

KENDRIYA VIDYALAYA KANPUR CANTT

Pre- Board Examination-I (2020-2021)

Class- XII

Subject- Informatics Practices

Time Allowed: 3 Hours

Maximum Marks: 70

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part N 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 3 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.

Q.No	PART -A	Marks Allocated
	SECTION-I Select the most appropriate option out of the options for each question. Attempt any 15 questions from question no 1 to 21.	
1	Which of these is not a communication channel? (i) Satellite (ii) Microwave (iii) Radio wave (iv) Wi-Fi	1
2	Which of the following methods should be used in the code to display a graph? (i) Show() (ii) display() (iii) execute() (iv) plot()	1
3	Write the output of the following SQL command. SELECT TRUNCATE(345.79) (i) 345.79 (ii) 345.0 (iii) 346 (iv) 345.8	1
4	Axes of a plot can be labelled using _____ and _____ functions.	1
5	In a dataframe, axis-0 is for (i) columns (ii) rows (iii) rows and columns both (iv) None of these	1
6	Which function is used to rename the existing column or index? (i) std() (ii) hist() (iii) groupby() (iv) rename()	1
7	The term "Intellectual Property Rights" covers: (i) Copyrights (ii) Trademarks (iii) Patents (iv) All of these	1

8	Missing data in Pandas series and dataframes can be filled with a _____ value.	1
9	Which of the following is not a type of network? (i) PAN (ii) VAN (iii) MAN (iv) LAN	1
10	What type of information a web page can contain? (i) Text (ii) Images (iii) video (iv) All of these	1
11	The max() function in MYSQL is an example of _____ (i) String function (ii) Math function (iii) Date function (iv) Aggregate function	1
12	Discarded electrical or electronic devices are known as _____	1
13	Which of the following statements is false? (i) Dataframe is size-mutable. (ii) Dataframe is values-mutable. (iii) Dataframe is immutable (iv) Dataframe is capable to hold multiple types of data	1
14	Define the term 'cookies'.	1
15	Which of the following is not a type of cybercrime? (i) Data theft (ii) Forgery (iii) Damage to data (iv) Installing antivirus	1
16	A mail or message sent to a large number of people indiscriminately without their consent is called _____	1
17	The _____ command is used to see the structure of a table.	1
18	Define the term 'Cyber Crime'	1
19	Write the SQL command to delete a table 'STUDENT' along with its structure.	1
20	A device used to connect dissimilar network is called _____	1
21	Which of the following is not a topology? (i) Star (ii) Moon (iii) Mesh (iv) Ring	1
SECTION-II Both the case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.		
22	<p>A company, Sunrise Ltd. is considering to manage the records of their employees using SQL to store the data. As a database administrator, Harish has decided that:</p> <p>Name of the database: Employee Name of the table : Empl The attributes of Empl are as follows: Empld - Numeric Empname - character of size 20 Salary - Numeric Date_of_Joining - Date</p>	

Empld	Empname	Salary	Date_of_Joining
1001	Mr. Khanna	50000	23-10-2018
1002	Mr. Roy	35000	22-04-2017
1004	Ms. Sehgal	25000	23-08-2016
1008	Mr. Pahwa	30000	15-10-2019
1006	Ms. Sharma	20000	14-12-2019
1005	Mr. Bhalla	25000	12-09-2020

- (a) Identify the attribute best suitable to be declared as a primary key. 1
- (b) Write the degree and cardinality of the table Empl. 1
- (c) Harish wants to delete all the records of the table Empl. Structure of the table should not be removed. Write the query for the same. 1
- (d) Write a query to increase the salary of all the employees by 5000. 1
- (e) Harish wants to see the structure of the table 'Empl'. Help him to do the same. 1

23

Consider the following DataFrame df and answer any four questions from (i) to (v)

Rollno	Name	Eng	Hindi	Maths	Science
1	Harish Kumar	50	47	45	40
2	Guneet Arora	49	46	47	48
3	Naysha Singh	40	45	50	49
4	Vasu Kaur	43	46	48	44
5	Divya Nagar	43	38	42	41

(i) Write down the command that will give the output 1 :

- (a) for i in df.iterrows():
print(i)
- (b) for i in df.iterrow():
print(i)
- (c) for i in df.iteritem():
print(i)
- (d) for i in df.iteritems():
print(i)

