

MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

V SEMESTER B.TECH. (INFORMATION TECHNOLOGY) END SEMESTER EXAMINATIONS, DECEMBER 2021 – JANUARY 2022 SUBJECT: DATABASE SYSTEMS [ICT 3157] REVISED CREDIT SYSTEM

(21/12/2021)

Time: 75+10 Minutes

MAX. MARKS: 20

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data, if any, may be suitably assumed.

1A. Consider the following Library Database Schema. LOGIN (user_id, user_name, password) ISSUE_RETURN(user_id, book_id, issue_date, due_date, return_date, penalty, status)
BOOK(book_id_book-name_author_publisher_vear_of_publication

BOOK(book_id, book-name, author, publisher, year_of_publication, copies_available)

MEMBER(user_id, name, mobile_number, address, department_id) DEPARTMENT(department_id, dept_name, building)

- i. Get the count of the members for each department who have currently borrowed atleast one book published by "Penguin" using nested query in 'From' clause.
- ii. Enforce the following constraint on the above database without using Trigger concept: Each member can borrow maximum 8 books.
- iii. With respect to the database given, relate and mention how the modelbased constraints are incorporated?

1B. Consider the Library Database Schema given in Q.1A.

- i. Write a trigger to display the book details for which penalty is greater than 0 for the members when borrowing the books. Display suitable message if the limit is exceeded.
- ii. Write a function to display list of books for an inputted publisher.

1C. Consider the view defined below. Can this view be updated? Justify. CREATE VIEW employee_yos AS SELECT employee_id, dept_name first_name || ' ' || last_name full_name, FLOOR(months_between(CURRENT_DATE, hire_date)/ 12) yos FROM Employees, department; 3

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2A Consider a database for that assists the dealers in maintaining customer and 5 inventory data to assist sales staff in ordering bikes. Each bike is identified by a VIN. Each individual bike is a particular model of a particular brand offered by the company. Each model can be offered with a variety of options, but an individual bike may have only some (or none) of the available options. The database needs to store information about models, brands, and options, as well as information about individual dealers, customers, and bikes.

For the given scenario design an E-R diagram based on Chen's notation, give a set of relational schemas.

- 2B Compute the canonical cover for the following set F of functional dependencies for 3 the relation schema R (A, B, C, D, E).
 F: {A-> B; AB -> C; D-> AC; D-> E}
- 2C Provide a view equivalent schedule for S if one can be possible. S: R1(A) R2(A) R3(B), W1(A), R2(C) R2(B), W2(B), W1(C)

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