

[Time: 3 Hrs]

[Marks: 80]

Please check whether you have got the right question paper.

- N.B:
1. Q. 1 is compulsory.
 2. Solve any three from remaining questions.
 3. Draw neat diagrams wherever necessary.

- Q. 1** a) Explain types of users of the database system with suitable example & responsibilities of DBA. (10)
b) Explain extended ER features. (10)
- Q. 2** a) Explain types of join with suitable example. (10)
b) Explain constraints in SQL. (10)
- Q. 3** a) Explain relational algebra operators. (10)
b) What is Log.? Explain Log based recovery. (10)
- Q. 4** a) What is 2PL. Explain 2PL (2- phase) Locking protocol with its types. (10)
b) What is trigger? Write syntax and example. (10)
- Q. 5** a) Explain view serializability with suitable examples. (10)
b) What is Normalization? Explain 1NF, 2NF and 3NF with suitable is example. (10)
- Q. 6** Write note on (Any two) (20)
a) Timestamp Based Protocol
b) Transaction state diagram
c) Functional dependency in dbms
