

KENDRIYA VIDYALAYAS- CHENNAI REGION

PREBOARD EXMINATION -2019-20

CLASS : XII

SUBJECT:INFORMATICS PRACTICES

ANSWER KEY

SECTION-A

1	a)	<p>Find the output of following program.</p> <pre>import numpy as np a=np.array([30,60,70,30,10,86,45]) print(a[-2:6])</pre> <p>Ans: [86] 1 mark for the correct output</p>	1
	b)	<pre>x=np.array([1,2,3]) y=np.array([3,2,1]) z=np.concatenate([x,y]) print(z)</pre> <p>Ans: [1 2 3 3 2 1] 1 mark for the correct answer</p>	1
	c)	<p>Mr. Shiv wants to plot a scatter chart for the given set of values of subject on x-axis and number of students who opted for that subject on y-axis. Complete the code to perform the following :</p> <p>(i) To plot the scatter chart in statement 1 (ii) To display the scatter chart in statement 2</p> <pre>import matplotlib.pyplot as plt x=['Hindi', 'English', 'Math', 'Science', 'SST'] y=[10,20,30,40,50] _____statement 1 _____statement 2</pre> <p>Ans: plt.scatter(x,y) plt.show() (1/2 mark for each correct line of the answer)</p> <p align="center">OR</p> <p>MrAjay wants to plot a horizontal bar graph of the above given set of values with programming language on x axis and its popularity on y axis with following code.</p> <pre>importmatplotlib.pyplotasplt x =['Java','Python','PHP','JS','C#','C++'] popularity =[22.2,17.6,8.8,8,7.7,6.7] _____ Statement 1</pre> <pre>plt.xlabel("Popularity") plt.ylabel("Languages") plt.show()</pre> <p>Complete the code by writing statement1 to print the horizontal bar graph with colour green</p> <p>Ans: plt.barh(x, popularity, color='green') 1 mark for the correct answer</p>	1

d)	<p>Suppose you want to join train and test dataset (both are two numpy arrays train_set and test_set) into a resulting array (resulting_set) to do data processing on it simultaneously. This is as follows:</p> <pre>train_set = np.array([1, 2, 3]) test_set = np.array([[0, 1, 2], [1, 2, 3]]) resulting_set --> [[1, 2, 3], [0, 1, 2], [1, 2, 3]]</pre> <p>How would you join the two arrays?</p> <p>Ans: <code>resulting_set = np.vstack([train_set, test_set])</code> 2 marks for the correct output with syntax</p>	2										
e)	<p>Create a horizontal bar graph of following data. Add suitable labels.</p> <table border="1"> <thead> <tr> <th>City</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>Delhi</td> <td>23456123</td> </tr> <tr> <td>Mumbai</td> <td>20083104</td> </tr> <tr> <td>Bangalore</td> <td>18456123</td> </tr> <tr> <td>Hyderabad</td> <td>13411093</td> </tr> </tbody> </table> <p>Ans:</p> <pre>import numpy as np import matplotlib.pyplot as plt Cities=['Delhi','Mumbai','Bangalore','Hyderabad'] Population=[23456123,20083104,18456123,13411093] plt.barh(Cities,Population) plt.ylabel('Cities') plt.xlabel('Population') plt.show()</pre> <p>½ mark for lists , ½ mark for barh() function , ½ mark for labels , ½ mark for show()</p>	City	Population	Delhi	23456123	Mumbai	20083104	Bangalore	18456123	Hyderabad	13411093	2
City	Population											
Delhi	23456123											
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Hyderabad	13411093											
f)	<p>Write a Pandas program to convert a NumPy array to a Pandas series</p> <p>Ans:</p> <pre>import numpy as np import pandas as pd np_array = np.array([10, 20, 30, 40, 50]) print("NumPy array:") print(np_array) new_series = pd.Series(np_array) print("Converted Pandas series:") print(new_series)</pre> <p>2 marks for the correct code / example code snippet</p>	2										
g)	<p>Write a NumPy program to create a 2d array with 1 on the border and 0 inside.</p> <p>Original array: [[1. 1. 1. 1. 1.]</p>	3										

