

Sylhet Engineering College, Sylhet
(Shahjalal University of Science & Technology)
Department of Computer Science & Engineering

Final Examination, 2020

Course No: CSE 501

Time: 03 (Three) hours

Set # 2

3rd year 1st semester
Course Title: Database Management System

Full Marks: 30

N.B. : (i) Answer every question from each PART

(ii) Use separate answer scripts for each PART

(iii) Marks allotted are indicated in the margin

(iv) Special Instruction (if any)-----N/A-----

PART-A

1. (a) Consider the following relational database and write the queries in relation algebra. 4*2

account(account_number, branch_name, balance)

depositor(account_number, customer_name)

customer(customer_name, customer_street, customer_city)

borrower(loan_number, customer_name)

loan (loan_number, branch_name, amount)

branch (branch_name, branch_city, branch_assets)

- i. Find the total customer of each branch.
- ii. Find the customer name, account_number who has maximum balance in Sylhet city.
- iii. Name, street and city of all customers who have loan in Sylhet Branch.
- iv. Find the name of all branches where average loan amount is greater than 50,000.

- (b) Suppose you are given a relational schema $R=(A,B,C,G,H,I)$ and the set of functional dependencies 3

$A \rightarrow B$

$A \rightarrow C$

$CG \rightarrow H$

$CG \rightarrow I$

$B \rightarrow H$

Now, logically imply the following functional dependencies $A \rightarrow H$, $AG \rightarrow I$, $CG \rightarrow HI$ using the above information.

- (c) Draw the following E-R notations. 4

- i) Identifying Relationship set
- ii) Total participation
- iii) Partial key
- iv) one-to-many relationship

PART-B

2. (a) Consider the following relational database:

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employee(person_name, street, city)
works(person_name, company_name, salary)
company(company_name, city)
manages(person_name, manager_name)

Write SQL for each of the following query:

- i) Find the name and city of each employee who works for FBC.
- ii) Find the names of all employees who earn more than every employee of SBC.
- iii) Modify the database so that Jamal now lives in Rajshahi.
- iv) Gives all managers a 10 percent salary raise.
- v) Find all employees and their corresponding manager name.

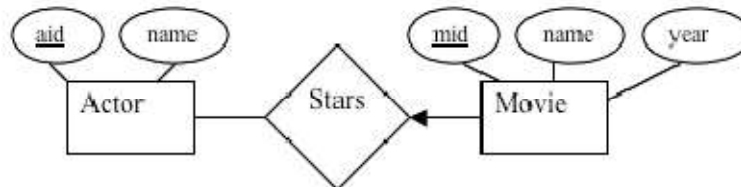
- (b)

3+4

- i) Find the Draw the Entity-Relationship Model for the following Relational Model :

employee(employee_name, street, city)
works(employee_name, company_name, salary)
company(company_name, city)
manages(employee_name, manager_name)

- ii) Consider the following ER Diagram that associates actors and movies with the relationship set Starts.



Which of the following statements is true? Explain

- b1. An actor can star in multiple movies.
- b2. Each actor has to star in a movie.
- b3. Every movie has a star.
- b4. A movie can have no more than one star.