O. P. JINDAL SCHOOL, SAVITRI NAGAR

प्री-बोर्ड परीक्षा:2024-25

PRE-BOARD EXAMINATION: 2024-25

SET 1(A)

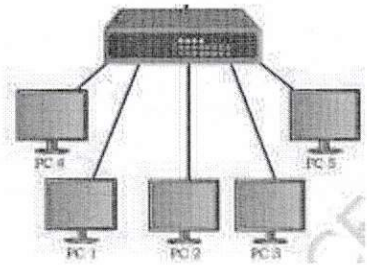
SUBJECT : INFORMATICS PRACTICES TIME : 3 HOURS
CLASS : XII MM : 70

सामान्यनिर्देश/GENERAL INSTRUCTIONS:

- Please check this question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
- Section D consists of 2 case study type questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

Q.NO	SECTION-A	MARKS
1	State whether the following statement is True or False: The index values associated with the series can be altered by assigning new index values.	1
2	Which SQL function can be used to group the rows together that contain similar values in a specified column. a. Order By b. Count c. Distinct d. Group by	1
3	Which among the following devices filters network traffic while connecting multiple computers or communicating devices. a. Hub b. Switch c. Gateway d. Repeater	1

4	Identify DDL (Data Definition Language) command among the following. a. Insert b. Delete c. Alter d. Update	1
5	A good practice to reduce E-waste is a. Purchasing the electronic or electrical devices only according to our need. b. Giving your old smart phone to your younger brother who is willing to use it. c. Discarding electronic equipment when it is near or end of their useful life. d. All of these.	1
6	Which of the following Python statements can be used to select a column column_name from a Data Frame df ? a. df.getcolumn('column_name') b. df['column_name'] c. df.select('column_name') d. df(column_name)	1
7	By default, the bar() function of Matplotlib draws a _____ bar chart. a. Vertical b. Horizontal c. Range based d. Sorted	1
8	State whether the following statement is True or False: Date functions are examples of single row functions.	1
9	Which of the following Python statements is used to export data to a CSV file from a Pandas Data Frame df? (Note: pd is an alias for pandas) a. df.to_csv() b. df.write_csv() c. pd.to_csv() d. pd.write_csv()	1
10	What is copyright? a. Legal rights to creators for their original work. b. An exclusive right for protected invention. c. Preventing others from copying, using or selling the work. d. A set of rights that one can avail legally.	1
11	COUNT(column) function in SQL returns a. The number of values in the specified column ignoring the NULL	1

	values. b. The number of records in a table. c. The sum of the values for the specified column. d. The average of the values in the specified column.	
12	A network topology illustrated in following diagram is  a. Bus topology b. Star topology c. Tree topology d. None of the above	1
13	A data frame ip contains 3 rows in it. On executing ip.tail() command it will print a. An error, since data frame ip contains less than 5 rows. b. Two rows as NaN and 3 rows of data frame. c. Last 3 rows of data frame. d. 3 rows of a data frame and two rows as NaN.	1
14	Using someone else's credentials to send inflammatory email messages is an act of a. Plagiarism b. Hacking c. Identity theft d. Cyber bullying	1
15	What is not true about Series in pandas. a. With labelled indexes the value at the end index label is excluded in the output. b. A Series is a one-dimensional array containing a sequence of values. c. Each value has a data label associated with it also called its index. d. Positional index takes an integer value that corresponds to its position in the series starting from 0.	1
16	INSTR() function in SQL is used to a. Extracts a portion of a string. b. Find the position of a substring in a string. c. Returns string in lower case. d. Removes white spaces present in a string.	1

17	A data frame ip has 4 rows and 3 columns. What can be possible output of following statement? >>> ip.shape a. (3, 4) b. (4,) c. An error d. (4, 3)	1
18	import matplotlib.pyplot as plt In the above statement matplotlib is a _____ and pyplot is a _____. a. Module, Library b. Library, Alias name c. Library, Module d. Module, Alias name	1
19	Amita is connecting her smart phone with television at her home. What type of network is established by her? a. LAN b. MAN c. PAN d. TAN	1
	Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as: (A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A) (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A) (C) Assertion (A) is True, but Reason (R) is False (D) Assertion (A) is False, but Reason (R) is True	
20	Assertion (A): When using a dictionary to create a Data Frame, values of the Dictionary become the column labels of the Data Frame. Reason (R): A Data Frame can be thought of as a dictionary of lists/ Series.	1
21	Assertion (A): Join is an operation which is used to combine rows from two or more tables based on one or more common fields between them. Reason (R): Multiple row functions work on a set of records as a whole and return a single value.	1

