MODEL EXAMINATION

INFORMATICS PRACTICES (065)

Class XII

Max Marks: 70 Marks **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 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 mark each in which one question has internal option.

PART A

Section – I : Attempt any 15 questions from questions 1 to 21

1 Which of the following is not covered under IPR? **1**

(a) Music (b) Insurance (c) Logo Designed (d) Invention

2 Point out the incorrect combination with regards to kind keyword for graph plotting. **1**

(a) 'bar' for bar plot (b) 'hist' for histogram

(c) 'line' for line plot (d) All above are correct

3 What will be the output of the following code? **1**

```
SELECT MOD(14,3);
```

4 What will be the output of the following code? **1**

```
import pandas as pd
s = pd.Series(6,index=range(0,5))
print(s)
```

5 If series s1 is having following data, **1**

```
1     6
3     1
5     3
7     5
9     4
11    8
13    7
15    4
17    6
19    7
dtype: int64
```

What would the command print(s1[3:6]) result in?

6 Fill in the blanks with correct library to execute the given code. **1**

```
import      _________    as plt
import numpy as np
ypoints = np.array([3, 8, 1, 10, 5, 7])
plt.plot(ypoints)
plt.show()
```

7 An_____ is a software extension that adds extra features to a program. **1**

8 Rahul wants to print the row labels of the dataframe. He should use the _____ attribute of a dataframe. **1**

9 **_____**websites are ones that are fixed and display the same content for every user, usually written exclusively in HTML. **1**

10 Which of the network topology can be a preferred for a company that would like to keep adding more and more computers to the topology economically as they grow? **1**

11 What will be the result of the following query based on the table given here. **1**

SELECT COUNT(Salary) FROM Instructor;

Instructor_id	Name	Department	Salary
236	Steive	Comp.Sci.	50000
635	Charles	Biology	70000
189	Natalya	Elec.Eng.	60000
372	Sheryl	Physics	null
439	Davis	Biology	80000
583	Calvin	Comp.Sci.	null
648	Jenny	Finance	95000

12 What is the maximum number of years that a patent would be valid in India? **1**

13 What will be the output of the following code? **1**

```
import pandas as pd
import numpy as np
s = pd.Series(np.random.randn(4))
print (s.ndim)
```

14 The networking device that forwards data packets between computer network is **1**

15 Write the expansion of the following terms **1**

(a) HTTP (b) URL

16 Give any two examples of e-waste. **1**

17 A mail or message sent to a large number of people indiscriminately without their consent is called _____

18 Plagiarism is a cybercrime under Indian IT Act. (True / False) **1**

19 Write the command to delete all the data of the table 'activity' retaining only structure. **1**

20 Which networking device with similar functionality can be used to replace a hub? **1**

21 Give one disadvantage of Open Source Software. **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 named happy_df created using following command

happy_df=pd.read_csv("Dataset3.csv")

Country	Region	Happiness Rank	Happiness Score	Family
Switzerland	Western Europe	1	7.587	1.34951
Iceland	Western Europe	2	7.561	1.40223
Denmark	Western Europe	3	7.527	1.36058
Norway	Western Europe	4	7.522	1.33095
Canada	North America	5	7.427	1.32261
Finland	Western Europe	6	7.406	1.31826
Netherlands	Western Europe	7	7.378	1.28017
Sweden	Western Europe	8	7.364	1.28907
New Zealand	Australia and New Zealand	9	7.286	1.31967
Australia	Australia and New Zealand	10	7.284	1.30923

(i) Complete the following command to display first five rows of the above Dataframe. **1**

```
print(happy_df.iloc[:]
```

(ii) Write the command to display number of rows and columns of the above Dataframe. **1**

(a) print(happy_df.row, happy_df.columns)
(b) print(happy_df.shape())
(c) print(happy_df.shape())

(iii) Which command(s) of the following would display only Region column of the above Dataframe. **1**

(a) print(happy_df.Region)
(b) print(happy_df.iloc [, 'Region'])
(c) print(happy_df.iloc [: ,'Region'])
(d) print(happy_df.iloc [: , 1])

