Branch : CSE & IT   Batch : hinglish

Database Management System
ER Model   DPP 01

[MCQ]

1. Which of the following statements about ER model is/are correct?

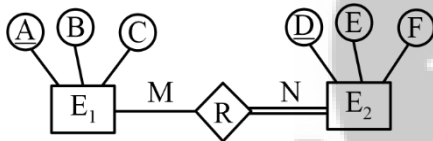S_1: Relationship sets can have attributes of their own.

S_2: Many to many relationships cannot be represented in ER diagram.

S_3: Multi value attributes and weak entity set allowed in RDMS.

(a) S_1 only
(b) S_1 and S_3 only
(c) S_2 and S_3 only
(d) S_1, S_2 and S_3
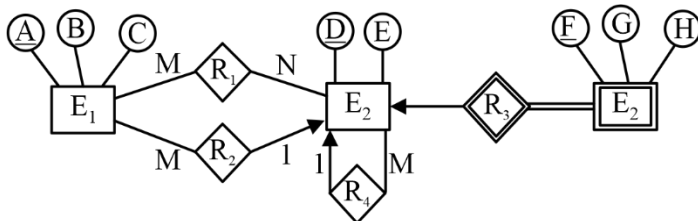
[MCQ]

2. Consider the following ERD:

Which of the following is the minimum number of relational table and foreign key required for above ERD?

(a) 3, 2
(b) 1, 1
(c) 2, 1
(d) None of thee
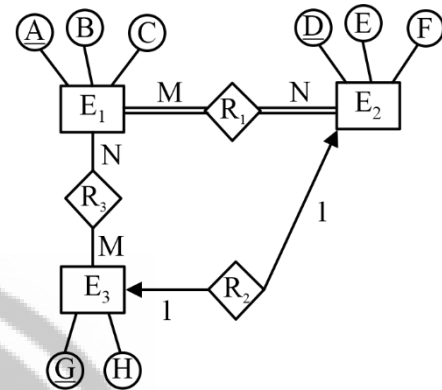
[MCQ]

3. Consider the following ER model:

Which of the following is the minimum number of relational tables and minimum number of foreign key required for conversion into relational table?
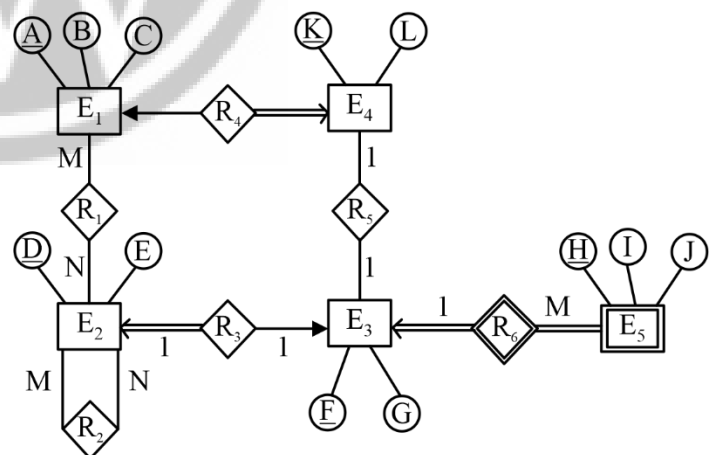
(a) 6, 4
(b) 4, 5
(c) 5, 4
(d) 4, 6

[NAT]

4. Consider the following ER model:

Assume X is the minimum number of tables, Y is the total number of attributes in relational tables and Z is the minimum number of foreign key, then find the value of X + Y + Z?

[MCQ]

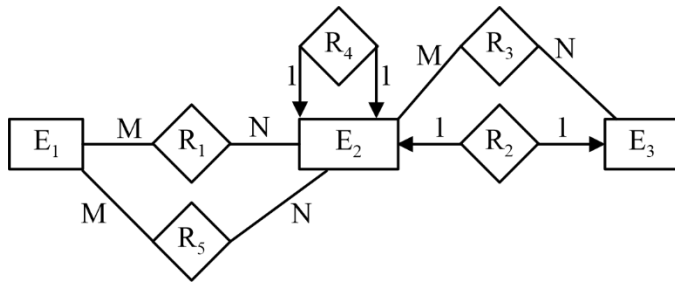**5.** Consider the following ER diagram:

How many total attributes required for the minimized relations of the above ER diagram?

