SAMPLE PAPER – 2021

CLASS – XII

Informatics Practices

(2020 – 2021)

Time : 3 hours | Max Marks : 70

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 subparts. An examinee is to attempt any 4 out of the 5 sub parts.
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.

Part – A

Section – I

Attempt any 15 questions from questions 1 to 21

1. **SIDDHARTHA SHAH** is not sure about the name of the functions that are used to create the following charts: (1)

(i) Line Chart
(ii) Bar Chart
(iii) Histogram

Choose the correct option to help him.

(a) (i) plot( ) (ii) Bar( ) (iii) his( )
(b) (i) chart( ) (ii) bar( ) (iii) hist( )
(c) (i) Plot( ) (ii) bar( ) (iii) Hist( )
(d) (i) plot( ) (ii) bar( ) (iii) hist( )

2. In order to calculate the remainder of 11 divided 3, the appropriate statement(s) will be? (1)
(i) Select 11%3;
(ii) Select 11 MOD 3;
(iii) Select MOD(11,3);
(iv) All of the above

3. When users deliberately share information about themselves then that is known as? (1)
(A) Over sharing
(B) Plagiarism
(C) Cyber bullying
(D) Active digital footprint

4. **AARUSHI SINGHANIA** has decided to share the data among various computers of her two office branches situated in the same city named **PURULIA.** Out of the followings which network will be formed in this process? (1)
(a) MAN
(b) LAN
(c) PAN
(d) WAN

5. State true or false: (1)
(a) Copyright protects our work as an asset.
(b) OSS cannot be freely used and copied.
Choose the correct option:
(i) (a) False (b) False
(ii) (a) True (b) False
(iii) (a) True (b) True
(iv) (a) False (b) True

6. Consider the following panda series named 'sr': (1)
a 111
b 112
c 113
d 114
Choose the command to delete the value against index 'c'.

(a) print(sr.drop(c))
(b) print(sr.drop('c'))
(c) print(drop('c'))
(d) print(sr.drop['c'])

7. Which one is incorrect about the network device switch? (1)
a. It is an intelligent hub.
b. It is a network device.
c. It amplifies the received signal.
d. It interconnects computers or devices on a network

8. **SOUHARDYA MAHATO** of **Purulia** works in a bank. He wants to change the last name of his customer in table Customer. Which command should be used for this? (1)
a. Alter Table
b. Change
c. Rename
d. Update

9. MySQL command to change the size of a column named 'Address' of a table 'Company' from Varchar(10) to Varchar(50) is: (1)
(i) ALTER TABLE Company CHANGE Address to Varchar(50);
(ii) UPDATE Company SET Address = Varchar(50);
(iii) ALTER TABLE Company MODIFY Address Varchar(50);
(iv) UPDATE Company SET Address = Varchar(50) WHERE Address = Varchar(10);

10. What is the output of the Python expression 3*1**3 ? (1)
A. 3
B. 27
C. 9
D. 1

11. Which of the following is not a feature of Networking? (1)
a. Resource Sharing
b. Reliability
c. Increasing mental strength
d. Reduced Cost

12. A table 'BANK' in a database has 3 columns and 30 rows. **NAMAN JALAN** has added 3 more columns and 50 more rows to the table. But the table has 15 records where balance is null. So, he has removed those records also. What is the degree and cardinality of this table now? (1)
(i) Degree = 3 and Cardinality = 30

(ii) Degree = 6 and Cardinality = 45
(iii) Degree = 6 and Cardinality = 65
(iv) Degree = 65 and Cardinality = 6

13. Which one is not a means to protect our personal data online? (1)
(i) Encryption of our data
(ii) Keeping our passwords private
(iii) Over sharing on social networking sites
(iv) Using Security Software

14. Find the sum of the series objects AG and CS given below: (1)

	AG		**CS**
a	19	c	45
b	23	d	23
c	34	e	88
d	33	f	20

15. A software company owned by **PRACHI PATTANAIK** develops and sells software for different purposes. Any user has to buy particular software to use. Which type of software is developed by her company? (1)
(a) FLOSS
(b) Freeware
(c) Proprietary Software
(d) Shareware

16. A dedicated computer which serves the requests made by web browsers is known as? (1)
a. Node
b. Server
c. Switch
d. Gateway

17. Fill in the blanks: (1)
(a) _____ is academic theft.
(b) _____ is a legal procedure to provide rules and guidelines for other user to use the work.
Find the correct option from the followings:
(i) (a) Online Fraud (b) Copyright
(ii) (a) Plagiarism (b) Legal Advice
(iii) (a) Cyber Stalking (b) IPR
(iv) (a) Plagiarism (b) Licensing

18. Which function in MySQL is used to show current date and time? (1)

A. CURDATE( )
B. SYSTEM_DATE( )
C. NOW( )
D. TODAYS_TIME( )

19. Given the following series named python_series: (1)

2 50
4 30
6 70
8 60

Write the command to print the values greater than 50.

