i **Indian School Al Wadi Al Kabir**

**Assessment – 1**

**INFORMATICS PRACTICES (Code: 065)**

**SET-I**

CLASS: XII Max. Marks:70

Date: 29/09/2024 Time: 3 hours

***General Instructions***:

● 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.

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|  | **SECTION A** |  |
| 1. | In Python Pandas, head(n) method returns the first n members of the series. What is the default value of n?  i) 2 ii) 3 iii) 4 iv) 5 | 1 |
| 2. | Aggregate functions are also known as:  i) Scalar Functions ii) Single Row Functions  iii) Multiple Row Functions iv) Hybrid Functions | 1 |
| 3. | What will be the output of the following code?  import pandas as pd  myser=pd.Series([0,0,0])  print(myser)  i) 0 0 ii) 0 1  0 0 0 1  0 0 0 2  iii) 0 0 iv) 0 1  1 0 1 1  2 0 2 2 | 1 |
| 4. | Mariya has stored the records of all suppliers of her company in a MySQL table. Suggest a suitable SQL clause so that she could see the name of all suppliers in an alphabetical order.  i) SORT BY ii) ARRANGE  iii) ORDER BY iv) GROUP BY | 1 |
| 5. | Which of the following is a not a DML command?  i) SELECT  ii) DELETE  iii) UPDATE  iv) ALTER | 1 |
| 6. | If series s1 is having following data:    What would the command print(s1[3:6]) result in?  i) 5 3 ii) 7 5  7 5 9 4  9 4 11 8  iii) 7 5 iv) ERROR  9 4  11 8  13 7 | 1 |
| 7. | The word Pandas has derived from  i) Panel Data System ii) Panel Data  iii) Python Data iv) Python Data System | 1 |
| 8. | To compare data values of pollution emitted from different chemical companies over a year, which of the following type of graph should preferably be used?  i) line ii) area  iii) bar iv) scatter | 1 |
| 9. | What will be the output of the python program mentioned below?  import pandas as pd  df=pd.DataFrame([‘Apple’,’Banana’,’Orange’,’Grapes’,’Gauva’])  print (df [2:4:2]  i) 0 ii) 0  2 Banana 2 Orange  iii) 0 iv) Empty DataFrame  2 Banana Columns: [0]  4 Grapes Index: [ ] | 1 |
| 10. | The following code create a dataframe named ‘D1’ with \_\_\_\_\_\_\_\_\_\_\_ columns.  import pandas as pd  LoD = [{‘a’:10, ‘b’:20}, {‘a’:5, ‘b’:10, ‘c’:20}]  D1 = pd.DataFrame(LoD)  i) 1 ii) 2 iii) 3 iv) 4 | 1 |
| 11. | The following statement will \_\_\_\_\_\_\_\_\_  df = df.drop(['Name', 'Class', 'Rollno'], axis = 1) #df is a DataFrame object  i) delete three columns having labels ‘Name’, ‘Class’ and ‘Rollno’  ii) delete three rows having labels ‘Name’, ‘Class’ and ‘Rollno’  iii) delete any three columns  iv) return error | 1 |
| 12. | An economics teacher wants to use a pandas series to teach about Indian historical monuments and its states. The series should have the monument names as values and state names as indexes which are stored in the given lists, as shown in the code.  Choose the statement which will create the series:  import pandas as pd  Monument= [‘Qutub Minar’,’Gateway of India’, ’Red Fort’,’Taj Mahal’]  State= [‘Delhi’,’Maharashtra’,’Delhi’,’Uttar Pradesh’]  i) S=df.Series(Monument,index=State) ii) S=pd.Series(State,Monument)  iii) S=pd.Series(Monument,index=State) iv) S=pd.series(Monument,index=State) | 1 |
| 13. | If column “Salary” contains the data set [1000, 15000, 25000, 10000, 15000], then what  will be the output after the execution of the given query?  SELECT SUM (DISTINCT SALARY) FROM EMPLOYEE;  i) 75000 ii) 25000  iii) 66000 iv) 51000 | 1 |
| 14. | When we create DataFrame from List of Dictionaries, then dictionary keys will become \_\_\_\_\_\_ i) Column labels ii) Row labels  iii)Both of the above iv) None of the above | 1 |
| 15. | With SQL, how can you return the number of not null record in the Project field of “Students” table?  i) SELECT COUNT (Project) FROM Students;  ii) SELECT COLUMNS (Project) FROM Students;  iii) SELECT COLUMNS (\*) FROM Students;  iv) SELECT COUNT (\*) FROM Students; | 1 |
