounts’,97000],[‘Priya’,’IT’,980000], [‘Deepak’,’Sales’,79000]]Df=pd.DataFrame(L, columns=[ ‘ Name’, ‘ department’, ‘ salary’])print(Df) | 2 |
| 24. |  Find the output of the following code: -import pandas as pdStationery = ['pencils', 'notebooks', 'scales', 'erasers']S1 = pd. Series ([20, 33, 52, 10], index = Stationery)S2 = pd. Series ([17, 13, 31, 32], index = Stationery)S3 = S + S2print (S3)S3[0:2] = 12 print(S3)**pencils 37****notebooks 46****scales 83****erasers 42****dtype: int64****pencils 12****notebooks 12****scales 83****erasers 42****dtype: int64** | 2 |
| 25. | What is the difference between char and varchar datatypes in SQL?Char is fixed length and varchar is variable length.For example : if fname is declared as char(10) and “ ajay” is stored , the remaining 6 characters is padded with space and the no.of characters in fname is 10. If lname is declared ad varchar(10) and “ kumar” is stored in it, the remaining 5 characters are omitted and the no. of characters in lname is 6. | 2 |
|  | **SECTION C** |  |
| 26. | Based on the SQL table CAR, write suitable queries for the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NUMBER | SEGMENT | FUEL | QT1 | QT2 |
| 1 | Compact HatchBack | Petrol | 56000 | 70000 |
| 2 | Compact HatchBack | Diesel | 34000 | 40000 |
| 3 | MUV | Petrol | 33000 | 35000 |
| 4 | MUV | Diesel | 14000 | 15000 |
| 5 | SUV | Petrol | 27000 | 54000 |
| 6 | SUV | Diesel | 18000 | 30000 |
| 7 | Sedan | Petrol | 8000 | 10000 |
| 8 | Sedan | Diesel | 1000 | 5000 |

i. Display the segment and fuel of all cars with qt1 in the range 20000 to  30000.SELECT SEGMENT,FUEL FROM CARS WHERE QT1 BETWEEN 20000 AND 30000; ii. Display the different segments of cars. SELECT DISTINCT SEGMENT FROM CARS; iii. Display the average QT1 and the greatest QT2 of all SUV. SELECT AVG(QT1), MAX(QT2) FROM CARS WHERE  SEGMENT=’SUV’; | **03** |
| 27. | Write a program to create a data frame LibraryDF with the help of a **dictionary of series** that represents BCode, Title, Author and Price of 4 books and print all the book details. **BCode Title Author Price**0 5478 Software Engineering Patrick 18001 7382 System Analysis and Design Mathews 6502 4727 Business Computing Viveka 8203 1683 Compiler Design Dan 1230import pandas as pdD={ ‘ Bcode’: pd.Series([5478,7382,4727,1683]), ‘ Title’ :pd.Series( [‘ softwae engineering’, ‘ system analysis and  design’, ‘business computing’, ‘ Compiler design’]), ‘ Author’ : pd.Series([ patrick’, ‘ mathews’, ‘ viveka’, ‘ Dan’]), ‘ Price’: pd.Series([ 1800, 650, 820, 1230])}LibraryDF=pd.DataFrame(D)print(LibraryDF) | 3 |
| 28. | Write MySQL statements for the following:1. To display the list of tables in the database FACTORY .

USE FACTORY;SHOW TABLES;1. Write create table command to create PRODUCT table as per the following :

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Size** | **Constraint** |
| productID | Int | 4 | Primary Key |
| Name | Varchar | 20 | Not Null |
| Category | Varchar | 20 |  |
| Price | Int | 5 |  |
| Stock | Int | 4 |  |

CREATE TABLE PRODUCT ( PRODUCTID INT(4) PRIMARY KEY, NAME VARCHAR(20) NOT NULL, CATEGORY VARCHAR(20), PRICE INT(5), STOCK INT(4)); | 1+2 |
| 29. |  A dataframe stud contains the following information about students

|  |  |  |  |
| --- | --- | --- | --- |
| RollNo | Name | Class | Section |
| 1 | Atul | II | A |
| 2 | Nilesh | III | B |

(a) Write the code to change the Class of ‘Atul ‘ to ‘IV’ **Stud.loc[stud.Name==’Atul’, ‘Class’]= ‘IV’**(b) Write the code to display the number of elements in the data frame. **Stud.size**(c) Write the code to delete column Class of data frame **Stud.drop(‘Class’, axis=1,inplace = True)** | 3 |
| 30. | Consider the given DataFrame ‘Teacher’: Name Salary0 Ajay 750001 Amrita 780002 Sohail 552253 Sujata 48500Write suitable Python statements for the following:i. Add a column called ‘Designation’ with the following data:  [‘PGT’ , ‘TGT’ , ‘TGT’, ‘PRT’].**Teacher[‘designation’] = [‘PGT’ , ‘TGT’ , ‘TGT’, ‘PRT’]**ii. Add a new teacher named ‘Rohit' having salary 80000 and designation as  PGT.**Teacher.loc[4]=[‘Rohit’, 80000, ‘PGT’]** iii. Write a command to change the name of column ‘Salary’ as  ‘Remuneration’ **Teacher.rename({ ‘salary’: ‘Remuneration’} , axis=1, inplace=True)** | 3 |
|  | **SECTION D** |  |
| 31. | Mr. Som, a HR Manager in a multinational company “Star-X world” has created the following table to store the records of employees:Table: Emp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Eid | EName  | Department  | DOB | DOJ |
| Star1 | Ivan | Sales | 1994-08-28 | 2020-02-14 |
| Star2 | Melinda | IT | 1997-10-15 | 2021-11-19 |
| Star3 | Raj | Accounts | 1998-10-02 | 2019-04-02 |
| Star4 | Michael | Sales | 2000-02-17 | 2020-05-01 |
| Star5 | Sajal | null | 2001-12-05 | 2018-06-13 |
| Star6 | John | Accounts | 1995-01-03 | 2019-07-15 |
| Star7 | Julia | Sales | 1985-11-13 | 2020-08-19 |

