

CBCS SCHEME

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16/17MCA23

Second Semester MCA Degree Examination, Dec.2018/Jan.2019

Database Management Systems

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define database and the characteristics of database approach. (08 Marks)
b. Discuss in detail about advantages of DBMS over traditional file system. (08 Marks)

OR

- 2 a. What is a data model? Explain different data models. (06 Marks)
b. What is entity type, entity set? Explain the difference between entity, entity types and entity set. (10 Marks)

Module-2

- 3 a. Discuss the entity integrity and referential integrity constraints in detail. (10 Marks)
b. How does the various update operations deal with constraint violations? (06 Marks)

OR

- 4 a. Explain the following with example:
i) SELECT
ii) PROJECT
iii) RENAME
iv) Cartesian Product (08 Marks)
b. Consider the following relational schema and answer the following queries using relational algebra.

DEPARTMENT (Dnumber, Dname, MgrSsn, MgrStartdate)

PROJECT (Pnumber, Pname, Plocation, Dnumber)

EMPLOYEE (SSN, Name, Bdate, Addr, Sex, Salary, SuperSSN, Dno)

Queries

- i) Retrieve name and address of all employees who work for account department.
ii) Retrieve the department number, number of employees and their average salary.
iii) Retrieve the name and salary of the manager of each department.
iv) List the name and location of the projects not controlled by department no.2 (08 Marks)

Module-3

- 5 a. Explain the different clauses of SELECT, FROM, WHERE, GROUPBY, HAVING with an example for each. (08 Marks)
b. Write a short note on :
i) VIEWS
ii) JOINS
iii) Subquery
iv) Correlated subquery (08 Marks)

OR

- 6 a. Write short notes on:
 i) EXISTS FUNCTION
 ii) Aggregate functions (08 Marks)
- b. Consider the following relational schemes and write the queries:
 BRANCH (BranchId, BranchName, HOD)
 STUDENT (USN, NAME, Address, BranchId, SEM)
 BOOK (BookId, BookName, AuthorId, Publisher, Branchid)
 AUTHOR (AuthorId, AuthorName, Country, Age)
 BORROW (USN, BookId, Borrow Date)
 QUERIES:
 i) List the students who have not borrowed any books.
 ii) Display the number of books written by each author.
 iii) Display the student details who borrowed more than two books.
 iv) List the details of students who borrowed the books which are all published by the same publisher. (08 Marks)

Module-4

- 7 a. What is the need for normalization? Explain 1NF, 2NF and 3NF with example for each. (08 Marks)
 b. Discuss on the four informal measures of quality for relation schemas. (08 Marks)

OR

- 8 a. Explain BCNF with example. (08 Marks)
 b. Discuss in detail Database stored procedures and functions. (08 Marks)

Module-5

- 9 a. What is a locking protocol? Describe the strict two-phased locking protocol. (08 Marks)
 b. What are acid properties? Define Atomicity, consistency and durability and illustrate them through examples. (08 Marks)

OR

- 10 a. Define transaction. Explain ACID properties of transaction. (10 Marks)
 b. With the help of state transaction diagram, give the states of transaction execution. (06 Marks)
