

DBMS Scheme

USN

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16/17MCA23

Second Semester MCA Degree Examination June/July 2018 Database Management System

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Define DBMS. Discuss the characteristics of Database approach. (06 Marks)
- b. Describe three – schema approaches, with a neat diagram. (04 Marks)
- c. Discuss in detail about the advantages of DBMS over traditional file system. (06 Marks)

OR

- 2 a. Illustrate component modules of DBMS and their interactions, with a neat diagram. (06 Marks)
- b. Briefly explain any 2 types of attributes in E-R model. (03 Marks)
- c. Define the following terms, with an example for each. (07 Marks)
 - i) Entity set ii) Cardinality iii) Participation iv) Weak entity.

Module-2

- 3 a. Summarize join operations in relational algebra. (08 Marks)
- b. Consider the following relational schema and answer the following queries using relational algebra.

EMPLOYEE (Name, SSN, Date, Address, Sex, Salary, Super SSN, Dno)

DEPARTMENT (Dname, Dnumber, Mgr SSN, Mgr Date)

PROJECT (Pname, Pnumber, Plocation, Dno)

WORKS_ON (ESSN, PSN, Hours)

DEPENDENT (ESSN, Dep Name, Sex, ESSN, Relationship)

- i) Retrieve the name and address of all employees who work for research department. (08 Marks)
- ii) Find the names of employees who work on all projects controlled by Dnumber 5. (08 Marks)
- iii) For every project located at "Stafford" list the project number, controlling Department number, department manager's name, with date. (08 Marks)
- iv) Retrieve the names of employees who have no dependents. (08 Marks)

- 4 a. Demonstrate ER – to – Relational mapping algorithms with an example. (08 Marks)
- b. Illustrate unary relational operations with appropriate symbols and example. (08 Marks)

Module-3

- 5 a. Bring out the different clauses of SELECT – FROM – WHERE – GROUP – HAVING with an example for each. (08 Marks)
- b. Explain set membership and set comparison operations for nested sub queries. (08 Marks)

OR

- 6 a. Write a short note on granting and revoking of privileges in SQL. (05 Marks)
- b. Consider the following tables and solve the following queries in SQL. (06 Marks)
- BRANCH (Branchid, Branchname, HOD)
- STUDENT (USN, Name, Address, Branchid, Sem)
- BOOK (Bookid, Bookname, Author, Publisher, Branchid)
- AUTHOR (Authorid, Authorname, Gender, Age)
- BORROW (USN, Bookid, Borrowed Date)
- i) List the student names who are all studying in 2nd sem MCA.
- ii) Display the student details who borrowed more than 2 books.
- iii) Display the student details who borrowed books of more than one author.
- iv) Display the USN, student name, Branchname, Book name of 2nd Sem MCA students.
- c. Give a brief explanation of embedded SQL. (05 Marks)

Module 2

- 7 a. Demonstrate the functional design guidelines for the relation schema. (08 Marks)
- b. Define Functional Dependency. List out the inference rules of functional dependency. (04 Marks)
- c. Define Triggers. Brief about Triggers with syntax and example. (04 Marks)

OR

- 8 a. What is Normalization? Explain the 1NF, 2NF and 3NF with example. (10 Marks)
- b. Explain BCNF with the help of an example. (05 Marks)

Module 3

- 9 a. With the help of state transition diagram, explain the states of transaction execution. (08 Marks)
- b. Define Transaction. Explain ACID properties of transaction. (08 Marks)

OR

- 10 a. Explain how to deal with deadlock in concurrent control mechanism. (08 Marks)
- b. What is a deadlock? Explain the 2PL. (08 Marks)