# CBCS SCHEME

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USN								TONICASI

# Third Semester MCA Degree Examination, Aug./Sept.2020 **Database Management Systems**

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- a. Explain Three Schema architecture. What is data independence and explain different types of data independence. (10 Marks)
  - b. What is DBMS? Explain the advantages of using DBMS approach.

(10 Marks)

OR

2 a. Explain the characteristics of Database approach.

(07 Marks)

b. Explain weak entity type with example.

(03 Marks)

c. Design an ER – diagram for the following scenario. There are many movies. Each movie is identified based on movieid, having a name and language. There are many directors, each of them are uniquely identified using Directorid, having a name, address (involves Door no, Area, City, State and Pincode) and multiple phonenos. A movie is directed by only one director and a director directs many movies. Every movie having a director. There are many actors uniquely identified using Actorid, having a name, multiple phonenos, gender. A movie contains many actors and an actor can act in many movies under some role.

(10 Marks)

# Module-2

3 a. Illustrate ER – to – Relational mapping algorithm, with an example.

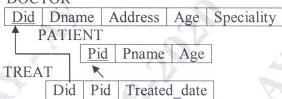
(10 Marks)

b. Explain the use of  $\sigma$  (select) and  $\pi$  (project) in Relational algebra with an example.

(04 Marks)

c. Consider the following schema and answer the following queries in Relational Algebra.

DOCTOR



- i) List the doctor details who are having the specialty as Cardiology and with more than 50 years age.
- ii) List the patient details, who are treated by the doctor Dr. Abhishek.
- ii) Count the number of patients treated by each doctor.

(06 Marks)

### OR

4 a. Consider the following schema and answer the queries using Relational Algebra.

STUDENT

USN Name Address Age Branchid Sem

BRANCH

Branchid Bname HOD

BOOK

Bookid Bookname Authorid Publisher

**AUTHOR** Authorid | Aname | Country BORROW USN Bookid Borrowdate

- List the details of 2<sup>nd</sup> sem, MCA students.
- ii) List the details of Author who has written the Book named "Introduction to DBMS".
- iii) List the Author details who had written more than two books.
- iv) List the students who have not borrowed any books.

(12 Marks)

- b. Explain the use of following operators in Relation Algebra with example.
  - i) DIVISION (÷)
- ii) MINUS (-).

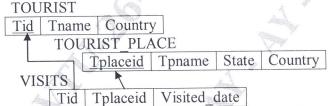
(08 Marks)

Module-3

- Explain the use of following command in SQL with example:
  - i) UPDATE
- ii) DELETE
- iii) ALTER iv) DROP.

(10 Marks)

b. Consider the following schema and answer the following queries in SQL.

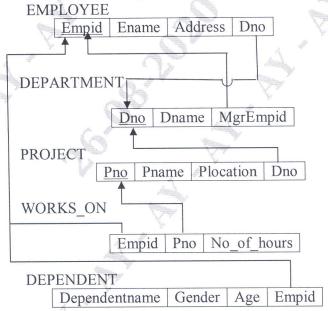


- i) List the tourist details who visited the tourist place "Mysore".
- ii) Display the details of tourist who visited atleast two tourist places.
- iii) Count the number of tourist places present in each country.
- iv) List the tourist place which is not visited by any of the tourist.

(10 Marks)

OR

- What are VIEWS in SQL? With an example, explain how to create a view and when views (12 Marks) can't be updatable.
  - Consider the following schema and answer the queries in SQL.



- i) Display the details of employees who are working in the Department "PRODUCTION".
- ii) List the employees who are all working on atleast two projects.
- iii) Display the employee details who have not having any dependents.
- iv) Display the employee details who works on both the projects Pno = 6 and Pno = 7.

(08 Marks)

# Module-4

- 7 a. What is Functional Dependency? Write the six inference rules for FD's. (08 Marks)
  - b. What is Normalization? Explain 1NF, 2NF and 3NF, with suitable example. (12 Marks)

#### OR

- 8 a. Explain the use of Database stored procedures with example. (08 Marks)
  - b. Explain the informal guidelines for relation schema design and illustrate how violation of these guidelines may be harmful. (12 Marks)

#### Module-5

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

(10 Marks)

## OR

- 10 a. Explain briefly about locks and also explain the Two phase locking protocol in handling concurrent access to a data item. (10 Marks)
  - b. Explain briefly the concept of Deadlock handling during transaction processing. (10 Marks)