Output 1

```
(0, Rollno      1
   Name      Harish Kumar
   Eng         50
   Hindi        47
   Maths        45
   Science       40
   Name: 0, dtype: object)
(1, Rollno      2
   Name      Guneet Arora
   Eng         49
   Hindi        46
   Maths        47
   Science       48
   Name: 1, dtype: object)
(2, Rollno      3
   Name      Naysha Singh
   Eng         40
   Hindi        45
   Maths        50
   Science       49
   Name: 2, dtype: object)
(3, Rollno      4
   Name      Vasu Kaur
   Eng         43
   Hindi        46
   Maths        48
   Science       44
   Name: 3, dtype: object)
(4, Rollno      5
   Name      Divya Nagar
   Eng         43
   Hindi        38
   Maths        42
   Science       41
   Name: 4, dtype: object)
```

Output 2

```
('Rollno', 0      1
 1      2
 2      3
 3      4
 4      5
   Name: Rollno, dtype: int64)
('Name', 0      Harish Kumar
 1      Guneet Arora
 2      Naysha Singh
 3      Vasu Kaur
 4      Divya Nagar
   Name: Name, dtype: object)
('Eng', 0      50
 1      49
 2      48
 3      47
 4      46
   Name: Eng, dtype: int64)
('Hindi', 0      47
 1      46
 2      45
 3      44
 4      43
   Name: Hindi, dtype: int64)
('Maths', 0      45
 1      47
 2      50
 3      48
 4      42
   Name: Maths, dtype: int64)
('Science', 0      40
 1      48
 2      49
 3      44
 4      41
   Name: Science, dtype: int64)
```

(ii) Write down the command that will give the output 2 :

- (a) for i in df.iterrow():
print(i)
- (b) for i in df.iterrows():
print(i)
- (c) for i in df.iteritem():
print(i)
- (d) for i in df.iteritems():
print(i)

iii) Which of the following statement(s) will give the exact number of values in each column of the dataframe?

- i. print(df.count())
- ii. print(df.count(0))
- iii. print(df.count)
- iv. print(df.count(axis='index'))

Choose the correct option:

- (a) both (i) and (ii)
- (b) only (ii)
- (c) (i), (ii) and (iii)
- (d) (i), (ii) and (iv)

(iv) Which of the following command will display the column labels of the DataFrame?

- (a) print(df.columns())
- (b) print(df.column())
- (c) print(df.column)
- (d) print(df.columns)

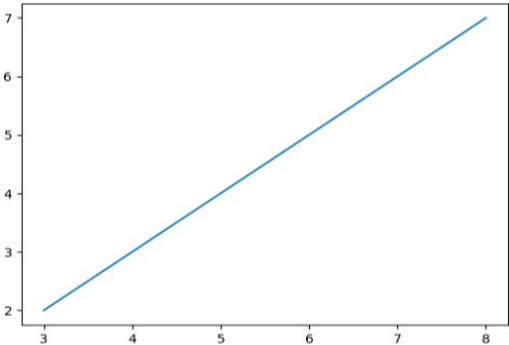
	(v) Ms. Pathak, the class teacher wants to add a new column, the total of 4 subject marks, named as 'Total' to the DataFrame. Help her to write the command to do so.	1								
	PART-B									
	Section-I									
24	<p>Consider a given Series, S1:</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">index</div> <div style="font-size: 2em; margin-right: 10px;">{</div> <table border="1" style="border-collapse: collapse;"> <tr><td></td><td>Salary</td></tr> <tr><td>January</td><td>20000</td></tr> <tr><td>February</td><td>30000</td></tr> <tr><td>March</td><td>40000</td></tr> </table> </div> <p>Write a program in Python Pandas to create the series.</p>		Salary	January	20000	February	30000	March	40000	2
	Salary									
January	20000									
February	30000									
March	40000									
25	<p>Differentiate between Degree and Cardinality of a table with suitable example.</p> <p style="text-align: center;">OR</p> <p>Differentiate between Primary Key and a Candidate Key with example.</p>	2								
26	<p>What will be the output of the following commands in Mysql:</p> <p>(i) SELECT MID('INFORMATICS PRACTICES', 3, 7);</p> <p>(ii) SELECT REVERSE('STRING FUNCTION');</p>	2								
27	<p>Consider the following Series Object, Ser1:</p> <table border="1" style="border-collapse: collapse; margin: 10px auto;"> <tr><td>Pen</td><td>50</td></tr> <tr><td>Pencil</td><td>100</td></tr> <tr><td>Eraser</td><td>70</td></tr> <tr><td>Sharpener</td><td>80</td></tr> </table> <p>(i) Write the command which will display the name of the item having price >70.</p> <p>(ii) Write the command to name the series as ITEM.</p>	Pen	50	Pencil	100	Eraser	70	Sharpener	80	2
Pen	50									
Pencil	100									
Eraser	70									
Sharpener	80									
28	<p>Priyansha writes the following commands with respect to a table 'CABS' having fields: Cabno, CabName, Color, Capacity, Charges.</p> <p>Command1: SELECT COUNT(COLOR) FROM CABS;</p> <p>Command2: SELECT COUNT(DISTINCT COLOR) FROM CABS;</p> <p>She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.</p>	2								
29	<p>Consider the following SQL string : 'Examination'</p> <p>Write commands to display:</p> <p>a. 'min'</p> <p>b. 'nation'</p> <p style="text-align: center;">OR</p> <p>Consider the same string 'Examination'</p> <p>Write SQL commands to display:</p> <p>a. The position of the substring 'min' in the string 'Examination'</p> <p>b. The last 5 letters of the string</p>	2								

