

(2 Hours)

Total Marks: 50

| <i>Note:</i> |   | Marks | Course Outcome | Bloom's Level |
|--------------|---|-------|----------------|---------------|
|              |   |       | CO             | BL            |
| <b>Q1</b>    |   |       |                |               |
|              | <b>a.</b> Describe features of HDFS.  | [05]  | 1              | 1,2           |
|              | <b>b.</b> What is MapReduce? Explain its importance in Big Data processing.   | [05]  | 2              | 1,2           |
|              | <b>c.</b> List any five Pig built-in functions and their uses.  | [05]  | 3              | 2,3           |
|              | <b>d.</b> Explain D3 and its features.  | [05]  | 5              | 2             |
|              |   |       |                |               |
| <b>Q2</b>    | <b>a.</b> Explain the business drivers that led to the evolution of NoSQL. Compare key-value, document, column-family, and graph stores in terms of structure, use cases. | [08]  | 3              | 2,4           |
|              | <b>b.</b> Describe the RDD operations – transformations and actions with examples.  | [07]  | 4              | 3             |
|              |   |       |                |               |
| <b>Q3</b>    | <b>a.</b> Explain the architecture of Hadoop and describe how HDFS and YARN work together to enable Big Data processing.  | [08]  | 1              | 2,4           |
|              | <b>b.</b> Explain Pig architecture and its components.  | [07]  | 3              | 2             |
|              |   |       |                |               |
| <b>Q4</b>    | <b>a.</b> Discuss the role of Mapper, Reducer, Partitioner, and Combiner of MapReduce in improving performance.   | [08]  | 2              | 4             |
|              | <b>b.</b> Explain in detail the challenges and approaches of Big Data visualization with examples.  | [07]  | 5              | 4             |
|              |   |       |                |               |
| <b>Q5</b>    | <b>a.</b> Discuss how Hive supports partitioning and joins in a distributed data environment.   | [08]  | 3              | 3,4           |
|              | <b>b.</b> Explain the Kafka architecture with a neat diagram.   | [07]  | 4              | 2             |