Class XII
INFORMATICS PRACTICES (065)
SAMPLE QUESTION PAPER (2020 - 21)

Max Marks: 70 **Time: 3 hrs**

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 sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
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	State whether True or False : i. A copyright is automatically granted to authors or creators of content. _____ ii. In FOSS source code is usually hidden from the users. _____	1
2	Fill in the blanks : The command used to give a heading to a graph is _____ a. `plt.show()` b. `plt.plot()` c. `plt.xlabel()` d. `plt.title()`	1

3.	Write the output of the following SQL command. `select round(49.88);` a. 49.88 b. 49.8 c. 49.0 d. 50	1
4	Given a Pandas series called Sequences, the command which will display the first 4 rows is _____. a. `print(Sequences.head(4))` b. `print(Sequences.Head(4))` c. `print(Sequences.heads(4)` d. `print(Sequences.Heads(4))`	1
5	Given the following Series S1 and S2: S1 A 10 B 40 C 34 D 60 S2 A 80 B 20 C 74 D 90 Write the command to find the sum of series S1 and S2	1
6	Using Python Matplotlib _____ can be used to count how many values fall into each interval a. line plot b. bar graph c. histogram	1
7	To prevent unauthorized access to and / or from the network, a system known as _____, can be implemented by hardware and / or software.	1
8	In a DataFrame, Axis= 1 represents the_____ elements.	1
9	Which of the following is not a network topology : Star, Mesh , Tree, Bug , Bus	1

10	For web pages where the information is changed frequently, for example, stock prices, weather information which out of the following options would you advise ? a) Static web page b) Dynamic web page Justify your answer.	1
11	The `avg()` function in MySql is an example of _____. a. Math function b. Text function c. Date Function d. Aggregate Function	1
12	The practice of taking someone else's work or ideas and passing them off as one's own is known as _____	1
13	In Pandas the function used to check for null values in a DataFrame is _____	1
14	I can keep you signed in. I can remember your site preferences. I can give you locally relevant content. Who am I ?	1
15	Which amongst the following is not an example of browser ? a. Chrome b. Firefox c. Avast d. Edge	1
16	A mail or message sent to a large number of people indiscriminately without their consent is called_____	1
17	According to a survey, one of the major asian country generates approximately about 2 million tonnes of electronic waste per year. Only 1.5 % of the total e-waste gets recycled. Suggest a method to manage e-waste .	1
18	The _____command can be used to makes changes in the rows of a table in SQL.	1

19	Write the SQL command that will display the current time and date	1
20	_____ network device is known as an intelligent hub .	1
21.	Receiving irreleavnt and unwanted emails repeatedly is an example of _____.	1
	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 **df** and answer any four questions from (i)-(v) rollno name UT1 UT2 UT3 UT4 1 Prerna Singh 24 24 20 22 2 Manish Arora 18 17 19 22 3 Tanish Goel 20 22 18 24 4 Falguni Jain 22 20 24 20 5 Kanika Bhatnagar 15 20 18 22 6 Ramandeep Kaur 20 15 22 24	
(i)	Write down the command that will give the following output. **rollno 6** **name Tanish Goel** **UT1 24** **UT2 24** **UT3 24** **UT4 24** **dtype: object** a. `print(df.max)` b. `print(df.max())` c. `print(df.max(axis=1))` d. `print(df.max, axis=1)`	1
(ii)	The teacher needs to know the marks scored by the student with roll number 4. Help her to identify the correct set of statement/s from the given options : a. `df1=df[df['rollno']==4]` `print(df1)`	1

	b. `df1=df[rollno==4]` `print(df1)` c. `df1=df[df.rollno=4]` `print(df1)` d. `df1=df[df.rollno==4]` `print(df1)`	
(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)	1
(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)`	1
(v)	Ms. Sharma, the class teacher wants to add a new column, the scores of Grade with the values, ' A', 'B', 'A', 'A', 'B', 'A' ,to the DataFrame. Help her choose the command to do so: a. `df.column=['A','B','A','A','B','A']` b. `df ['Grade']=['A','B','A','A','B','A']` c. `df.loc['Grade']= ['A','B','A','A','B','A']` d. Both (b) and (c) are correct	1
23	Consider the table STUDENT given below:	