Write the output of the following queries:a. SELECT DISTINCT DEPARTMENT FROM EMP;

|  |
| --- |
| Department  |
| Sales |
| IT |
| Accounts |
| null |

b. SELECT ENAME,DEPARTMENT FROM EMP WHERE ENAME  LIKE “%J%”;

|  |  |
| --- | --- |
| EName  | Department  |
| Raj | Accounts |
| Sajal | null |
| John | Accounts |
| Julia | Sales |

c. SELECT MAX(DOB), MIN(DOJ) FROM EMP;

|  |  |
| --- | --- |
| MAX(DOB) | MIN(DOJ) |
| 2001-12-05 | 2018-06-13 |

d. SELECT ENAME,DOB FROM EMP WHERE DEPARTMENT IN  ( ‘SALES’, ‘IT’);

|  |  |
| --- | --- |
| ENAME | DOB |
| IvanMelindaMichaelJulia | 1994-08-281997-10-152000-02-171985-11-13 |

 | **4** |
| 32. | i. Write a python code to create DataFrame “Vendor” with the following data  using dictionary of list.import pandas as pdD={ ‘Vname’: [‘A’, ‘B’, ‘C’, ‘E’,’F’] , ‘Item’: [ ‘Chair’, ‘Table’, ‘Pen’, ‘Eraser’, ‘Sketch Pen’], ‘Area’: [ ‘East’, ‘West’, ‘South’, ‘SW”, ‘NE’], ‘Qty’: [ 30,45,23,12,100]}Vendor=pd.DataFrame(D, index=[200,201,202,203,204])print(Vendor)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Vname | Item | Area | Qty |
| 200 | A | Chair | East | 30 |
| 201 | B | Table | West | 45 |
| 202 | C | Pen | South | 23 |
| 203 | E | Eraser | SW | 12 |
| 204 | F | Sketch Pen | NE | 100 |

ii. Change the index to 100,101,102,103,104**Vendor.index=[100,101,102,103,104]**iii. Find the output of the following: x=Vendor.columns[:2] print(x) **[ Vname,Item]** | 2+1+1 |
|  | **SECTION E** |  |
| 33. | Write SQL queries for questions (i) to (v) which are based on the given table  **TEACHER.**i. Displaty the name and department of of female PGT teachers.SELECT NAME,DEPARTMENT FROM TEACHER WHERE GENDER = ‘F’AND CATEGORY = ‘PGT’; ii. Display the name ,category and salary of teachers whose hiredate is before  2018-07-20SELECT NAME,CATEGORY ,SALARY FROM TEACHER WHERE HIREDATE< ‘2018-07-20’;iii. Change the category of Sonali to PGT UPDATE TEACHER SET CATRGORY = “PGT”WHERE NAME = “SONALI”;iv. Delete the gender column from the table teacher ALTER TABLE TEACHER DROP GENDER;v. Display the details of all PGT and TGT teachers in English Department. SELECT \* FROM TEACHER WHERE DEPARTYMENT = “ENGLISH”  AND CATEGORY IN ( ‘PGT’, ‘TGT’); | 5 |
| 34. | Consider the DataFrame ‘exam’ and write suitable Python statements for the following questions: name score1 score2 qualifyA Anand 6 9 yesB Dema 2 8 noC Clark 9 7 yesD James 3 5 noE Emily 4 6 noi. Add a column ‘avgscore’ that contains the average score of  score1 and score2. e**xam[‘avgscore’] = (exam. Score1+exam.score2)/2**ii. Remove the row at index C. **exam.drop(‘C’, axis=0, inplace = True)**iii. Predict the output of the following:1. print(exam.loc[‘ B’:’D’, [‘name’, ‘avgscore’]]

  **name avgscore** **B Dema 5.0** **C Clark 8.0** **D James 4.0**1. print(exam.iloc[1 : 3, 2])

 **score2** **B 8** **C 7**1. print(exam[exam[‘qualify’]==’yes’])

 name score1 score2 qualify avgscore A Anand 6 9 yes 7.5 C Clark 9 7 yes 8.0  | 5 |
| 35. | Write a python program to plot a line chart based on the given data to analys the Temperature of different cities. city=["surat","baroda","rajkot", "bhuj","Vapi"]temp=[85,105,68,35, 55] Add legend and necessary markers for the line graph.Import matplotlib.pyplot as pltcity=["surat","baroda","rajkot", "bhuj","Vapi"]temp=[85,105,68,35, 55]plt.plot(city,temp, marker=’\*’)plt.xlabel(“cities”)plt.ylabel(“temperature”)plt.title(“Temperature Analysis”)plt.legend([‘temp’])plt.show() **OR**Write python code to draw the following bar graph representing the Salary of 5 employees of ABC Co.Ltd company.Also give suitable python statement to save this chart.import pandas as pdName=[‘Aman’, ‘ Abhishek’, ‘Karthik’, ‘Siddarth’, ‘ Harish’]Salary=[ 95000, 85000, 40000, 20000, 75000]Plt.bar(Name,salary)Plt.xlabel(“Name->” )Plt.ylabel(“Salary in Rs. ->”)Plt.title(“ABC Co. Ltd”)Plt.grid(True)Plt.show()Plt.savefig(“salary.png”) | 5 |