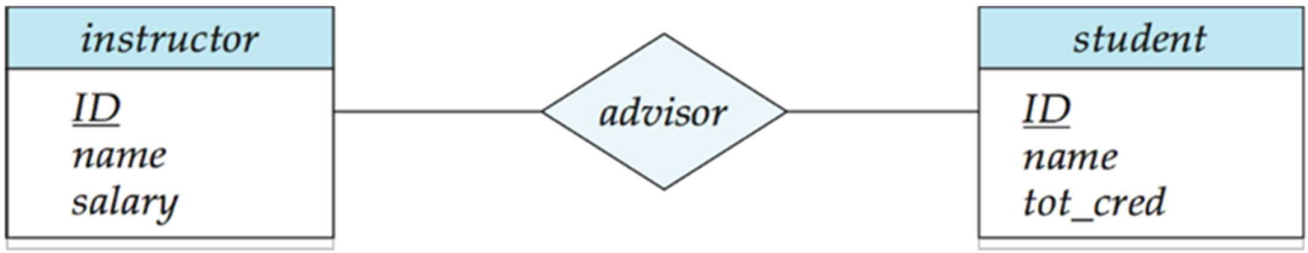
UNIT 1

1) Define and Differentiate between Super Key, Candidate Key and Primary Key. Give appropriate example.
2) List different types of users in Database environment. Explain the role played by each of the listed users.
3) Define Database. List and explain the applications of Database.
4) Explain the ER Model in details. (Defn 1 mark, symbols 3, example 3).

UNIT 2

1) How is ER diagram reduced? and reduce the below ERD to relational schema.



Reduction 3 marks, example 4 marks

2) List and explain the Extended Features of ER model.
3) Explain the rules for reduction of following notation in ERD, with appropriate examples.

   a) Weak Entity set.

   b) Multivalued attribute in Strong Entity set

   c) Many to One relationship set.

UNIT 3

1) List and explain aggregate functions of SQL with appropriate examples.
2) Explain the following SQL constructs with examples: (1) order by, (2) group by, (3) having, (4) as, (5) in
3) Consider the following Database design.

   Customer (cid, custname, custstreet, custcity)
   Account (accno, branchname, balance)
   Loan (loanno, branchname, amount)
   Borrower (cid, loanno)
   Branch (branchname, branchcity, asset)
   Depositor (cid, accno)

Solve the following queries in SQL:

a. Display the name of customers who have both account and loan at the bank. (2 Marks)

b. Update amount of loan to 10000 where loan number is “L-101”. (2 Marks)

c. Change the column name custcity to ccity. (1 Mark)

d. Find all customers who an account but no loan at bank. (2 Marks)

4) List and explain the types of Joins in SQL.

UNIT 4

1) Define the terms Primary Index and Secondary Index. Differentiate between them on basis of the Evaluation Criteria for indices.
2) When does a collision occur in hashing? Illustrate various collision resolution techniques.
3) Illustrate Multiple Key Access with appropriate example.

UNIT 5

1) List and explain the variants of Two Phase Lock Protocol
2) Explain with appropriate example the following terms:
   a) Recoverable Schedules.
   b) Cascadeless Schedules.
3) Draw and explain the Transaction State Diagram.

UNIT 6

1) Explain the purpose of Checkpoint mechanism. Explain the steps for performing a checkpoint.
2) State and explain various classes of failure in database system.
3) Elaborate the Immediate Database Modification with its Recovery mechanism.
4) Compare Deferred Database Modification and Immediate Database Modification.

OUT OF DYP QB

1) What is data redundancy? Explain the update anomalies. (Definition 1 marks, anomalies 6 marks). [Unit 2]
2) Explain the time stamp based protocol. Give an example of it. (Explanation 4 marks, Example 3 marks). [Unit 5]