

USN

--	--	--	--	--	--	--	--	--	--

10MCA34

Third Semester MCA Degree Examination, Dec.2013/Jan.2014

Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain any four advantages of DBMS, briefly. (08 Marks)
 b. Describe the three-schema architecture of DBMS with a diagram. (08 Marks)
 c. Explain briefly the end users of DBMS. (04 Marks)
- 2 a. Explain the DBMS component modules with a neat diagram. (10 Marks)
 b. Explain the types of attributes in ER model. Give example for each. (06 Marks)
 c. List all the notations used in ER diagram. (04 Marks)
- 3 a. Consider a MOVIE database in which data is recorded about the movies industry. The data requirements are summarized as follows:
 i) Each movie is identified by title and year of release. Each movie has length in minutes. Each has a production company, and each is classified under one or more genres (such as horror, action, drama and so forth). Each movie has one or more directors and one or more actors appear in it. Finally, each movie has zero or more quotable quotes, each of which is spoken by a particular actor appearing in the movie.
 ii) Actors are identified by name and date of birth and appear in one or more movies. Each actor has a role in the movie.
 iii) Directors are also identified by name and date of birth and direct one or more movies.
 iv) Production companies are identified by name and each has an address. A production company produces one or more movies.
 Design an E-R diagram for the movie database and mention the appropriate participation constraints and cardinality ratios. (10 Marks)
 b. Explain the cardinality ratios for binary relationships with an example. (06 Marks)
 c. Describe weak entity type with an example. (04 Marks)
- 4 a. Explain the steps in ER-to-Relational mapping algorithm, with a suitable example. (10 Marks)
 b. Consider the following relational schema and answer the following queries using relational algebra:
 AUTHOR (author_id, aname, acity)
 PUBLISHER (publisher_id, pname, pcity)
 CATALOG (book_id, title, author_id, publisher_id, year, price)
 i) List the title of the books written by 'Navale'.
 ii) Retrieve the author details for the book published in the year 2010
 iii) Retrieve the name of the publisher who published the book costs above 500.
 iv) List the book_ids of the books written by the authors from Bangalore. (08 Marks)
 c. Define degree of a relation. (02 Marks)
- 5 a. Write an essay on join operations for relational algebra. (10 Marks)
 b. Explain the SELECT and PROJECT Unary Relational operations with an example. (06 Marks)
 c. Explain the constraint violations of insert operation. (04 Marks)

Important Note: On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Only revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

- 6 a. Consider the following database schema:
 Employee (SSN, ename, Salary, address, DNo)
 Department (DNo, Dname, MgrSSN)
 Project (PNo, PName, Plocation)
 Works_ON (SSN, PNo, Hours)
- Retrieve the name and address of all employees who work for the 'Admin' Department.
 - List all the SSN and salary starts with 'A'.
 - List the SSN and project name of all the employees who work on the project located at 'Bangalore'.
 - Retrieve the name of the departments whose Employees draw salary below 10000. (08 Marks)
- b. Give the syntax and example for the following SQL commands:
 i) Drop ii) Rollback iii) Update iv) Alter (08 Marks)
- c. Describe views in SQL. Give an example. (04 Marks)
- 7 a. What is the need for normalization? Explain the 1NF, 2NF and 3NF with examples. (10 Marks)
- b. Discuss the update anomalies of relational database design with suitable examples. (06 Marks)
- c. Write short notes on functional dependency. (04 Marks)
- 8 a. Explain how to deal with deadlock in concurrent control mechanism. (10 Marks)
- b. Explain binary locks in two-phase locking technique. (06 Marks)
- c. Describe the ACID properties of a transaction. (04 Marks)