Class XII INFORMATICS PRACTICES (065)
MODEL TEST PAPER – 2 (THEORY) (2020-21)
(Unsolved)

Maximum Marks: 70 **Time Allowed: 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 study questions. Each case study has 5 case-based sub-parts. An examinee is to attempt any 4 out of the 5 sub-parts.
4. Part B is Descriptive Paper. 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 internal options.

PART A – Section I

Attempt any 15 questions from questions 1 to 21.

1. Fill in the blanks: (1)
(i) Creative creations of mind such as patents, trademark and copyright are called ..... .
(ii) Software which usually limit the functionality after a trial period are called ..... .

2. The command used to make the grid visible in the graph is ..... . (1)
(i) `plt.visible()` (ii) `plt.setgrid(True)`
(iii) `plt.grid(True)` (iv) `plt.grid(True)`

3. Fill in the blanks with the appropriate SQL function which returns the following output. (1)

```
mysql> Select _______(3,3);
+---------------+
27
+---------------+
```

(i) Truncate (ii) Round
(iii) Mod (iv) Pow

4. DataFrame is ..... mutable as well as ..... mutable. (1)

5. Choose the correct way to create a Series using a dictionary: (1)
(i) `S1= pd.Series(["One":1,"Two":2,"Three":3])`
(ii) `S1= pd.Series({"One":1,"Two":2,"Three":3})`
(iii) `S1= pd.Series(("One":1,"Two":2,"Three":3))`
(iv) `S1= pd.Series("One":1,"Two":2,"Three":3)`

6. Which Python package is used for creating 2D graphics? (1)

7. ..... helps in locating a particular website or a web page. (1)

8. The function used to get the original index values in a dataframe is ..... . (1)

9. In ..... topology, each computer is connected with the other and provides point-to-point link between each dedicated node. (1)
(i) Star (ii) Bus
(iii) Ring (iv) Mesh

10. ..... is the process of storing your website on the web server to be accessed by everyone on the web. (1)

11. What SQL statement do we use to find the total number of records present in the table Report? (1)

(i) Select * from Report; (ii) Select Count(*) from Report;

(iii) Select Sum() from Report; (iv) Select Total() from Report;

12. Which of the following is not a type of cybercrime? (1)

(i) Data theft (ii) Phishing

(iii) Damage to data (iv) Installing antivirus

13. Write a command to delete the column "SportsFee" from a DataFrame "FeeRecord". (1)

14. I can connect two dissimilar networks. (1)

I can perform necessary translation to provide communication.

I can be used to reduce network traffic.

Who am I?

15. Identify the odd one: (1)

Microsoft Office, Adobe Photoshop, Libre Office, Coral Draw

16. Copying and pasting data from the internet or other digital resources is termed as ..... . (1)

17. The term used for discarded or unwanted electrical or electronic devices such as CPUs, keyboard, TVs, Mobile phones, LEDs, digital camera, etc., is called ..... . (1)

18. The SQL command used to retrieve the records of absent students in Science (column) subject from Student table is ..... . (1)

(i) Select * from student where science = Null;

(ii) Select * from Student where Science='Null';

(iii) Select * from Student where Science Is Null;

(iv) Select Science =Null from Student;

19. What is the importance of Distinct keyword in MySQL? (1)

20. A ..... is a device that enables a computer to connect to a network and communicate. (1)

21. Unsolicited commercial email is known as ..... . (1)

(i) Malware (ii) Virus

(iii) Spyware (iv) Spam

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' that stores Covid active cases in a society block-wise. Answer any four questions from (i) to (v).

	Block	Total Members	Cases
0	A	200	10
1	B	170	6
2	C	230	9
3	D	190	22

(i) Write the command to display cases in ascending order. (1)

(a) `print(df.sort_values("cases"))`

(b) `print(df.sort_index("cases"))`

(c) `print(df.sort_values("cases"), ascending=False)`

(d) `print(df.sort_index("cases"), ascending=True)`

(ii) The manager of a society wants to add a new column "Recover" with the following data [3,4,6,11]. Help him find the correct command. (1)

i. `df['Recover']=[3,4,6,11]` ii. `df[Recover]=[3,4,6,11]`

iii. `df.Recover=[3,4,6,11]` iv. `df['Recover']=3,4,6,11`

Choose the correct option:

(a) both (i) and (ii) (b) only (ii)

(c) (i) and (iii) (d) (i), (ii) and (iv)

(iii) Consider the above values of 'Recover' column and write the output of the following code: (1)

```
>>> df = df.TotalCases = df.cases - df.Recover
>>> df
```