RollNo	Name	Class	DOB	Gender	City	Marks
1	Anand	XI	6/6/97	M	Agra	430
2	Chetan	XII	7/5/94	M	Mumbai	460
3	Geet	XI	6/5/97	F	Agra	470
4	Preeti	XII	8/8/95	F	Mumbai	492
5	Saniyal	XII	8/10/95	M	Delhi	360
6	Maakhiy	XI	12/12/94	F	Dubai	256
7	Neha	X	8/12/95	F	Moscow	324

	8	Nishant	X	12/6/95	M	Moscow	429

(i) State the command that will give the output as : — 1

Name
Anand
Chetan
Geet
Preeti

```
i.  select name from student where class='XI' and
class='XII';
ii. select name from student where not class='XI' and
    class='XII';
iii. select name from student where city="Agra" OR
    city="Mumbai";
iv. select name from student where city IN("Agra",
"Mumbai");
```

Choose the correct option:
a. Both (i) and (ii).
b. Both (iii) and (iv).
c. Any of the options (i), (ii) and (iv)
d. Only (iii)

(ii) What will be the output of the following command? — 1

```
Select * from student where gender ="F" order by marks;
```

a.

Rollno	Name	Class	DOB	Gender	City	Marks
4	Preeti	XII	8/8/95	F	Mumbai	492
3	Geet	XI	6/5/97	F	Agra	470
7	Neha	X	8/12/95	F	Moscow	324
6	Maakhiy	XI	12/12/94	F	Dubai	256

b.

Rollno	Name	Class	DOB	Gender	City	Marks
6	Maakhiy	XI	12/12/94	F	Dubai	256
7	Neha	X	8/12/95	F	Moscow	324
3	Geet	XI	6/5/97	F	Agra	470
4	Preeti	XII	8/8/95	F	Mumbai	492

c.

Gender	Marks
F	256
F	324
F	470
F	492

	d. Gender | Marks F | 492 F | 470 F | 324 F | 256	
(iii)	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. a. Select max(marks) from student where group by class; b. Select class, max(marks) from student group by marks; c. Select class, max(marks) group by class from student; d. Select class, max(marks) from student group by class;	1
(iv)	State the command to display the average marks scored by students of each gender who are in class XI? i. Select gender, avg(marks) from student where class= "XI" group by gender; ii Select gender, avg(marks) from student group by gender where class="XI"; iii. Select gender, avg(marks) group by gender from student having class="XI"; iv. Select gender, avg(marks) from student group by gender having class = "XI"; Choose the correct option: a. Both (ii) and (iii) b. Both (ii) and (iv) c. Both (i) and (iii) d. Only (iii)	1
(v)	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;	1

	Part - B	
	Section – I	
24	Consider a given Series , M1: index |	Marks
---	---
Term1	45
Term2	65
Term3	24
Term4	89 | Write a program in Python Pandas to create the series.	2
25	State any two differences between single row functions and multiple row functions. **OR** What is the difference between the order by and group by clause when used alongwith the **`select`** statement. Explain with an example.	2
26	Consider the decimal number x with value 8459.2654. Write commands in SQL to: i. round it off to a whole number ii. round it to 2 places **before** the decimal.	2
27	Consider the following Series object, S_amt | Table	350
---	---
Chair	200
Sofa	800
Stool	150 | 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.	2
28	Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission. Command1 : `Select count(*) from employee;`	2

<table>
<tr><td></td><td>Command2: <code>Select count(commission) from employee;</code>

She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.</td><td></td></tr>
<tr><td>29</td><td>Consider the following SQL string: “Preoccupied”

Write commands to display:

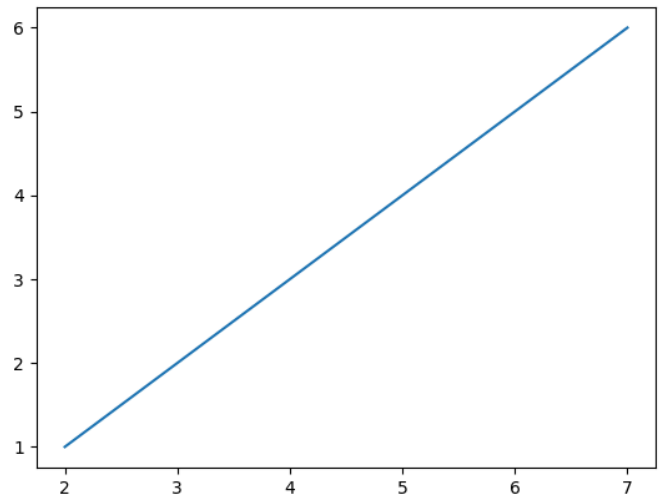
a. “occupied”
b. “cup”

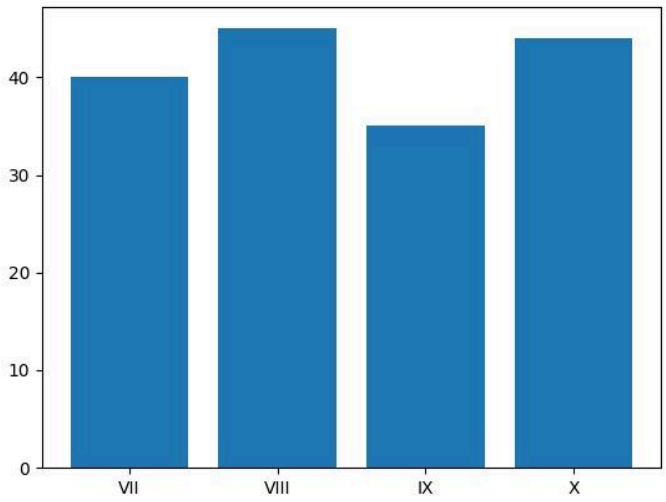
OR

Considering the same string “Preoccupied”
Write SQL commands to display:

a. the position of the substring ‘cup’ in the string “Preoccupied”
b. the first 4 letters of the string</td><td>2</td></tr>
<tr><td>30</td><td>Consider the following DataFrame, classframe

<table><tr><th></th><th>Rollno</th><th>Name</th><th>Class</th><th>Section</th><th>CGPA</th><th>Stream</th></tr><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></table>
Write commands to :
i. Add a new column ‘Activity’ to the Dataframe
ii. Add a new row with values (5 , Mridula ,X, F , 9.8, Science)</td><td>2</td></tr>
<tr><td>31</td><td>Expand the following terms related to Computer Networks:
a. SMTP
b. POP
c. FTP
d. VoIP</td><td>2</td></tr>
<tr><td>32</td><td>List any two health hazards related to excessive use of Technology.</td><td>2</td></tr>
</table>

33	Priyanka is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?	2
	Section -II	
34	Cconsider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40,90, 110. What will be the output of the following two statements considering that the above objects have been created already a. `print (x*2)` b. `print(y*2)` Justify your answer.	3
35	What do you mean by Identity theft? Explain with the help of an example. **OR** What do you understand by Net Ettiquetes? Explain any two such ettiquetes.	3
36	Consider the following graph . Write the code to plot it.  **OR** Draw the following bar graph representing the number of students in each class.	3



37 A relation Vehicles is given below : 3

V_no	Type	Company	Price	Qty
AW125	Wagon	Maruti	250000	25
J0083	Jeep	Mahindra	4000000	15
S9090	SUV	Mitsubishi	2500000	18
M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

Write SQLcommands to:
a. Display the average price of each type of vehicle having quantity more than 20.
b. Count the type of vehicles manufactured by each company.
c. Display the total price of all the types of vehicles.

