 **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

|  |  |  |
| --- | --- | --- |
|  | **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: object  Write 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 intervals  a. interval  b. 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: int64  What 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 pd  S=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 pd  data= {'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 pd  L= [[‘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 pd  Stationery = ['pencils', 'notebooks', 'scales', 'erasers']  S1 = pd. Series ([20, 33, 52, 10], index = Stationery)  S2 = pd. Series ([17, 13, 31, 32], index = Stationery)  S3 = S + S2  print (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 1800  1 7382 System Analysis and Design Mathews 650  2 4727 Business Computing Viveka 820  3 1683 Compiler Design Dan 1230  import pandas as pd  D={ ‘ 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 Salary  0 Ajay 75000  1 Amrita 78000  2 Sohail 55225  3 Sujata 48500  Write 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 | | Ivan  Melinda  Michael  Julia | 1994-08-28  1997-10-15  2000-02-17  1985-11-13 | | **4** |
| 32. | i. Write a python code to create DataFrame “Vendor” with the following data  using dictionary of list.  import pandas as pd  D={ ‘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  2018-07-20  SELECT 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 qualify  A Anand 6 9 yes  B Dema 2 8 no  C Clark 9 7 yes  D James 3 5 no  E Emily 4 6 no  i. 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 plt  city=["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 pd  Name=[‘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 |