(a)
```
0   10
1   7
2   11
3   2
```
(b)
```
3   11
2   3
1   2
0   7
```
(c)
```
0   7
1   2
2   3
3   11
```
(d)
```
0   17
1   1
1   6
3   10
```

(iv) Write a command to set the index to block. (1)

(a) df.set_index('Block', inplace=True) (b) df.set_values ('Block', inplace=True)
(c) df.reset_index('Block', inplace=False) (d) df.set_values 'Block', inplace=True

(v) Write a command to display the rows of the DataFrame. (1)

(a) df.values() (b) df.rows
(c) df.columns() (d) df.values

23. Consider the table Employee given below:

Table: EMPLOYEE

EmpId	EmpName	Salary	Department	Age	Gender	DateofJoining
E1001	Rohit	25000	Admin	28	M	2019-03-02
E1002	Mohit	35000	Accounts	34	M	2016-04-23
E1003	Vishal	30000	Clerical	27	M	2018-05-12
E1004	Deepak	45000	IT	45	M	2019-09-10
E1005	Shreya	60000	Finance	55	F	2019-08-12
E1006	Poonam	38000	Accounts	35	F	2020-02-10

(i) Select the right command that will display the details of all the employees whose salary is in the range of 30000 to 50000. (1)

i. Select * from Employee where Salary between 30000 or 50000;
ii. Select * from Employee where Salary between 30000 and 50000;
iii. Select * from Employee where Salary = 30000 and salary = 50000;
iv. Select * from Employee where Salary>=30000 and salary<=50000;

Choose the correct option:

(a) Both (ii) and (iii) (b) Both (ii) and (iv)
(c) Both (i) and (iii) (d) Only (iii)

(ii) Select the right command that will display the name of the youngest employee getting higher salary than others. (1)

i. Select EmpName, Min(Age), Max(Salary) from Employee;
ii. Select EmpName, Max(Age), Min(Salary) from Employee;
iii. Select EmpName, Max(Age) from Employee group by Salary;
iv. Select Min(Age), Max(Salary) from Employee;

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

EmpName
Deepak
Shreya
Poonam

i. Select EmpName from Employee where Salary>45000;
ii. Select EmpName from Employee where Age>36;
iii. Select EmpName from Employee where DateofJoin> '2019-07-10';
iv. Select EmpName from Employee where Department In("IT","Finance","Accounts");

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)

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

```
Select EmpId, EmpName, salary from Employee where gender="M" order by Salary desc;
```

i.

EmpId	EmpName	Salary
E1001	Rohit	25000
E1002	Mohit	35000
E1003	Vishal	30000
E1004	Deepak	45000

ii.

EmpId	EmpName	Salary
E1004	Deepak	45000
E1002	Mohit	35000
E1003	Vishal	30000
E1001	Rohit	25000

iii.

EmpId	EmpName	Salary
E1004	Deepak	45000
E1002	Mohit	35000
E1003	Vishal	30000
E1001	Rohit	25000
E1005	Shreya	55000

iv.

EmpId	EmpName	Salary
E1005	Shreya	60000
E1004	Deepak	45000
E1006	Poonam	38000
E1002	Mohit	35000
E1003	Vishal	30000
E1001	Rohit	25000

(v) State the command to display the Employee Name, Age, Department and Annual Salary of all Employees. (1)

i. Select Empname, Age, Department, Salary /12 from Employee;
ii. Select Empname, Age, Department, Salary *6 from Employee;
iii. Select Empname, Age, Department, Salary * 12 from Employee;
iv. Select Empname, Age, Department, Max(Salary) from Employee;

PART B – Section I

24. Create a Series that depicts Month as index and Sales as values from two different lists: (2)

Month=['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun']

Sales=[1000,1200,1100,800,1600,600]

25. mysql> Desc school; (2)

```
+--------------------+-----------------+---------+------+-----------+---------+
| Field              | Type            |Null     | Key | Default | Extra  |
+--------------------+-----------------+---------+------+-----------+---------+
| RollNo             | char<4>         | NO      | PRI | NULL    |        |
| Name               | varchar<40>     | YES     |     | NULL    |        |
| Age                | int<3>          | YES     |     | NULL    |        |
| AdmNo              | char<5>         | YES     |     | NULL    |        |
| AadharCardNo       | int<11>         | YES     | UNI | NULL    |        |
+--------------------+-----------------+---------+------+-----------+---------+
```

(i)
```
mysql> Insert into School Values<'1001','Vansh',15,'IP10',NULL>;
Query OK, 1 row affected <0.05 sec>
mysql> select * from school;
```

```
+--------------------+-----------------+---------+-----------+--------------------+
| RollNO             | Name            |Age      | AdmNo | AadharCardNo  |
+--------------------+-----------------+---------+-----------+--------------------+
| 1001               | Vansh           |15       | IP10      | NULL               |
+--------------------+-----------------+---------+-----------+--------------------+
```

(ii)
```
mysql> Insert Into School Values<NULL,'Jai',14,'IP12',892822887>;
```

Consider the structure of the table school and the two commands given above. While inserting the Null value in AadharCardNo field, it accepts but when inserting in RollNo field, it gives an error. What could be the possible reason? Differentiate between the two of them.