		<pre>[1. 1. 1. 1. 1.] [1. 1. 1. 1. 1.] [1. 1. 1. 1. 1.] [1. 1. 1. 1. 1.]]</pre> <p>Expected Output: 1 on the border and 0 inside in the array</p> <pre>[[1. 1. 1. 1. 1.] [1. 0. 0. 0. 1.] [1. 0. 0. 0. 1.] [1. 0. 0. 0. 1.] [1. 1. 1. 1. 1.]]</pre> <p>Ans: import numpy as np x = np.ones((5,5)) print("Original array:") print(x) print("1 on the border and 0 inside in the array") x[1:-1,1:-1] = 0 print(x)</p> <p>3mark : 1 mark for creating array , 2 marks for extracting</p>	
2	a)	<p>_____ function applies the passed function on each individual data element of the dataframe.</p> <p>i) apply() ii) applymap() iii) pivot() iv) pivot_table()</p> <p>Ans: applymap() 1 mark for the correct answer</p>	1
	b)	<p>A dictionary smarks contains the following data: Smarks={'name':['rashmi','harsh','priya'],'grade':['A1','A2','B1']}</p> <p>Write a statement to create DataFrame called df. Assume that pandas has been imported as pd.</p> <p>Ans: import pandas as pd Smarks={'name':['rashmi','harsh','priya'],'grade':['A1','A2','B1']}</p> <pre>df=pd.DataFrame(Smarks) print(df)</pre> <p>1 mark for correct answer</p> <p style="text-align: center;">OR</p> <p>In pandas S is a series with the following result: S=pd.Series([5,10,15,20,25]) The series object is automatically indexed as 0,1,2,3,4. Write a statement to assign the series as a,b,c,d,e index explicitly.columns.</p> <p>Ans: import pandas as pd S=pd.Series([5,10,15,20,25],index=['a','b','c','d','e'])</p>	1

	print(S) 1 mark for correct answer																																											
c)	Which function is used to generate a quartile in python? Ans: quantile() 1 mark for correct answer	1																																										
d)	Write python statement to delete the 3 rd and 5 th rows from dataframe df. Ans: df.drop([2,4]) 1 mark for correct answer	1																																										
e)	What is the use of pipe() in python pandas? Give example. Ans: pipe() function performs the operation on the entire dataframe with the help of user defined or library functions. Any example. 1 mark for correct definition 1 mark for correct example	2																																										
f)	Write python statements to create a data frame for the following data. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Name</th> <th>Age</th> <th>Designation</th> </tr> </thead> <tbody> <tr> <td>RAJIV</td> <td>20</td> <td>CLERK</td> </tr> <tr> <td>SAMEER</td> <td>35</td> <td>MANAGER</td> </tr> <tr> <td>KAPIL</td> <td>45</td> <td>ACCOUNTANT</td> </tr> </tbody> </table> Ans: import pandas as pd d={'Name':['RAJIV','SAMEER','KAPIL'], 'Age':[20,35,45],'Designation':['CLERK','MANAGER','ACCOUNTANT']} df=pd.DataFrame(d) print(df) ½ mark for importing pandas, 1 mark for creating dictionary , ½ mark for using DataFrame function	Name	Age	Designation	RAJIV	20	CLERK	SAMEER	35	MANAGER	KAPIL	45	ACCOUNTANT	2																														
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g)	A dataframe df1 is given with following data: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Name</th> <th>English</th> <th>Accounts</th> <th>Economics</th> <th>Bst</th> <th>IP</th> </tr> </thead> <tbody> <tr> <td>Aashna</td> <td>87.0</td> <td>76.0</td> <td>82.0</td> <td>72.0</td> <td>78.0</td> </tr> <tr> <td>Simran</td> <td>64.0</td> <td>76.0</td> <td>69.0</td> <td>56.0</td> <td>75.0</td> </tr> <tr> <td>Jack</td> <td>58.0</td> <td>68.0</td> <td>78.0</td> <td>63.0</td> <td>82.0</td> </tr> <tr> <td>Raghu</td> <td>74.0</td> <td>72.0</td> <td>67.0</td> <td>64.0</td> <td>86.0</td> </tr> <tr> <td>Somya</td> <td>87.0</td> <td>82.0</td> <td>78.0</td> <td>66.0</td> <td>67.0</td> </tr> <tr> <td>Ronald</td> <td>78.0</td> <td>68.0</td> <td>68.0</td> <td>71.0</td> <td>71.0</td> </tr> </tbody> </table> Write the command to given an increment of 5% to all students to DataFrame df1 using applymap() function. Ans: def increase5(x): return x + x*0.05 df1.applymap(increase5)	Name	English	Accounts	Economics	Bst	IP	Aashna	87.0	76.0	82.0	72.0	78.0	Simran	64.0	76.0	69.0	56.0	75.0	Jack	58.0	68.0	78.0	63.0	82.0	Raghu	74.0	72.0	67.0	64.0	86.0	Somya	87.0	82.0	78.0	66.0	67.0	Ronald	78.0	68.0	68.0	71.0	71.0	3
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Ronald	78.0	68.0	68.0	71.0	71.0																																							
Or																																												