20. Which amongst the following is not an example of Network device? (1)

(a) Hub
(b) Mesh
(c) Router
(d) Switch

21. The outputs of the given two commands are 20 and 17 respectively. (1)

Select COUNT(*) From Student;
Select COUNT(Age) From Student;
How many NULL values are there in Age column of the Student table?

A. 17
B. 20
C. 3
D. None of these

Section – II

Both the case study based questions (22 & 23) are compulsory.
Attempt any four sub parts from each question. Each sub question carries 1 mark.

22. Consider the following DataFrame 'result' and answer the following questions:

	Roll	Name	Sub1	Sub2	Sub3
S1	1	**HARSHIT BHURA**	92	97	65
S2	2	**ADITI SHARMA**	99	86	77
S3	3	**AMAN JAIN**	80	85	90
S4	4	**VAIBHAV PERIWAL**	93	96	88
S5	5	**MADHAV MALL**	83	88	92
S6	6	**KOMAL KUMARI**	78	80	79

(a) What will be the output of the given command? (1)

result.Name[[2 , 1]]

(i) S2 ADITI SHARMA
S1 HARSHIT BHURA

(ii) S3 AMAN JAIN
S2 ADITI SHARMA

(iii) S2 ADITI SHARMA
S3 AMAN JAIN

(iv) S2 HARSHIT BHURA
S1 ADITI SHARMA

(b) The code(s) to show the details of the student whose Roll is 4 is? (1)

(i) result[result[Roll == 4]
(ii) result[result['Roll'] == 4]
(iii) result.result.Roll == 4
(iv) result[result.'Roll' == 4]

(c) Which of the following command will give the exact number of columns in the DataFrame? (1)

(i) print(result.count(columns))
(ii) print(result.columns.len( ))
(iii) print(result.columns.count( ))
(iv) print(len(result.columns))

(d) Which of the following command will display the column labels of the DataFrame? (1)

(i) print(result.columns( ))
(ii) print(result.column( ))
(iii) print(result.column)
(iv) print(result.columns)

(e) Choose the statement that will add a new column named as 'Sum' to the DataFrame which will contain the total of all the 3 subjects. (1)

(i) result['Sum'] = result['Sub1'] + result['Sub2'] + result['Sub3']
(ii) result['Sum'] = result['Sub1' + 'Sub2' + 'Sub3']

(iii) result[Sum] = result[Sub1] + result[Sub2] + result[Sub3]

(iv) result['Sum'] = ['Sub1'] + ['Sub2'] + ['Sub3']

23. Consider the following table 'GAME' and answer the questions given below:

SNo	Name	Class	Game1	Game2
101	**SOUMIK ACHARJEE**	12S	A	B
102	**YUVRAJ BHURA**	12C	B	B
103	**UDITA ROY**	12H	A	B
104	**SHUBHAM DEY**	12C	C	A
105	**AHELEE PALIT**	12C	A	A

(a) Which MySQL command will return the following output? (1)

SNo	Name	Class	Game1	Game2
102	YUVRAJ BHURA	12C	B	B
105	AHELEE PALIT	12C	A	A

(i) SELECT * FROM Game WHERE Class = '12C';

(ii) SELECT * FROM Game WHERE Game1 = 'B' OR Game2 = 'B';

(iii) SELECT * FROM Game WHERE Game1 = Game2;

(iv) SELECT * FROM Game WHERE Game1 = 'A' AND Game2 = 'A';

(b) Out of the following statements which all will produce the same output? (1)

(i) SELECT Name, Class FROM Game WHERE Sno BETWEEN 102 AND 104;

(ii) SELECT Name, Class FROM Game WHERE Sno IN (102 , 104);

(iii) SELECT Name, Class FROM Game WHERE Sno = 102 , 103 , 104;

(iv) SELECT Name, Class FROM Game WHERE Sno >= 102 AND Sno <= 104;

Choose the correct option:

A. (i) , (iii) and (iv)

B. (ii) and (iv)

C. (iii) and (iv)

D. (i) and (iv)

(c) Find the statement which will display the following output. (1)

