

Max Marks: 70

Time: 3 hrs

**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 question has internal option.

<b>Part - A</b>		
<b>Section - I</b>		
<b>Attempt any 15 questions from questions 1 to 21</b>		
1.	State whether True or False : i. Stealing brand new hard disk from a shop is covered under cybercrime. ii. Full form of ODF is Open Document File.	1
2.	The command used to draw a bar graph horizontally is _____. a)p1.barhor(x,y)    b)p1.hbar(x,y)    c)p1.barh(x,y)    d)p1.graphbarh(x,y)	1
3.	Write the output of the following SQL command: <b>Select truncate(32.567,2)</b> a)32.56                      b)32.57                      c)32                      d)32.6	1
4.	Given a Pandas series called “S”,the command which will delete the 1 <sup>st</sup> row (index value 0)_____. a)S.delete(0)              b)S.drop(0)              c)S.pop(0)              d)S.del(0)	1

5.	<p>Given the following two series S1 and S2</p> <table border="1" data-bbox="217 141 847 409"> <thead> <tr> <th colspan="2">S1</th> <th colspan="2">S2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10</td> <td>0</td> <td>100</td> </tr> <tr> <td>1</td> <td>20</td> <td>1</td> <td>200</td> </tr> <tr> <td>2</td> <td>30</td> <td>2</td> <td>300</td> </tr> <tr> <td>3</td> <td>40</td> <td>3</td> <td>400</td> </tr> <tr> <td>4</td> <td>50</td> <td>4</td> <td>500</td> </tr> </tbody> </table> <p>Give the output of the following command: <b>Print(S1+S2)</b></p>	S1		S2		0	10	0	100	1	20	1	200	2	30	2	300	3	40	3	400	4	50	4	500	1
S1		S2																								
0	10	0	100																							
1	20	1	200																							
2	30	2	300																							
3	40	3	400																							
4	50	4	500																							
6.	<p>Ms.Arohi wants to draw a line chart using a list of elements named LIST. Complete the code to plot a line chart using the given LIST</p> <p><b>import matplotlib.pyplot as P</b> <b>LIST=[10,20,30,40,50,60]</b> <b>P.show()</b></p>	1																								
7.	<p>_____ protocol is used to transfer the hyper text documents on the internet.</p>	1																								
8.	<p>Write the correct option for the method used in Pandas to delete columns in dataframe.</p> <p>a)delete()      b)drop()      c)remove()      d)pop()</p>	1																								
9.	<p>Write down the full forms of the following:</p> <p>a)URL      b)IDE</p>	1																								
10.	<p>“ABS Company” is planning to link its branch office in Delhi to its head office in London. Name the type of the network to connect.</p>	1																								
11.	<p>Identify Single Row function of MySQL among the following:</p> <p>a)Trim()      b)Max()      c)Avg()      d) Count()</p>	1																								
12.	<p>Consider the following scenario and answer the question:</p> <p>“A student is expected to write a research paper on a topic.The student had a friend who took a similar class six years ago.The student asks his older friend for a copy of his paper and then takes the paper and submit the entire paper as his own research work.”</p> <p>Which kind of offense out of the following is made by the student?</p> <p>a)Cyber Crime    b)Civil Crime    c)Violation of Intellectual Property Rights.</p>	1																								
13.	<p>Write the correct output on execution of the following Pandas code:</p> <pre>import pandas as pd df=pd.DataFrame([('Om',93),('Jay',91)],columns=['Name', 'Mark']) print(df['Name'])</pre>	1																								
14.	<p>What is the following address called:</p> <p>208.77.188.166</p>																									

15.	Ms.Hanes, an IT Help Desk Executive need to remotely login a customer's PC to provide him technical support. Suggest a remote access software to him.	1																								
16.	The avg()function in MySql is an example of_____ a. Math function b. Text function c. Date Function d. Aggregate Function	1																								
17.	A_____is networking device that connects computers in a network by using packet switching to receive and forward data to the destination.	1																								
18.	The _____command can be used to remove all the records from the table at one go along with its structure permanently.	1																								
19.	A device that converts data from digital bit stream into an analog signal and vice versa is called_____.	1																								
20.	A software company purchases new computers every year and discards the old ones into the local dumping yard. Write the name of the most appropriate category of waste that the organization is creating every year, out of the following options: a)Business Waste b) Commercial Waste c)Solid Waste d)E-waste	1																								
21.	A mail or message sent to a large number of people indiscriminately without their consent is called_____.	1																								
<b>Section -II</b>																										
<b>Both the case study based questions (22 &amp; 23 ) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</b>																										
22.	Consider the following DataFrame <b>df</b> and answer any four questions from (i)- (v) <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><b>Roll</b></th> <th style="text-align: center;"><b>Name</b></th> <th style="text-align: center;"><b>Marks</b></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">A</td> <td style="text-align: center;">87</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">B</td> <td style="text-align: center;">45</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">C</td> <td style="text-align: center;">67</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">D</td> <td style="text-align: center;">39</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">E</td> <td style="text-align: center;">78</td> </tr> </tbody> </table>		<b>Roll</b>	<b>Name</b>	<b>Marks</b>	0	1	A	87	1	2	B	45	2	3	C	67	3	4	D	39	4	5	E	78	
	<b>Roll</b>	<b>Name</b>	<b>Marks</b>																							
0	1	A	87																							
1	2	B	45																							
2	3	C	67																							
3	4	D	39																							
4	5	E	78																							
i)	Which of the following commands is used to display all records having rollno>3 a) print(df[df['Roll']>3])                      c) print(df['Roll']>3) b) print(df.Roll>3)                                      d) print(df('Roll')>3)	1																								
ii)	Which of the following commands is used to add a new column 'Grade', with the values, 'A', 'B', 'A', 'B', 'A' to the DataFrame. a) df.column=['A', 'B', 'A', 'B', 'A'] b) df['Grade']= ['A', 'B', 'A', 'B', 'A'] c) df.insert(loc=3,column= 'Grade',value=['A', 'B', 'A', 'B', 'A']) d) Both (b) and (c) are correct	1																								



