Lab: 5

Q 1. Create a query to perform roll up operations using the av.sales_fact table. (Note:-examine all data)

```
SELECT
   MONTH_ID,
   CATEGORY_ID,
   STATE_PROVINCE_ID,
   SUM(UNITS) AS TOTAL_UNITS,
   SUM(SALES) AS TOTAL_SALES
FROM AV.SALES_FACT
GROUP BY ROLLUP(MONTH_ID, CATEGORY_ID, STATE_PROVINCE_ID);
```

Q 2. Create a query to perform cube operation using av.sales_fact table. (Note: Also examine the data)

```
SELECT
   MONTH_ID,
   CATEGORY_ID,
   STATE_PROVINCE_ID,
   SUM(UNITS) AS TOTAL_UNITS,
   SUM(SALES) AS TOTAL_SALES
FROM AV.SALES_FACT
GROUP BY CUBE(MONTH_ID, CATEGORY_ID, STATE_PROVINCE_ID);
```

Q 3. Why do we use roll up, cube and pivot function and what are the differences between them?

The usage of rollup, cube and pivot functions are as follows along with their significant differences:

Roll-up:

- Used for hierarchical aggregations.
- Provides subtotals and grand totals.
- Performs aggregation on a set of columns.
- Result has progressively higher levels of aggregation.
- Suitable for examining data at different levels of granularity in a hierarchy.

Cube:

- Similar to roll-up but more comprehensive.
- Generates all possible subtotals.
- Produces a result set with all combinations of aggregations.
- Valuable for multi-dimensional analysis.
- Useful when exploring data from various dimensions.

Pivot:

- Used to change the view of data.
- Transforms rows into columns based on unique values.
- Involves rotating a table-valued expression.
- Performs aggregations where required.
- Enhances the view of data and allows for concise summarization.

Q 4. Perform pivot operation using AV schema.

```
SELECT *
FROM (
    SELECT MONTH_ID, CATEGORY_ID, UNITS
    FROM AV.SALES_FACT
)
PIVOT(
    SUM(UNITS) FOR MONTH_ID IN ('Jan', 'Feb', 'Mar')
);
```

Q 5. Create pivot operation using SH schema.

```
SELECT *
FROM (
    SELECT MONTH_ID, CATEGORY_ID, UNITS
    FROM SH.SALES_FACT
)
PIVOT(
    SUM(UNITS) FOR MONTH_ID IN ('Jan', 'Feb', 'Mar')
);
```

Q 6. Create a view using cube operation.

```
CREATE VIEW AV.CubeView AS
SELECT
    MONTH_ID,
    CATEGORY_ID,
    STATE_PROVINCE_ID,
    SUM(UNITS) AS TOTAL_UNITS,
    SUM(SALES) AS TOTAL_SALES
FROM AV.SALES_FACT
GROUP BY CUBE(MONTH_ID, CATEGORY_ID, STATE_PROVINCE_ID);
```