Name	Game1	Game2
UDITA ROY	A	B
AHELEE PALIT	A	A

(i) SELECT Name, Game1, Game2 FROM Game WHERE Name LIKE '%IT%;
(ii) SELECT Name, Game1, Game2 FROM Game WHERE Game1 = 'A';
(iii) SELECT Name, Game1, Game2 FROM Game WHERE Sno > 103;
(iv) SELECT Name, Game1, Game2 FROM Game WHERE Name LIKE '%A%';

(d) Choose the statement which will remove all the students from Game table whose class is 12C. (1)
(i) DELETE * FROM Game WHERE Class = '12C';
(ii) DELETE FROM Game WHERE Class is '12C';
(iii) DELETE FROM Game WHERE Class = '12C';
(iv) DELETE * FROM Game WHERE Class is '12C';

(e) Select the command that will change 12H class to 12C and Game2 scores to A of the student whose Sno is 103. (1)
(i) UPDATE Game SET Class = '12C' and SET Game2 = 'A' WHERE Sno = 103;
(ii) UPDATE Game SET Class = '12C', Game2 = 'A' WHERE Sno = 103;
(iii) UPDATE Game SET Class = '12C', SET Game2 = 'A' WHERE Sno = 103;
(iv) UPDATE TABLE Game SET Class = '12C', Game2 = 'A' WHERE Sno = 103;

Part – B

Section – I

24. Write one similarity and one dissimilarity between loc( ) and iloc( ) functions. (2)

25. Consider the SQL string: '**CHIRAG AGARWAL**' (2)
Write commands to display:
a. 'RAG'
b. 'WAL'

OR

Considering the SQL string: '**SHRESTH BANKA**'
Write SQL commands to display:
a. the entire string in lower case
b. the position of the substring 'BANK' in the given string

26. Define FOSS. Mention any two criteria which must be met for FOSS. (2)

27. What will be the output of the following code? (2)
ITEMS = {'pencil' : 25 , 'pen' : 12 , 'eraser' : 10 , 'cutter' : 45}

```
I = ['pencil' , 'eraser' , 'pen' , 'cutter']
SER = pd.Series(ITEMS , index = I)
print(SER)
```

28. Define URL. Identify the protocol, domain name and path from the given URL: (2)
https://www.w3schools.com/html/default.asp

29. Write the name of the MySQL commands for the followings: (2)
(i) to modify data in a table.
(ii) to remove a column from a table.
(iii) to show the constraints used in a table.
(iv) to select a database and to make it current.

OR

Write the name of the MySQL functions for the followings:
(i) to display the name of the month from a date-time expression.
(ii) to find the occurrence of a string within another string.
(iii) to remove the unwanted leading and trailing spaces from a string.
(iv) to find the remainder of two numbers.

30. Name one example of Free and Open source software under each of the given categories: (2)
a. Office software
b. DBMS
c. Programming language
d. Web server

31. **ANKITA AGARWAL** wants to draw a bar chart using lists of elements named DAYS & MONTHS. (2)
Complete the code to perform the following operations:
(i) To plot a bar chart using the given lists,
(ii) To give a Title to the bar chart named “Number of Days’

```
import matplotlib.pyplot as p
MONTHS = [‘JAN’, ’FEB’, ’JUN’, ’AUG’, ’NOV’]
DAYS = [31, 28, 30, 31, 30]
_____Statement1
_____Statement2
p.show( )
```

32. Expand the followings: (2)
(i) VoIP
(ii) TITA

(iii) FLOSS

(iv) TCP/IP

33. **MITALI MALL** has recently started learning MySQL. But she is little confused regarding the concept of constraints in MySQL. Write down one similarity and one difference between UNIQUE and PRIMARY KEY constraints to help her. (2)

Section – II

34. Observe the given DataFrame named Marks carefully: (3)

	ROLL	IP	ENG
0	1	70	60
1	2	80	50
2	3	50	60
3	4	80	90

Write Python statements for the followings:

(a) To create the given DataFrame.

(b) To modify the DataFrame so that the given output can be achieved:

	ROLL	IPR	ENG	TOTAL
0	1	70	60	130
1	2	80	50	130
2	3	50	60	110
3	4	80	90	170

(c) To change the name of the column TOTAL to TOTAL_MARKS.