OR

Differentiate between Char and Varchar data type with the help of an example.

26. Write the output of the following SQL commands: (2)

(i) Select Mod(9,5); (ii) Select Round(67543.9876,–3);

(iii) Select Sqrt(–256); (iv) Select Abs(–900);

27. What will be the output of the following code: (2)

```
import pandas as pd
import numpy as np
Data = np.array(['a1','b1','c1','d1','e1', 'f1'])
S=pd.Series(Data)
print("I.")
print(S[:3])
print("II.")
print(S[-3:])
```

28. Shuchi created a table Product having fields, P_No, Pname, Qty, Price, commission, DeliveryDate. Help her to: (2)

(i) Delete row(s) that contain commission greater than or equal to 18.

(ii) Delete the column DeliveryDate.

29. Differentiate between DML and DDL commands with examples. (2)

OR

Define the following terms:

(i) Attribute (ii) Cardinality

(iii) Degree (iv) Tuple

30. How is Series data structure different from a Data Frame data structure? Explain with the help of example. (2)

31. Expand the following terms related to Computer Networks: (2)

(i) NSFNET (ii) MAC

(iii) TCP/IP (iv) OSI

32. Write two methods of e-waste management. (2)

33. Pratibha uses her smartphone for online shopping payments and other transactions such as paying electricity bills, broadband connection charges, phone recharge, etc. What kind of protection should she take while doing online transactions? Websites that she visited collect what type of information about her? (2)

Section II

34. Write a Python code to create the following DataFrame Library using Python Pandas. Give index as 'B1','B2','B3','B4'. (3)

ItemNo	ItemName	Price
I99	Sugar	100
I10	Tea	150
I50	Coffee	200
I60	Green Tea	250

(i) Display Item Number and Name whose price is less than 150.

(ii) Display detail of different types of Tea available in Shop.

(iii) Display the DataFrame.

35. Prakash wants to prepare a report on IT Act that deals with cybercrime. Help him prepare a report that includes Identity theft and Credit Card account theft. (3)

OR

List three emotional and physical symptoms of internet addiction.

36. Write a Python program to display a bar chart of the number of students in a school. Use different colours for each bar. (3)

Sample data:

Class: I,II,III,IV,V,VI,VII,VIII,IX,X

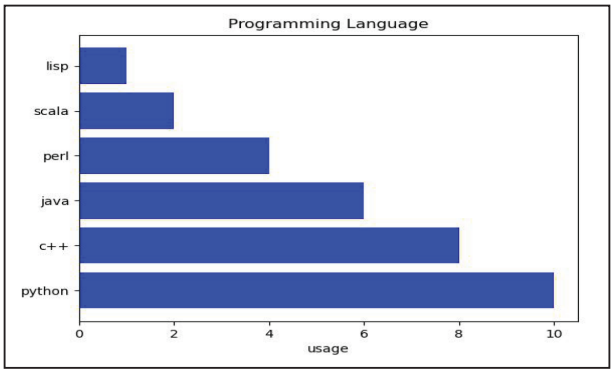
Strength: 38,30,45,49,37,53,48,44,36,46

OR

Write a Python program to plot the given bar graph to depict the popularity of various programming languages. Label the graph with x-axis, y-axis, y-ticks and title.

Data : Programming languages: Python, C++, Java, Perl, Scala, Lisp

Usage= 10,8,6,4,2,1



37. Consider the table "Loan" given below: (3)

Acc_No	Acc_Name	Amount	Loantype	Interest
HD101	Sanjeev	55000	Auto	7.65
HD102	Abhishek	3000000	Home	7.1
HD103	Shagun	120000	Personal	9.85
HD105	Gunjan	300000	Auto	6.90
HD106	Jyoti	1000000	Business	8.50
HD107	Aarush	1500000	Home	9.10
HD108	Lalit	20000	Auto	6.66
HD109	Smriti	250000	Auto	11.09

Write SQL commands for the following statements:

(i) Count the different types of loan the bank is offering.

(ii) Display the Maximum and Minimum amount of each category of loan type.

(iii) Display average interest rate of Auto loan.

