

## FACULTY OF ENGINEERING

B.E. 3/4 (CSE) I Semester (Main) Examination, December 2011

## DATABASE SYSTEMS

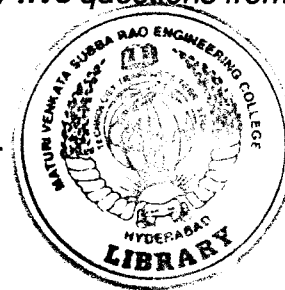
Time: 3 Hours]

[Max. Marks: 75

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

## PART – A

(25 Marks)



- |   |   |
|---|---|
| 1. Differentiate between file system and database system.             | 3 |
| 2. Write about multiplicity constraints with example.                 | 3 |
| 3. Define metadata. What is the need of metadata ?                    | 2 |
| 4. What is a candidate key ?  | 2 |
| 5. What is an atomic transaction ?                                    | 2 |
| 6. What is check pointing ? Explain its need in DBMS.                 | 3 |
| 7. What are the features of sparse index ?                            | 2 |
| 8. What are bitmap Indices ?  | 3 |
| 9. What is dynamic SQL ?  | 2 |
| 10. What restrictions are necessary to ensure the view is updatable ? | 3 |

## PART – B

(50 Marks)

- |   |   |
|---|---|
| 11. a) Draw and explain the 'Database Architecture'.                        | 6 |
| b) Explain the concept of aggregation in E-R model give a suitable example. | 4 |
| 12. a) Define the concept of aggregation. Give example.                     | 3 |
| b) Consider the following relational database :                             |   |
| Employee (employee-name, street, city)                                      |   |
| Works (employee-name, company, salary)                                      |   |
| Company (company, city)   |   |
| Manager (employee-name, manager-name)                                       |   |
| Write the following in SQL, DDL/DML   |   |



- 1) Find all employees who earn more than an average salaries of all employees of their company.
- 2) Find all employees in the database who live in the same cities and on the same street as do their managers.
- 3) Create an assertion to impose the constraint that no employee should draw an salary more than his / her manager. (2+2+3)

13. a) Compare BCNF and 3NF with an example. 4
- b) Discuss about the following constraints on a single relation
- 1) Not null
  - 2) Unique
  - 3) Check. 6

14. a) Explain nested subqueries and complex queries with examples. 6
- b) Explain log based recovery scheme. 4

15. a) Describe about 'Thomas' write rule. 4
- b) What are the three phases in 'ARIES recovery algorithm' ? Explain each of them. 6

16. Define hashing. Explain the differences between closed and open hashing. Discuss the merits of each technique in database applications. 10

17. Write short notes on the following :
- a) Data mining and analysis. 4
  - b) Division operator in relational algebra. 3
  - c) Deadlock recovery. 3