35. The 'Name' column of a table 'Student' is given below: (3)

Name
SHAGUN AGARWAL
ADITYA VARDHAN CHOUBEY
PRATEEKSHA TIRKEY
PARTHIB CHATTERJEE
PRATIK DUTTA
KASHISH KHEDIA

Based on the information, find out the output the following queries:

(i) mysql> SELECT Name FROM Student WHERE Name LIKE '%U%';

(ii) mysql> SELCT Name FROM Student WHERE Name LIKE '%TI%';

(iii) mysql> SELCT Name FROM Student WHERE Name LIKE '_R%S%';

OR

The table 'School' has the following information stored in it:

Roll	Name	Age
11	**MONOJIT MAHATO**	16
15	**ANIRUDDHA TIWARI**	16
17	**VIDISHA AGARWAL**	15
21	**ANIRUDDHA TIWARI**	17
32	**ANANTA PASARI**	17

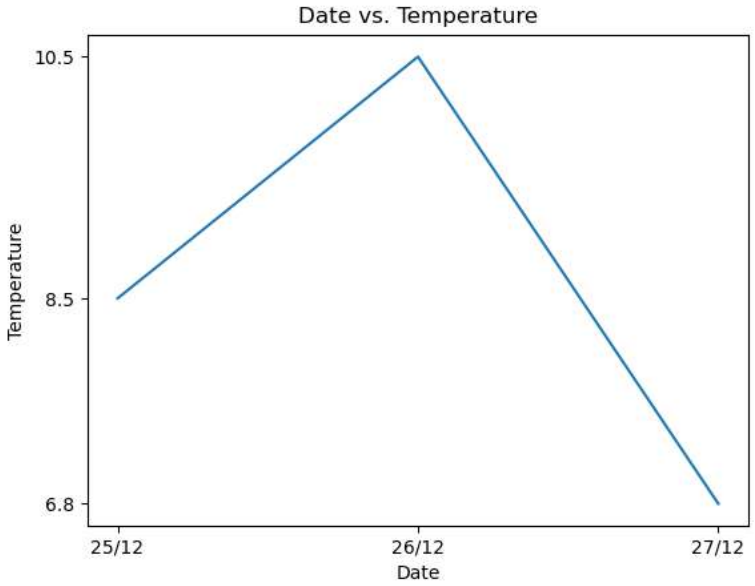
What will be the output of the following SELECT statements?

(i) mysql> SELECT ALL Name FROM School;

(ii) mysql> SELCT DISTINCT Name FROM School;

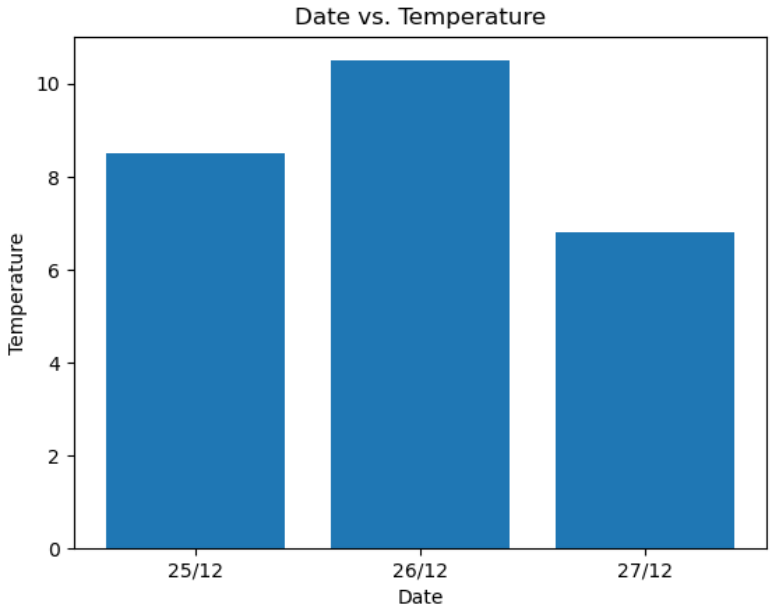
(iii) mysql> SELCT COUNT(DISTINCT Name) FROM School;

36. Observe the line graph given below and write Python code to draw it. (3)



OR

Write Python code to draw the following bar graph:



37. Write the statement in MySQL for the followings: (3)

(i) To extract the string "God" from the string "The Assembly of God Church School".

(ii) To display the position of "our" in the string "Python is an Open Source Software".

(iii) To round up the value 3947.847 to a whole number.

Section – III

38. Given a DataFrame named 'STUDENT' as shown below: (5)

	NAME	SCHOOL	MARKS1	MARKS2
0	**NAVNEET BHAIYA**	AGPN	83	90
1	**KASHISH KEDIA**	AGCS	92	88
2	**ANKIT SAO**	AGPN	74	81
3	**AYUSH KATARUKA**	AGCS	61	75
4	**ANANYA ROY**	AGPN	66	91
5	**TRISHA GUPTA**	AGCS	65	61
6	**ISHA MISHRA**	AGCS	79	63

Based on the DataFrame STUDENT given above, write statements for the following questions:

(a) Print second, third and fourth row.

