

KENDRIYA VIDYALAYA SANGATHAN, JAIPUR REGION
PREBOARD – 1 (2020-21)
INFORMATICS PRACTICES (065)
CLASS: XII

Time: 3 Hrs

Max.Mark: 70

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
 - a. Section – I is short answer questions, to be answered in one word or one line.
 - b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
 - a. Section-I is short answer questions of 2 marks each in which two questions have internal options.
 - b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
 - c. Section-III is very long answer questions of 5 marks each in which one question has internal option.

Part - A		
Section - I		
Attempt any 15 questions from questions 1 to 21		
1	State whether True or False : i) The MAC address refers to the physical address assigned by NIC manufacturer ii) OSS and Proprietary software are freely available.	1
2	Fill in the blanks : After writing all the command/functions to make a graph/chart we need to use_____ to display the graph. a. plt.show() b. plt.display() c. plt.title() d. pyplot.picture()	1
3	Write the output of the following SQL command.	

	<p>select pow(2.37,3.45);</p> <p>a. 17.62</p> <p>b. 19.62</p> <p>c. 18.35</p> <p>d. 15.82</p>	1
4	<p>import pandas as pd1</p> <p>s = pd1.Series([1,2,3,4,5],index = ['a','b','c','d','e'])</p> <p>print (s.head())</p> <p>print (s.head()) statement will print first _____ values</p> <p>a. 3</p> <p>b. 2</p> <p>c. 5</p> <p>d. 1</p>	1
5	<p>Given the following Series. Write the output.</p> <p>import pandas as pd1</p> <p>s = pd1.Series([1,2,3,4,5],index = ['a','b','c','d','e'])</p> <p>print (s[-3:])</p> <p>a. c 3 d 4 e 5 dtype: int64</p> <p>b. a 1 b 2 dtype: int64</p> <p>c. a 1 b 2 c 3 dtype: int64</p>	1
6	<p>To set X and Y label we use pyplot functions ____and ____ respectively.</p> <p>a. setx(), sety()</p> <p>b. labelx(), labely()</p> <p>c. xlabel(),ylabel()</p> <p>d. xticks(),yticks()</p>	1

7	<p>_____ is networking device capable to convert protocols so that two different network architecture based system can communicate with each other.</p> <p>a. Router b. Bridge c. Gateway d. Modem</p>	1
8	<p>In a DataFrame, Axis= 0 represents the_____ elements.</p> <p>a. Column b. Row</p>	1
9	<p>In _____topology, If one link fails the network can still function.</p> <p>a. Ring b. Star c. Mesh d. Bus</p>	1
10	<p>_____is used to host the web sites and deliver the resources requested through web browser.</p> <p>a. Webpage b. Web Server c. Web Browser d. Web Client</p>	1
11	<p>Having clause is used with _____function.</p> <p>a. Math function b. Text function c. Date Function d. Aggregate Function</p>	1
12	<p>_____is the use of technology to harass, threaten or humiliate a target.</p> <p>a. Phishing b. Cyberbullying c. Hacking d. Cracking</p>	1
13	<p>In Pandas the function used to gets rows (or columns) with particular labels from the index.</p> <p>a. iloc()</p>	1

	b. loc() c. ilabel() d. id()	
14	_____ is a property created by a person or group of persons using their own intellect for ultimate use in commerce and which is already not available in the public domain.	1
15	Identify the web server from following: a. Google Chrome b. Firefox c. Edge d. Apache Tomcat	1
16	Tracking and monitoring a person's online activity, and using the internet to stalk or harass an individual is _____ a. Impersonation b. Harassment c. Cyberstalking	1
17	Suggest two ways to dispose off E-waste.	1
18	The _____ command can be used to makes changes in structure of a table in SQL.	1
19	Write the output of the query: select instr('Toolbarbar','bar');	1
20	_____ network device which regenerates the signal and forwards these signal with more power.	1
21	_____ is a cybercrime in which a target or targets are contacted by email, telephone or text message by someone posing as a legitimate institution to lure individuals into providing sensitive data such as personally identifiable information, banking and credit card details, and passwords	1

Section -II

Both the case study based questions (22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.

