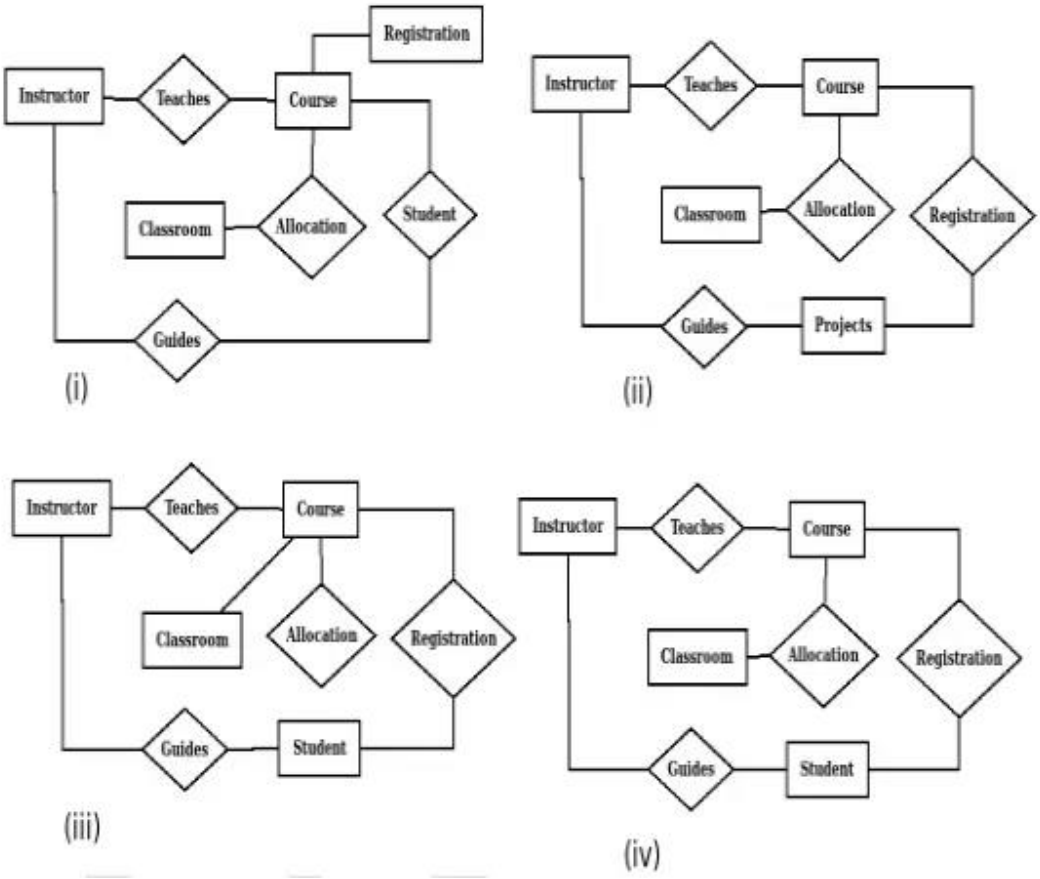
Tutorial Sheet 5

Question 1: (a): Explain the concept of *Mapping Cardinalities* in an Entity-Relationship Model.
(b) Describe how weak entities are related to their identifying entities.
(c) What are common methods to avoid *Redundancy in Schemas* in ER Models?
(d) How do composite key's function when multiple attributes are required to uniquely identify an entity?

Question 2
Let S be the specification: "Instructors teach courses. Students register for courses. Courses are allocated classrooms. Instructors guide students." Which one of the following ER diagrams CORRECTLY represents S? State the reason.