	SECTION-B	
22	How are Data Frames related to Series? **OR** What do you understand by the size of (i) A Series (ii) A Data Frame	2
23	What is free open source software? Give two examples.	2
24	Consider the date "2024/12/06" and write SQL statement for following. (i) To display December as an output. (ii) To display Friday as an output.	2
25	What is a webpage? Differentiate between static and dynamic webpage. **OR** What is a web browser? Give any two commonly used web browsers.	2
26	Rewrite the following SQL queries after removing errors if any. (i) SELECT * FROM EXAM WHERE MARKS=NULL; (ii) SELECT SUBJECT, COUNT(*) FROM EXAM GROUP BY STREAM WHERE COUNT(*) > 5;	2
27	Amit got good marks in all the subjects. His father gifted him a smart phone. He would like to make Amit aware of health hazards associated with inappropriate and excessive use of smart phone. Help his father to list the points which he should discuss with Amit.	2
28	Write python code to create following series which stores employee names as index and their respective salary as data. Meet 50000 Ram 65000 Smita 68500 Rohan 46000 Riddhi 56000 **OR** Mitali created following data frame using list of dictionaries, but it shows some errors on execution. Help her to find errors and rewrite the correct code. Import pandas as pd d1={'acc':98,'bst':95,'eco':88} d2={'acc':94,'bst':87,'eco':79} d3={'acc':89,'bst':76,'eco':81} df=pd.Dataframe((d1,d2,d3),index=['Meet','Ram','Smita','Rohan']) print(df)	2

	SECTION-C	
29	What do you understand by plagiarism? Why is it a punishable offence? Mention any two ways to avoid plagiarism.	3
30	Observe the following code and predict the output. import pandas as pd d1 = {'Item': 'PEN', 'Price': 25} d2 = {'Item': 'PENCIL', 'Price': 10} d3 = {'Item': 'ERASER', 'Price': 5} d4 = {'Item': 'SCALE', 'Price': 20} data = [d1, d2, d3, d4] df = pd.DataFrame(data) print(df) print(df.head(2)) print(df.T) **OR** Observe the following code and predict the output. import pandas as pd l1=[10,20,30,40,50] l2=[89,56,23,45,78] s1=pd.Series(l1,index=['a','b','c','d','e']) s2=pd.Series(l2,index=['a','b','e','g','k']) print(s1+s2) print(s2*2) print(s1[s1>25])	3
31	(i) Write SQL command to create a table EXAM with following specifications. EID – To store Exam ID, An integer value and a primary key. ENAME - To store name of exam, A variable character value with maximum 20 characters. DOE – To store date on which exam is to be conducted. Marks – To store marks Subject – To store subject names, A variable character value with maximum 10 characters. (ii) Also write SQL command to display schema/structure of the above table.	2+1=3
32	Consider following tables Student and Book Student	3

S_ID	S_NAME	CLASS	SECTION
S101	Ashish	11	A
S102	Anil	12	A
S103	Shefali	11	A
S104	Mitesh	12	B
S105	Sandhya	12	B

Book

S_ID	Book_ID	Title	Price
S101	1235	Computer Network	200
S102	6598	Operating System	300
S103	7845	DBMS	425
S104	1346	Python	530
S105	4679	Computer System	350

Write appropriate SQL queries for the following:

i. To display class wise total number of students.

ii. To display maximum and minimum price of book.

iii. To display student name and title of book issued to him/her.

OR

Consider following tables Teacher and Subject

Teacher

T_ID	T_NAME
T101	Vikash Sharma
T102	Rohan Verma
T103	Meena Singh
T104	Sohel Khan
T105	Vinay Shroff

Subject

T_ID	Code	Name
T101	083	Computer Science
T102	065	Informatics Practices
T103	301	English Core
T104	302	Hindi Core
T105	044	Biology

Write appropriate SQL queries for the following:

i. To display Teachers names in uppercase.

ii. To display first four characters of each subject.

iii. To display teacher name and subject taught by him/her.

SECTION-D

33 Write python code to generate bar chart of marks scored by 5 students in first pre-board exam as per following data. 4

Student Name	Vishal	Ajay	Nirav	Khyati	Mitali
Marks	65	58	62	57	66

Give appropriate Title, X and Y labels to the chart.

