

(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

- What is Big Data? What are the different sources of Big Data?
- Compare ACID Vs BASE.
- With the help of a neat diagram explain, the CAP theorem.
- What are the advantages and disadvantages of NoSQL databases?
- What are the different categories of NoSQL database? Explain each with an example.
- What are the different challenges Big Data poses?

2. Attempt any three of the following:

15

- a. Consider a Collection users containing the following fields

```
{
  id: ObjectID(),
  FName: "First Name",
  LName: "Last Name",
  Age: 30,
  Gender: "M",
  Country: "Country"
}
```

Where Gender value can be either "M" or "F" or "Other".

Country can be either "UK" or "India" or "USA".

Based on above information write the **MongoDB** query for the following.

- Update the country to UK for all female users.
 - Add the new field company to all the documents.
 - Delete all the documents where Gender = 'M'.
 - Find out a count of female users who stay in either India or USA.
 - Display the first name and age of all female employees.
- b. Write the Mongo dB command to create the following with an example:
- | | | |
|----------------------|-------------------|----------------|
| (i) Database | (ii) Collection | (iii) Document |
| (iv) Drop Collection | (v) Drop Database | (vi) Index |
- Write a short note on Capped collection.
 - List and explain the different conditional operators in MongoDB.
 - Explain the two ways MongoDB enables distribution of the data in Sharding.
 - List and explain the 3 core components in the MongoDB package.

[TURN OVER]

- 3. Attempt any three of the following: 15**
- List and explain the limitations of Sharding.
 - What is Data Storage engine? Which is the default storage engine in MongoDB? Also compare MMAP and Wired Tiger storage engines.
 - “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.
 - What is Journaling? Explain the importance of Journaling with the help of a neat diagram.
 - Write a short note on Replication Lag.
 - Explain **“GridFS – The MongoDB File System”** with the help of a neat diagram.
- 4. Attempt any three of the following: 15**
- Explain TimesTen Architecture with the help of a neat diagram.
 - Write a jQuery code to change text contents of the elements on button click.
 - Explain how we can create our own custom event in jQuery with an example.
 - What is Ajax? What is the use of Ajax? Explain how Ajax can be used with jQuery.
 - Explain how to add and remove elements to DOM in jQuery with an example
 - Write a jQuery code to add a CSS class to the HTML elements.
- 5. Attempt any three of the following: 15**
- Explain the use of `json_encode` and `json_decode` function with an example.
 - List and explain any 5 **XMLHttpRequest** Event Handlers used for Monitoring the Progress of the HTTP Request.
 - What is the use of Stringify function? What are the different parameters that can be passed in Stringify function? Explain with an example.
 - Write a short note on JSON Arrays.
 - List and explain the different methods of a Cradle Wrapper.
 - “JSON is better than XML”.** Comment.