30	<p>Consider the following DataFrame, student:</p> <table border="1" data-bbox="252 168 933 383"> <thead> <tr> <th></th> <th>Rollno</th> <th>Name</th> <th>Class</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>S1</td> <td>1</td> <td>Akash</td> <td>XI</td> <td>250</td> </tr> <tr> <td>S2</td> <td>2</td> <td>Divya</td> <td>XII</td> <td>300</td> </tr> <tr> <td>S3</td> <td>3</td> <td>Radha</td> <td>XI</td> <td>347</td> </tr> <tr> <td>S4</td> <td>4</td> <td>Ekta</td> <td>XII</td> <td>390</td> </tr> <tr> <td>S5</td> <td>5</td> <td>Palak</td> <td>XII</td> <td>400</td> </tr> </tbody> </table> <p>Write commands to:</p> <p>(i) Add a new column 'Grade' to the DataFrame. (ii) To display the records of Class XII students.</p>		Rollno	Name	Class	Marks	S1	1	Akash	XI	250	S2	2	Divya	XII	300	S3	3	Radha	XI	347	S4	4	Ekta	XII	390	S5	5	Palak	XII	400	2						
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S4	4	Ekta	XII	390																																		
S5	5	Palak	XII	400																																		
31	<p>Expand the following terms related to Computer Networks:</p> <p>a. ARPANET b. ISP c. TCP/IP d. URL</p>	2																																				
32	<p>List any 2 ways related to e-waste management.</p>	2																																				
33.	<p>Ankita received an SMS, from her bank querying a recent transaction asking her pin number. Answer the following questions as what she should do upon receiving the SMS:</p> <p>a. Should she SMS her pin number to the given contact number? b. Should she call the bank helpline number to recheck the validity of the SMS received?</p>	2																																				
SECTION-II																																						
34	<p>Consider the two objects s1 and s2. s1 is a list whereas s2 is a Series. Both have values 10, 20, 30, 40, 50.</p> <p>What will be the output of the following two statements considering that the above objects have been created already</p> <p>a. <code>print(s1 * 2)</code> b. <code>print(s2 * 2)</code></p> <p>Justify your answer.</p>	3																																				
35	<p>What do you mean by Cyber Crime? Explain with the help of an example.</p> <p style="text-align: center;">OR</p> <p>How the excessive use of Technology affected the health of human beings? Explain.</p>	3																																				
36	<p>Write the outputs of the SQL queries (i) to (iii) based on the following table 'CABHUB':</p> <table border="1" data-bbox="272 1391 1284 1632"> <thead> <tr> <th>VCODE</th> <th>VNAME</th> <th>MAKE</th> <th>COLOR</th> <th>CAPACITY</th> <th>CHARGES</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>INNOVA</td> <td>TOYOTA</td> <td>WHITE</td> <td>7</td> <td>15</td> </tr> <tr> <td>102</td> <td>SX4</td> <td>SUZUKI</td> <td>BLUE</td> <td>4</td> <td>14</td> </tr> <tr> <td>104</td> <td>C CLASS</td> <td>MERCEDES</td> <td>RED</td> <td>4</td> <td>35</td> </tr> <tr> <td>105</td> <td>A-STAR</td> <td>SUZUKI</td> <td>WHITE</td> <td>3</td> <td>14</td> </tr> <tr> <td>108</td> <td>INDIGO</td> <td>TATA</td> <td>SILVER</td> <td>3</td> <td>12</td> </tr> </tbody> </table>	VCODE	VNAME	MAKE	COLOR	CAPACITY	CHARGES	100	INNOVA	TOYOTA	WHITE	7	15	102	SX4	SUZUKI	BLUE	4	14	104	C CLASS	MERCEDES	RED	4	35	105	A-STAR	SUZUKI	WHITE	3	14	108	INDIGO	TATA	SILVER	3	12	3
VCODE	VNAME	MAKE	COLOR	CAPACITY	CHARGES																																	
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108	INDIGO	TATA	SILVER	3	12																																	
<p>(a) To display the names of all the white colored vehicles. (b) To display name of vehicle, make and capacity of vehicles in ascending order of their seating capacity. (c) To display the highest charges at which a vehicle can be hired from CABHUB.</p>																																						

