

Roll No. 

Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech.(CSE) (2011 Onwards) (Sem.-5)**  
**RELATIONAL DATABASE MANAGEMENT SYSTEM-I**  
Subject Code : BTCS-502  
M.Code : 70535

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

1. What are DML commands in SQL?
2. What is a multi-valued dependency?
3. What is a lock in concurrency control?
4. What are attributes?
5. Explain 'C' in 'ACID' properties?
6. What is the difference between B-Trees and B+ Trees?
7. Define transaction.
8. Differentiate between Grant and Revoke.
9. Define Normalization?
10. What is a Sparse Index?

**SECTION-B**

11. Draw any ER Diagram which demonstrates the following : (5)
  - a. Entity
  - b. Attribute
  - c. Multi-valued attribute
  - d. Composite attribute
  - e. Derived attribute

12. What is a precedence graph? What is a conflict serializable schedule? Can precedence graph be used to detect a conflict serializable schedule? (5)
13. Consider a relation R with attribute set {A, B, C, D} and functional dependency set  $F = \{A \rightarrow B, B \rightarrow C, C \rightarrow D\}$ . This relation is decomposed into three sub relations {AB, BC, CD}. Check if the decomposition is dependency preserving or not. Discuss. (5)
14. Attempt the following :
  - a. Explain Lost-Update Problem? (2)
  - b. How can Lost-Update problem be solved? (3)
15. What are the properties of decomposition? Explain in detail with the help of examples. (5)

### SECTION-C

16. Consider the following relation for published books : (10)  
BOOK (Book\_title, Author\_name, Book\_type, List\_price, Author\_affil, Publisher)  
Author\_affil refers to the affiliation of author. Suppose the following dependencies exist :  
 $Book\_title \rightarrow Publisher,$   
 $Book\_type \ Book\_type \rightarrow List\_price$   
 $Author\_name \rightarrow Author\_affil$ 
  - a. What normal form is the relation in? Explain your answer.
  - b. Apply normalization until you cannot decompose the relations further. State the reasons behind each decomposition.
17. Explain the following : (10)
  - a. Update Anomaly
  - b. Deletion Anomaly
  - c. Insertion Anomaly
  - d. Transitive Dependency
18. Answer the following :
  - a. Why is indexing required for a Database? (4)
  - b. Explain multi-level indexing. Is it true that all the levels of multi-level index are primary index? Discuss. (6)

**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.**