PRE-BOARD / XII / INFORMATICS PRACTICES / 2020-21

Time: 3 Hrs.   **MM: 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 each.
     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 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

Q1. Gaining unauthorised access to a network or computer or digital files with malicious intentions, is called_____   1

Q2. Fill in the blanks: 1
Pyplot's _____ function is used to create line charts.
    a. plt.line()
    b. plt.plot()
    c. plt.bar()
    d. plt.title()

Q3. To display first four elements of a Series object S, you may write ____   1
    a. S[:4]
    b. S[4]
    c. S[4:]
    d. ALL OF THE ABOVE

Q4. Write the output of the following SQL command :   1
SELECT TRUNCATE(58.567, LENGTH("hi"));
    a. 58.60
    b. 58.57
    c. 58.56
    d. 59

Q5. Ms. Sanjna wants to plot a bar graph for the given set of values of subject on x-axis and number of students who opted for that subject on y-axis.   1

Complete the code to perform the following :

(i) To plot the bar graph in statement 1
(ii) To display the graph in statement 2

import matplotlib.pyplot as plt

x=['Hindi', 'English', 'Science', 'SST']
y=[10,20,30,40]
_____ Statement 1
_____ Statement 2

Q6. Write ouput of following code: 1
```
import pandas as pd
my_series=pd.Series({'Indore':20,'Ujjain':35,'Bhopal':40})
print(my_series[my_series>20])
```

Q7. Consider the following python code and write the output :   1
```
import pandas as pd
K=pd.Series([2,4,6,8,10])
s = pd.Series(K)
print(s)
```

Q8. All pandas data structure are_____mutable but not always   1
_____mutable.
    1. Size, value
    2. Semantic , size
    3. Value, size
    4. None of the above

Q9. A Device used to connect dissimilar network is called_____   1

Q10. Mr. Aditya Raj Singhania is in India and he is interested in communicating with her uncle in America. He wants to show one of her own designed gadgets to him and also wants to demonstrate its working without physically going America. Which protocol out of the following will be ideal for the same?   1
(i)   POP3   (ii) SMTP   (iii)   VoIP   (iv) HTTP

Q11. Which of the following is not a category of MySQL functions?   1

    a. Text Functions
    b. Mathematical Functions
    c. Statistical Functions
    d. Arithmetic Functions

Q12. Online _____ is a theft of personal information in order to commit fraud.   1

Q13. David wants to display the last four rows of the dataframe df and has written the following code :   1
df.tail()

But last 5 rows are being displayed. Identify the error and rewrite the correct code so that last 4 rows get displayed.

Q14. The practice of attempting to acquire sensitive information from individuals over the internet by means of deception is called_____   1

Q15. Which client server program allows multiple users to communicate online with real time audio, video and text chat in dynamic 3D environment?   1

Q16. Which amongst the following is not an example of browser?   1
  a. AOL
  b. Google
  c. Opera
  d. Webkit

Q17. What is cyber stalking?   1

Q18. The _____ command can be used to make changes in the structure of a table in SQL.   1

Q19. The COUNT function in SQL returns the number of _____   1
  A. Record   B. Distinct values
  C. Group By   D. Columns

Q20. _____ network device is known as a smart hub.   1

Q21. The attack that focuses on capturing small packets from the network transmitted by other computers and reading the data content in search of any type of information is _____   1
  a. Phishing
  b. Eavesdropping
  c. PC Intrusion
  d. Scams

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.

Q22. Consider the following DataFrame **df** and answer any four questions from (i)-(v) given below:
import pandas as pd
df = pd.DataFrame({ "Qtr1":[2000, 4000, 5000, 4400, 10000],
                    "Qtr2":[5800, 2500, 5400, 3000, 2900],
                    "Qtr3":[20000, 16000, 7000, 3600, 8200],
                    "Qtr4":[1400, 3700, 1700, 2000, 6000]})
 (i)   Which of the following command will display the row labels of the DataFrame?   1
  a. print(df.axex)
  b. print(df.index)
  c. print(df.axex())
  d. print(df.index())

