(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**
a. How does big data contribute to creating value for organizations, and what are some key ways organizations can utilize big data for their benefit?
b. What is Big data and explain three Vs of it?
c. What are the distinguishing characteristics between SQL and NoSQL technologies?
d. Explain the CAP theorem in detail.
e. Explain the MongoDB design philosophy in detail.
f. How is consistency implemented at both the read and write operation levels in NoSQL databases?

2. Attempt _any three_ of the following: **15**
a. Explain the MongoDB database model and Binary JSON.
b. Explain the selector and projector in the query documents of MongoDB with example.
c. Explain the MapReduce framework of MongoDB with example.
d. Which are the core components in the MongoDB package?
e. Describe the Master/Slave Replication architecture in MongoDB.
f. List and explain the different types of secondary members in the replica set.

3. Attempt _any three_ of the following: **15**
a. Describe the process of writing data with Journaling in MongoDB.
b. Explain the Sparse and Geospatial Indexes in detail.
c. Explain the limitations of the sharding in the MongoDB?
d. How can application response time be optimized to ensure instantaneous responses for a better user experience?
e. Explain the monitoring mechanism of MongoDB.
f. Describe the "GridFS – The MongoDB File System" in detail.

4. Attempt _any three_ of the following: **15**
a. Write a short note on Redis architecture.
b. Explain the concept of Solid State Disks in detail.
c. Explain how jQuery's slideUp() and slideToggle() methods work, and give the example for each.
d. What is jQuery and what are its advantages?
e. What are the three "around" methods in DOM Insertion?
f. Write a note on Disk Economics.

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5. **Attempt _any three_ of the following:** 15
a. List and explain the various data types available in JSON.
b. What are the differences between JSON and XML? Provide examples.
c. What is the XMLHttpRequest object? List and explain the Request Methods associated with it.
d. Write a note on Stringify() method.
e. Explain JSON HTML with an example.
f. Write a short note on JSON Arrays.

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