New Digamber Public School

Second Term Examination – 2019-20

Class-**XII, Subject: Informatics Practices - (065)**

Time: 3 hrs **MM: 70**

Q.1	(i) _____ function is used to perform aggregation via groupby object. (a) agg( ) (b) max() (c) cov(a,b) (d) index() (ii)It is a registered rights granted for new invention (only for tangible objects). (a) Pair Programming (b) Component Based (c) Design (d) Patent (iii) If you have a numpy array, in a variable p4, how would you access the data item at the 3th column, 2nd row? (a) p4[2,5] (b)p4[1,4] (c) p4[1,2] (d) p4[4,1] (iv) _____ software model gives the reuse environment for software development. (a) Pair Programming (b) Component Based (c) Agile (d) Waterfall (v) It is unauthorised attempt to obtain sensitive information such as username, password etc. (a) Pharming (b) None (c) Cyber Stalking (d) Phishing (vi) It is a widely used free software license which gives freedom to run, study, share and modify the software to end users. (a) GPL (b) Apache (c) None (d) CC (vii) The method which is used to change the order or existing indices/labels. (a) agg( ) (b) rename( ) (c) sort( ) (d) reindex( ) (viii) The default value of skipna attribute in mean( ) function is _____. (a) True (b) False (c) true (d)false (ix) The default value of axis attribute in concatenate ( ) method is _____. (a) 0 (b) false (c) true (d)1 (x) <array>.T command is used to _____ 2D array. (a) traverse (b) terminate (c) target (d) transpose	10
Q.2	Convert a 1D array to a 2D array with 3 rows and 4 columns. i.e., Input : import numpy as np A=np.arange(12) Output : array([[0,1,2,3], [4,5,6,7], [8,9,10,11]])	1
Q.3	Consider the ndarrays ar1 and ar2 given below. What will be the resultant array,if the following statement is given? np.hstack((ar1,ar2)) ar1= array([[1,2,3], [4,5,6], [7,8,9]]) ar2=array([[1,2,3], [5,6,7], [9,10,11]])	1
Q.4	What is the default value for inplace argument in sort_values()?	1
Q.5	Rewrite the following code using pipe( ) function: np.sqrt(np.multiply(df.add(30),3) (numpy already imported as np) (dataframe object:df)	1
Q.6	When the fromiter( ) is preferred over array( )?	1

Q.7	Consider an array as shown below: array([[1,2,3,4], [6,5,4,7], [10,1,2,3]]) Write command to accomplish the array split as depicted below: array([[1,2,3,4], → array([[1,2,3,4]]) [6,5,4,7] → array([[6,5,4,7]]) [10,1,2,3]]) → array([[10,1,2,3]])	1
Q.8	What is the difference between apply ( ) and applymap( ) functions? OR In which situation the function apply ( ) will behave like applymap( )?Give example.	2
Q.9	Consider following dataframe A1: **Classes Country Tutor** 0 25 USA TAHIRA 1 35 UK ANUSHA 2 45 USA TAHIRA 3 55 UK ANUSHA 4 50 BRAZIL JACOB 5 70 JAPAN VENKAT 6 60 BRAZIL JACOB 7 50 JAPAN VANKAT 8 40 UK ANUSHA 9 50 USA TAHIRA 10 30 JAPAN JACOB Predict the output: (i) A1.groupby('Tutor')['Classes'].transform(np.mean) (numpy already imported) (ii) A1['ClassesMean']=A1.groupby('Tutor')['Classes'].transform(np.mean) print (A1)	2
Q.10	What is the difference between pivot ( ) and pivot_table( ) functions?	2
Q.11	Consider following dataframe A1: **Classes Country Tutor** 0 25 USA TAHIRA 1 35 UK ANUSHA 2 45 USA TAHIRA 3 55 UK ANUSHA 4 50 BRAZIL JACOB 5 70 JAPAN VENKAT 6 60 BRAZIL JACOB 7 50 JAPAN VANKAT 8 40 UK ANUSHA 9 50 USA TAHIRA 10 30 JAPAN JACOB Predict the output: A2=A1.groupby(['Country','Tutor']) (i) A2.get_group(('USA','TAHIRA")) (ii) A2.size( )	2
Q.12	DataFrame : A **2016 2018 2020** Q1 25 15 25 Q2 35 20 35 Q4 45 25 45 Write program to reindex the above dataframe 'A' so that two new rows get added to it while the previous data is retained.Fill the new rows with value 10.0.	2

