

**FACULTY OF INFORMATICS**  
**B.E. 3/4 (IT) I Semester (Main) Examination, December 2011**  
**DATABASE SYSTEMS**

Time : 3 Hours]

[Max. Marks : 75

**Note : Answer all questions from Part A. Answer any five questions from Part B.**

## PART – A

(25 Marks)



1. Write about three levels of abstraction. 3
2. What is a derived attribute in E-R diagram ? Give an example. 2
3. How do you test for empty relations in SQL ? 3
4. How do you represent aggregate functions in relational algebra ? 2
5. Why does the schema that satisfy BCNF also satisfies 3NF. 2
6. What is a phantom record ? Why do they occur ? 3
7. Explain the two types of ordered indices. 3
8. Write about state diagram of a transaction. 2
9. Define a locks. How many types of locks are there what are they ? 2
10. What are the steps followed in dead lock recovery ? 3

## PART – B

(5×10=50 Marks)

11. a) What are the applications of database systems ? 4
- b) Explain  $\epsilon$ -R diagram with their extended  $\epsilon$ -R features. 6
12. a) What is a view ? Why are they required ? 3
- b) Discuss the various fundamental relational algebra operations with an example for each. 7
13. a) Discuss in detail the process of Normalization. 7
- b) Discuss different authorizations in SQL with necessary commands to grant them. 3



14. a) How do you perform updates on B<sup>+</sup> trees. 5
- b) What is a recoverable schedule ? Why is recoverability of schedules desirable ?  
Are there any circumstances under which it would be desirable to allow non-recoverable schedules ? Explain. 5
15. What is a lock based protocol ? Explain the two phase locking protocol. 10
16. Write short notes on :
- a) Bit map indices. 5
- b) String operation in SQL. 5
17. a) Discuss in detail about integrity constraints. 5
- b) Write about remote backup systems. 5