Section III

38. Write a program in Python Pandas to create the following DataFrame 'Order' for an online shopping app: (5)

OrderId	Ordername	Price	Delivery Charges	Date of Delivery	Location
FK100	Purse	1800	50	2020-10-09	Delhi
FK101	Shoes	1100	50	2020-11-11	Ghaziabad
FK102	Watch	800	30	2020-04-12	Karol Bagh
FK103	Belt	500	30	2020-09-03	Gurugram
FK104	Shirt	2200	50	2020-11-10	Palam

(i) Display DataFrame 'Order'.

(ii) Calculate the Total price of orders along with delivery charges and assign to a new column Total.

(iii) Display records of those orders which have delivery charges greater than 30.

39. Write the SQL commands which will perform the following operations: (5)

(i) To display total characters in a string field "FacultyName".

(ii) To round the argument x that contains number 234.6789 to 3 decimal places.

(iii) To return the last 5 characters from a string field "LastName".

(iv) To display Day name of your date of birth field.

(v) To display 2 characters starting from the 3rd position from the string field "Address".

OR

Consider a table Teacher that contains the following data:

EmpNo	FName	LName	Subject	Qualification	Salary	Post
1	Sandeep	Verma	S.St.	B.Ed	25409.789	TGT
2	Sonia	Kumari	Computer	BCA	21200.456	TGT
3	Nirmal	Sharma	Hindi	B.Ed	38274.657	PGT
4	Sanjeev	Shastri	Sanskrit	B.Ed.	28782.228	TGT
5	Rakesh	Sharma	English	B.Ed.	32892.487	PGT

Write SQL queries using SQL functions to perform the following operations:

(i) To display Teacher's first name where 'ee' occurs in the first name.

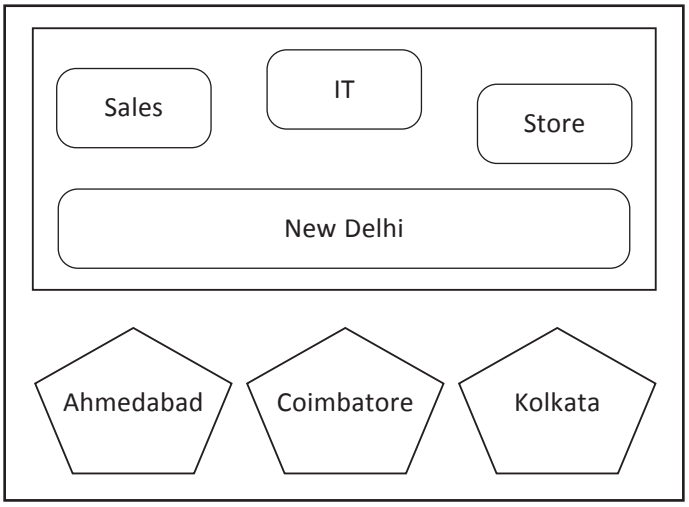
(ii) To join First Name and Last name of the teachers with some space in between.

(iii) To display contents of "Qualification" field in small letters.

(iv) To display first 2 characters of the "Subject" field.

(v) To round off the salary to the nearest integer.

40. KV Courier Company is planning to start their regional offices in four major cities in India—"Coimbatore", "Kolkata" and "Ahmedabad"—to provide easy and fast courier services in different cities. The company has their head office in New Delhi with three different branches—"Sales Office", "Store Office" and "IT office". A rough layout of the same is as follows: (5)



Approximate distance between these offices is as follows:

Head Office – Sales Office	10KM
Head Office – IT Office	50KM
Head Office – Store House	25KM
Head Office – Kolkata Office	1536KM
Head Office – Ahmedabad Office	947KM
Head Office – Coimbatore Office	2508KM

The company experts have planned to install the following number of computers in each of their offices:

Head Office	100
IT Office	25
Store House	60
Kolkata Office	80
Ahmedabad Office	120
Coimbatore Office	150

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following sets of their offices:
   (a) Head Office and IT Office
   (b) Head Office and Coimbatore Office

(ii) Which device you will suggest the company to procure for connecting all the computers with each of their offices out of the following devices?
   (a) Modem
   (b) Telephone
   (c) Switch/Hub

(iii) Which of the following communication medium will you suggest for connecting their local offices in New Delhi for very effective and fast communication?
   (a) Ethernet Cable
   (b) Optical Fibre
   (c) Telephone Cable

(iv) Suggest a cable layout for connecting the company's local offices located in New Delhi.

(v) Suggest an effective and fast method/technology for connecting the company's regional offices—"Kolkata", Coimbatore", "Ahmedabad".