(ii) Which of the following statement(s) will the values of column **Qtr2** of the DataFrame?   1
     i.   print(df.Qtr2)
     ii.   print(df.'Qtr2'[])
     iii.   print(df['Qtr2'])
     iv.   print(df)

Choose the correct option:
    a. Both i and ii
    b. Both i and iii
    c. Both i and ii
    d. (i), (ii) and (iii)

(iii) Which of the following statement(s) is/are used to add one more column that is Qtr5,   1
the values of Qtr5 , 15200,5600,4500,6000,8000, to the dataframe df:

    a. df['Qtr5']=[15200,5600,4500,6000,8000]
    b. df.column=[15200,5600,4500,6000,8000]
    c. df.loc['Qtr5']= [15200,5600,4500,6000,8000]
    d. Both a and c

(iv) Which of the following statement(s) is used to delete column Qtr3 from DataFrame df?   1
    a. drop df1['Qtr3']
    b. del df1['Qtr3']
    c. delete df1['Qtr3']
    d. Both a and b

(v) Which of the following statement(s) will give the exact number of values in each column of the   1
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)

Q23. Consider the table **TEACHER** given below.

TEACHER						
ID	Name	Department	Hiredate	Category	Gender	Salary
1	Taniya	Social Studies	03/17/1994	TGT	F	25000
2	Abhishek	Art	02/12/1990	PRT	M	20000
3	Sanjana	English	05/16/1980	PGT	F	30000
4	Vishwajeet	English	10/16/1989	TGT	M	25000
5	Aman	Hindi	08/1/1990	PRT	F	22000
6	Pritam	Math	03/17/1980	PRT	F	21000
7	RajKumar	Science	09/2/1994	TGT	M	27000
8	Sital	Math	11/17/1980	TGT	F	24500

(i)   Write the SQL command to find out highest salary?   1

        a.   Select name, max(salary) from Teacher;
        b.   Select name, maximum(salary) from Teacher;
        c.   Select name, salary, maximum from teacher;
        d.   Select max(salary) from teacher;

(ii)   State the command to display average salary of teachers of each department who are in TGT   1
category?

        I.   Select department, Avg(salary) from Teacher group by department where
              Category="TGT";
        II.   Select department, Avg(salary) from Teacher where Category="TGT" group by
              department;
        III.   Select department, Avg(salary) from Teacher group by department Having
              Category="TGT";
        IV.   Select department, Avg(salary) from Teacher Having Category="TGT" group by
              department;

        Choose the correct option:
        a.   Both I and III
        b.   Both II and III
        c.   Both II and IV
        d.   Only III

(iii)   State the command to count the number of teachers and sum of their salaries department wise.   1
        a.   Select count(*), sum(salary) from Teacher group by Department;
        b.   Select count(*), sum(salary) group by Department from Teacher;
        c.   Select count(*), salary from Teacher group by Department;
        d.   Select count(*), sum(salary) from Teacher group by Salary;

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

Name
Abhishek
Aman
Pritam

        a.   Select name FROM Teacher where name is ('Abhishek','Aman','Pritam');
        b.   Select name FROM Teacher where Category="PRT";
        c.   Select name FROM Teacher where category="PRT" and Gender="M";
        d.   Select name FROM Teacher where Department in ("Hindi", "Art","math");

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

SELECT Department, COUNT(Department) FROM Teacher   Group by Department;
a.

Department	Count(Department)
Social Studies	1
Art	1
English	2

Hindi	1
Math	2
Science	1

b.

Department	Count(Department)
8	6

c.

Department	Count(Department)
Social Studies	1
Art	1
English	2
Hindi	2
Math	2
Science	1

d.

Department	Count(Department)
Social Studies	1
Art	2
English	2
Hindi	1
Math	2
Science	2

PART B
SECTION – I

Q24. Consider a given Series , S1:   2

Index	Runs
Rohit	520
Virat	450
Mayank	500
Rishabh	300

Write a program in Python Pandas to create the Series.

Q25. What is the difference between **Where** and **Having** clause when used along with the select   2
statement. Explain with an example.

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

State any two differences between single row functions and multiple row functions.

Q26. Pay" is a column name for the Pay of staff in a table "Schools". The SQL queries   2

SELECT count(*) FROM Schools;
and
SELECT count(Pay) FROM Schools;

The outputs obtained are 40 and 39 in both the queries respectively.

What is the reason behind different output? Justify the your answer

Q27. Name SQL Single Row functions (for each of the following) that   2

(i)   returns names of days. For example : ''Monday'', ''Tuesday''.
(ii)   returns weekday number. For example : 1 for Sunday, 2 for Monday, 3 for Tuesday.

Q28. Write the output of the following SQL queries: 2
   i) SELECT TRUNCATE(8.975,2);
   ii)SELECT MID('HONESTY WINS',3,4);
   iii)SELECT RIGHT(CONCAT('PRACTICES','INFORMATICS'),5);
   iv)SELECT DAYOFMONTH('2020-01-16');

Q29. (i) Name the Data type that should be used to store   2
             AccountCodes like ''A1001'' of Customers
   (ii) Name two Data types that require data to be enclosed in quotes.
                              OR

   Given the table 'Player' with the following columns :
                    Table : Player

PCODE	POINTS
1	50
2	NULL
3	40

   Write the output of the following statements :
            (i)   SELECT AVG(POINTS)
                    FROM Player;

            (ii)   SELECT COUNT(POINTS) FROM PLAYER;

Q30. Write a python program to create a data frame with headings (CS and IP) from the list given   2
   below-
                [[79,92][86,96],[85,91],[80,99]]

Q31. Expand the following terms: 2
   a. IRC
   b. ISP
   c. URL
   d. SMTP

Q32. Mention two benefits of e-waste recycling.   2

Q33. Rohit is using his internet connection to book a ticket. This is a classic example of leaving a trail of   2
web activities carried by his. What do we call this type of activity? What is the risk involved by
such kind of activity?

SECTION – II

Q34. Consider two Series objects S1 and S2. Both have values 10, 20,30,40   3
What will be the output of the following two statements considering that the above objects have
been created already

  a. print(S1*S2)
  b. print(S1+S2)
Justify your answer.

Q35. What do you understand by Net Ettiquetes? Explain any two such ettiquetes.   3
OR

What do you mean by Identity theft? Explain with the help of an example.

Q36. Write a python program to draw a bar chart with the following information: 3

City	Pollution
Kolkata	78
Delhi	91
Kanpur	88
Patna	90
Banglore	82

The barchart should have the following features:
  a) X-axis label should be City and Y-axis label should be Pollution
  b) The title of the chart should be Pollution Index
  c) The colour of the bars should be Red
Use proper import statements in the program.

OR

Write a python program to draw a histogram with following information:

1 0	1 5	1 0	1 0	1 0	1 5	2 0	2 0	2 0	2 0	2 0	2 5	2 5

The histogram should have following information
  a) X-axis label should be score and Y-axis should be Frequency
  b) The title should be Frequency of Score
  c) The colour of histogram should be blue with 10 bins
Use proper import statements in the program

Q37. Consider the following table **products** and write output for below given questions: 3

Pcode	Pname	Qty	Price	Company
P1001	iPad	120	15000	Apple
P1002	LED TV	100	85000	Sony
P1003	DSLR Camera	10	25000	Philips
P1004	iPhone	50	95000	Apple
P1005	LED TV	20	45000	MI
P1006	Bluetooth Speaker	100	20000	Ahuja

a. select concat(concat(pname,"-"),qty) from products where compnany='Apple';
b. select pname,mod(price,103) from products where qty>100;
c. select pcode, round(qty) from products where company in ('Sony','MI');

SECTION – III

Q38. A Dictionary Grade contains the following data: 5
Grade={'Name':[Ramesh','Priya','Amit','Harshit','David','Vinita','Sanjeev'],
'Grade': ['A1','A2','B1','A1','B2','A2','A1']}
Write statements for the following:
a) Create a Dataframe called Gr
b) Give the output of : (i) Gr[0:5]   (ii) Gr.iloc[0:5]
c) Add a column called Percentage with following data:
   [90,79,None,85,78,None,93]
d) Rearrange the columns as Name, Percentage and Grade.
e) Drop the column(i.e. Grade) by name.

