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INFORMATICS PRACTICES

(New Course)

Full Marks : 70

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

(i) Write all the answers in the Answer Script.

(ii) Attempt multiple choice questions and very short answer-type questions serially.

(iii) Attempt all parts of a question together at one place.

1. Choose the correct option for the following questions :

1×6=6

(a) To get the number of elements in a series object, _____ attribute may be used.

(i) index

(ii) size

(iii) itemsize

(iv) ndim

[Contd.

(**2**)

(b) To display the 3rd, 4th and 5th columns from the 6th to 9th rows of a dataframe DF, you can write

　(i) DF.loc [6 : 9, 3 : 5]

　(ii) DF.loc [6 : 10, 3 : 6]

　(iii) DF.iloc [6 : 10, 3 : 6]

　(iv) DF.iloc [6 : 9, 3 : 5]

(c) Which of the following is NOT a date function?

　(i) Month

　(ii) Year

　(iii) Now

　(iv) Pow

(d) What is the full form of SQL?

　(i) Structured Query Language

　(ii) Structured Query List

　(iii) Simple Query Language

　(iv) None of the above

(e) URL stands for _____

　(i) Universal Resource Locator

　(ii) Uniform Resource Locator

　(iii) Uniform Resource Location

　(iv) None of the above

(3)

(f) The excessive use of Internet affects the mental health of a person. Such condition is termed as _____ by doctors.

   (i) cybercrime

   (ii) identity theft

   (iii) Internet addiction

   (iv) online stealing

2. Answer the following questions in brief :   1×4=4

   (a) What is a Data Structure?

   (b) What is a function in MYSQL?

   (c) What are the two types of web page?

   (d) What is a network topology?

3. Answer the following questions :   2×4=8

   (a) How is a series data structure different from a Dataframe data structure?

   (b) Write two different methods to create a series.

   (c) Create a dataframe having two columns : Capital and Income

   Enter the data for five States of India.

   Index of the dataframe will be the name of the States.

   (d) Which function would you use to change the row index and column names in a dataframe? Write the syntax.

(4)

4. Answer the following questions : 2×4=8

   (a) Mention the three categories of MYSQL functions.

   (b) What is the difference between sysdate( ) and now( ) functions?

   (c) What is the difference between WHERE clause and a HAVING clause of SQL SELECT statement?

   (d) Sweety is using a table 'STUDENT'. It has the following columns (fields) :

   Admno, Name, Agg, Stream [Column Agg contains Aggregate marks]

   She wants to display highest Aggregate marks obtained in each stream. She wrote the following command :

   SELECT Stream, MAX (Agg) FROM STUDENT;

   But she did not get the desired result.

   Rewrite the above query with necessary changes to help her to get the desired result.

5. Answer the following questions : 2×2=4

   (a) What is a modem? What are the two types of modem?

   (b) Differentiate between Hub and Switch.

   Or

   Differentiate between a Web browser and a Web server.

(5)

6. Answer the following questions :   3×2=6

(a) If Ser is a series type object having 30 values, then what will be the output for the following ?

 (i) print (Ser.head( ))

 (ii) print (Ser.head(8))

 (iii) print (Ser.tail(11))

(b) Given a dataframe df as shown below :

	A	B	D
0	15	17	19
1	16	18	20
2	20	21	22

What will be the result of the following code statements?

 (i) df ['C'] = np.NaN

 (ii) df ['C'] = 2

 (iii) df ['C'] = [12, 15, 27]

Or

What advantages does dataframe offer over series datastructure? If you have multiple series and a single dataframe, which one would you prefer and why?

7. Answer the following questions :   3×2=6

(a) What is the significance of GROUP BY clause in a SQL Query? Write a query to count the number of employees in each job from the 'EMP' table.

(b) Write a query to display sum, average, highest and lowest salary of the employees in 'EMP' table having columns Emp_no, Emp_name and Salary.

Or

What is the use of ORDER BY clause? Write a query that sorts the data of table 'STUDENT' on the basis of Project Group (in ascending order), section (in descending order), Marks (in descending order).