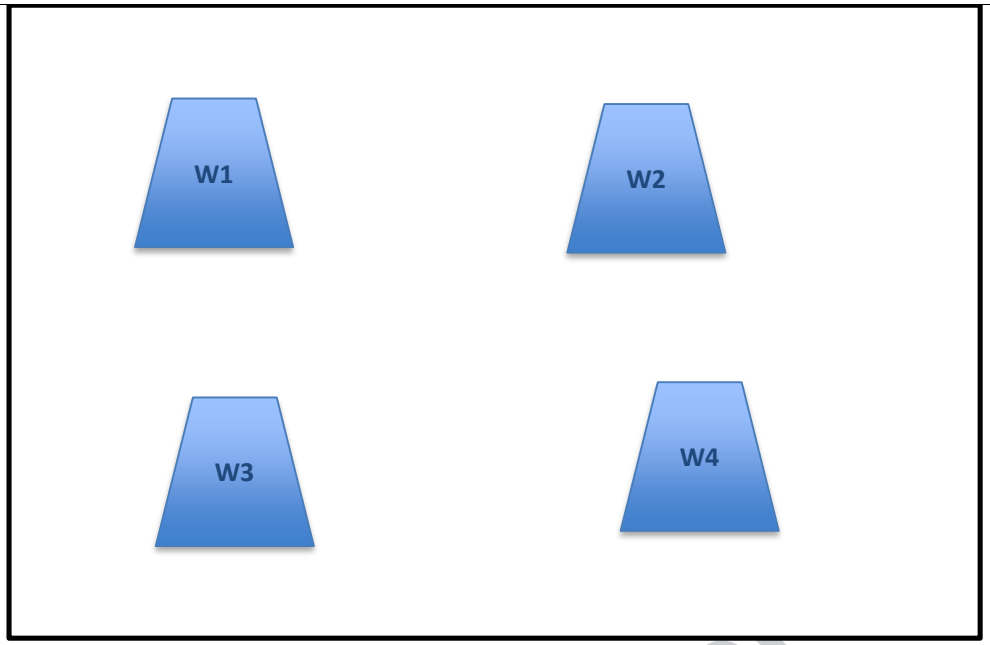
Section -III

38 Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary: 5

B_NO	Name	Score1	Score2
1	Sunil Pillai	90	80
2	Gaurav Sharma	65	45
3	Piyush Goel	70	90
4	Kartik Thakur	80	76

Perform the following operations on the DataFrame :
1)Add both the scores of a batsman and assign to column “Total”
2)Display the highest score in both Score1 and Score2 of the DataFrame.

	3)Display the DataFrame	
39	Write the SQL functions which will perform the following operations: i) To display the name of the month of the current date . ii) To remove spaces from the beginning and end of a string, “ Panorama “. iii) To display the name of the day eg, Friday or Sunday from your date of birth, dob. iv) To display the starting position of your first name(fname) from your whole name (name). v) To compute the remainder of division between two numbers, n1 and n2 **OR** Consider a table SALESMAN with the following data: SNO SNAME SALARY BONUS DATE OF JOIN A01 Beena Mehta 30000 45.23 29-10-2019 A02 K. L. Sahay 50000 25.34 13-03-2018 B03 Nisha Thakkar 30000 35.00 18-03-2017 B04 Leela Yadav 80000 NULL 31-12-2018 C05 Gautam Gola 20000 NULL 23-01-1989 C06 Trapti Garg 70000 12.37 15-06-1987 D07 Neena Sharma 50000 27.89 18-03-1999 Write SQL queries using SQL functions to perform the following operations: a) Display salesman name and bonus after rounding off to zero decimal places. b) Display the position of occurrence of the string “ta” in salesman names. c) Display the four characters from salesman name starting from second character. d) Display the month name for the date of join of salesman e) Display the name of the weekday for the date of join of salesman	5
40.	A company in Mega Enterprises has 4 wings of buildings as shown in the diagram :	5



Center to center distances between various Buildings:
W3 to W1 - 50m
W1 to W2 - 60m
W2 to W4 - 25m
W4 to W3 - 170m
W3 to W2 - 125m
W1 to w4 - 90m
Number of computers in each of the wing:
W1 - 150
W2 - 15
W3 - 15
W4 - 25
Computers in each wing are networked but wings are not networked The company has now decided to connect the wings also.
i. Suggest a most suitable cable layout for the above connections.
ii. Suggest the most appropriate topology of the connection between the wings.
iii. The company wants internet accessibility in all the wings. Suggest a suitable technology .
iv. Suggest the placement of the following devices with justification if the company wants minimized network traffic
a)Repeater
b)Hub / switch
v. The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically.