

(e) Which model is best suited for larger projects and organizations and why? (2)

Ans. WaterFall Model. The reasons are:

- (i) It adapts to shifting teams;
- (ii) It forces structured organization.

(f) Explain spiral model along with the steps involved and its drawbacks. (5)

Ans. The spiral model is divided into a number of frameworks. These frameworks are denoted by task regions. Usually, there are six task regions. In a spiral model project, entry point axis is defined. The task regions are:

- Customer communication
- Planning
- Risk analysis
- Engineering
- Construct and release
- Customer evaluation

Drawbacks

- It is based on customer communication.
- It involves a considerable risk assessment.

3. (a) What is another name for numpy? In numpy, what are dimensions called? (2)

Ans. ND ARRAY and AXES

(b) Name any two functions of numpy module to create numpy array. (2)

Ans. zeros(), ones(), empty(), arrange()

(c) Differentiate between series data structure and dataframe data structure? (2)

Ans. A series is a one-dimensional object that can hold any data type such as integers, floats and strings. It has only one axis.

A dataframe is a two-dimensional object that can hold different data types. Individual columns of a dataframe can act as a separate series object. (2)

(d) Explain Matplotlib.

Ans. Matplotlib is a Python 2D plotting library which produces publication quality figures in a variety of hard copy formats and interactive environments across platforms.

(e) A dataframe fdf stores data about passengers, flights and years. The first few rows of the dataframe are shown below: (4)

	Year	Month	Passengers
0	Soap	50	112
1	Powder	100	118
2	Face cream	150	132
3	Pen	50	129
4	Soap box	20	121

Using the above dataframe, write commands for the following:

(i) Compute total passengers per year. (ii) Compute average passengers per month.

Ans. (i) `fdf.pivot_table(index='year', value='passengers', aggfunc='sum')`
(ii) `fdf.pivot_table(index='month', values='passengers', aggfunc='mean')` (4)

(f) Write the output of the following code.

```
import numpy as np
a = np.array([1, 2, 3])
print(type(a))
print(a.shape)
print(a[0], a[1], a[2])
a[0] = 5
print(a)
b = np.array([[1, 2, 3], [4, 5, 6]])
print(b.shape)
print(b[0, 0], b[0, 1], b[1, 0])
```

Ans. <class 'numpy.ndarray'>

```
(3,)  
1 2 3  
[5 2 3]  
(2, 3)  
1 2 4
```

(g) Give the output for the following code. (4)

```
import pandas as pd  
data = [{'a': 1, 'b': 2}, {'a': 5, 'b': 10, 'c': 20}]  
#With two column indices, values same as dictionary key  
df1 = pd.DataFrame(data, index=['first', 'second'], columns=['a', 'b'])  
#With two column indices with one index with other name  
df2 = pd.DataFrame(data, index=['first', 'second'], columns=['a', 'b1'])  
print(df1)  
print(df2)
```

Ans.

	a	b
first	1	2
second	5	10

	a	b1
first	1	NaN
second	5	NaN

4. (a) Is Django a framework? Yes or No? (1)

Ans. Yes

(b) What is fetchall() method? (1)

Ans. fetchall() fetches all (remaining) cases from the active dataset or, if there are splits, the remaining cases in the current split. If there are no remaining rows, the result is an empty tuple. Each element in a tuple contains the data value for a specific variable.

(c) Write the command to install mysql connector. (1)

Ans. pip install mysql - connector

(d) Write the difference between Single-Row Functions and Multiple-Row Functions in SQL. (2)

Ans. Single row functions perform on individual rows or records and returns the answer either as integer or string. For example, len() and trim(). On the other hand, multiple row functions perform on a range of values and always return the result as a numeric value or number.

For example, Aggregate functions like sum(), count(), max(), min() & avg().

(e) Compare Having clause and Order by clause? (2)

Ans. Having clause is used in conjunction with group by clause in MySQL. It is used to provide condition based on grouped data. On the other hand, order by clause is an independent clause used to arrange records of a table in either ascending or descending order on the basis of one or more columns.

(f) Write SQL commands and output for the following queries: (8)

StudentNo	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sameer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Veena	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

(i) Display the names of the students who have grade 'A' in either Game1 or Game2 or both.

Ans. Select name from SPORTS where Grade1='A' OR Grade2='A';

(ii) Display the number of students having game 'Cricket'.

Ans. Select count(*) from SPORTS Where Game1='Cricket' OR Game2='Cricket';

(iii) Display the names of the students who have same game for both Game1 and Game2.
Select Name from SPORTS where Game1=Game2;

Ans.

(iv) Display the games taken by the students whose name starts with 'A'.

Ans.

Select Game1,Game2 from SPORTS where Name LIKE 'A%';

(v) Give the output of the following sql statements.

(1) SELECT COUNT(*) FROM SPORTS;

Ans.

6

(2) SELECT DISTINCT Class FROM SPORTS;

Ans.

7

8

9

10

(3) SELECT MAX(Class) FROM STUDENT;

Ans.

10

(4) SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

Ans.

2

2

1

1

5. (a) True Name and Account Takeover are categories of? (1)

Ans. Identity Theft

(b) IT Act 2000, Section 72 deals with? (1)

Ans. Privacy and confidentiality

(c) Explain phishing. (2)

Ans. **Phishing** is a term used to describe a malicious individual or group of individuals who scam users. They do so by sending emails or creating web pages that are designed to access an individual's online bank credit card, or other login information.

(d) Write the appropriate usage of social networks. (2)

Ans. A **social networking service** (also known as **social networking site**, or SNS or **social media**) is an online platform which people **use** to build **social networks** or **social** relationships with other people who share similar personal or career interests, activities, backgrounds or real-life connections.

(e) Reena has recently shifted to a new city and new college. She does not know many people in her new city and college. But all of a sudden, someone starts posting negative, demeaning comments on her social networking profile, college site's forum, etc. She is also getting repeated mails from unknown people. Every time she goes online, she finds someone chasing her online. (2)

(i) What is happening to Reena?

Ans. Reena has become a victim of cyber bullying and cyber stalking.

(ii) What action should she take to stop them?

Ans. She must immediately bring it to the notice of her parents and college authorities and report this cyber crime to local police with the help of her parents. (2)

(f) Write two advantages of online campaigning?

Ans. (i) **Reaches more people:** Online campaign helps you reach anyone with internet access. You don't need people's addresses or phone numbers to reach them.

(ii) **Updates Information:** An online campaign enables you to update information instantly, whether through your campaign site, mass emails and texts, blog or social networking websites like Facebook and Twitter.