Q.13	Predict the output: DataFrame : df **2016 2018 2020** Q1 25 15 25 Q2 35 20 35 Q4 45 25 45 DataFrame : df1 **2016 2018 2020** Q1 40 10 30 Q2 20 30 40 Q3 30 20 10 print (df.reindex_like(df1))	2
Q.14	Write a program using given data to create dataframe and sort the dataframe by index in descending order. DataFrame : Record **Name Age Score** 0 Raj 25 80 1 Virat 30 90 2 Ronit 28 100 3 Mehul 32 75 4 Rahul 34 65 5 Rounak 26 85	2
Q.15	Find the output for the following code: import pandas as pd data=[[‘Rita’,10],[‘Ritu’,12],[‘Reena’,14],[‘Ranjeet’,16]] q=pd.DataFrame(data, columns=[‘Name’, ‘Age’]) print(q)	2
Q.16	Given following ndarray A1: array([[1,2,3], [4,5,6], [7,8,9]]) What will be the output produced by the following array slices? (i) A1[: : 3,: : 2] (ii) A1[: : -1,: : -1]	2
Q.17	What are software process activities? OR Define the following : (i) Scrum master (ii) Product backlog	2
Q.18	Explain Waterfall model. OR What is agile software development?	2
Q.19	Define the following terms in the context of Version control system: (i) Working copy (ii) Commit (iii) Repository (iv) Pull OR Define the following terms in the context of Use-case diagrams: (i) Use-case (ii) include relationship (iii) actor (iv) extend relationship	2
Q.20	What is Net neutrality? Does India impose Net neutrality by law?	2

Q.21 Consider dataframe wdf as shown below: [2]

DataFrame : wdf

	MinTemp	MaxTemp	Rainfall	Evaporation
0	2.9	13.0	24.5	0.0
1	2.5	10.0	20.5	3.2
2	6.3	9.0	18.5	0.2
3	5.5	12.0	33.5	0.3
4	4.3	13.0	35.5	1.2
5	2.8	14.0	32.5	0.6

(i) Write command to calculate maximum value for each of the rows.

(ii) Write command to calculate variance for column Rainfall.

Q.22 Consider the following ndarray AB: [2]

```
array([[2,4,6],
       [8,10,12],
       [14,16,18]])
```

Write code to extract the subset from the ndarray AB, containing elements whose Cube is fully divisible by 6.

Q.23 Write commands to perform following operations on two 3x3 ndarrays namely X and Y: [2]

(i)Adding 10 to X

(ii)Calculate remainder of all elements of X when divided by 4.

Q.24 Predict the output of the following code fragment: [2]

```
x=[20,10,30,40,50,60,100,15]
x1,x2,x3=np.split(x,[3,5])          (numpy already imported)
print(x1,x2,x3)
```

Q.25 Name any two functions used for joining two or more ndarrays. [2]

Q.26 Name any two functions using which you can perform arithmetic operations on ndarrays. [2]

Q.27 Given a dataframe T as: [2]

	Year	Month	Passengers
0	2009	January	100
1	2010	February	50
2	2011	March	30
3	2010	January	80
4	2009	March	40

Write python code to

(i)Compute total passengers per year.

(ii) Compute average passengers per month.

Q.28 Consider the dataframe DF2 given below. Using the same dataframe data,answer the following: [3]

(i) List only the columns Count and Price using loc.

(ii) List only rows with labels ‘Apple’ and ‘Pear’ using loc.

(iii) List only rows with index 1, 2, 3 and 4 using iloc.

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

Q.29	Assume following data is stored in data frame named as df1: **Name of Employee** **Sales** **Quarter** **State** RSahay 125600 1 Delhi George 235600 1 Tamil Naidu JayaPriya 213400 1 Kerala ManilaSahai 189000 1 Haryana RymaSen 456000 1 West Bengal ManilaSahai 172000 2 Haryana JayaPriya 201400 2 Kerala Write following commands: (i) Find total sales per state (ii) find total sales per employee (iii)find total sales both employee wise and state wise (iv)find mean, median and min sale state wise (v)find maximum sale by individual	5
Q.30	Write short notes on the following: (i) Crowd sourcing (ii) Smart mobs (iii)Plagiarism	6

****** All the Best*****