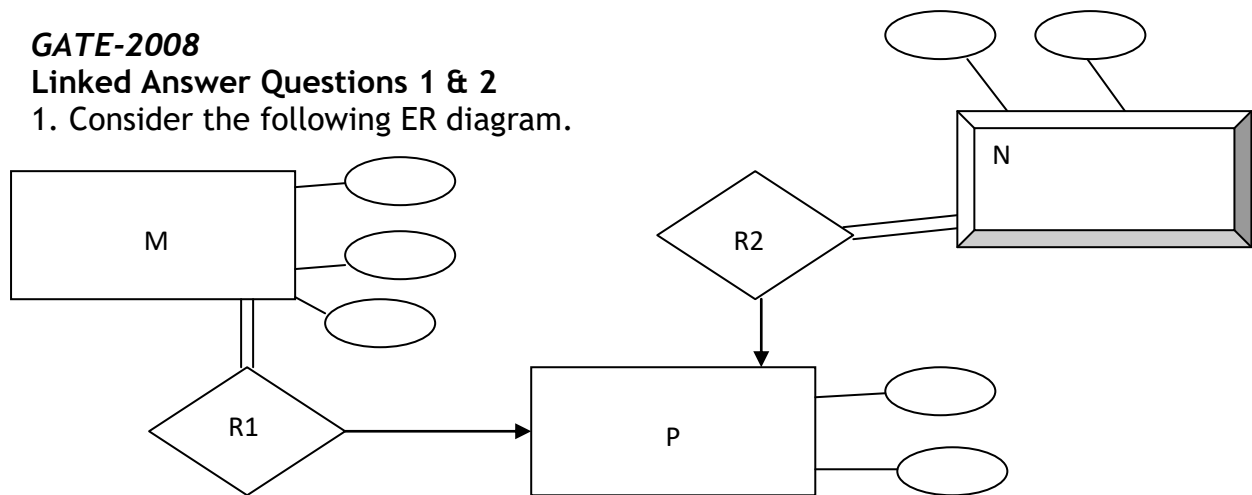


**GATE-2008**

**Linked Answer Questions 1 & 2**

1. Consider the following ER diagram.



The minimum number of tables needed to represent M, N, P, R1, R2 is  
(a) 2 (b) 3 (c) 4 (d) 5

Ans: option (b)

Explanation:

All strong entities and weak entities will be converted into a table. Therefore we will have 3 tables:

M (M1,M2,M3,P1)

P (P1,P2)

N (N1,N2,P1) =>N is a weak entity and it is modified to include the primary key of P (i.e. P1).

2. Which of the following is a correct attribute set for one of the tables for the correct answer to the above question?

(a) {M1, M2, M3, P1} (b) {M1, P1, N1, N2} (c) {M1, P1, N1} d) {M1, P1}

Ans: option (a)

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**GATE-2005**

3. The following table has two attributes A and C where A is the primary key and C is the foreign key referencing A with on-delete cascade.

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A	C
-----	
2	4
3	4
4	3
5	2
7	2
9	5
6	4
-----	

The set of all tuples that must be additionally deleted to preserve referential integrity when the tuple (2,4) is deleted is:

- (a) (3,4) and (6,4)                      (b) (5,2) and (7,2)  
(c) (5,2), (7,2) and (9,5)              (d) (3,4), (4,3) and (6,4)

Ans: option (c)

Explanation:

Note that C is a foreign key, referring A with delete on cascade. Therefore when (2,4) is deleted, all the rows with value 2 in field C also should be deleted. Hence (5,2) and (7,2) is also deleted. Now rows with value 5 and 7 in field C also should be deleted. Therefore (9,5) is also deleted.

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#### **GATE-2005**

4. Let E1 and E2 be two entities in an ER diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?

(a) 2 (b) 3 (c) 4 (d) 5

Ans: option (b)

Explanation:

Strong entities E1 and E2 should be converted into tables. For R1, which is one to

many relation, there is no need of a separate table. Modify the "many" side to include the primary key of "one" side as foreign key. For R2, which is many to many relation, we require a separate table by including the primary key of E1 and E2 as foreign keys. Hence we require a minimum of 3 tables.

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**GATE-2012**

5. Given the basic ER and relational models, which of the following is INCORRECT?
- (a) An attribute of an entity can have more than one value
  - (b) An attribute of an entity can be composite
  - (c) In a row of a relational table, an attribute can have more than one value
  - (d) In a row of a relational table, an attribute can have exactly one value or a NULL value

Ans: option (c)

Explanation:

According to First Normal Form, an attribute cannot have multiple values.

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**GATE-2011**

6. Consider a relational table with a single record for each registered student with the following attributes.

1. Registration\_Number: Unique registration number of each registered student
2. UID: Unique Identity number, unique at the national level for each citizen
3. BankAccount\_Number: Unique account number at the bank. A student can have multiple accounts or joint accounts. This attributes stores the primary account number
4. Name: Name of the Student
5. Hostel\_Room: Room number of the hostel

Which of the following options is INCORRECT?

- (a) BankAccount\_Number is a candidate key
- (b) Registration\_Number can be a primary key
- (c) UID is a candidate key if all students are from the same country
- (d) If  $S$  is a superkey such that  $S \cap \text{UID}$  is NULL then  $S \cup \text{UID}$  is also a superkey

Ans: option (a)

Explanation:

Candidate Key: All unique value columns in a table are called candidate keys.

Its already specified in the question that "A student can have multiple accounts or joint accounts". Hence if two students have a joint account, BankAccount\_Number will be the same both the students. Hence BankAccount\_Number cannot be a candidate key.