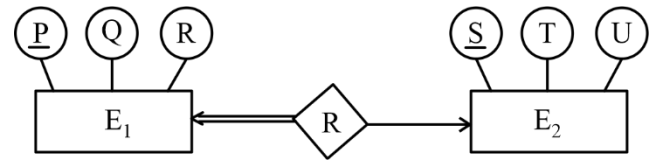(a) 14
(b) 15
(c) 18
(d) None of these

[NAT]

6. Consider the following ER diagram

Total number of RDBMS table in the above diagram?

[MCQ]

7. Consider the following ER model:

If 'x' entries in E1 and 'y' entries in E2.
How many entries in relation set (R)?

(a) Exactly y

(b) At most x
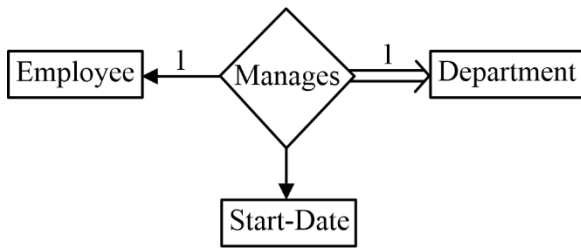
(c) Exactly x

(d) at least x and at most m

Answer Key

1. (a)
2. (c)
3. (b)
4. (17)

5. (c)
6. (6)
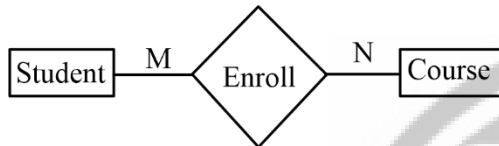7. (c)

Hints & Solutions

1. (a)

Statement S_1 is correct.

In the above ER diagram "Start-Date" is attribute of relationship set "Manages". It can be associate to either employee or department entity.

Statement S_2 is incorrect.

ER diagram represents many students can enroll many courses.

Statement S_3 is incorrect.

According to R DBMS guidelines every attributes in relational table must atomic and table must have atleast one candidate key (1NF) hence, multivalued attribute and weak entity sets are not allowed in R DBMS.

It only allowed in ER diagram

2. (c)

I. Minimum number of relational tables:

When the relation between entity set is "many to many" and any one side total participation then relationship merge towards total participation.
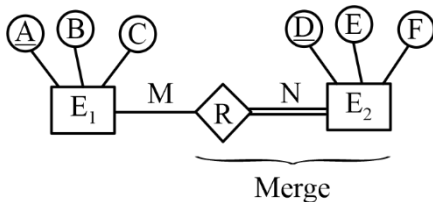
E_1 (<u>A</u> B C) E_2R (<u>A D</u> E F)

Hence, the minimum number of relations are 2.

II. Minimum number of foreign keys:

E_1(<u>A</u> B C) E_2R(<u>A D</u> E F)

Here A is PK   Here 'A' is PK
                      and "AD" is PK

Hence, we need minimum 1 foreign key to represent above ERD into relational table

3. (b)

Minimum number of relations tables:

1. E_1 R_2 (<u>A</u> D B C)

In this table A is P.K and D is F.K referring "E_2R_4"

2. E_2 R_4 (<u>D</u> E D_1)

In this table D is P.K and D_1 taken from self-referring relation set "R_4" and D_1 is F.K referring D in the same table.
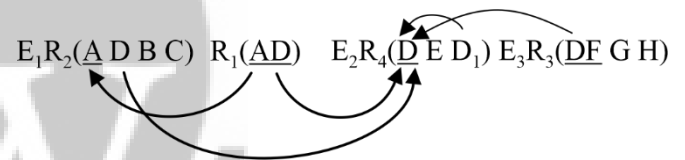
3. R_1 (<u>A D</u>)

In this table "AD" is PK and A and D is FK referring "E_1 R_2" and "E_2 R_4".