A (i)

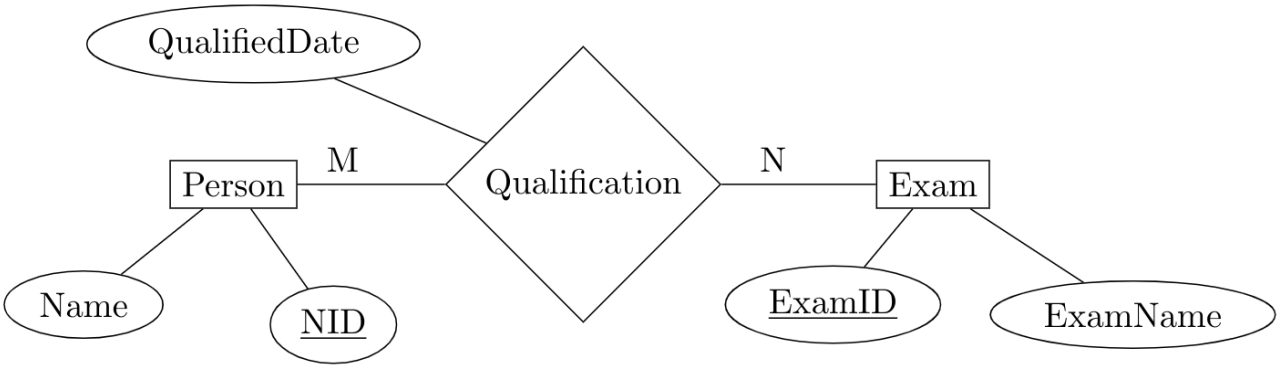
B (ii)

C (iii)

D (iv)

Question 3

Consider the following ER Diagram



Which of the following possible relations will not hold if the above ERD is mapped into a relation model? State the reason.

A Person (NID, Name)

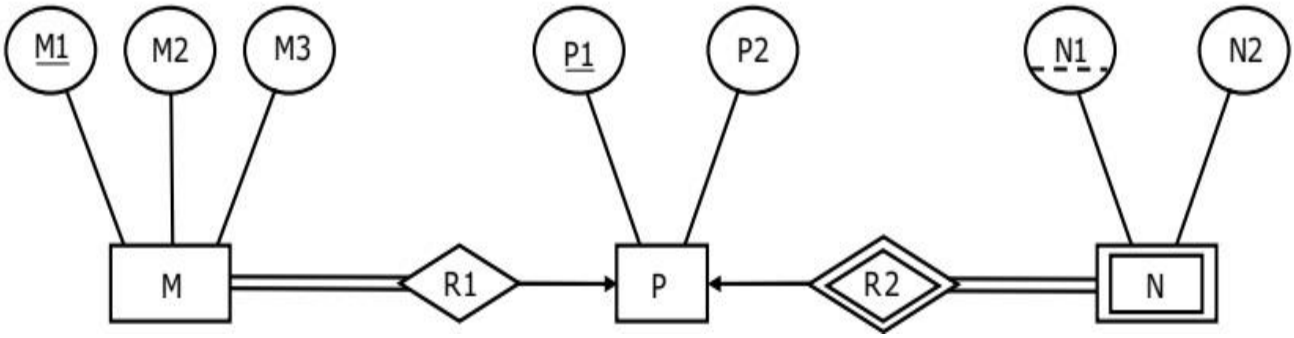
B Qualification (NID, ExamID, QualifiedDate)

C Exam (ExamID, NID, ExamName)

D Exam (ExamID, ExamName)

Question 4

Consider the following ER Diagram



Which of the following is a correct attribute set for one of the tables for the minimum number of tables needed to represent M, N, P, R1, R2? Solve.

