



नवोदय विद्यालय समिति
NAVODAYA VIDYALAYA SAMITI
2nd PRE BOARD EXAMINATION :: 2022-23

Class : XII
Subject: Informatics Practices (065)

Time : 3:00 Hrs
Max. Marks : 70

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each.
8. All programming questions are to be answered using Python Language only.

SECTION - A		
Q. No.	Question	Marks
1.	Pandas Series is: a. 2 Dimensional b. 3 Dimensional c. 1 Dimensional d. Multidimensional	1
2.	Which of the following is not a violation of IPR? a. Plagiarism b. Copyright Infringement c. Patent d. Trademark Infringement	1
3.	What will be the order of the data being sorted after the execution of given SQL query? SELECT * From School Order by Class; (a) Order of inserting records in a table (b) Ascending order (c) Descending order (d) None of these	1
4.	Legal term to describe the rights of a creator of original creative or artistic work is: a. Copyright b. Copyleft c. GPL d. FOSS	1
5.	Method or function to add a new row in a data frame is: a. loc() b. iloc() c. join d. add()	1

6.	<p>Write the output of the following SQL command.</p> <pre>select truncate(99.78,0);</pre> <ol style="list-style-type: none"> 99.78 99.8 99 100 	1
7.	<p>Following are the impact of e-waste on the environment. Choose the odd one out.</p> <ol style="list-style-type: none"> Soil Pollution Water Pollution Air Pollution Sound Pollution 	1
8.	<p>Which SQL statement do we use to find out the total number of records present in the table ORDERS?</p> <ol style="list-style-type: none"> SELECT * FROM ORDERS; SELECT COUNT (*) FROM ORDERS; SELECT FIND (*) FROM ORDERS; SELECT SUM () FROM ORDERS; 	1
9.	<p>Which function will be used to read data from a CSV file into pandas data frame?</p> <ol style="list-style-type: none"> readcsv() to_csv() read_csv() csv_read() 	1
10.	<p>Which of the following commands will delete the table from MYSQL database?</p> <ol style="list-style-type: none"> DELETE TABLE DROP TABLE REMOVE TABLE ALTER TABLE 	1
11.	<p>Which type of values will not be considered by SQL while executing the following statement? SELECT COUNT(column name) FROM inventory;</p> <ol style="list-style-type: none"> Numeric value text value Null value Date value 	1
12.	<p>Which of the following is not an attribute of pandas data frame?</p> <ol style="list-style-type: none"> length T Size shape 	1
13.	<p>The SELECT statement when combined with _____ clause, returns records without repetition.</p> <ol style="list-style-type: none"> DESCRIBE UNIQUE DISTINCT NULL 	1
14.	<p>Which of the following import statement is not correct?</p> <ol style="list-style-type: none"> import pandas as class12 b. import pandas as 1pd c. import pandas as pd1 d. import pandas as pd 	1

15.	If column “Fees” contains the data set (5000,8000,7500,5000,8000), what will be the output after the execution of the given query? SELECT SUM (DISTINCT Fees) FROM student; a. 20500 b. 10000 c. 20000 d. 33500	1
16.	_____ is the trail of data we leave behind when we visit any website (or use any online application or portal) to fill-in data or perform any transaction. a. Offline phishing b. Offline footprint c. Digital footprint d. Digital phishing	1
Q.17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as :- i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True		
17.	Assertion (A): - Internet cookies are text files that contain small pieces of data, like a username, password and user’s preferences while surfing the internet. Reasoning (R):- To make browsing the Internet faster & easier, its required to store certain information on the server’s computer.	1
18.	Assertion (A):- DataFrame has both a row and column index. Reasoning (R): - A DataFrame is a two-dimensional labelled data structure like a table of MySQL.	1
SECTION-B		
19.	Explain the difference between a web hosting and web server with suitable examples. OR Differentiate between Star topology and Bus topology.	2
20.	Rinku writes the following commands with respect to table sales having fields, itemno, iname, sales_made, commission. Command1 : Select sum(sales_made) from sales; Gives Output as: 1200 Command2: Select avg(sales_made) from sales; Gives Output as: 300 What will be the cardinality of the table if there is no NULL value for sales_made? Also give the command to find out the no. of rows in this table.	2
21.	Differentiate between aggregate functions and single row functions.	2