(iv) What will be the output of the following command? **1**

```
print(happy_df.loc[4:6,'Country'])
```

(v) Which of the following commands would display maximum value of every column? **1**

(a) print(happy_df.max)
(b) print(happy_df.max())
(c) print(happy_df.max(axis=1))
(d) print(happy_df.max, axis=1)

23 Consider a table showing air quality of a city taken over period of time. The name of the table is cityair.

Odate	PM25	PM10	CO	SO2
2019-03-01	114.56	104.08	0.82	12.89
2019-03-02	176.07	97.02	0.66	30.02
2019-03-03	38.85	95.51	0.6	20.68
2019-03-04	43.48	98.1	0.81	6.32
2019-03-05	53.2	95.25	0.81	17.25
2019-03-06	58.19	83.69	0.81	11.03
2019-03-07	39.87	85.68	0.78	4.02
2019-03-08	38.91	89.41	0.77	5.58
2019-03-09	36.46	115.57	0.83	5.6

(i) Which of the following command will give the latest date for which data is available in the above table? **1**

(a) SELECT MAX(ODate) FROM cityair;
(b) SELECT MIN(ODate) FROM cityair;
(c) SELECT COUNT(ODate) FROM cityair;

(ii) Which of the following commands will display 'Mar' for Date column? **1**

(a) SELECT MONTH(ODate) FROM cityair;

(b) SELECT MONTHNAME(ODate) FROM cityair;

(c) SELECT DATE(ODate) from cityair;

(iii) What will be the output of the following query? **1**

SELECT ROUND(PM25,1) FROM cityair WHERE Odate = '2019-03-01'

(iv) What will be the output of the following query? **1**

SELECT DAY(Odate) FROM cityair WHERE SO2 <5;

(a) 7

(b) 3

(c) Empty Table

(v) Write a command to delete the data of 1st Mar 2019 in the table. **1**

Part – B

Section – I

24 Write a program to create a Series having 10 random numbers in the range of 10 and 20. **2**

25 What is importance of primary key in a table? How many primary keys can be there for a table? **2**

OR

Explain working of TRIM( ) function with proper examples.

26 Consider the following 'Student' table. **2**

TABLE:Student

Rollno	Sname	Subject	Marks	grade
001	SUMIT	MATHS	95	A
002	SHERRY	IP	96	A
003	SUMAN	IP	75	
004	LALIT	HINDI	84	B
005	RAHUL	MATHS	88	B

(i) What will be the most suitable datatype for the grade column and why?

(ii) Write a command to insert Suman's record with the data as shown in the table.

27 Consider the following Series 's' **2**

```
0    4.0
1    5.0
2    7.0
3    NaN
4    1.0
5   10.0
dtype: float64
```

(i) Write a Python code to add 1 to all the elements.

(ii) Rewrite the above code to add 1 to all the elements assuming NaN to be value 0.

28 Explain the working of ORDER BY clause of SELECT query with proper example. **2**

29 Consider a string "AS YOU know MORE" **2**

Write the queries for the following tasks.

(i) Write a command to display "know".

(ii) Write a command to display number of characters in the string.

OR

Consider a string "You Grow more" stored in a column str. What wil be the output of the following queries?

(i) SELECT UPPER(str);

(ii) SELECT substr(str,-9,4);

30 Given here is a Dataframe of Sales data of four months stored with name sales_df. **2**

	April	May	June	July
Delhi	75	90	54	67
Mumbai	78	65	87	84
Kolkata	84	79	92	79
Chennai	65	78	94	90

(i) Write a Python code to find total sales of July month.

(ii) Write a Python code to add the sales of August month with [70,94,80,93] data.