A {M1,M2,M3,P1}

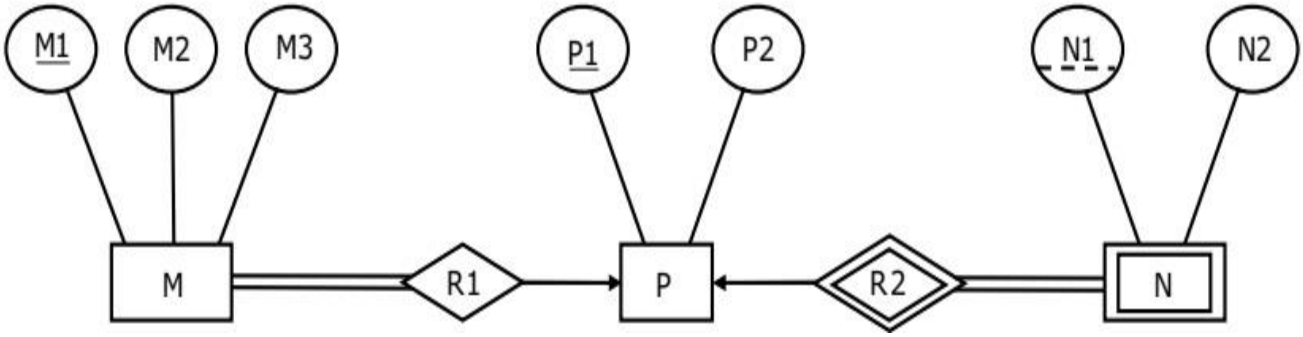
B {M1,P1,N1,N2}

C {M1,P1,N1}

D {M1,P1}

Question 5

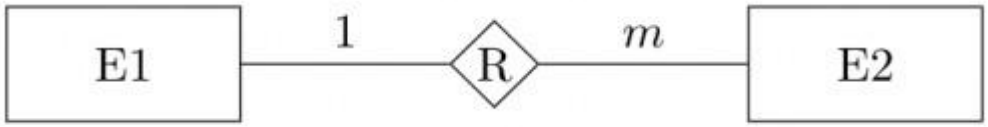
Consider the following ER Diagram



Find the minimum number of tables needed to represent M, N, P, R1, R2.

Question 6:

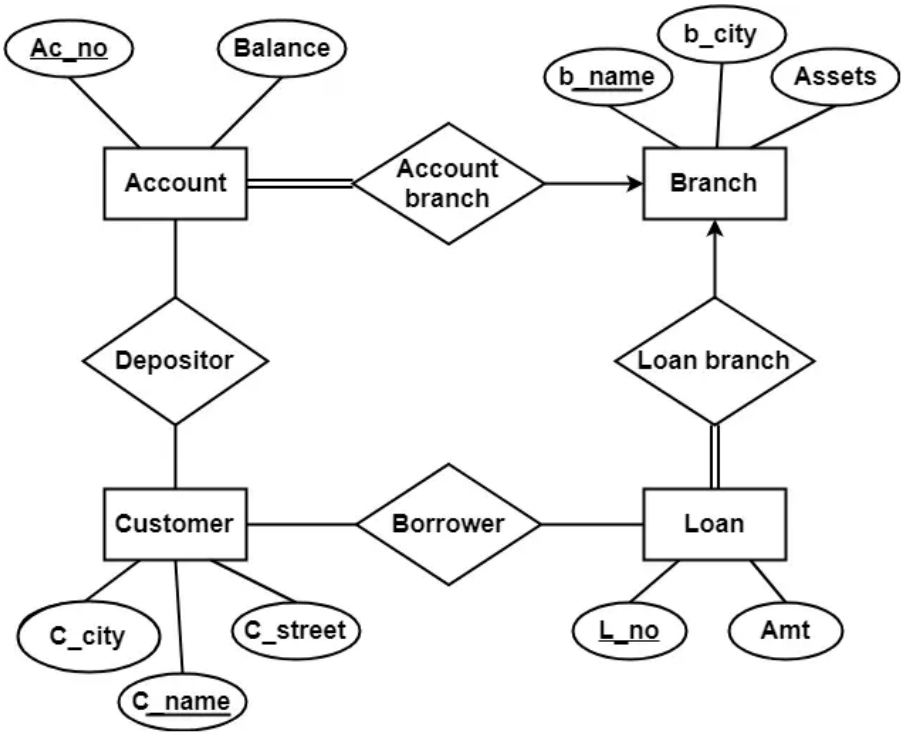
Consider the following entity relationship diagram (ERD), where two entities E1 and E2 have a relation R of cardinality 1:m.



The attributes of E1 are A11,A12 and A13 where A11 is the key attribute. The attributes of E2 are A21,A22 and A23 where A21 is the key attribute and A23 is a multi-valued attribute. Relation R does not have any attribute. A relational database containing minimum number of tables with each table satisfying the requirements of the third normal form (3NF) is designed form the above ERD. Find the minimum number of tables in the database.

Question 7:

Find the minimum number of tables required to represent the given ER diagram in relational model



Question 8:
Convert the ER diagram into RDBMS table and Find the total number of foreign keys.