| 16. | What will be the output of the following code?  import pandas as pd  import numpy as np  S1= pd.Series([3,4,11,9])  S2= pd.Series([2,np.NaN,5])  S3= S1+S2  print (S3.count())  i) 2 ii) 4  iii) 3 iv) 7 | 1 |
| 17. | Which of the following is true about the HAVING clause?  i) Similar to the WHERE clause but is used for columns rather than groups.  ii) Similar to WHERE clause but is used for rows rather than columns.  iii) Similar to WHERE clause but is used for groups rather than rows.  iv) Acts exactly like a WHERE clause. | 1 |
| 18. | What is the command to display the structure of a relation class?  i) Use class;  ii) Show class;  iii) Describe class;  iv) None of the Above | 1 |
| 19. | To sort the DataFrame in Pandas, use the \_\_\_\_\_ method.  i) sort ()  ii) sort\_values ()  iii) sorted\_values ()  iv) sort\_value () | 1 |
| 20. | **Assertion (A):** In order to be able to use Python’s data visualization library, we need to import the pyplot module from matplotlib library.  **Reason (R):** The pyplot module houses a variety of functions required to create and customize charts or graphs.  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 |
| 21. | **Assertion (A):** The output of addition of two series will be NaN, if one of the elements or both the elements have no value(s).  **Reason (R):** While performing mathematical operations on a series, by default all missing values are filled in with 0.  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** |  |
| 22. | Write the output of the following code: Given two series SER1 and SER2  SER1 SER2  A 15 C 2  B 25 D 3  C 35 E 4  D 45 F 5  E 55 G 6  F 60 H 8  Find the output for the following python pandas statements (i) and (ii)  (i) print (SER1.mul (SER2, fill\_value=2))  (ii)print(SER1.loc[‘A’:’D’]) | 2 |
| 23. | What will be the output of the following code?  import pandas as pd  s1=pd.Series(data=2\*[3,10])  print(s1+3)  print(s1.shape) | 2 |
| 24. | Ruchika wants to find the total commission earned by those departments where the number of employees in the department is more than 2 and write the following query:  **Select department, count(commission) having count (\*) > 2 group by department from techno;**  But she got an error. Identify the error(s) and rewrite the query by underlining the correction(s) done. | 2 |
| 25. | Write a program to create the following series object named Seminar using a dictionary dict with the details given below. Also write python statements to name the series as ‘SemTopics’ and display the series.  Note: Sem1, Sem2, Sem3, Sem4 and Sem5 are key element of a dictionary.  Sem1 Business Intelligence  Sem2 Artificial Intelligence  Sem3 Corporate Law  Sem4 Communication Technology  Sem5 Virtual Reality | 2 |
| 26. | Consider the following structure of DataFrame **ITEM.** Answer following questions with proper python code.    i) Write the command to display the total number of elements in the dataframe ITEM.  ii) Write the command to display the column labels of ITEM.  iii) Write the command to Transpose the DataFrame ITEM.  iv) Write the command to display last two rows with name and price | 2 |
| 27. | Write the answers based on the following code:  import pandas as pd  dic={‘pid’:[101,102,103,104,105],  ‘pname’:[‘Roshan’,’Radhika’,’Arnav’,’Manisha’,’Lobo’],  ‘sports’:[‘cricket’,’tennis’,’football’,’cricket’,’’cricket’],  ‘points’:[45000,20000,15000,53000,60000]}  player=pd.DataFrame(dic)  print(player)  Write Python statements for the following:  i) In the dataframe player created above, set the row labels as ‘P1’,’P2’,’P3’,’P4’,’P5’.  ii) Rename the column ‘points’ to ‘netpoint’ for a given dataframe. | 2 |
| 28. | Differentiate Delete command and Drop command by giving an appropriate example using a SQL query. | 2 |
|  | **SECTION C** |  |