Consider the data frame
dfC = pd.DataFrame({'Student Name' : ['TANVI GUPTA', 'MRIDUL KOHLI', 'DHRUV TYAGI', 'SAUMYA PANDEY', 'ALEN RUJIS', 'MANALI SOVANI', 'AAKASH IRENGBAM', 'SHIVAM BHATIA'],'Height' : [60.0, 62.9, np.nan, 58.3, 62.5, 58.4, 63.7, 61.4], 'Weight' : [54.3, 56.8, 60.4, 58.3, np.nan, 57.4, 58.3, 55.8]})

- (i) Count the number of non-null value across the column for DataFramedfC.
- (ii) Find the most repeated value for a specific column 'Weight' of DataFramedfC.
- (iii) Find the median of hieght and weight column for all students using DataFramedfC

Ans:

- (i) dfC.count(axis='columns')
- (ii) dfC['Weight'].mode()
- (iii) dfC.loc[:, ['Height', 'Weight']].mean()

h) Consider the following data frame of automobile

index	company	body-style	wheel-base	num-of-cylinders	price
0	bmw	sedan	101.2	four	16925
1	bmw	sedan	101.2	six	20970
2	honda	sedan	96.5	four	12945
3	honda	sedan	96.5	four	10345
4	toyota	hatchback	95.7	four	5348
5	toyota	hatchback	95.7	four	6338

- (i) From the given data set print first and last five rows
- (ii) Find the most expensive car company name
- (iii) Sort all cars by price columns

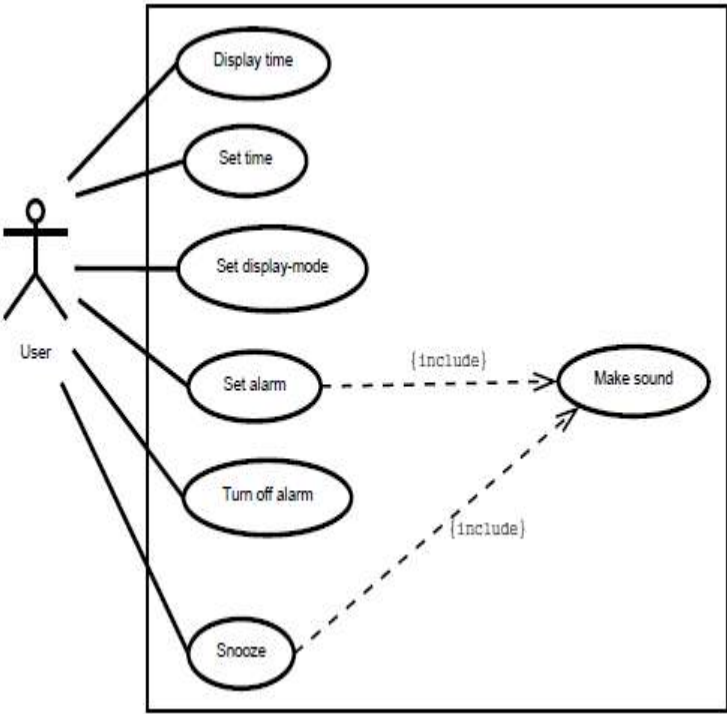
Ans:

- (i) df.head(5)
df.tail(5)
- (ii) df = df [['company','price']][df.price==df['price'].max()]
- (iii) carsDf = df.sort_values(by=['price', 'horsepower'], ascending=False)

i) A dataframedfB is given with following data:

Itemno	ItemName	Color	Price
1	Ball Pen	Black	15.0
2	Pencil	Blue	5.5
3	Ball Pen	Green	10.5
4	Gel Pen	Green	11.0
5	Notebook	Red	15.5
6	Ball Pen	Green	11.5
7	Highlighter	Blue	8.5

		<p>8 Gel Pen Red 12.5 9 P Marker Blue 8.6 10 Pencil Green 11.5 11 Ball Pen Green 10.5</p> <p>Answer the following questions (a) Display Color and corresponding item name. (b) Find the maximum price of each ItemName. (c) Find the minimum price of each ItemName. (d) Count the number of items in each ItemName category.</p> <p>Ans: (a) <code>dfX = dfB(['ItemName', 'Color'])</code> (b) <code>dfB.groupby('ItemName').Price.max()</code> (c) <code>dfB.groupby('ItemName').Price.min()</code> (d) <code>dfB.groupby('ItemName')['Color'].apply(dfB.count())</code> 1 mark for each correct answer</p>	
SECTION- B			
3	a)	<p>What is the simplest model of software development paradigm? (i) Spiral model (ii) Big Bang model (iii) V-model (iv) Waterfall model</p>	1
	b)	<p>RAD Software process model stands for _____ Rapid Application Development</p>	1
	c)	<p>Scrum event is divided into how many parts? Name them Scrum event has four parts: Sprint, Daily Scrum, Sprint Review, Sprint Retrospective</p>	1
	d)	<p>Write two advantages and disadvantages of waterfall model. Advantages of waterfall model Easy to arrange task Clearly defined stages Easy to manage Well understood milestones Disadvantages of waterfall model Poor model for long project Cannot fulfill changing requirement No working software is developed till last phase Difficult to measure the progress in phases (1 +1 for two valid advantages and disadvantages) OR Drawbacks of Pair programming: Different skill set may kill the project. Disagreement may occur between programmers. Absence of partners (2 marks for valid answer)</p>	2
	e)	<p>What is Agile Manifesto? (i) INDIVIDUALS AND INTERACTIONS</p>	3

	<p>(ii) WORKING SOFTWARE (iii) CUSTOMER COLLABORATION (iv) RESPONDING TO CHANGE OR Write the advantages and disadvantages of Component Based Model Advantages Reduce the cost & risk of software development. Reduce the amount of software to be developed Faster delivery of software. Disadvantages Requirement changes effect the software development. Control over the system evolution is lost</p>	
f)	<p>Explain Git and its features Git is a Distributed Version Control tool that supports distributed non-linear workflows by providing data assurance for developing quality software. Features of Git: Free and open source: It is freely available to download and also you can modify the source code of it. Automatic Backup of the Whole Repository: In case of loss of repository, it can be recovered from other workstations too. Maintain full history of the changes: When pull operation is performed, developer gets all the previous edit history. Allow offline Repo access: Developer can work with its repository offline. Efficient Algorithm: Git provides best algorithms for branching and merging and all the operations to work smoothly. (1 mark for explanation of git, 2 marks for any two features)</p>	3
g)	<p>Alarm Management System</p>  <p>OR Actors: Cellular network and User Use cases: Place phone call, receive phone call, use scheduler, place conference call and receive additional call Relationship:</p>	4