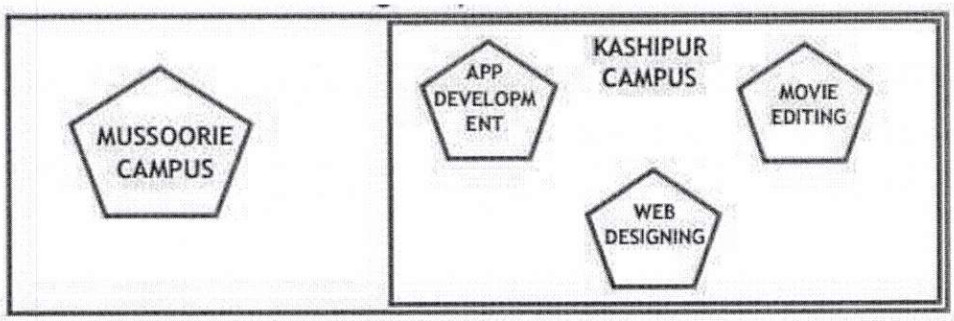
Also write statement to save chart with appropriate name.

34 Consider the following table Medicine and answer the questions. 4

Medicine

Code	Name	Price	Exp_Date
123	PARACETAMOL	150	2024-12-15
787	AMOXICILLIN	253	2025-01-16
465	COUGH SYRUP	350	2025-08-22
327	INSULIN	560	2025-03-31
369	IBUPROFEN	300	2025-02-28

	i. Write SQL query to print Medicine names in descending order of their price.
	ii. Write SQL query to print number of characters in each medicine name.
	iii. Write SQL query to print medicine name and its month name of expiry date.
	iv. Write SQL query to print total price of medicines.
	OR
	Write the output of the following SQL Queries on the basis of table Medicine.
	i. SELECT MOD(PRICE,10) FROM MEDICINE;
	ii. SELECT MID(NAME,5) FROM MEDICINE;
	iii. SELECT RIGHT(NAME,3) FROM MEDICINE;
	iv. SELECT COUNT(*) FROM MEDICINE;	

	SECTION-E	
35	MakeInIndia Corporation, an Uttarakhand based IT training company, is planning to set up training centres in various cities in next 2 years. Their first campus is coming up in Kashipur district. At Kashipur campus, they are planning to have 3 different blocks for App development, Web designing and Movie editing. 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 of this company, you have to suggest the best network related solutions for them for issues/problems raised in question keeping in mind the distances between various blocks/locations and other given parameters.  Distance between various blocks/locations: Block | Distance App development to Web designing | 28 m App development to Movie editing | 55 m Web designing to Movie editing | 32 m Kashipur Campus to Mussoorie Campus | 232 km Number of computers in each block:	5

Block	Number of Computers
App development	75
Web designing	50
Movie editing	80

a. Suggest the most appropriate block/location to house the SERVER in the Kashipur campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

b. Suggest a device to be installed in each block of Kashipur Campus to connect computers.

c. Suggest the best wired medium and draw the cable layout (Block to Block) to economically connect various blocks within the Kashipur Campus.

d. Suggest the placement of Repeater with appropriate reason.

e. Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.

36 Consider the following data frame book and answer the questions. 5

	Title	Author	Price	Year
101	India Shining	Milan Sen	520	2024
102	Indian Tourism	Romit Ray	650	2023
103	Indian Culture	Dhruv Jain	270	2023
104	Indian Festivals	Kishan Roy	300	2022

Write Python statements for the Data Frame book to:

i. Print the first two rows of the Data Frame book.

ii. Display author of all the books.

iii. Add the column Publisher.

iv. Display the Title, Author and Price of books with row index 102 and 103.

v. Rename the column name 'Year' to 'Year of Publish'.

37 Write suitable SQL query for the following: 5

i. To extract sub string 'EXAM' from string 'PRE-BOARD EXAMINATION'
ii. To remove all leading and trailing spaces from ' Commerce '
iii. To round the number 123.456 to two decimal places.
iv. To print cube of 100.
v. To find number of characters in "INFORMATICS PRACTICES"

OR

What is the use of following functions in SQL? Also give one example.

i. MONTH()
ii. SUBSTRING ()
iii. COUNT()
iv. MOD()
v. RTRIM()

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