8. Briefly explain the types of network on the basis of geographical spread? 3

Or

What is VoIP? Write any two advantages and disadvantages of VoIP.

9. Answer the following questions : 3×3=9

(a) What are online scams? What measures will you take to avoid online scams?

(b) Describe the following cybercrimes :

(i) Cyberbullying

(ii) Cyberstalking

(iii) Cyber Trolls

(c) What are intellectual property rights? Why should intellectual property rights be protected?

Or

What is Plagiarism? Why is it a punishable offence?

10. Answer the following questions :   4×2=8

(a) Given the following series objects :

X1		X2	
0	3	0	12
1	5	2	10
2	6	3	15
4	10	4	20
5	12	6	27

(i) What will be the result of $X1+X2$?

(ii) What will be the result of $X1-X2$?

(iii) What will be the result of $X1*X2$?

(iv) What will be the result of $X1/X2$?

Or

Write a program to create the following dataframe.

Dataframe : Class XII

Roll No.	Name	Marks
1	Amy	97·5
2	Grace	98·0
3	Susan	98·5
4	Paul	98·0
5	Ryan	98·1

(i) Display all the names of Class XII

(ii) Delete the marks column

(b) Given a dataframe 'Cities' :

	Populations	*Hospitals*	*Schools*
Delhi	10927986·0	189·0	7916·0
Mumbai	12691836·0	208·0	8508·0
Kolkata	4631392·0	149·0	7226·0
Chennai	4328063·0	157·0	7617·0
Bengaluru	5678097·0	1200·0	1200·0

Write the statements to do the following operations :

(i) Delete the first three rows

(ii) Change the column index to

POP,   HOSP, SCH

(iii) Display the 2nd, 3rd, and 4th row of the dataframe

(iv) Change the population value of Kolkata to 10527900·00

Or

Write a Python code to create a DataFrame to store weight, age and name of three people. Print the DataFrame and its transpose.

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11. Answer the following questions : 4×2=8

(a) Write a program to read from a CSV file Employee.CSV and create a dataframe from it but dataframe should not use file's column header rather should use own column headings as EmpID, EmpName, Designation and Salary. Also print the maximum Salary given to an employee.

Or

Consider a series object 's2' that stores the number of students in each Section of Class 12 Science (as shown below) :

Section	Number of Students
A	40
B	45
C	50
D	35

First two Sections have been given a task of selling tickets @150/- per ticket and the last two sections have been given a task of selling tickets @200/- per ticket as part of a social cause. Write a Python code to display how much each Section have collected.

(b) Given the following table :

Table : STUDENT

No.	Name	Stipend	Stream	Avg. Mark	Grade	Class
1	Karan	400·00	Medical	78·5	B	12B
2	Divakar	450·00	Commerce	89·2	A	11C
3	Divya	300·00	Commerce	68·6	C	12C
4	Arun	350·00	Humanities	73·1	B	12C
5	Sabina	500·00	Non-medical	90·6	A	11A
6	John	400·00	Medical	75·4	B	12B
7	Robert	250·00	Humanities	64·4	C	11A
8	Rubina	450·00	Non-medical	88·5	A	12A
9	Vikas	500·00	Non-medical	92·0	A	12A
10	Mohan	300·00	Commerce	67·5	C	12C

Give the output of the following SQL Statements :

(i) SELECT MIN (AvgMark) FROM STUDENT WHERE AvgMark < 75;

(ii) SELECT SUM (Stipend) FROM STUDENT WHERE Grade = 'B';

(iii) SELECT AVG (Stipend) FROM STUDENT WHERE Class = '12A';

(iv) SELECT COUNT (DISTINCT Stream) FROM STUDENT;

Or

Write SQL commands for the following on the basis of the given table : STUDENT.

(i) Select all the non-medical stream students from STUDENT.

(11)

(ii) List the names of those students who are in Class 12 sorted by stipend.

(iii) List all students sorted by AvgMark in descending order.

(iv) To display the contents of the table STUDENT.

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