	<p>Place phone call <<extends>> Place conference call Receive phone call <<extends>> Receive additional call Details of Use-cases: (i) Place Phone call- Type- Standard use case Linked use cases: Place conference call (extension use case) Actors involved: Cellular network and user Main flow: (a) The use case is activated by user and cellular network. (b) This use case can activate the place conference call use case. (ii) Receive phone call- Type- Standard use case Linked use cases: receive additional call (extension use case) Actors involved: Cellular network and user Main flow: (a) The use case is activated by user and cellular network. (b) This use case can activate receive additional call use case. (iii) Use scheduler- Type- Standard use case Linked use cases: None Actors involved: user Main flow: The use case is activated by user. (iv) Place conference call- Type- Extension use case Actors involved: user, cellular network Main flow: The use case is activated by Place phone call(not always). Return to 'Place phone call' main flow. (v) Receive additional call- Type- Extension use case Actors involved: user, cellular network Main flow: The use case is activated by Receive Phone call(not always). Return to 'Receive phone call' main flow.</p>	
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SECTION- C

4	a)	Name any two files that are found in project's application folder ½ mark for one valid file name	1
	b)	What is the difference between Update and Alter Commands of SQL? OR What is the difference between commit and rollback command of SQL? ½ mark for each correct difference	1
	c)	Differentiate between GET and POST methods? ½ mark for each proper difference	1
	d)	Find the error in the following command: Select * from Employee where DOJ is 2018-04-01; Select * from Employee where DOJ = '2018-04-01';	1
	e)	What is the difference between Char and Varchar data type of SQL? ½ mark for each correct difference	1
	f)	What are the different keys available in SQL? Explain with example 1 mark for each key with proper explanation and example	3
	g)	What do you understand by degree and cardinality of a relation? If table1 having 3 rows and 5 columns and table2 having 2 rows and 4 columns then what will be the degree and cardinality of the Cartesian product of table1 and table2	3

1 mark for difference , 1 mark for Degree :9, 1 mark for cardinality :6

h) Write SQL Commands and the output for following queries .

4

Table: TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K.Niwal	2015-12-13	200	V01	32
103	Fredrick Sym	2016-03-21	120	V03	45
105	Hitesh Jain	2016-04-23	450	V02	42
102	Ravi Anish	2016-01-13	80	V02	40
107	John Malina	2015-02-10	65	V04	2
104	Sahanubhuti	2016-01-28	90	V05	4
106	Ramesh Jaya	2016-04-06	100	V01	25

Note:

- Km is Kilometers travelled
- NOP is number of passengers travelled in vehicle

To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

AnsSELECT CNO, CNAME, TRAVELDATE FROM TRAVEL ORDER BY CNO
DESC;

To display the CNAME of all the customers from the table TRAVEL who are traveling by vehicle with code V01 or V02.

AnsSELECT CNAME FROM TRAVEL WHERE VCODE='V01' OR
VCODE='V02';

OR

SELECT CNAME FROM TRAVEL WHERE VCODE IN ('V01', 'V02');

To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2015 - 12 - 31' and '2015 - 05 - 01' .

AnsSELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE >=
'2015/05/01'

AND TRAVELDATE <= '2015/12/31'

;

OR

**SELECT CNO, CNAME from TRAVEL
WHERE TRAVELDATE BETWEEN '2015/05/01'
AND '20151231'**

;

OR

**SELECT CNO, CNAME from TRAVEL
WHERE TRAVELDATE <= '2015/12/31'
AND TRAVELDATE >= '2015/05/01'**

;

OR

**SELECT CNO, CNAME from TRAVEL
WHERE TRAVELDATE BETWEEN '2015/12/31'
AND '2015/05/01'**

SELECT COUNT(*),VCODE FROM TRAVEL
GROUP BY VCODE HAVING COUNT(*)>1;

AnsCOUNT(*) VCODE

2 V01

2 V02

(½ Mark for correct output)

SELECT DISTINCT VCODE FROM TRAVEL;

Ans **DISTINCT VCODE**

V01

V02

V03

V04

V05OR

Consider the table Employee table with the following structure:

Column name	Data Type	Size	Constraint
Empno	Char	4	Primary Key
Name	Varchar	25	
Dateofjoin	Date		
Gender	Char	1	
Salary	Decimal	8,2	
Deptcode	Char	4	

Write a python program to read all the rows from Employee table whose salary is between 40000 and 60000. Display the rows in a formatted manner. P-418 saho

1 mark for opening database connection

½ mark for creating cursor

½ mark for sql query

½ mark for fetchall()

½ mark for correct for loop

1 mark for printing in correct format

SECTION- D

5	a)	Expand the following General Public License World wide web Consortium	i) GPL ii)W3C	1
	b)	What is a cyber attack? Cyber attack is an umbrella term used to classify different computer and network attacks or activities like extortion, identity theft, email hacking, hardware stealing and physical security breaching.		1
	c)	a)Copyright		1
	d)	Amit used a pen drive to copy files from his friend' s laptop to his office computer. Soon his office computer started abnormal functioning. Sometimes it would restart by itself and sometimes it would stop functioning totally. Which of the following options out of (i) to (iv), would have caused the malfunctioning of the computer. Justify the reason for your chosen option: (i) Computer Worm (ii) Computer Virus (iii) Computer Bacteria (iv) Trojan Horse Ans: (ii) Computer Virus		2

	<p>OR</p> <p>(iv) Trojan Horse</p> <p>Pen drive containing Computer Virus / Trojan Horse was used before the abnormal functioning started, which might have corrupted the system files.</p> <p>Computer Virus/ Trojan Horse affects the system files and start abnormal functioning in the computer</p>	
e)	1 mark for each correct advantage of Online Campaigning?	2
f)	<p>What do understand by Internal Threats to the System? Give two examples</p> <p>Internal Threats: Data and programs within a computer system are vulnerable to deliberate and accidental destruction both from within an organization and from outside it. When it is floppy disk, Which after months of the project loading without complaint. comes up with a message, disk unreliable, then it is termed as Internal Threat to the system.</p> <p>Some Internal Threats to the System are as follows.</p> <p>(i) Hardware Failure:- A disk head crash for example can make the contents of a hard disk unreadable.</p> <p>(ii) Faulty Procedures:- A careless employees who makes entries into an accounts system can cause havoc.</p> <p>(iii) Natural Disasters:- Fire flood hurricanes and earthquakes can destroy a building taking every last customer record with it.</p> <p style="text-align: center;">OR</p> <p>What is Plagiarism? How to avoid plagiarism?</p> <p>Plagiarism is usually defined as the "wrongful appropriation" of another's words, thoughts, ideas, or expressions and the misrepresentation that they are the representer's original work. Of course, with a definition that broad and vague, most any sort of researched work might be considered plagiarized. However, plagiarism is considered academic dishonesty, but is not a crime, per se.</p> <p>Use quotation mark around someone else's phrase or words</p> <p>Cite the material</p> <p>Get involved in the work you are expected to do. This will reduce the chances of plagiarism.</p> <p>Structure and plan your writing well in advance.</p> <p>Use plagiarism checkers</p> <p>Write bibliography for your work</p> <p>Don't forget your online resources</p>	3