

LIONS SCHOOL MIRZAPUR

HalfYearlyExamination(2020-21)

Class: XII

Time: 3 hrs

Subject: Informatics Practices (065)

M.M.: 70

**Note:**

*Please check, this question paper contains 6 printed pages.*

*Please check, this question paper contains 5 questions.*

*Q. No.-1 & 2 are short answer type and carry 1 Marks each.*

*Q. No.-3 & 4 carry 2 Marks each.*

*Q. No.-5(a), (b), (c), (d), (e) carry 3 Marks and 5(f), (g) carry 4 marks.*

*Attempt all the questions.*

**Section– A**

**Q1 – a)** What are dataframes? (1)

**b)** Which protocol is used to open remote machine access sessions on internet? (1)

**c)** If S1 is a series object then how will len(S1) and S1.count() behave? (1)

**d)** Write Python code to create a series object Temp2 storing temperature of seven days of week. Its indexes should be 'Sunday', 'Monday', ..... 'Saturday' (1)

**e)** Given following series objects, What will be the result of S1 – S2? (1)

S1

0	3
1	5
2	6
4	10
5	12

S1

0	12
2	10
3	15
4	20
6	27

**f)** What is broadcasting in dataframes? (1)

**g)** Identify the device that is used to connect different types of networks. It performs the necessary translation so that the connected can communicate properly. (1)

**h)** What is the difference between iterrows() and iteritems()? (1)

**Q2 – a)** Find the error in the following code fragment -- (1)

```
S2 = pd.Series( [101, 102, 102, 104] )  
print(S2.index)  
S2.index = [0, 1, 2, 3, 4, 5]  
S2[5] = 220  
print(S2)
```

**b)** Name two transmission media for networking. (1)

**c)** Write one advantage of Star topology as compared to Bus topology. (1)

**d)** Which argument would you give to read\_csv() if you only want to read top 10 rows of data? (1)

**e)** Which function lets you store data of a dataframe into an SQL table? (1)

**f)** If query is a string storing an SQL statement. Write statements so that the data is fetched based on query from SQL database Mydata.db (1)

**g)** What is VoIP and what facilities are offered by VoIP? (1)

**h)** What do you mean by data encryption? (1)

**i)** Find the error and make the correction (1)

```
data = np.array( ['a', 'b', 'c', 'd', 'e', 'f'] )  
s = pd.Series(data, index = [100, 101, 102, 103, 104, 105] )  
print( s[102, 103, 104] )
```

**Q3 - a)** Differentiate between Internet and Intranet. (2)

**b)** How is Coaxial cable different from Optical Fiber cable? (2)

**c)** Why does following code causes error? (2)

```
dfc1 = pd.DataFrame( [2, 3, 4] )  
dfc1 = pd.DataFrame( [ [2, 3, 4] ] )  
print(dfc1 == dfc2)
```

**d)** What do you understand by Network Topology? Name most popular topologies. (2)

e) Jai is an IT expert and a freelancer. He recently used his skills to access the administrator password for the network server of MegaTech Corporation Ltd. And provided confidential data of the organization to its Director, informing him about the vulnerability of their network security. Out of the following options (i) to (iv), which one most appropriately defines Jai? (2)

Justify the answer for your chosen option :

- i) Hacker                      ii) Cracker                      iii) Operator                      iv) Network Admin

f) Given a dataframe as show below => (2)

	A	B	C
0	1	2	3
1	4	5	6

Find the error in the following statements & specify the reason (don't write correct statement)

- i) `mdf.drop(["Total", "Order"], axis=1)`  
 ii) `mdf.drop(["A", "D"])`

g) Give one similarity and one difference between Repeater and Hub (2)

h) What are protocols? Write name of two protocols used in sending and receiving emails. (2)

Q4 – a) A dataframe fdf stores data about passengers, flights and years. First few rows of dataframe are shown below -- (2)