22	Consider the following DataFrame df and answer any four questions from (i)- (v)					
	EmpNo	Name	Quarter1	Quarter2	Quarter3	Quarter4
0	1	Prem	2000	5800	20000	1400
1	2	Prakash	4000	2500	16000	3700

	2	3	Meena	5000	5400	7000	1700	4
	3	4	Ram	4400	3000	3600	2000	
	4	5	Raj	10000	2900	8200	6000	

(i) Write down the command that will give the following output.

```
EmpNo      5
Name       Ram
Quarter1   10000
Quarter2   5800
Quarter3   20000
Quarter4   6000
dtype:object
```

a. `print(df.max)`
b. `print(df.max())`
c. `print(df.max(axis=1))`
d. `print(df.max, axis=1)`

(ii) The Employer needs to know the Quarterly Revenue by Employee with Emp No -4. Help Employer to identify the correct set of statement/s from the given options :

a. `df1=df[df['EmpNo']==4]`
`print(df1)`

b. `df1=df[EmpNo ==4]`
`print(df1)`

c. `df1=df[df. EmpNo =4]`
`print(df1)`

d. `df1=df[df. EmpNo =4]`
`print(df1)`

<p>(iii)</p>	<p>Which of the following statement(s) will give the exact number of values in each column of the dataframe?</p> <p>i. <code>print(df.count())</code> ii. <code>print(df.count(0))</code> iii. <code>print(df.count)</code> iv. <code>print(df.count(axis='index'))</code></p> <p>Choose the correct option:</p> <p>a. both (i) and (ii) b. only (ii) c. (i), (ii) and (iii) d. (i), (ii) and (iv)</p>																																														
<p>(iv)</p>	<p>Which of the following command will display the column labels of the DataFrame?</p> <p>a. <code>print(df.columns())</code> b. <code>print(df.column())</code> c. <code>print(df.column)</code> d. <code>print(df.columns)</code></p>																																														
<p>(v)</p>	<p>HR wants to add a new column, the scores of APR Grade with the values, 'A', 'B', 'A', 'A', 'B', to the DataFrame. Help HR to choose the command to do so:</p> <p>a. <code>df.column=['A','B','A','A','B','A']</code> b. <code>df['Grade']=['A','B','A','A','B','A']</code> c. <code>df.loc['Grade']= ['A','B','A','A','B','A']</code> d. Both (b) and (c) are correct</p>																																														
<p>23</p>	<p>Consider the table FLIGHT given below:</p> <table border="1" data-bbox="320 1317 1235 1675"> <thead> <tr> <th>FLCODE</th> <th>START</th> <th>DESTINATION</th> <th>NO_STOPS</th> <th>NO_FLIGHTS</th> </tr> </thead> <tbody> <tr> <td>IC101</td> <td>DELHI</td> <td>AGARTALA</td> <td>1</td> <td>5</td> </tr> <tr> <td>IC102</td> <td>MUMBAI</td> <td>SIKKIM</td> <td>1</td> <td>3</td> </tr> <tr> <td>IC102</td> <td>MUMBAI</td> <td>SIKKIM</td> <td>1</td> <td>3</td> </tr> <tr> <td>IC103</td> <td>DELHI</td> <td>JAIPUR</td> <td>0</td> <td>7</td> </tr> <tr> <td>IC105</td> <td>KANPUR</td> <td>CHENNAI</td> <td>2</td> <td>2</td> </tr> <tr> <td>IC107</td> <td>MUMBAI</td> <td>KANPUR</td> <td>0</td> <td>4</td> </tr> <tr> <td>IC431</td> <td>INDORE</td> <td>CHENNAI</td> <td>3</td> <td>2</td> </tr> <tr> <td>IC121</td> <td>DELHI</td> <td>AHMEDABAD</td> <td>2</td> <td>6</td> </tr> </tbody> </table>	FLCODE	START	DESTINATION	NO_STOPS	NO_FLIGHTS	IC101	DELHI	AGARTALA	1	5	IC102	MUMBAI	SIKKIM	1	3	IC102	MUMBAI	SIKKIM	1	3	IC103	DELHI	JAIPUR	0	7	IC105	KANPUR	CHENNAI	2	2	IC107	MUMBAI	KANPUR	0	4	IC431	INDORE	CHENNAI	3	2	IC121	DELHI	AHMEDABAD	2	6	<p>4</p>
FLCODE	START	DESTINATION	NO_STOPS	NO_FLIGHTS																																											
IC101	DELHI	AGARTALA	1	5																																											
IC102	MUMBAI	SIKKIM	1	3																																											
IC102	MUMBAI	SIKKIM	1	3																																											
IC103	DELHI	JAIPUR	0	7																																											
IC105	KANPUR	CHENNAI	2	2																																											
IC107	MUMBAI	KANPUR	0	4																																											
IC431	INDORE	CHENNAI	3	2																																											
IC121	DELHI	AHMEDABAD	2	6																																											