22.	List any four benefits of e-waste management. OR Mention any four net etiquettes.	2																																			
23.	Consider the following Series object, S_amt <table border="1" data-bbox="505 298 905 451" style="margin-left: auto; margin-right: auto;"> <tr><td>Table</td><td>350</td></tr> <tr><td>Chair</td><td>200</td></tr> <tr><td>Sofa</td><td>800</td></tr> <tr><td>Stool</td><td>150</td></tr> </table> <p>i. Write the command which will display the name of the furniture having rent>250. ii. Write the command to name the series as Furniture</p>	Table	350	Chair	200	Sofa	800	Stool	150	2																											
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24.	Write the output of the given command: import pandas as pd s=pd.Series([1,2,3,4,5,6],index=['A','B','C','D','E','F']) print(s[s%2==0])	2																																			
25.	Consider the following DataFrame, classframe <table border="1" data-bbox="309 886 1239 1114" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Rollno</th> <th>Name</th> <th>Class</th> <th>Section</th> <th>CGP A</th> <th>Stream</th> </tr> </thead> <tbody> <tr> <td>St1</td> <td>1</td> <td>Aman</td> <td>IX</td> <td>E</td> <td>8.7</td> <td>Science</td> </tr> <tr> <td>St2</td> <td>2</td> <td>Preeti</td> <td>X</td> <td>F</td> <td>8.9</td> <td>Arts</td> </tr> <tr> <td>St3</td> <td>3</td> <td>Kartikey</td> <td>IX</td> <td>D</td> <td>9.2</td> <td>Science</td> </tr> <tr> <td>St4</td> <td>4</td> <td>Lakshay</td> <td>X</td> <td>A</td> <td>9.4</td> <td>Commerce</td> </tr> </tbody> </table> <p>Write commands to :</p> <p>i. Add a new column 'Activity' to the Dataframe ii. Add a new row with values (5 , Mridula ,X, F , 9.8, Science)</p>		Rollno	Name	Class	Section	CGP A	Stream	St1	1	Aman	IX	E	8.7	Science	St2	2	Preeti	X	F	8.9	Arts	St3	3	Kartikey	IX	D	9.2	Science	St4	4	Lakshay	X	A	9.4	Commerce	2
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SECTION-C																																					
26.	A relation Vehicles is given below :- <table border="1" data-bbox="432 1437 1116 1777" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>V_no</th> <th>Type</th> <th>Company</th> <th>Price</th> <th>Qty</th> </tr> </thead> <tbody> <tr> <td>TT25</td> <td>Wagon</td> <td>Maruti</td> <td>200000</td> <td>20</td> </tr> <tr> <td>J0043</td> <td>Jeep</td> <td>Mahindra</td> <td>3500000</td> <td>19</td> </tr> <tr> <td>SV98</td> <td>SUV</td> <td>Mitsubishi</td> <td>5000000</td> <td>20</td> </tr> <tr> <td>MV76</td> <td>Mini van</td> <td>Datsun</td> <td>7800000</td> <td>25</td> </tr> <tr> <td>SV599</td> <td>SUV</td> <td>Maruti</td> <td>8000000</td> <td>26</td> </tr> <tr> <td>MV880</td> <td>Mini van</td> <td>Mahindra</td> <td>5600000</td> <td>19</td> </tr> </tbody> </table> <p>Write SQLcommands to:</p> <p>(i) Display the average price of each type of vehicle having quantity more than 20. (ii) Count the type of vehicles manufactured by each company (iii) Display the total price of all types of vehicles</p>	V_no	Type	Company	Price	Qty	TT25	Wagon	Maruti	200000	20	J0043	Jeep	Mahindra	3500000	19	SV98	SUV	Mitsubishi	5000000	20	MV76	Mini van	Datsun	7800000	25	SV599	SUV	Maruti	8000000	26	MV880	Mini van	Mahindra	5600000	19	3
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OR

Discuss the significance of Group by clause in detail with the help of suitable example.