31 Give any two advantages of star topology. 2

32 Write any four net netiquettes you should follow while working with Internet. 2

33 What is cyber bullying? What are the two actions you would take if you feel that you are a victim of cyber bullying? 2

34 Predict the output of the following code. 3

```
data = {'one':'a','two':'b','three':'c'}
s=pd.Series(data)
print(s)
print(s.size)
```

35 What is Phishing? Write any two precautions that you would take to avoid being victim of phishing. 3

36 Consider a Dataframe 'emp_df' - 3

Name	Age	Salary
Shalini	25	32000
Gaurav	31	35000
Bhavya	29	37000
Divansh	28	27000

Write a Python code to display a line graph with names on x-axis and age on y-axis. Give appropriate names for axis and title for the graph.

OR

Write a Python code to display a bar graph with names on x-axis and salary on y-axis. Give appropriate names for axis and title for the graph.

37 Consider a MySQL table 'product' **3**

P_ID	PROD_NAME	PROD_PRICE	PROD_QTY
P01	Notebook	85	500
P02	Pencil Box	76	200
P03	Water Bottle	129	50
P04	School Bag	739	70

(i) Display maximum PROD_QTY.
(ii) Display the value of each product where the value of each product is calculated as

PROD_PRICE * PROD_QTY

(iii) Display average PROD_PRICE.

Section -III

38 Consider the following Dataframe named housing_df. **5**

area_type	location	size	society	total_sqft	bath	balcony	price
Super built-up Area	Anand Vihar	2 BHK	DDA	1056	2	1	39.07
Plot Area	Mundka	4 BHK	PWD	2600	5	3	120
Built-up Area	Peeragarhi	3 BHK	DLF	1440	2	3	62
Super built-up Area	Lajpat Nagar	3 BHK	DDA	1521	3	1	95
Super built-up Area	Patel Nagar	2 BHK	PWD	1200	2	1	51
Super built-up Area	Rajendra Place	2 BHK	DLF	1170	2	1	38
Super built-up Area	Old Airport Road	4 BHK	DDA	2732	4	2	204
Super built-up Area	Rajaji Nagar	4 BHK	PWD	3300	4	2	600

Write a Python program to
(i) Create the above Dataframe from a csv file named housing.csv and display it. Import necessary libraries.

(ii) Display the houses having 2 bathrooms.
(iii) Display the price of house in lakhs. Assume the numbers in price column represent price in lakhs.

(iv) Display first 3 rows of the Dataframe

39 Consider the below mentioned table of 'CLOTH' **5**

DCODE	DESCRIPTION	PRICE	MCODE	LAUNCHDATE
10001	FORMAL SHIRT	1250	M001	12–JAN–08
10020	FROCK	750	M004	09–SEP–07
10012	INFORMAL SHIRT	1450	M002	06–JUN–08
10019	EVENING GOWN	850	M003	06–JUN–08
10090	TULIP SKIRT	850	M002	31–MAR–07
10023	PENCIL SKIRT	1250	M003	19–DEC–08
10089	SLACKS	850	M003	20–OCT–08

Write the commands for the following:

(i) Display first three letters of description e.g. 'FRO' for 'FROCK'

(ii) Display the description after removing leading spaces if any.

(iii) Display number of characters taken by each description.

(iv) Display the number of MCODE in the table.

(v) Display the day of the LAUNCHDATE. Eg. 'Monday', 'Tuesday' etc

OR

(i) Display total price of products launched in year 2008.

(ii) Display minimum price of product for each material code(MCODE).

(iii) Display the most recent LAUNCHDATE.

(iv) Display the description in lower case alphabets.

(v) Display remainder of price divided by 10.

40 Software Development Company has set up its new center at Raipur for its office and **5** web based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D.

Block	Number of Computers
A	25
B	50
C	125
D	10

Shortest distances between various Blocks in meters:

Block A to Block B	60m
Block B to Block C	40m
Block C to Block A	30m
Block D to Block C	50m

(i) Suggest most suitable place to house server of this company with proper reason.

(ii) Suggest the layout of connection between the blocks and identify the topology of the layout.

(iii) Suggest the placement of the Modem in the network with justification.

The company wants to design a website for its customers that can be changing the contents as per the responses of customers. What type of website static or dynamic can they design for this purpose?

(iv) What type of network would be formed if the Raipur office is connected to their New Delhi office?