(i) Choose the command that will give the output as :

FLCODE	START	DESTINATION	NO_FLIGHTS
IC103	DELHI	JAIPUR	7
IC121	DELHI	AHMEDABAD	6
IC101	DELHI	AGARTALA	5
IC107	MUMBAI	KANPUR	4
IC102	MUMBAI	SIKKIM	3
IC102	MUMBAI	SIKKIM	3
IC105	KANPUR	CHENNAI	2
IC431	INDORE	CHENNAI	2

- a. select FLCODE,START,DESTINATION,NO_FLIGHTS from FLIGHT order by NO_FLIGHTS desc;
- b. select FLCODE,START,DESTINATION,NO_FLIGHTS from FLIGHT order by NO_FLIGHTS desc;
- c. select FLCODE,START,DESTINATION,NO_FLIGHTS from FLIGHT group by NO_FLIGHTS desc;
- d. select FLCODE,START,DESTINATION,NO_FLIGHTS from FLIGHT;

(ii) What will be the output of the following command?

select FLCODE,No_FLIGHTS from FLIGHT where NO_STOPS=0;

a.

FLCODE	No_FLIGHTS
IC101	5
IC102	3
IC102	3

b.

FLCODE	No_FLIGHTS
IC103	7
IC107	4

c.

FLCODE	No_FLIGHTS
IC105	2
IC431	2
IC121	6

d.

FLCODE	No_FLIGHTS
IC431	2

(iii) Ram has given the following command to obtain the unique(list of destinations) destination from Flight table .

Select count(DESTINATION) from FLIGHT ;

but he is not getting the desired result.

Help him by writing the correct command.

- a. Select DESTINATION from FLIGHT ;
- b. Select MAX(DESTINATION) from FLIGHT ;
- c. Select distinct(DESTINATION) from FLIGHT ;
- d. Select SUM(DESTINATION) from FLIGHT ;

(iv)	State the command to Count and display number of flights reaching at each destination. a. select FLCODE ,DESTINATION,NO_FLIGHTS from FLIGHT order by DESTINATION; b. select count(FLCODE),DESTINATION,NO_FLIGHTS from FLIGHT c. select count(FLCODE),DESTINATION,NO_FLIGHTS from FLIGHT group by NO_FLIGHTS; d. select count(FLCODE),DESTINATION,NO_FLIGHTS from FLIGHT group by DESTINATION;									
(v)	Help Ram to write the command to display the maximum no of stops from FLIGHT table. a. select max(NO_STOPS) from FLIGHT; b. select count(NO_STOPS) from FLIGHT; c. select NO_STOPS from FLIGHT;									
Part - B										
Section - I										
24	Consider a given DataFrame , Student: <table style="margin-left: 40px;"> <thead> <tr> <th>Name</th> <th>Age</th> </tr> </thead> <tbody> <tr> <td>0 Freya</td> <td>10</td> </tr> <tr> <td>1 Mohak</td> <td>12</td> </tr> <tr> <td>2 Dwivedi</td> <td>13</td> </tr> </tbody> </table> Write a program in Python Pandas to create the DataFrame with above values..	Name	Age	0 Freya	10	1 Mohak	12	2 Dwivedi	13	2
Name	Age									
0 Freya	10									
1 Mohak	12									
2 Dwivedi	13									
25	What is the difference between the where and Having clause when used along with the select statement. Explain with an example. OR Explain the difference between Update and Alter command with help of an example.	2								
26	Write the output of following queries:- i. SELECT SUBSTR('Aakila', -3); ii. SELECT LEFT('Toolbar', 4);	2								
27	Write the program in context of series: i. Create empty series ii. Write the output of following series <pre>import pandas as pd1 s = pd1.Series([1,2,3,4,5],index = ['a','b','c','d','e']) print (s[['c','d']])</pre>	2								
28	Raghav writes the following commands with respect to a table Flight having Fields FLCODE, START, DESTINATION, NO_STOPS.	2								

