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| **FT/IPCAK/1223/A 14-JUN-2023** | | | | | |
| **FIRST TERM EXAMINATION (2023-24)** | | | | | |
| **Subject: Informatics Practices**  **Grade: XII** | | | **Max. Marks:70** **Time:3 hours** | | |
| **Name:** | | **Section:** | | **Roll No:** | |
| General Instructions:  1. This question paper contains five sections, Section A to E.  2. All questions are compulsory.  3. Section A have 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 03 Long Answer type questions carrying 05 marks each.  7. Section E has 02 questions carrying 04 marks each.  8. All programming questions are to be answered using Python Language only | | | | | |
|  | **SECTION A** | | | |  | |
| 1 | In SQL, which of the following is not a data definition language command?  a) Create  b) Alter  c) drop  **d) delete** | | | | 1 | |
| 2 | Which SQL keyword is used to sort the result-set(records)?  a) SORT BY  b) ORDER  **c) ORDER BY**  d) SORT | | | | 1 | |
| 3. | Consider the following query:SELECT name FROM class WHERE subject \_\_\_\_ NULL;  Which comparison operator may be used to fill the blank space in above query?  a) =  b) LIKE  **c) IS**  d) if | | | | 1 | |
| 4. | The count() function is an example of   1. math functions 2. date functions 3. **aggregate functions** 4. string functions | | | | 1 | |
| 5. | Write the command to delete all the data of the table ‘activity’ retaining only structure.   1. Delete table activity; 2. Drop table activity; 3. **Delete from activity;** 4. Drop from activity; | | | | 1 | |
| 6. | To print first two columns of the data frame df we shall use:-  a) df.head(2)  b) df.tail(2)  c**) df.iloc[0:,0:2]**  d) df.head() | | | | 1 | |
| 7. | The SQL statement to display the position of "Learn" in "eLearning".   1. Select Inpos(‘eLearning’.’Learn’) 2. **Select instr(‘eLearning’.’Learn’)** 3. Select substr(‘eLearning’.’Learn’) 4. Select strpos(‘eLearning’.’Learn’) | | | | 1 | |
| 8. | Any String function returns   1. Only string 2. Only number 3. **String or number** 4. None of the above. | | | | 1 | |
| 9. | Which one of the following functions is used to find the total value from the given data in MySQL?   1. total( ) 2. **sum( )** 3. add( ) 4. calculate( ) | | | | 1 | |
| 10. | The axis 1 identifies a dataframe’s \_\_\_\_\_\_\_\_\_\_\_   1. rows 2. **columns** 3. values 4. datatype | | | | 1 | |
| 11 | Inplace=True means:-  **a) Changes will be permanent**  b) Changes are temporary  c) Changes are partial and temporary  d) None of all | | | | 1 | |
| 12. | John wants to create a data series for the months and number of days. He has created two lists as shown in the code. Give the correct command to create a series that contains the names of the months as index and days as values  import pandas as pd  X=['Jan','Feb','Mar','Apr']  Y=[31,28,31,30]   1. D=pd.Series(X,Y) 2. **D=pd.Series(X,index = Y)** 3. D=pd.Series(Y,X) 4. D=Series(X,index = Y) | | | | 1 | |
| 13. | Which command will be used to delete 3rd and 5th columnof the data frame. Assuming the  data frame name as DF.  a) DF.drop([2,4],axis=0)  b) DF.drop([2,4],axis=1)  c) DF.drop([3,5],axis=1)  d) DF.drop([3,5]) | | | | 1 | |
| 14. | Which of the following is a date function?   1. Pow() 2. **Now()** 3. Today() 4. None of the above | | | | 1 | |
| 15. | The function to create a dataframe from a CSV file is –  a) to\_csv()  b) load\_csv()  c) fetch\_csv  d**) read\_csv()** | | | | 1 | |
| 16. | Explain the meaning of print(df.iloc[:4]) where df is a dataframe.  a**) It will display first 4 rows of DataFrame df.**  b) It will display 4th row of DataFrame df.  c) It will display last 4 rows of DataFarme df  d) None of these | | | | 1 | |
|  | Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice | | | |  | |
| 17. | Assertion(A):- Two basic data structure in Python are: Series and Dataframe. But both are different from each other.  Reason(R):- Series stores heterogenous data while Dataframe stores homogenous data.   1. Both A and R are true and R is the correct explanation for A 2. Both A and R are true and R is not the correct explanation for A 3. **A is True but R is False** 4. A is false but R is True | | | | 1 | |
| 18. | Assertion (A):- All pandas data structures are value-mutable (the values they contain can be altered) but not always size-mutable.  Reasoning (R): The length of a Series cannot be changed, but, for example, columns can be inserted into a DataFrame.   1. **Both A and R are true and R is the correct explanation for A** 2. Both A and R are true and R is not the correct explanation for A 3. A is True but R is False 4. A is false but R is True | | | | 1 | |
|  | **SECTION B** | | | |  | |
| 19 | What will be the output of the following code:  import pandas as pd  s1=pd.Series(data=2\*[4,10])  print(s1)  0 4  1 10  2 4  2 10  Dtype int 64 | | | | 2 | |
| 20 | Give the output   1. Select round(35.6789,mod(3,2)); # 35.7 2. Select power(9, round(2.5)); # 729 | | | | 2 | |
| 21 | 1. Differentiate between order by and group by clause. 2. Can we use Where clause after Group By clause ? Name the clause which is used to restrict the number of records returned by the Group By clause.   Yes  having | | | | 2 | |
| 22 | Write a program in Python to create the series of all the alphabets of ''Wisdom'' with default index. Print the first three alphabets.  import padas as pd  s=pd.series(['w', 'i', 's', 'd', 'o', 'm'])  print(s.head(3)) | | | | 2 | |
| 23 | Carefully observe the following code:  >>> import pandas as pd  >>> xiic = {‘amit’:34, ‘kajal’:27, ‘ramesh’:37}  >>> xiid = {‘kajal’:34, ‘lalta’:33, ‘prakash’:38}  >>> result = {‘PT1’:xiic, ‘PT2’:xiid}  >>> df = pd.DataFrame(result)  >>> print(df)  Answer the following:  i) List the index of the dataframe df **print(df.index)**  ii) Find the output of the following code : print(df.loc[‘kajal’:’ramesh’])  pt1 pt 2  kajal 27.0 34.0  ramesh 37.0 NaN | | | | 2 | |
| 24 | Consider the following Series ‘s’  0 4.0  1 5.0  2 7.0  3 NaN  4 1.0  5 10.0  dtype: float64  (i) Write a Python code to add 1 to all the elements.  (ii) Rewrite the above code to add 1 to all the elements assuming NaN to be value 0.  Ans   1. s = s + 1   print(s1)   1. s.add(1,fill\_value=0) | | | | 2 | |
| 25 | Given here is a Dataframe of Sales data of four months stored with name sales\_df.   1. Write a Python code to delete sales of July month. 2. Write a Python code to add the sales of August month with [70,94,80,93]   Ans   1. sales\_df.pop(‘July’) 2. sales\_df.insert(4,column="August",value=[70,94,80,93] )   ( 1 mark each for above or any other correct line(s) of code | | | | 2 | |
|  | **SECTION C** | | | |  | |
| 26 | Find the Output of following :  i) select pow(length(“Team”),instr(“hello”,’l’)); **Ans 16**  (ii) select round(4567.132,-1);  **Ans 4570**  (iii)select day(‘2020-04-09’);   **Ans 09**  **( 1 mark each for correct answer)** | | | | 3 | |
| 27. | Consider the following Dataframe happy\_df created using following command   |  |  |  |  | | --- | --- | --- | --- | | Country | Region | Happiness Rank | Happiness Score | | Switzerland | Western Europe | 1 | 7.587 | | Iceland | Western Europe | 2 | 7.561 | | Denmark | Western Europe | 3 | 7.527 | | Norway | Western Europe | 4 | 7.522 | | Canada | North America | 5 | 7.427 |  1. The command to display first five rows of the above Dataframe. 2. Write the command to display number of rows and columns of the above Dataframe 3. Write the command to delete the first two rows from dataframe   Ans  (i) print(happy\_df.iloc[0 : 5 ] )  (ii) print(df.shape)  iii) happy\_df.drop([0,1]) | | | | 3 | |
| 28. | Write a program to **create** a dataframe for the following and perform the following.  Name Marks1 Marks2  0 Avani 10 20  1 Janhvi 12 30  2 Rohit 14 40  3 Pranav 16 50   1. Add a new column Average to store the average of both the marks. 2. Rename the columns Marks 1 and Marks 2 as Accounts and Economics   import pandas as pd                                                       (.5 mark)    data = {'Name':['Amit', 'Jeevan', 'Rani', ‘Pranav'],     'Marks1':[10,12,14,16],'Marks2':[20,30,40,50]}  df = pd.DataFrame(data) (1.5mark for Dataframe creation)               df['average']=(df['Marks1']+df['Marks2'])/2                 (1 mark)  print(df) | | | | 3 | |
| 29. | Consider the below mentioned table of ‘CLOTH’  Dcode Description Price Mcode Launchdate  10001 Formal Shirt 1250 M001 12–Jan–08  10020 Frock 750 M004 09–Sep–07  10012 Informal Shirt 1450 M002 06–Jun–08  10019 Evening Gown 850 M003 06–Jun–08  10090 Tulip Skirt 850 M002 31–Mar–07  10023 Pencil Skirt 1250 M003 19–Dec–08  10089 Slacks 850 M003 20–Oct–08  Write the commands for the following:   1. Display the description after removing leading spaces if any.   Select trim(description) from cloth;   1. Display number of characters taken by each description.   Select length(description) from cloth;   1. Display the day of the LAUNCHDATE. Eg. ‘Monday’, ’Tuesday’ etc   Select dayname(LAUNCHDATE.) from cloth; | | | | 3 | |
| 30 | Consider the table shown below and answer the queries that follow  Relation – Student   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ROLLNO | NAME | BRANCH | D\_O\_B | FEE | SEMESTER | | E201 | JOHN | COMMERCE | 2002-09-21 | 6700 | I | | E202 | BABU | SCIENCE | 2001-12-23 | 2070 | II | | E203 | GEORGE | HUMANITIES | 2000-12-29 | 5700 | I | | E204 | JIBIN | COMMERCE | 2002-01-30 | 4500 | III | | E205 | VARGHESE | SCIENCE | 2000-08-19 | 6250 | I | | E206 | SOMAN | HUMANITIES | 2000-06-09 | 4620 | IV |  1. Display semester wise average marks   **Select semester, avg(fee) from student group by semester;**   1. Display the number of available branches.   **Select count(distinct branch) from student;**   1. Display the total fees for each branch.   **Select branch,sum(fee) from student;** | | | | 3 | |
|  | **Section D** | | | |  | |
| 31 | Consider the following tables PARTICIPANT and ACTIVITY and answer the questions that follow :     1. When the table ‘‘PARTICIPANT’’ was first created, the column ‘NAME’ was planned as the Primary key by the Programmer. Later a field ADMNO had to be set up as Primary key. Explain the reason.   NAME column has duplicate values ,cannot be considered as Primary key,  therefore Admno is to be considered as Primary Key.   1. Identify data type and size to be used for column ACTIVITYCODE in table ACTIVITY.   Char(4)  3. With reference to the above given tables write commands in SQL for (i) to (iii).   1. How many rows will be there in Cartesian product of the two tables in consideration **here**   **Number of Rows:25**   1. To display Names of Participants, Activity Code, Activity Name in alphabetic ascending order of names of participants.   **SELECT P.NAME , P.ACTIVITYCODE , A.ACTIVITYNAME FORM PARTICIPANT P , ACTIVITY A WHERE P.ACTIVITYCODE = A.ACTIVITYCODE ORDER BY P.NAME ;**   1. To display Names of Participants along with Activity Codes and Activity Names for only those participants who are taking part in Activities that have ‘bag’ in their Activity Names and Points of activity are above 250.   **SELECT P.NAME , P.ACTIVITYCODE , A.ACTIVITYNAME FROM PARTICIPANT P, ACTIVITY A WHERE P.ACTIVITYCODE = A.ACTIVITYCODE AND A.POINTS > 250 AND A.ACTIVITYNAME LIKE '%bag%';** | | | | 5 | |
| 32. | Write the SQL queries which will perform the following operations   1. To display the year from your Date of Admission which is 2023-05-15. 2. To convert your email id ‘ABC@XYZ.com’ to lowercase. 3. To remove leading spaces from a string ‘my country’. 4. To display current date. 5. To display the value of 106.   Ans   1. select year(‘2023-05-15’); 2. select lower(‘ABC@XYZ.COM’); **or** select lcase(‘ABC@XYZ.COM’); 3. select ltrim(‘my country’); 4. select date(now()); 5. select pow(10,6); | | | | 5 | |
| 33 | Consider the following relation, Write the sql commands for the following  Relation :STUDENT     1. To count the number of students with grade C. 2. To display sum of Avgmarks for B grade students. 3. To display sum of stipend by each grade. 4. To count the number of students whose name starts with ‘V’. 5. To display details of students who have opted for medical stream. | | | | 5 | |
|  | SECTION E | | | |  | |
| 34. | Consider the following Dataframe named df.   |  |  |  |  | | --- | --- | --- | --- | | Area\_type | Location | totalsqft | price | | Super built- up Area | Electronic City Phase | 1056 | 39.07 | | Plot Area | Chikka Tirupathi | 2600 | 120 | | Built-up Area | Uttarahalli | 1440 | 62 | | Super built- up Area | Lingadheeranahalli | 1521 | 95 | | Super built- up Area | Kothanur | 1200 | 51 | | Super built- up Area | Whitefield | 1170 | 38 |   Write a Python program to   1. Create the above Dataframe from a csv file named housing.csv and display it. 2. Display the houses having price less than 50 lakhs 3. Add a column tax which is 10% of price   *(Note price is pgiven in lakhs)*  import pandas as pd # ½ mark  df = pd.read\_csv("housing.csv") # 1 Mark  print(df) # ½ mark  print(df[df[‘Price’]<50]) # 1Mark  df[‘tax’]= df['price']\*100000\*.1 # 1 Mark  print(df) | | | | 2+1+1 | |
| 35 | Consider the table charity. Write the sql query     1. Display First 2 characters of City and Person ID. 2. Display Last name, contribution and a third column which has contribution divided by 10. Round it to two decimal points. 3. Display Last Names and First names of people who have "at" in the second or third position in their first names.   Ans   1. Select left(city,2),p\_id from charity;(1 mark) 2. Select lastname,contribution,round(contribution/10,2) from charity;(1 mark)    Select firstname, lastname from charity where instr(firstname,’at’)=2 or instr(firstname,’at’)=3;  (2 mark) | | | | 1+1+2 | |

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