

H

Roll No. 2292109

TBC-302/TBI-302/TBS-303

B. C. A./B. SC. (IT)/B. SC. (CS)

(THIRD SEMESTER)

END SEMESTER

EXAMINATION, Dec., 2023

DATABASE MANAGEMENT SYSTEM

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) Differentiate between logical database design and physical database design. Show how this separation leads to data independence.

(CO1)

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- (b) Information about a bank is about customers and their account. Customer has a name, address which consists of house number, area and city, and one or more phone numbers. Account has number, type and balance. We need to record customers who own an account. Account can be held individually or jointly. An account cannot exist without a customer.

Draw an E-R diagram on the basis of above assumption. (CO1)

- (c) Define Database and Database Management System. Describe the advantages and disadvantages of using of DBMS. (CO1)

2. (a) What is a relation? Differentiate between a relational schema and a relational instance. Define cardinality and degree of a relation with example. (CO2)
- (b) Define the concept of union compatible in relational algebra. What are the unary and binary operators used in relation algebra? (CO2)

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- (c) Consider the following relational schema : (CO2)

CAR (CAR_REG_NO, YEAR, MODEL)

ACCIDENT (DATE, DRIVER_NAME,

CAR_REG_NO, ADHAR_NO)

OWNS (ADHAR_NO, LICENSE_NO)

Write the following relational algebra queries :

- (i) Find the names of persons who are involved in an accident.
- (ii) Find the details of cars which were involved in any accident.
- (iii) Find the details of car which are not involved in accident.
- (iv) Change relation name OWNS to DRIVER.
3. (a) Explain the characteristics of SQL. What are the different types of commands used in SQL? (CO3)
- (b) Write short notes on the following : (CO3)
- (i) Aggregate Functions
- (ii) SQL Joins

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