# Branch : CSE & IT Batch : English

# 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.

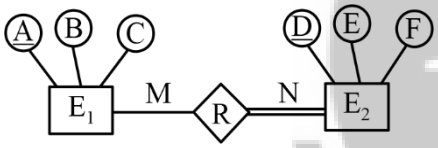
**$S_3$:** Multi value attributes and weak entity set allowed in RDMS.

(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:



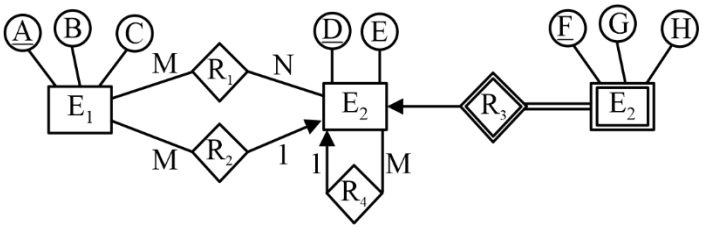

Which of the following is the minimum number of relational table and foreign key required for above ERD?

(a) 3, 2 (b) 1, 1

(c) 2, 1 (d) None of thee

**[MCQ]**

**3.** Consider the following ER model:



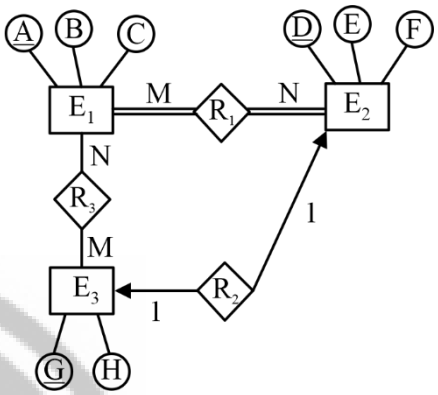

Which of the following is the minimum number of relational tables and minimum number of foreign key required for conversion into relational table?

(a) 6, 4 (b) 4, 5

(c) 5, 4 (d) 4, 6

**[NAT]**

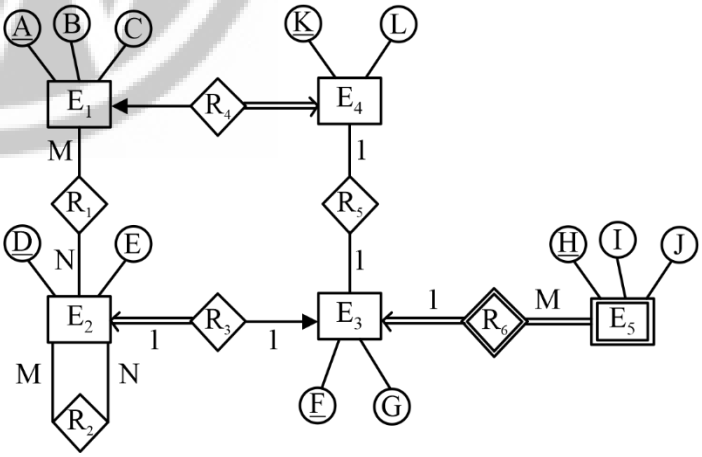
**4.** Consider the following ER model:




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

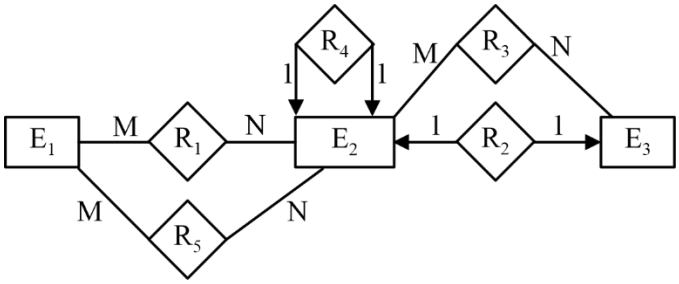
(b) 15

(c) 18

(d) None of these

**[NAT]**

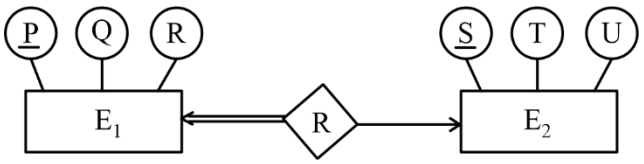
**6.** Consider the following ER diagram




