

Sen-V/IT/c-scheme/Nov-25/Date-21/11/25 PP-95678
1/1

Time: 3hrs

Max. Marks: 80

N.B.: 1. Question no. 1 is compulsory.

2. Attempt any Three from out of the remaining Five questions.

3. Assume suitable data wherever necessary.

4. Figures at right indicates full marks.

- Q 1 a Discuss Data Transformation with example. 5
b Differentiate between Data Warehouse and Data Mart. 5
c Describe Volume, Velocity with examples in Big Data. 5
d Compare and contrast ACID and BASE. 5
- Q 2 a Discuss the various access control mechanisms used in database systems. 10
Also, explain the GRANT and REVOKE operations with suitable examples.
b List out the major ETL challenges and advantages. Also, mention various 10
ETL tools used in data integration.
- Q 3 a Explain the External Merge Sort algorithm with a suitable example. Further, 10
analyse and discuss the required number of block transfers and seek
operations involved during the sorting process.
b List and explain four commonly used NoSQL architectural patterns. Describe 10
any two of these patterns in detail with suitable examples.
- Q 4 a Consider a retail company that wants to analyze its sales data. 10
Explain how the company can design its data warehouse using Star Schema
and Snowflake Schema explain.
b Discuss the CAP Theorem and the key principles of BASE properties. 10
- Q 5 a. Explain various OLAP operations — Slice, Dice, Roll-up, Drill-down, and 10
Pivot — using suitable real-world scenarios
b. Explain Primary Horizontal, Derived Horizontal and Vertical Fragmentation 10
with example. Comment on. Completeness, Reconstruction and Disjointness
Properties.
- Q 6 a Describe data loading techniques in detail. 5
b Discuss Spatial Database. 5
c Explain Query processing in detail. 5
d Define Factless fact table with example 5
