

(2½ Hours)

[Total Marks: 75]

- N. B.: (1) **All** questions are **compulsory**.  
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
(3) Answers to the **same question** must be **written together**.  
(4) Numbers to the **right** indicate **marks**.  
(5) Draw **neat labeled diagrams** wherever **necessary**.  
(6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt any three of the following:** 15
- Differentiate between SQL and NoSQL Databases.
  - What are the different V's of big data?
  - What are NRW notations? How are reads and writes implemented in NoSQL databases?
  - Compare ACID Vs BASE.
  - Write a short note on Non-Relational Approach.
  - List and explain applications of Big Data.
2. **Attempt any three of the following:** 15
- Describe MapReduce concept and its application in MongoDB.
  - Discuss the concept of Sharding in detail.
  - Write MongoDB queries to create, drop and manage indexes.
  - What is Binary JSON(BSON)?
  - Explain the following terms: i) Capped Collection. ii) `_id`.
  - Write a short note on Master/Slave replication of MongoDB.
3. **Attempt any three of the following:** 15
- What is a Wired Tiger Storage Engine?
  - List and explain the limitations of Sharding
  - What is GridFS in MongoDB?
  - "With the rise of the Smartphone, it's becoming very common to query for things near a current location". Explain the different indexes used by MongoDB to support such location-based queries.
  - Design a schema for a social networking website in the MongoDB database.
  - Discuss how data is written using Journaling.
4. **Attempt any three of the following:** 15
- Explain the concept of Oracle 12c "in-Memory Databases".
  - Discuss Spark architecture with a neat diagram.
  - Define In-Memory Database. What are the techniques used in In-Memory Database to ensure that data is not lost?

- d. What is DOM in jQuery? How does it work?
- e. Write a jQuery to demonstrate method chaining.
- f. Describe event delegation in jQuery.

**5. Attempt any three of the following:**

**15**

- a. List and explain various data types in JSON.
  - b. Describe six structural character tokens in JSON.
  - c. Write a short note on JSON Arrays.
  - d. Discuss the stringify object for JSON Object.
  - e. "JSON is better than XML." Comment.
  - f. Describe members of Web Storage API.
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