27. What will be the output of the following program:
import pandas as pd
a = pd.Series([10,20,30,40,50], index=['a', 'e', 'i', 'o', 'u'])
print(a * 5)
print(a< 30)
a['i'] = 1000
print(s)

3

28. A dictionary Grade contains the following:
Grade={'Name':['Rashmi', 'Harsh', 'Ganesh', 'Priya', 'Vivek'],
'Grade':['A1', 'A2', 'B1', 'A1', 'B2']} Write statements for the following:
(i) Create a Dataframe named "Gr".
(ii) Add a column called 'marks' with following data: [97,92,95,89,96,82]
(iii) Delete 3rd and 5th rows

3

29. What is unauthorized access? How confidentiality of data can be maintained?
OR
Explain the difference between a web browser and web server with suitable examples?

3

30 Consider the given table MALL

ICode	Descp	Price	QOH	ROL	ROQ
101	Milk	15.00	20	10	20
102	Cake	5.00	60	20	50
103	Bread	9.00	40	10	40
104	Biscuit	10.00	50	40	60
105	Namkeen	15.00	100	50	70
106	Cream Roll	7.00	10	20	30

Write the output of the following quires:

(a) Select icode, descp,QOH from MALL where QOH between 30 and 50;

(b) Select * from MALL where Descp NOT IN ('Milk', 'Cream Roll')

(c) Select All(ROQ) from MALL;

3

SECTION-D

31.

5

Write the SQL statements to perform the following operations:

- (a) To display the name of the month of “2020-10-31”.
- (b) To remove spaces from the right side of the string, “Pandas ”.
- (c) To display the name of the day, such as Friday or Sunday, from the current date.
- (d) To display the last name from “Arjun Awasthi”.
- (e) To calculate number 7 raised to the power of 3.

OR

Consider the LOANS table given below and give the SQL commands to perform the following:

Table: LOANS

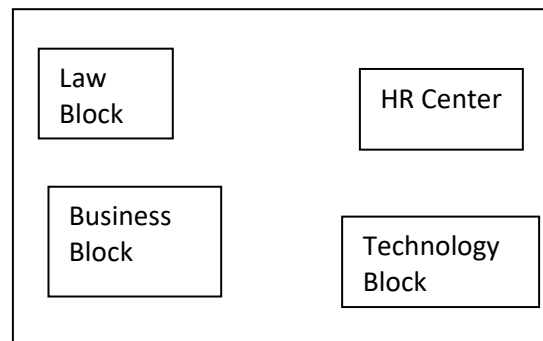
AccNo	Cust_Name	Loan_Amount	Instalments	Int_Rate	Start_Date	Interest
1	R.K. Gupta	300000	36	12.00	19-07-2009	1200
2	S.P. Sharma	500000	48	10.00	22-03-2008	1800
3	K.P. Jain	300000	36	NULL	08-03-2007	1600
4	M.P. Yadav	800000	60	10.00	06-12-2008	2250
5	S.P. Sinha	200000	36	12.50	03-01-2010	4500
6	P. Sharma	700000	60	12.50	05-06-2008	3500
7	K.S. Dhall	500000	48	Null	05-03-2008	3800

- (a) Display the sum of all Loan Amount whose interest rate is greater than 10.
- (b) Display the Maximum Interest from LOANS table.
- (c) Display the count of all Loan Account Holders whose name ends with ‘Sharma’.
- (d) Display interest-wise details of Loan Account Holders with at least 10 instalments remaining.
- (e) Display interest-wise count of all Loan Account Holders whose due Instalments are more than 5 in each group.

32.

MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:

5



Center to Center distances between various blocks/center is as follows:

Law Block to business Block	40m
Law block to Technology Block	80m
Law Block to HR center	105m
Business Block to technology Block	30m
Business Block to HR Center	35m
Technology block to HR center	15m

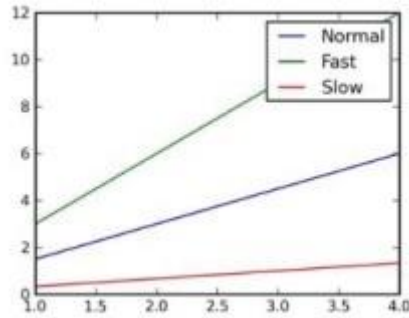
Number of computers in each of the blocks/Center is as follows:

Law Block	15
Technology Block	40
HR center	115
Business Block	25

- Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.
- Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.
- Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.
- Suggest the placement of a Repeater in the network with justification.
- The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