37

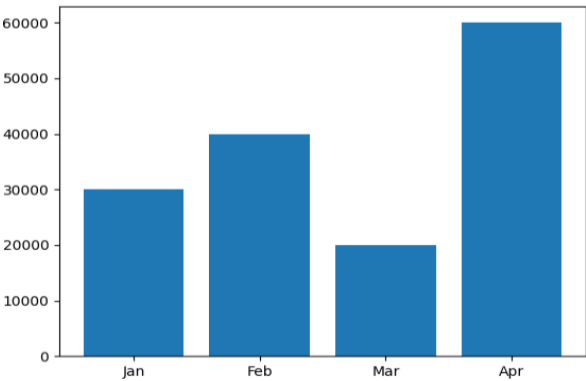
Consider the following graph. Write the code to plot it.

3



OR

Draw the following bar graph representing the Sales of each month.



SECTION-III

38

Write a program in Python Pandas to create the following DataFrame DEPT from a dictionary:

5

DeptId	DeptName	Income	Location
10	Sales	85660	New Delhi
20	Purchase	86780	Kolkata
30	Personnel	87600	Haryana
40	Research	89990	Bengaluru

Perform the following operations of the DataFrame:

- i. Display the highest income from the DEPT.
- ii. Add a new Column "Commission" that will have the values as 15% of the Income.
- iii. Display the DataFrame.

39

Consider the following tables STORE and SUPPLIERS and answer the following parts of the questions:

5

Table: Store

ITEMNO	ITEM	SCODE	QTY	RATE	LASTBUY
2005	Sharpener Classic	23	60	8	31-6-2009
2003	Ball Pen 0.25	22	50	25	1/2/2010
2002	Gel pen premium	21	150	12	24-02-2010
2006	Gel Pen Classic	21	250	20	11/3/2009
2001	Eraser Small	22	220	6	19-1-2009
2004	Eraser Big	22	110	8	2/12/2009
2009	Ball Pen 0.5	21	180	18	3/11/2009

Table: Suppliers

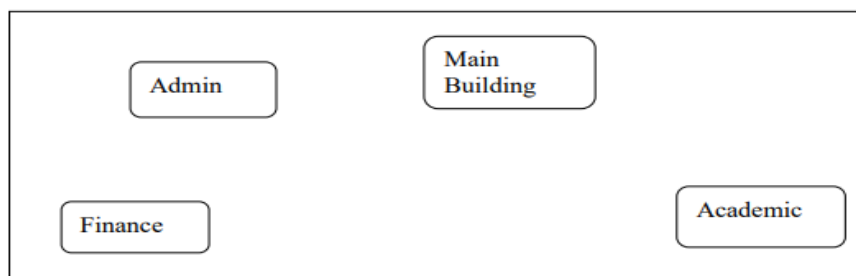
SCODE	SNAME
21	Premium Stationers
23	Soft Plastics
22	Tetra Supply

- a. To display details of all the items in the Store table in ascending order of LastBuy.
- b. To display itemno ItemName of those items from Store Table whose rate is more than 15 rupees.
- c. To display the details of those items whose Suppliers code(Scode) is 22 or Quantity in Store(Qty) is more than 110 from the table Store.
- d. To display minimum rate of Items for each Supplier individually as per Scode from the table Store.
- e. To increase the Rate of all the items by Rs. 10

40

Sanskar University of Himachal Pradesh is setting up a secured network for its campus at Himachal Pradesh for operating their day-to-day office & web based activities. They are planning to have network connectivity between four buildings. Answer the question (i) to (v) after going through the building positions in the campus & other details which are given below:

5



The distances between various buildings of university are given as:-

Building 1	Building 2	Distance(in mtrs.)
Main	Admin	50
Main	Finance	100
Main	Academic	70
Admin	Finance	50
Finance	Academic	70
Admin	Academic	60

Number of computers:-

Building	No. of Computers
Main	150
Admin	75
Finance	50
Academic	60

As a network expert, you are required to give best possible solutions for the given queries of the university administration: -

- (a) Suggest cable layout for the connections between the various buildings,
- (b) Suggest the most suitable building to house the server of the network of the university,
- (c) Suggest the placement of following devices with justification:
 - 1. Switch/Hub 2. Repeater
- (d) Suggest the technology out of the following for setting-up very fast Internet connectivity among buildings of the university
 - 1. Optical Fiber 2. Coaxial cable 3. Ethernet Cable
- (e) The University is planning to connect its admission office in Haryana, which is more than 1000 KM from University. Which type of Network out of LAN, MAN or WAN will be formed? Justify your answer.