	<p>Command1 : Select count(*) from FLIGHT;</p> <p>Command2: Select count(DESTINATION) from FLIGHT;</p> <p>He gets the output as 5 for the first command but gets an output 3 for the second command. Explain the output with justification.</p>	
29	<p>Write the output for following queries:</p> <p>i. select MOD(11,4) "Modulus", power(3,2) "Raised";</p> <p>ii. select CURDATE()+10;</p> <p style="text-align: center;">OR</p> <p>i. select length('CORONA COVID-19');</p> <p>ii. select lcase('COMputer Science');</p>	2
30	<p>Consider the following DataFrame.</p> <pre>import pandas as pd df = pd.DataFrame({"A": [1, 2, 3], "B": [4, 5, 6]}) print(df)</pre> <pre> A B 0 1 4 1 2 5 2 3 6</pre> <p>Write commands to :</p> <p>i. Add a new column 'C' to the DataFrame with values 7,8,9.</p> <p>ii. Rename the column name from 'B' to 'D' of DataFrame.</p>	2
31	<p>Expand the following terms related to Computer Networks:</p> <p>a. ARPANET</p> <p>b. TCP</p> <p>c. NIC</p> <p>d. RJ-45</p>	2
32	List any four health hazards occurred due to E-waste.	2
33	What do you mean by Plagiarism? Explain with help of an example.	2
	Section -II	
34	<p>Consider string str='Informatics practices'</p> <p>What will be the output of the following two statements considering that the above objects have been created already:</p>	3

	<p>i. <code>print('str *2-', str *2)</code></p> <p>ii. <code>print("str +'yes' -", str +'yes')</code></p>																																				
35	<p>What do you mean by Dos attack? Explain with the help of an example.</p> <p style="text-align: center;">OR</p> <p>What do you understand by Digital Footprint? Explain its types with help of an example.</p>	3																																			
36	<p>Write Python programming to display a bar chart of the popularity of programming Languages. Sample data:</p> <p>Programming languages: Python, Java, PHP, JavaScript</p> <p>Popularity: 8.6, 8, 7.8, 6.4</p> <p style="text-align: center;">OR</p> <p>The height of a plant was measured regularly after it had been transplanted, and the results are given below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><i>Day</i></td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> </tr> <tr> <td><i>Height (cm)</i></td> <td>2</td> <td>3</td> <td>6</td> <td>10</td> <td>12</td> <td>14</td> </tr> </table> <p>Draw a line graph using matplotlib to show how the height of the plant increased</p>	<i>Day</i>	4	8	12	16	20	24	<i>Height (cm)</i>	2	3	6	10	12	14	3																					
<i>Day</i>	4	8	12	16	20	24																															
<i>Height (cm)</i>	2	3	6	10	12	14																															
37	<p>Consider the table Garment and write the query:</p> <p style="text-align: center;">Table: GARMENT</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>G CODE</th> <th>G NAME</th> <th>SIZE</th> <th>COLOUR</th> <th>PRICE</th> </tr> </thead> <tbody> <tr> <td>111</td> <td>T Shirt</td> <td>XL</td> <td>Red</td> <td>1400.00</td> </tr> <tr> <td>112</td> <td>Jeans</td> <td>L</td> <td>Blue</td> <td>1600.00</td> </tr> <tr> <td>113</td> <td>Skirt</td> <td>M</td> <td>Black</td> <td>1100.00</td> </tr> <tr> <td>114</td> <td>Ladies Jacket</td> <td>XL</td> <td>Blue</td> <td>4000.00</td> </tr> <tr> <td>115</td> <td>Trousers</td> <td>L</td> <td>Brown</td> <td>1500.00</td> </tr> <tr> <td>116</td> <td>Ladies Toop</td> <td>L</td> <td>Pink</td> <td>1200.00</td> </tr> </tbody> </table> <p>i. Display the Minimum price of the Garment.</p> <p>ii. Count and display the number of GARMENT from each SIZE where number of GARMENTS are more than 1</p> <p>iii. Display the sum of price of each color garment</p>	G CODE	G NAME	SIZE	COLOUR	PRICE	111	T Shirt	XL	Red	1400.00	112	Jeans	L	Blue	1600.00	113	Skirt	M	Black	1100.00	114	Ladies Jacket	XL	Blue	4000.00	115	Trousers	L	Brown	1500.00	116	Ladies Toop	L	Pink	1200.00	3
G CODE	G NAME	SIZE	COLOUR	PRICE																																	
111	T Shirt	XL	Red	1400.00																																	
112	Jeans	L	Blue	1600.00																																	
113	Skirt	M	Black	1100.00																																	
114	Ladies Jacket	XL	Blue	4000.00																																	
115	Trousers	L	Brown	1500.00																																	
116	Ladies Toop	L	Pink	1200.00																																	
	Section -III																																				
38	Write a program in Python Pandas to create the following DataFrame Student from																																				

Dictionary of Series:

	Roll_No	Name	Marks
a	1	Prem	10
b	2	Prakash	15
c	3	Meena	30
d	4	Raj	24

Perform the following operations on the DataFrame :

- 1) Add the Marks of a Student and assign to column "Total"
- 2) Display the highest Marks from the DataFrame.
- 3) Display only Name column from Dataframe.

5

39

Consider a table Teacher with the following data:

Table:TEACHER

No.	Name	Age	Department	Dateofadm	Salary	Sex
1	Jugal	34	Computer	10/01/97	12000	M
2	Sharmila	31	History	24/03/98	20000	F
3	Sandeep	32	Maths	12/12/96	30000	M
4	Sangeeta	35	History	01/07/99	40000	F
5	Rakesh	42	Maths	05/09/97	25000	M
6	Shyam	50	History	37/06/98	30000	M
7	Shivam	44	Computer	25/02/97	21000	M
8	Shalakra	33	Maths	31/07/97	20000	F

Write SQL queries using SQL functions to perform the following operations:

- a) Convert all the names into lower case.
- b) Display the position of occurrence of the string "sh" in Name.
- c) Display the four characters from Department starting from second character.
- d) Display the month name for the date of admission.
- e) Display the name of the weekday for the date of admission.

OR

Write the SQL functions which will perform the following operations:

- i) To display the day of month of current date.
- ii) To remove spaces from the beginning and end of a string, " Informatics Practices".
- iii) To display the name of the day eg. Friday or Sunday from your date of birth, dob.
- iv) To convert your name into Upper case.

5

v) To compute the mode of two numbers num1 and num2.

40

Hi Speed Technologies Ltd is a Delhi based organization which is expanding its office setup to Chandigarh. At Chandigarh office campus, they are planning to have 3 different blocks for HR, Accounts and Logistics related work. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant, you have to suggest the best network related solutions for them for issues/problems raised in (i) to (iv), keeping in mind the distances between various blocks/locations and other given parameters.

5



Shortest distances between various blocks/locations:

HR Block to Accounts Block	400 Metres
Accounts Block to Logistics Block	200 Metres
Logistics Block to HR Block	150Metres
DELHI Head Office to CHANDIGARH Office	270 Km

Number of Computers installed at various blocks are as follows:

HR Block	70
Account Block	50
Logistics Block	40

- (i) Suggest a most suitable cable layout for the above connections.
- (ii) Suggest the most appropriate block/location to house the SERVER in the CHANDIGARH Office (out of the 3 Blocks) to get the best and effective connectivity. Justify your answer.
- (iii) Suggest the best wired medium and draw the cable layout (Block to Block) to efficiently connect various Blocks within the CHANDIGARH office compound.
- (iv) Suggest a device/software and its placement that would provide data security for the entire network of CHANDIGARH office.
- (v) Which of the following kind of network, would it be

(a) PAN	
(b) WAN	
(c) MAN	
(d) LAN	