CLASS XII – INFORMATICS PRACTICES	MM: 70 Marks	Time: 3 Hours

Instructions
1. This question paper contains five sections. Section A to E
2. All questions are compulsory
3. Section A has 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 02 questions carrying 04 marks each
7. Section E has 03 questions carrying 05 marks each
8. All programming questions are to be answered using Python Language only

SECTION A

1. Rohit forgot his laptop in his car and when he came back, he found his laptop was missing. This act is:
   (a) cybercrime   (b) phishing   (c) theft   (d) plagiarism

2. The rights of the owner of information to decide, how much information is to be shared/exchanged/distributed, are collectively known as:
   (a) Intelligent Portable Rights   (b) Intellectual Property Rights
   (c) Interactive Property Rights   (d) Instance Portability Rights

3. Which of the following statement(s) is/are incorrect?
   (a) A column of a DataFrame can be deleted.
   (b) A column of a DataFrame can be deleted, if it carries no data.
   (c) A column of a DataFrame can be deleted, if it carries NaN values.
   (d) Columns of DataFrame cannot be deleted.

4. Electronic discovery technique used to determine and reveal technical criminal evidence is called:
   (a) cyber investigation   (b) cyber evidence   (c) cyber forensics   (d) cyber intrude

5. The HAVING clause acts like a WHERE clause, but it identifies columns that meet a criterion, rather than rows.
   (a) Truc   (b) False   (c) Depend on query   (d) Depend on column

6. A series is created with 5 integers as
   ```
   import pandas as pd
   Nseries=pd. Series([22,44,55,33,66])
   print(Nseries.nbytes)
   ```
   Find the output of the above code.
   (a) 15   (b) 10   (c) 20   (d) 25

7. The term phishing is synonymous to the term:
   (a) spoofing   (b) spooling   (c) stalking   (d) None of these

8. While creating a DataFrame Sunil wanted to specify the datatype, ____ property will help to do so.
   (a) datatype   (b) type   (c) dtype   (d) dt

9. What does the web server need to send back information to the user?
   (a) Home address   (b) Domain name   (c) IP address   (d) Both (b) and (c)

10. select _____(calorie) from food where type = " Not-Protein";
    Requirement: To get the average calories of non-protein type foods. Select the appropriate function to complete the above query.
    (a) Mean   (b) Min   (c) AVG   (d) Sum

11. _____ device may operate at different network speeds depending on the protocol standard they support.
    (a) Router   (b) Ethernet card   (c) RJ45 Connector   (d) None of these
12. Help Ritesh to write the command to display the name of the youngest student.
    (a) SELECT Name, MIN(DOB) FROM Student;
    (b) SELECT Name, MAX(DOB) FROM Student;
    (c) SELECT Name, MIN(DOB) FROM Student GROUP BY Name;
    (d) SELECT Name, MAXIMUM(DOB) FROM Student;
13. Which of the following statements is incorrect in the context of a worm?
    (a) It represents a category of malware   (b) It creates infections in a computer
    (c) It is self-replicating   (d) It cannot travel on its own
14. In MySQL which function is used to find the round off value of the specified floating-point number?
    (a) FLOAT   (b) TRUNCATE()   (c) ROUND   (d) DECIMAL

15. Which of the following operators compare two conditions at a time to determine whether a row can be selected for the output?
    (a) Comparison operators (b) Logical operators (c) Arithmetic operators (d) Between operator
16. Which of the following commands is not a data manipulation command?
    (a) SELECT   (b) INSERT   (c) UPDATE   (d) ALTER

Directions (Q.Nos. 17-18) Assertion and Reason based Questions.
17. Assertion (A) Web Browser is application software that allows us to view and explore information on the web.
    Reason (R) Web browser can show text, audio, video, animation and more. It is the responsibility of a web browser to interpret text and commands contained in the web page.
    (a) Both A and Rare true and R is the correct explanation of A
    (b) Both A and R are true but R is not the correct explanation of A
    (c) A & is true but R is false.
    (d) A is false but R is true
18. Assertion (A) Some time we want to combine the two DataFrame using the merge() function.
    Reason (R) Merging operation can be performed only with common values of column not with specific column.
    (a) Both A and R are true and R is the correct explanation of A.
    (b) Both A and R are true but R is not the correct explanation of A
    (c) A is true but R is false
    (d) A is false but R is true.

SECTION B
19. Identify the following devices:
    (i) An intelligent device that connects several nodes to form a network and redirects the received information only to intended node(s).
    (ii) A device that regenerates (amplifies) the received signal and re-transmits it to its destinations.

<div align="center">Or</div>

    What is a modem?

20. Prachi has given the following command to obtain the highest marks:
    SELECT MAX(Marks) FROM Student WHERE GROUP BY Class;
    But she is not getting the desired result. Help her by writing the correct command.

21. Write a query to display the Sum, Average, Highest and Lowest marks of the students grouped subject and sub-grouped by class.

22. The Python code written below has syntactical errors. Rewrite the correct code and underline the corrections made.
    import pandas as Pd
    data = {Name ["Alice", "Bob", "Charlie"], Age [25, 30, 22])
    df pd.DataFrame(Data)
    df['Country'] = ['USA', 'Canada', 'UK']
    print(df)
23. For avoiding the plagiarism, what guidelines should we follow?
24. Given a DataFrame graded
    import pandas as pd
    gradedf=pd.DataFrame({'Name': ['Rashmi', 'Anil', 'Sunil', 'Becker'], 'Grade':['A', 'B', 'C', 'D']})
    print (gradedf.iloc[0: 2])
    Find the output.
25. Complete the given Python code: to rename the column Age to Years in the DataFrame df and display the updated DataFrame.
    import _____ as pd
    df = pd.DataFrame ({'Name': ['John', 'Alice', 'Bob'], 'Age': [25, 30, 22]})
    df._____(columns = {'Age': _____})
    print(df)

SECTION C

26. (i) Write a query to display current date on your system.
    (ii) Display the position of occurrence of string "OR" in the string "CORPORATE LAWYER"
    (iii) Mrs. Kumar is using table Students with the following columns:
    Rno, AdmNo, Name, Aggregate, display all information of students in descending order of name and with ascending order of aggregate.