33. Write a code to plot the speed of a passenger train as shown in the figure given below.

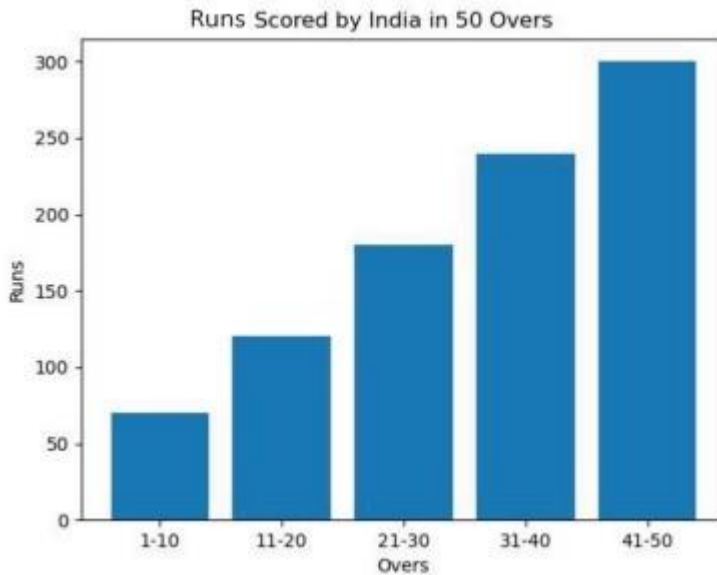
5



OR

Write a code to plot the histogram to display the total runs scored by India in a match as shown in the figure given below:

Runs=[70, 120,180,240, 300]



SECTION - E

34. Consider the table Student .Write commands in SQL for (i) to (iii).

1+1+2

Student

Rno	Name	Class	DOB	Gender	City	Marks
1	Rehan	10	06-06-1995	M	Agra	551
2	Amit	12	07-05-1993	M	Mumbai	462
3	Sonal	11	09-04-1994	F	Chennai	562
4	Tushar	12	08-08-1993	M	Delhi	590
5	Priya	11	02-02-1994	F	Dubai	562
6	Richa	10	12-12-1995	F	Delhi	543
7	Anil	11	12-09-1994	M	Mumbai	425
8	Pooja	12	03-03-1993	F	Kanpur	458
9	Rahul	10	12-07-1995	M	Kanpur	485

	<p>(i) Write a query to display all records from the table student in alphabetical order as per the name of the student.</p> <p>(ii) Write a query to display Name, class, dob and city whose marks between 450 and 550.</p> <p>(iii) Write a query to count total students in each city. OR (Option for part iii only) Write a query to count the total boys and total girls students .</p>																															
35	<p>Mr. Som, a data analyst has designed the DataFrame df that contains data about Computer Olympiad with 'CO1', 'CO2', 'CO3', 'CO4', 'CO5' as indexes shown below. Answer the following questions:</p> <table border="1" data-bbox="361 663 1218 890"> <thead> <tr> <th></th> <th>School</th> <th>Tot_students</th> <th>Topper</th> <th>First_Runnerup</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td>PPS</td> <td>40</td> <td>32</td> <td>8</td> </tr> <tr> <td>CO2</td> <td>JPS</td> <td>30</td> <td>18</td> <td>12</td> </tr> <tr> <td>CO3</td> <td>GPS</td> <td>20</td> <td>18</td> <td>2</td> </tr> <tr> <td>CO4</td> <td>MPS</td> <td>18</td> <td>10</td> <td>8</td> </tr> <tr> <td>CO5</td> <td>BPS</td> <td>28</td> <td>20</td> <td>8</td> </tr> </tbody> </table> <p>A. Predict the output of the following python statement: i. df.shape ii. df[2:4]</p> <p>B. Write Python statement to display the data of Topper column of indexes CO2 to CO4.</p> <p style="text-align: center;">OR (Option for part iii only)</p> <p>Write Python statement to compute and display the difference of data of Tot_students column and First_Runnerup column of the above given DataFrame.</p>		School	Tot_students	Topper	First_Runnerup	CO1	PPS	40	32	8	CO2	JPS	30	18	12	CO3	GPS	20	18	2	CO4	MPS	18	10	8	CO5	BPS	28	20	8	1+1+2
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