iv)	<p>Choose the correct output of the command given below:          Select count(Distinct size) from garment;</p> <p>a) <table border="1" data-bbox="279 280 406 582"> <tr><th>Size</th></tr> <tr><td>XL</td></tr> <tr><td>L</td></tr> <tr><td>M</td></tr> <tr><td>L</td></tr> </table></p> <p>b) <table border="1" data-bbox="598 280 774 515"> <tr><th>count</th></tr> <tr><td>XL</td></tr> <tr><td>L</td></tr> <tr><td>M</td></tr> </table></p> <p>c) <table border="1" data-bbox="925 302 1085 414"> <tr><th>Count</th></tr> <tr><td>3</td></tr> </table></p> <p>d) <table border="1" data-bbox="1181 313 1340 425"> <tr><th>Count</th></tr> <tr><td>5</td></tr> </table></p>	Size	XL	L	M	L	count	XL	L	M	Count	3	Count	5	1
Size															
XL															
L															
M															
L															
count															
XL															
L															
M															
Count															
3															
Count															
5															
v)	<p>What is degree and cardinality of Garment table?          a) 5 and 5    b) 5 and 6    c) 6 and 5    d) 6 and 6</p>	1													

**Part - B**

**Section – I**

24.	<p>Write python code to create the following series:          101    Harsh          102    Arun          103    Manna          104    Hennat          105    Danny          106    Fatima</p>	2												
25.	<p>Distinguish between a Primary key and Candidate key with the help of suitable example of each.</p> <p align="center"><b>Or</b></p> <p>How is primary key constraint different from unique key constraint?</p>	2												
26.	<p>Consider the decimal number x with value 5678.2654. Write commands in SQL to:          i. Truncate it off to whole number    ii. Truncate it upto 2 places</p>	2												
27.	<p>Write a program to create a series from list marks and taking index values from list rollno. Show all elements that are above 75 marks.          rollno=[1,2,3,4,5,6]    marks=[23,86,74,11,98,75]</p>	2												
28.	<p>The item_no and cost column of a tables “Items” are given below.</p> <table border="1" data-bbox="178 1792 718 2038"> <thead> <tr> <th>Item_No</th> <th>Cost</th> </tr> </thead> <tbody> <tr><td>101</td><td>5000</td></tr> <tr><td>102</td><td>NULL</td></tr> <tr><td>103</td><td>4000</td></tr> <tr><td>104</td><td>6000</td></tr> <tr><td>105</td><td>NULL</td></tr> </tbody> </table> <p>Based on this information, find the output of the following queries:</p>	Item_No	Cost	101	5000	102	NULL	103	4000	104	6000	105	NULL	2
Item_No	Cost													
101	5000													
102	NULL													
103	4000													
104	6000													
105	NULL													