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

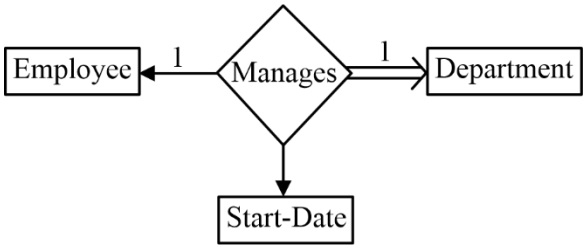
# Answer Key

1. **(a)**
2. **(c)**
3. **(b)**
4. **(17)**
5. **(c)**
6. **(6)**
7. **(c)**

# Hints & Solutions

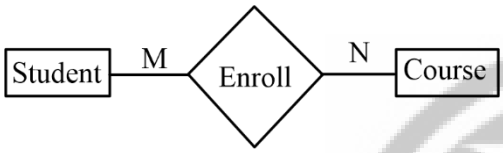
**1. (a)**

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.

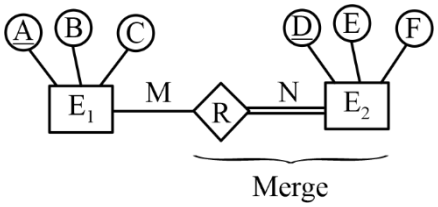
According to R DBMS guidelines every attributes in relational table must atomic and table must have atleast one candidate key (1NF) hence, multivalued attribute and weak entity sets are not allowed in R DBMS.

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.




$E_1$ (A B C) $E_2R$ (A D E F)

Hence, the minimum number of relations are 2.

**II.** Minimum number of foreign keys:


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

**3. (b)**

Minimum number of relations tables:

**1.** $E_1$ $R_2$ (A D B C)

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

**2.** $E_2$ $R_4$ (D 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.

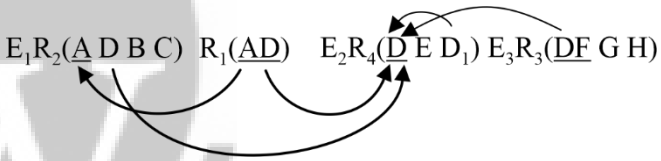
**3.** $R_1$ (A D)

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

**4.** $E_3$ $R_3$ (D F 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.




**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.

$E_1$ $R_1$ $E_2$ (A B C D 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 $E_3$.

$\therefore$ $R_2$ $E_3$ (G H D)

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.

$\therefore$ $R_3$ (A G)

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)**

$E_1(\underline{A}BC)$, $R_4(\underline{A}\,\underline{K})$, $E_4(\underline{K}L)$ $\Big\}$ $E_1R_4E_4(\underline{A}BC\underline{K}L)$

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

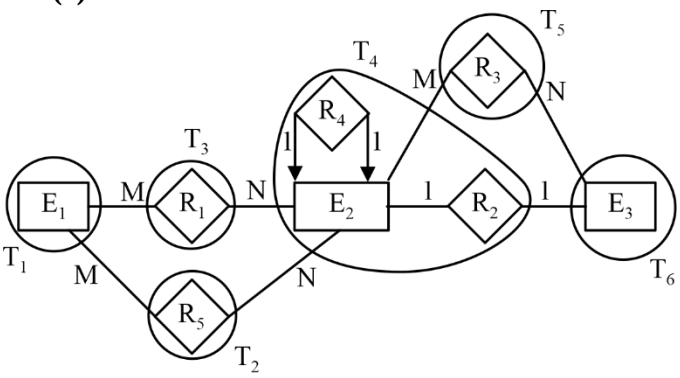
$E_2(\underline{D}\,E)$ $R_3(\underline{D}\,\underline{F})$ $E_3(\underline{F}\,G)$ $E_5(\underline{K}\,F)\}$

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

$R_2(\underline{D_1}D_2)\Big\}R_2(\underline{D_1}D_2)$

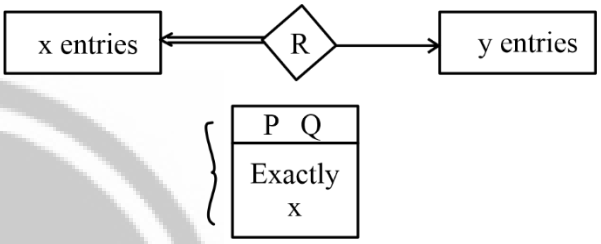
$R_6(\underline{FH})$, $E_5(HIJ)$ $\Big\}$ $E_5R_6(\underline{FH}IJ)$

**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.