

(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. What are the different V's of big data?
 - b. What are two facts about big data?
 - c. Explain the 4 categories of NoSQL databases.
 - d. What is the difference between SQL database and MongoDB?
 - e. What are NRW notations? How read and writes implemented in NoSQL databases?
 - f. What is CAP theorem in NoSQL?

2. Attempt any three of the following: 15
 - a. Does MongoDB support polymorphism? Justify your answer.
 - b. Explain MapReduce concept and its application in MongoDB.
 - c. Write MongoDB queries to create, drop and manage indexes.
 - d. Consider a MongoDB database that has collection "students" with a given schema:


```
{
    _id: 1,
    Name: "Full Name",
    Age: 18,
    Gender: "M",
    Class: "TYIT",
    Gradepoints: 10
  }
```

 Write MongoDB queries for following:
 - i. find all students who are younger than 17 (Age < 17)
 - ii. find out all of the students with Gradepoints >= 8
 - iii. find all students who belong to either class TYIT or SYIT
 - iv. find out all students whose gender is either "M" or they belong to class TYIT or SYIT and whose age is less than or equal to 16
 - v. find all students with names starting with "St" or "Te" and whose class begins with "TY"
 - e. Explain the process of election for selecting a primary member in replica set.
 - f. What is sharding? List and explain sharding components.

3. Attempt any three of the following: 15
- a. What is the WiredTiger storage engine in MongoDB?
 - b. Explain limitations of BSON document in MongoDB.
 - c. Explain Namespace (.ns File) in MMAPv1 storage engine of MongoDB.
 - d. What is GridFS in MongoDB?
 - e. Explain limitations of sharding in MongoDB.
 - f. Design a schema for social networking website in MongoDB database.
4. Attempt any three of the following: 15
- a. Explain Spark architecture with neat diagram.
 - b. Write a short note on VoltDB database's partitioning.
 - c. Write a jQuery to demonstrate slideUp(), slideDown () and slideToggle() methods.
 - d. What is event propagation in jQuery?
 - e. What is DOM in jQuery? How it works?
 - f. Write a short note on disk economics.
5. Attempt any three of the following: 15
- a. Explain six structural character tokens in JSON.
 - b. What is document.cookie? Explain functions of setCookie() and getCookie () methods.
 - c. List and explain various data types in JSON.
 - d. Write a short note on JSONP.
 - e. Describe members of Web Storage API.
 - f. Write a short note on JSON.stringify() method.
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