| 29. | i) Consider the following Teacher table: Write SQL output for given query.    a) Select \* from Teacher order by Salary desc;  b) Select Department, count (\*) from Teacher group by Department;  ii) Create the table Books as per the following:     |  |  |  |  | | --- | --- | --- | --- | | **Field Name** | **Type** | **Size** | **Constraint** | | BookID | Int | 4 | Primary Key | | Name | Varchar | 20 | Not Null | | Category | Varchar | 20 | Unique | | Price | Float | (7,3) |  | | Stock | Int | 4 |  | | 3 |
| 30. | Kavyanjali, a chemical analyst, needs to arrange data of few elements in the form of two series containing symbols and their atomic numbers respectively. Create a dataframe named Chemicals from two series as shown below:    Help her in writing suitable Python code to complete the task. | 3 |
| 31. | Consider the given DataFrame ‘Disease’.    Write suitable Python statements for the following:  i) Add a column holding details of number of cases for each disease case= [12,34,21,15]  ii) Add a new disease named ‘Malaria’ caused by ‘Protozoa’ with 13 case.  iii) Remove the row containing details of disease named Tuberculosis. | 3 |
| 32. | A SQL relation named movie has the following structure:  Movie (movie\_id, movie\_name, DOR)  i) Write a command to add a column Genre of type varchar and size 15.  ii) Write a command to delete DOR column from movie.  iii)Write a command to make movie\_id as primary key. | 3 |
|  | **SECTION D** |  |
| 33. | Consider the following table School:    Write SQL queries for the following:  i) Display the average Marks secured by each Gender.  ii) Display the minimum Marks secured by the students of Grade 10.  iii)Display the total number of students in each Club where number of students are more than 1.  iv) Display the number of different Clubs. | 4 |
| 34. | Consider the following DataFrame ‘mdf’.    A) Write Python statements for the DataFrame ‘mdf’:  i) To display the records of the students having roll numbers 1 and 4.  ii) To increase the marks of subject English by 2, for all students.  B) Write Python statement to display the Rollno and Name of all students who secured less than 15 marks in Hindi.  **OR**  **(Option for Part B only)**  B) Write Python statement to display the total marks i.e., sum of marks secured in English, Hindi and Maths for all students and export the updated dataframe in csv file named Marks.csv in D:\. | 2+2 |
|  | **SECTION E** |  |
| 35. | Write SQL queries for questions (i) to (v) which are based on the given table    i) Display all the details of products after excluding null values.  ii) Display the names of all items whose Stockdate is after 2000.  iii)Modify the discount of Logitech by adding 10 into the existing value.  iv)Display the details of products whose item name contains letter ‘o’.  v) Remove the records of items having price less than 15000. | 5 |
| 36. | Yukta has created a Data frame “Sports” to keep track of the number of First, Second and Third prizes won by different houses in various events.      A) Write Python commands to do the following:  (i) Display all the records in the reverse order.  (ii) Display the bottom 3 records.  (iii) Find output for the given statements:  x=df.columns[:1]  print(x)  B) Predict the output for the following:  (i) print (Sports.loc [ : ,[‘First’,’Third’]])  (ii) print (Sports [Sports[‘Third’]>10]) | 5 |
| 37. | Consider the following graph. Write the Python code to plot it. Also add the Title, label for X and Y axis. Write a command to save the plot.    **OR**  Write Python code to draw the following bar graph representing the total production in each area. Add the Title, Label for X-axis and Y-axis and give different colors for each bar with dashed line style. Write a command to save the plot.  Use the following data for plotting the graph:  production= [450,300,500,650]  Area= [“South-East”,” North-West”,” West”,” East”] | 5 |