

Time :2 ½ Hours

[Total Marks: 60]

- N.B:**
- (1) **All questions are compulsory.**
 - (2) Figures to the **right** indicate full marks.
 - (3) **Assume additional data if necessary** but state the same clearly.
 - (4) Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.

- Q.1 Attempt **any two** of the following (12)
- a) Write short note on GIS. 06
 - b) What are the differences between structured, semi structured, and unstructured data? 06
 - c) Explain the following concept in context to object oriented databases 06
 - i. Object Identity
 - ii. Object Structure
 - iii. Unstructured Complex Object
 - iv. Equal and identical object
 - d) State and explain the differences between valid time, transaction time, and bitemporal relations? 06
- Q.2 Attempt **any two** of the following (12)
- a) Explain Locking-Based Concurrency Control Algorithms. 06
 - b) What is fault? Explain different types of faults in DDBMS. 06
 - c) Write a short note on 2-phase commit (2PC) protocol. 06
 - d) Explain Timestamp-Based Concurrency Control Algorithms. 06
- Q.3 Attempt **any two** of the following (12)
- a) Explain CRUD operation in MongoDB database. 06
 - b) What is Key-Value store? Write example of Key-Value store. Explain advantages of Key-Value store. 06
 - c) Explain CAP theorem. 06
 - d) Discuss the difference between traditional database and NoSQL database. 06
- Q.4 Attempt **any two** of the following (12)
- a) Write short note on Google App Engine Data Store. 06
 - b) What are Compound and Embedded Keys? How are they created and managed in MongoDB? 06
 - c) What is Indexing? Explain indexing and ordering in CouchDB database. 06
 - d) Explain Distributed ACID properties. 06
- Q.5 Attempt **any two** of the following (12)
- a) Discuss the various applications of temporal databases. 06
 - b) Write a short note on Mobile Databases. 06
 - c) What is Column-Oriented Database? Write example of Column-Oriented Database and explain its advantages. 06
 - d) Discuss the similarities and differences between SQL and MongoDB. 06