4. E_3 R_3 (<u>D F</u> G H)

In this table "DF" is strong key that is PK and 'D' is F.K referring table "E_2R_4".

Hence, for the given ER diagram we need minimum 4 relational table and 5 foreign keys.

E_1R_2(<u>A</u> D B C) R_1(<u>AD</u>) E_2R_4(<u>D</u> E D_1) E_3R_3(<u>DF</u> G H)

4. (17)

Find the minimum number of relation table:

I. The entity between E_1 and E_2 have many to many mappings and both side total participation so, E_1, R_1 and E_2 will be merged into single relation.

E_1 R_1 E_2 (<u>A</u> B C <u>D</u> E F)

In this table A and D both are candidate key of relation E_1 R_1 E_2.

II. Between E_2 and E_3, we have one to one mapping and both side partial participation. Hence, relationship R_2 can be merge either towards E_2 or E_3.

∴ R_2 E_3 (<u>G</u> H <u>D</u>)

In this table G and D is candidate key and D is FK referring to table E_1 R_1 E_2.

III. Between E_1 and R_3, we have many to many mapping and both side partial participation. Hence, R_3 will have separate table.

∴ R_3 (<u>A G</u>)

In this table "AG" is candidate key and A and G are FK referring "$E_1 R_1 E_2$" and "$E_3 R_2$"

Hence, X value will be 3

Y value will be 11

Z value will be 3

$\therefore X + Y + Z = 3 + 11 + 3 = 17$

5. **(c)**

$\left.\begin{array}{l} E_1(\underline{A}BC) \\ R_4(\underline{A}\,\underline{K}) \\ E_4(\underline{K}L) \end{array}\right\} E_1 R_4 E_4(\underline{A}BC\underline{K}L)$

$R_1(\underline{AD}) \} R_1(\underline{AD})$

$\left.\begin{array}{l} E_2(\underline{D}\,E)\ R_3(\underline{D}\,\underline{F})\ E_3(\underline{F}\,G)\ E_5(\underline{K}\,F) \end{array}\right\}$

$E_2\ R_3\ E_3\ R_5\ (\underline{D}\,E\,\underline{F}\,\underline{K}\,G)$

$\left.R_2(\underline{D_1 D_2})\right\} R_2(\underline{D_1 D_2})$

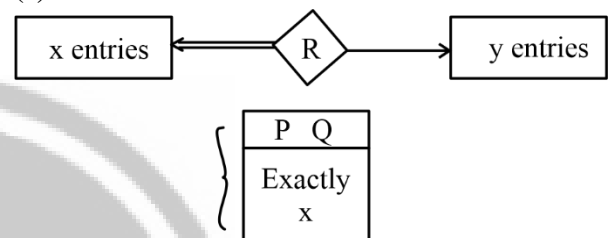$\left.\begin{array}{l} R_6(\underline{F}H) \\ E_5(\underline{H}IJ) \end{array}\right\} E_5 R_6(\underline{FH}IJ)$

6. **(6)**
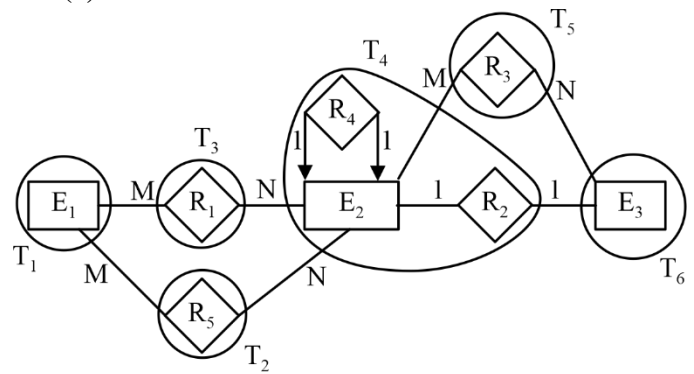
Total number of tables = 6

7. **(c)**

Every object of E_1 must be related with exactly one entry of E_2.

Hence, option C is correct.