Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(IT)(2015 & Onwards)/(CSE Engg.) (2015 to 2017)   (Sem.–1)
ADVANCED DATABASE SYSTEMS
Subject Code : MTCS-104
M.Code : 72632

Time : 3 Hrs.   Max. Marks : 100

INSTRUCTION TO CANDIDATES :
1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Explain various operations of query processing with suitable examples.   (15)

    b) Compare centralized and distributed databases.   (5)

2. a) Explain architecture of distributed databases.   (12)

    b) Explain the four important properties of transaction that a DBMS must ensure to maintain database.   (8)

3. a) Explain working of query compiler.   (12)

    b) Create an ER diagram for the following problem definition :   (8)

    Each company operates four departments and each department belongs to one company. Each department employs one or more employees and each employee works for one department. Each of the employees may or may not have one or more dependants and each dependant belongs to one employee.

4. a) Explain how deadlocks are controlled and managed in distributed databases.   (15)

    b) Discuss transparency issues in DDBMS.   (5)

5. a) What is a timestamp? How does the system generate timestamps? Discuss the timestamp ordering protocol for concurrency control.   (10)

    b) Discuss the two phase locking protocol. What are its variations?   (10)

6. a) Explain in detail about heuristic approach to query optimization. (12)

   b) What do you understand by an attribute of an entity? Provide examples of simple, composite, single-valued, multi-valued, and derived attributes. Also draw the symbols used for them in ER diagrams. (8)

7. What is normalization? Discuss the role of normalization in database design. Explain in detail different forms of normalization with suitable examples. (20)

8. a) Explain about the spatial databases. (10)

   b) Explain the concept of Geographical Information Systems (GIS). (10)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.