(b) Print last two columns.

(c) Remove the rows 5 and 6.

(d) Display a subset having third, fourth, fifth row and first, second column.

(e) Add new column named TOTAL_MARKS which stores (MARKS1 + MARKS2) values.

39. Consider the table EXAM given below. Write commands in MySQL for (i) to (iv) & output for (v). (5)

Roll	Name	Stream	Class	Subject	Marks
1	**KRITIKA SARAWGI**	Commerce	12C	English	60
2	**PRATEEK BAURI**	Humanities	12H	IP	85
3	**IPTISHA CHOUDHURY**	Commerce	12C	Maths	89
4	**SHREYASI DAS**	Science	12S	Physics	78
5	**ARYA AGRAHARI**	Science	12S	Biology	91
6	**SHUBHAM CHANDAK**	Commerce	12C	Accounts	82

(i) To display the details of all the commerce students having marks more than 80.

(ii) To increase the marks by 5% of all the students who have got their marks < 80.

(iii) To add a new row with the following details:
7, '**RUDRASISH MAHATO**', 'Humanities', '12H', 'History', 79

(iv) To show the names, subjects and marks of all those who have the characters 'si' in both their names and subjects.

(v) A. SELECT MAX(Stipend) FROM Exam WHERE Class = '12C';
B. SELECT AVG(Stipend) FROM Exam WHERE Marks >= 85;

OR

Write down the output produced by following queries after execution.

(a) SELECT LENGTH('**NITISH CHURIWALA**');

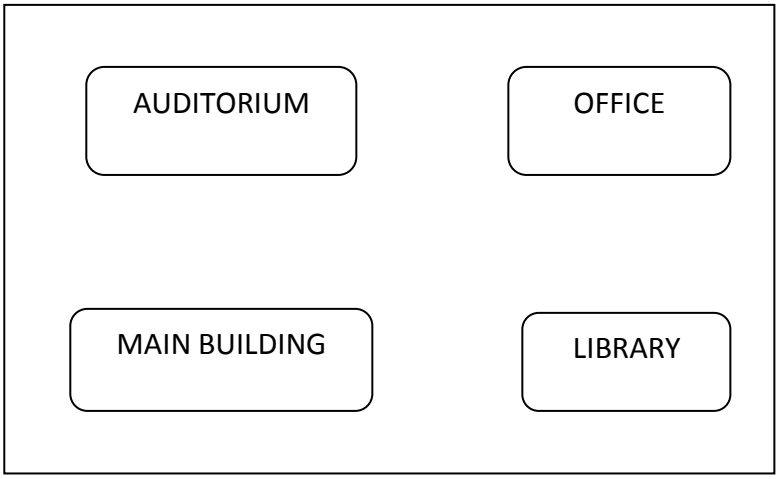
(b) SELECT MOD(11, 3), MOD(3, 11);

(c) SELECT DAYOFMONTH('2010-02-16');

(d) SELECT LOWER(RIGHT('JAVA', 3));

(e) SELECT MID('Year 2021', 3, 5);

40. **THE ASSEMBLY OF GOD CHURCH SCHOOL, PURULIA** is setting up the network between its different buildings of school campus. For this purpose the school administration has hired two network specialist named **ADITYA SAH** and **ROSHAN KATARUKA**. There are four buildings in the school named as OFFICE, MAIN BUILDING, AUDITORIUM and LIBRARY as shown in the following diagram: (5)



Distances between different buildings are as follows:

AUDITORIUM TO MAIN BUILDING	15m
AUDITORIUM TO LIBRARY	110m
OFFICE TO MAIN BUILDING	115m
MAIN BUILDING TO LIBRARY	75m
OFFICE TO LIBRARY	25m
AUDITORIUM TO OFFICE	95m

Number of computers installed at different buildings is given below:

OFFICE	21
LIBRARY	05
AUDITORIUM	02
MAIN BUILDING	12

(a) Suggest the best wired medium and draw the cable layout to efficiently connect various buildings of the school.

(b) Mention the most suitable building where the server should be installed. Justify your answer.

(c) Suggest the placement of following devices:
(i) HUB/SWITCH (ii) REPEATER

(d) Suggest a device/software and its placement that would provide data security for the entire network of the School.

(e) Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the school campus.

Sample Paper submitted by:

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