	Year	Month	Passengers
0	2009	January	112
1	2009	February	118
2	2009	March	132
3	2009	April	129
4	2009	May	121

Using above dataframe, write commands for the following –

- i) Compute total passengers per year  
 ii) Compute average passengers per year

b) How are `reindex()` and `reindex-like()` similar and different? (2)

c) Write a program that reads from a CSV file where the separator character is '\$'. Read only first 5

rows in your dataframe. Give Column Heading as ItemName, Quantity, Price. Make sure to read first row as data and not as column headers. (2)

**d)** Three Series objects store the marks of 10 students in three terms. Roll numbers of students form the index of these series objects. The three series objects have the same indexes. (2)

Calculate the total weighted marks obtained by students as per the following formula:

$$\text{Final marks} = 25\% \text{ Term1} + 25\% \text{ Term2} + 50\% \text{ Term3}$$

**e)** Given a series object S13 as shown below => (2)

A	7600
B	5600
C	7000
D	7000
dtype:	int64

Why is the following code producing error while working on Series object S13?

```
import pandas as pd
S13.index = range(0, 5)
print(S13)
```

**f)** The head() and tail() extract rows or columns from a dataframe. Explain. (2)

**g)** Out of the following identify the Client-Side and Server-Side script. (2)

- i) JavaScript
- ii) ASP
- iii) VBScript
- iv) JSP

**Q5 – a)** How is Series data structure different from DataFrame data structure? Give one example of each. (3)

**b)** Given a DataFrame df1 as shown below => (3)

City	MaxTemp	MinTemp	RainFall
Delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
Kolkata	39	23	41.8

- i) Write command to compute sum of every column of the dataframe.
- ii) Write command to compute mean of column Rainfall.
- iii) Write command to compute median of the MaxTemp column.

c) Explain briefly the CSV format of storing files. (3)

d) Write a program that lists only those records from SQL table Stud that have marks in the range 50-60. **NOTE:** Table Stud table is in sqlite3 data new.db, stored at C:\sqlite3 folder. (3)

e) Given a data frame namely data as shown in adjacent figure (fruit names are row labels). Write code statement to – (3)

	Color	Count	Price
Apple	Red	3	120
Apple	Green	9	110
Pear	Red	25	125
Pear	Green	26	150
Lime	Green	99	70

- i) Find all rows with the label “Apple”. Extract all columns.
- ii) List only the columns Count and Price using loc.
- iii) List only rows with labels “Apple” and “Pear” using loc.

f) Write a program that stores the sales of 4 fast moving items of a store for 4 month in 4 series objects i.e. S1 series object stores sales of these 4 items in 1<sup>st</sup> month, S2 series object stores sales of these 4 items in 2<sup>nd</sup> month and so on. (4)

The program should display the summary sales report like this:

Total yearly Sales, itemwise: <should display sum of items sales over the months>

Maximum sales of item made: <name of item that was sold the maximum in whole year>

Maximum sales for individual items=>

Maximum sales of item1 made : <month in which that item sold the maximum>

Maximum sales of item2 made : <month in which that item sold the maximum>

Maximum sales of item3 made : <month in which that item sold the maximum>

Maximum sales of item4 made : <month in which that item sold the maximum>

**g)** Predict the output of the following code one by one. For every next code fragment, consider that the changes by previous code fragment are in place. That is, for code fragment (ii), changes made by code fragment (i) are persisting. (4)

```
i) import pandas as pd
    columns = ['2015', '2016', '2017', '2018']
    index = ['Messi', 'Ronaldo', 'Neymar', 'Hazard']
    df = pd.DataFrame(columns=columns, index=index)
    print(df)
    df.to_csv("C:\one.csv")

ii) df[ '2015' ][ 'Messi' ] = 12
     df[ '2016' ][ 'Ronaldo' ] = 11
     df[ '2017' ][ 'Neymar' ] = 8
     df[ '2018' ][ 'Hazard' ] = 16
     print(df)
     df.to_csv("C:\two.csv", sep = '@')
```