Q39. Write SQL (i) to (iv) and output for (v) based on following table :   5

Table: Emp

EMPNO	ENAME	JOB	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	02-Apr-81	2975	NULL	20
7654	MARTIN	SALESMAN	28-Sep-81	1250	1400	30
7698	BLAKE	MANAGER	01-May-81	2850	NULL	30
7782	CLARK	MANAGER	09-Jun-81	2450	NULL	10
7788	SCOTT	ANALYST	09-Dec-82	3000	NULL	20

    i)   To list the Employee Name who are not getting any commission (COMM).
    ii)   Display Name of Employee whose name start with character 'A'.
    iii)   To count number of Jobs available in company i.e. in EMP table.
    iv)   To display Employee no. and name of employees in decreasing order of Salary.
   v)   SELECT ENAME, SAL*10 FROM EMP WHERE DEPTNO=10;

OR

Write SQL commands for the questions from (i) to (vi) on the basis of table **SCHOLARS**

Adm_No	Name	Address	Join_DT	Fee	Semester	Grade
1256	ADITYA	B-4, DWARKA	2012-07-23	45000	I	A1
5678	AMIT	SEC 5, R.K PURAM	2014-06-15	35000	III	B2
1425	KARINA	B3/2, V.VIHAR	2013-06-22	26000	II	C1
8954	BIKRAM	SEC 2, PUNA	2012-03-13	75000	I	A2
1789	VIJAY	123/A, MUMBAI	2014-02-17	35000	II	B1
8376	GANESH	53/2, CHANDIGARH	2012-10-05	22000	III	C3
2938	ARUN	11/7, CHENNAI	2012-06-24	25000	II	B2
6498	TANU	117-N, DELHI	2011-05-25	32000	I	A1
5420	RAJAN	56-E, AHEMADABAD	2014-02-30	44000	III	B2
8567	ANITA	73/C, FARIDABAD	2012-08-22	38000	I	C2

   (i) To display Name, Adm_No of those students who joined after year 2012.
   (ii) To display all the information in descending order of Adm_No.
  (iii) To add record with the following data: 8326, "ANKIT", "2013-10-25"
   (iv) To count unique SEMESTER numbers in given table.
   (v) To change the FEE of VIJAY from 35000 to 30000.

Q40. Tech Up Corporation (TUC) is a professional consultancy company. The company is planning to set up new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirements and suggest to them the best available solutions
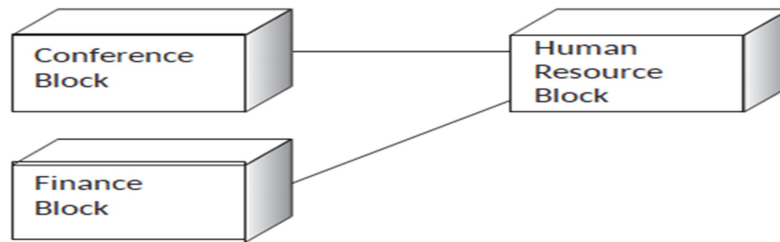
Block-to-Block distance (in Mtrs.):

Block (From)	Block (To)	Distance
Human Resource	Conference	60
Human Resource	Finance	60
Conference	Finance	120

Expected Number of Computers to be installed in each block:

Block	Computers
Human Resource	125
Conference	25
Finance	60

(a) What will be the most appropriate block where TUC should plan to install their server?

(b) What will be the best possible connectivity out of the following to connect the new set-up of offices in Bengaluru with its London base office?
  (i) Infrared   (ii) Satellite Link   (iii) Ethernet Cable

(c) Which of the following devices will you suggest to connect each computer in each of the above buildings?
  (i) Gateway   (ii) Switch   (iii) Modem

(d) Write names of any **two** popular Open Source Software which are used as Operating Systems.

(e) Write **any two** important characteristics of cloud computing.