	<p>a) Select avg(cost) from items  b) b)Select cost+100 from items where item_no&gt;103</p>													
29	<p>A numeric column MONEY contains 34567.7896. Write a command to truncate MONEY:  i) upto 2 decimal palces    ii) upto 3 places(i.e expected result 34000)</p> <p style="text-align: center;"><b>OR</b></p> <p>Write the output of the following SQL queries:  i) Select instr('INTERNATIONAL', 'NA');  ii) Select length(Concat('NETWORK', 'ING'));  iii) Select round(563.345,-2);  iv) Select dayofyear('2014-01-30');</p>	2												
30.	<p>Consider the following DataFrame, Friends</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th></th> <th style="text-align: center;">Name</th> <th style="text-align: center;">Hobbies</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F101</td> <td style="text-align: center;">Simakshi</td> <td style="text-align: center;">Swimming</td> </tr> <tr> <td style="text-align: center;">F102</td> <td style="text-align: center;">Anshul</td> <td style="text-align: center;">Reading Books</td> </tr> <tr> <td style="text-align: center;">F103</td> <td style="text-align: center;">Abhav</td> <td style="text-align: center;">Dancing</td> </tr> </tbody> </table> <p>Write commands to :</p> <p style="margin-left: 80px;">i. Add a new column 'Age' at position 2 using insert function with the following values(20,17,18)</p> <p style="margin-left: 80px;">ii. Change the column name "Name" to "Fname"</p>		Name	Hobbies	F101	Simakshi	Swimming	F102	Anshul	Reading Books	F103	Abhav	Dancing	2
	Name	Hobbies												
F101	Simakshi	Swimming												
F102	Anshul	Reading Books												
F103	Abhav	Dancing												
31.	<p>Expand the following terms related to Computer Networks:  a. HTTP    b. VoIP    c. GPRS    d. CDMA</p>	2												
32.	<p>Write some ways to reduce digital eye strain.</p>	2												
33.	<p>Pratibha is an IT expert and a freelancer. She undertakes those jobs, which are related to setting up security software and managing networks in various companies. If we name her role in these companies, what it will be out the following and also justify the reason :</p> <p>i) Cracker    ii) Network Admin    iii) Hacker    iv) Operator</p>	2												
<b>Section -II</b>														
34.	<p>Fill the missing statements to get the desired output:  Import pandas as pd  L=[101,102,103,104,105,106,107]  ___=pd.Series(L)  Print(p.____(3))</p> <p style="text-align: center;">Output:</p> <p style="margin-left: 100px;">4 105  5 106  6 107</p>	3												

35. What is plagiarism?  
**Or**  
 What are the problems caused by E-waste?

3

36. A bar chart is drawn(using a pyplot)to represent sale data of various models of cars,for a month.Write appropriate statements in Python to provide labels Month-June and Sale done to x and y axis respectively.  
**Or**  
 Write python code to create a Line Graph using list of elements x and y.Set ylabels as “marks” and xlabel as “names”.Title of graph is “Result”.  
 X=['A', 'B', 'C', 'D', 'E']  
 Y=[82,25,87,14,90]

3

37. Consider the following table:

<b>SchoolBus</b>						
Rtno	Area_Covered	Capacity	Noofstud	Distance	Transporter	Charges
1	Vasant_kunj	100	120	10	Shivam Travels	100000
2	Hauz Khas	80	80	10	Anand Travels	95000
3	Pitampura	60	55	30	Anand Travels	60000
4	Rohini	100	90	35	Shivam Travels	75000
5	Yamuna Vihar	50	60	30	Anand Travels	55000

Write the SQL commands for the following:  
 i)To count number of schoolbus transporter wise.  
 ii)To show transporter wise average charges for all routes having charges more than 60000.  
 iii)To show transporter wise total number of students travelling.

3

**Section –III**

38. Write a program in Python Pandas to create the following DataFrame Furniture from a Dictionary:

Fcode	Name	Price
10023	Table	4000
10001	Chair	2050
10012	Sofa	3500

Perform the following operations on the DataFrame :  
 1)Calculate 10% of price and assign to column “Tax”  
 2)Count the number of names of DataFrame.  
 3)Display the DataFrame.

5

39.

Write the SQL functions which will perform the following operations:

- i) To get the length of a string in bytes and in characters.
- ii) To get a specified number of leftmost character from a string.
- iii) To get the name of a weekday for specified date.
- iv) To return the weekday index of a date.
- v) To return the number of rows in a group, including rows with NULL values.

**OR**

Consider the following table named “GARMENT”.

**Table:Garment**

Gcode	Gname	Size	Colour	Price
111	TShirt	XL	Red	1400.00
112	Jeans	L	Blue	1600.00
113	Skirt	M	Black	1100.00
115	Trousers	L	Brown	1500.00
116	Ladies Top	L	Pink	1200.00

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

- a) Display name and price after rounding off to one decimal place.
- b) Display all the Gname in upper case.
- c) Display the last three characters from gname.
- d) Display the highest Gcode from the table.
- e) Display the sum of all price of size “L”.

40.

A company in Mega Enterprises has 4 wings of buildings as shown in the diagram :



Center to center distances between various Buildings:

W3 to W1 - 50m

W1 to W2 - 60m

5

5



W2 to W4 - 25m

W4 to W3 - 170m

W3 to W2 - 125m

W1 to w4 - 90m

Number of computers in each of the wing:

W1 - 150

W2 - 15

W3 - 15

W4 - 25

Computers in each wing are networked but wings are not networked .The company has now decided to connect the wings also.

i. Suggest a most suitable cable layout for the above connections.

ii. Suggest the most appropriate topology of the connection between the wings.

iii. The company wants internet accessibility in all the wings.Suggest a suitable technology .

iv. Suggest the placement of the following devices with justification if the company wants minimized network traffic

a)Repeater

b)Hub / switch

v. The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically.