                                OR

    Which commands are used to control user's privileges and how?
27. Write a Python program to create the DataFrame with name dfballs from dictionary of different colors of balls Red, Green and Yellow with data values[10,20,30], [30,40,50] and [90,100,110]

28. Given a DataFrame "Cellphone" containing the following data:

Index	ModelNo	Type	Brand
0	A22	4G	Samsung
1	N95	3G	Nokia
2	XPS12	2G	Apple

    Write the Python statements to do the following:
    (i) To remove the first row
    (ii) The command that changes the Brand column to values ['Realme', 'Xiomi', 'Samsung']
    (iii) To save the dataframe to a CSV file "Mobiles.csv"
29. Jack received a phone call stating that the call was from his Bank and they asked him his ATM card and PIN number. Also his colleague Jennifer was trying to see his key locations of fingers the keyboard, while he was trying to open his E-mail account.
    (i) What this call may be.........?
    (ii) What is the symbol © used for?
    (iii) What kind of network threat is Jennifer trying to do?
                                Or
       List the advantages of recycling the e-Waste.

30. Predict the output of the following.
    (i) SELECT POW(INSTR("Success@dedication", "@"), 2);
    (ii) SELECT MONTH('2020-11-15')*POW(2, 3):
    (iii) LTRIM('   Python Basics   ')

SECTION – D

31. Consider the following table MASTER

Table: MASTER

S.No.	Name	Age	Department	Salary
1	Shyam	21	Computer	12000
2	Shiv	25	Maths	14000
3	Rakesh	31	Hindi	15000
4	Sharmila	32	History	20000
5	Dushyant	25	Software	30000

(i) Write a command to update the salary of the employee to 40000, whose S.No is 3.
(ii) Write a query to add a column Date of Joining to the table MASTER.
(iii)   Write a query to display Age and Department of those employees whose salary is greater than 120000.
(iv)   Write a query to display Name whose Salary is more than 15000 and Department is Computer.

32. Given the following code, where a series is created storing population of some cities:

import pandas as pd

popseries=pd.Series([34567,890,450,678,9001)

(a) What will be the output of following commands?

(i) print(popseries.tail(3).head (2)

(ii) print (popseries/2)

(b) Write the Python statement to display the elements of dataset with value above 500.

(c) Write Python statement for the required output (5,)

Or (Option for part (c) only)

Write Python statement to assign index to the series as 11, 12, 13, 14, 15.

SECTION E

33. Write SQL queries for the questions from (i) to (v) on the basis of table Class.

Table: Class

No	Name	Stipend	Subject	AvgMarks	Grade
01	Vikas	1200	Medical	67	B
02	Boby	1400	Humanities	78.4	B
03	Tarun	1000	Medical	64.8	C
04	Varun	1600	Non-Medical	84	A
05	Atul	1800	Non-medical	92	A

(i) Select all the non-medical stream students from the table Class.
(ii) Arrange the records of Class name wise.
(iii) List the records whose grade is B or C.
(iv) Insert the new row with the following data. (06, Jack', 2800, 'Humanities', 98, 'A')
(v) Identify the attribute to be best suitable for primary key.

Or

Name 5 major string functions with their purpose.

34. Granuda consultants are setting up a secured network for their office campus at Faridabad for their day-to-day office and web-based activities. They are planning to have connectivity between 3 buildings and the head office situated in Kolkata. Answer the questions (i) to (v) after going through the building positions in the campus and other details, which are given below.

Distance between various buildings
Building RAVI to Building JAMUNA – 120 m
Building RAVI to Building GANGA – 50 m
Building GANGA to Building JAMUNA – 65 m
Faridabad Campus to Head Office – 1450 km
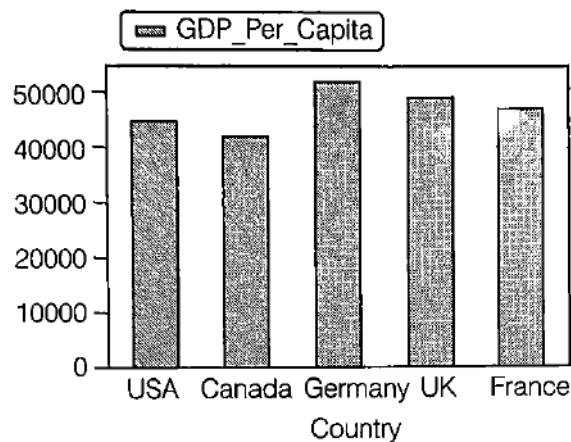
Number of computers
Building RAVI – 25
Building JAMUNA – 150
Building GANGA – 51
Head Office – 10

(i) Suggest the most suitable place (i.c. Building) to house the server of this organisation. A give a reason to justify your suggested location.
(ii) Suggest a cable layout of connections between the building inside the campus.
(iii)   Suggest the placement of the following devices with justification
       (a) Switch
       (b) Repeater
(iv)   Consultancy is planning to connect its office in Faridabad which is more than 10 km from head office. Which type of network will be formed?
(v)   State the use of HUB?

35. Write the Python code to display the following bar graph,:

OR

Write the code to plot below given chart.