

## DBMS Questions

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### MCQ Question 1

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Fifth-Generation languages are the \_\_\_\_.

1. Assembly languages
2. Machine languages
3. constraint based languages
4. High level language
5. None of the above

**Answer** (Detailed Solution Below)

Option 3 : constraint based languages

### DBMS MCQ Question 1 Detailed Solution

The correct answer is **constraint-based languages**.



#### Key Points

Programming languages are classified in variety of ways and **generation** is one of them.

- Generation are further classified as: First-generation, second-generation, third-generation, fourth-generation, **fifth-generation**.
- Fifth generation language is applied to logic and **constraint-based languages** like Prolog.

## Additional Information

- Assembly languages → Second-generation
- Machine languages → First-generation
- High Level language → Third-generation

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### MCQ Question 2

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Consider the relation  $X(P, Q, R, S, T, U)$  with the following set of functional dependencies

$$F = \{ \begin{aligned} &\{P, R\} \rightarrow \{S, T\}, \\ &\{P, S, U\} \rightarrow \{Q, R\} \end{aligned} \}$$

Which of the following is the trivial functional dependency in  $F^+$ , where  $F^+$  is closure of  $F$ ?

1.  $\{P, R\} \rightarrow \{S, T\}$
2.  $\{P, R\} \rightarrow \{R, T\}$
3.  $\{P, S\} \rightarrow \{S\}$
4.  $\{P, S, U\} \rightarrow \{Q\}$

**Answer** (Detailed Solution Below)

Option 3 :  $\{P, S\} \rightarrow \{S\}$

**DBMS MCQ Question 2 Detailed Solution**

**Concept:**

The closure of  $F$ , denoted as  $F^+$ , is the set of all regular FD, that can be derived from.

For trivial functional dependency,

Let  $A$  and  $B$  be two sets consists of attributes of a relation

$$A \rightarrow B$$

$$A \supseteq B$$

**Explanation:**

Option 1:

$$\{P, R\} \rightarrow \{S, T\}$$

$$\{P, R\} \not\supseteq \{S, T\}$$

Not a trivial functional dependency

Option 2:

$$\{P, R\} \rightarrow \{R, T\}$$

$$\{P, R\} \not\supseteq \{R, T\}$$

Not a trivial functional dependency

**Option 3:**

$$\{P, S\} \rightarrow \{S\}$$

$$\{P, S\} \supseteq \{S\}$$

It is a trivial functional dependency

Option 4:

$$\{P, S, U\} \rightarrow \{Q\}$$

$$\{P, S, U\} \not\supseteq \{Q\}$$

Not a trivial functional dependency

**NOTE:**

$\supseteq \rightarrow$  superset

$\not\supseteq \rightarrow$  not superset

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## MCQ Question 3

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Which symbol denote derived attributes in ER Model?

1. Double ellipse
2. Dashed ellipse
3. Squared ellipse
4. Ellipse with attribute name underlined

**Answer** (Detailed Solution Below)

Option 2 : Dashed ellipse

## DBMS MCQ Question 3 Detailed Solution

### Concept:

An attribute that can be derived from other attributes of the entity type is known as a derived attribute, derived attribute is represented by a dashed ellipse.

### Explanation:

In the ER model,

**Option 1:** Double ellipse



Multivalued attribute

**Option 2:** Dashed ellipse





Derived attribute

**Option 4:** Ellipse with attribute name underlined



Key attribute

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#### MCQ Question 4

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An ER model of a database consists of entity types A and B. These are connected by a relationship R which does not have its own attribute. Under which one of the following conditions, can the relational table for R be merged with that of A?

1. Relationship R is one-to-many and the participation of A in R is total.
2. Relationship is one-to-many and the participation of A in R is partial.
3. Relationship R is many-to-one and the participation of A in R is total.
4. Relationship R is many-to-one and the participation of A in R is partial.

**Answer** (Detailed Solution Below)

Option 3 : Relationship R is many-to-one and the participation of A in R is total.

### Concept:

**Total participation:** It specifies that each entity in the entity set must compulsorily participate in at least one relationship instance in that relationship set.

**Partial participation:** It specifies that each entity in the entity set may or may not participate in the relationship instance in that relationship set.

### Explanation:



In one to many or many to one relation, the relation between two entities is merged on the many side with total participation. As, it is given that relationship R doesn't have its own attributes. So, it must be combined with entity A. So, the relation must be many to one and there should be total participation of A in R.

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### MCQ Question 5

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Consider the relation scheme  $R = (E, F, G, H, I, J, K, L, M, N)$  and the set of functional dependencies  $\{(E, F) \rightarrow \{G\}, \{F\} \rightarrow \{I, J\}, \{E, H\} \rightarrow \{K, L\}, \{K\} \rightarrow \{M\}, \{L\} \rightarrow \{N\}\}$  on R. What is the key for R ?

1.  $\{E, F\}$
2.  $\{E, F, H\}$
3.  $\{E, F, H, K, L\}$
4.  $\{E\}$



### DBMS MCQ Question 5 Detailed Solution

Function Dependencies:

$\{(E, F) \rightarrow \{G\}, \{F\} \rightarrow \{I, J\}, \{E, H\} \rightarrow \{K, L\}, \{K\} \rightarrow \{M\}, \{L\} \rightarrow \{N\}\}$

Option 1: {E, F}

$\{E, F\}^+ = \{E, F, G, I, J\}$

Since K, L, M and N is missing in RHS  $\therefore$  it is not a key

Also, {E} cannot be a key because {E} is subset of {E, F}

Option 2: {E, F, H}

$\{E, F, H\}^+ = \{E, F, H, G, I, J, K, L, M, N\}$

$\therefore$  it is a key

Key for R is {E, F, H}.

#### Important Points:

In relation algebra, key is primary key or candidate key.

{E, F, H, K, L} is super key.

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### MCQ Question 6



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Which of the following is NOT a superkey in a relational schema with attributes V, W, X, Y, Z and primary key V Y?

1. VXYZ



2. VWXZ

3. VWXY

4. VWXYZ



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**Answer** (Detailed Solution Below)

Option 2 : VWXZ

### DBMS MCQ Question 6 Detailed Solution

#### Concept:

Superkey is a set of attributes within a table whose values can be used to uniquely identify a tuple. A candidate key is a minimal superkey.

Superkey is superset of candidate key or primary key.

#### Explanation:

Primary key is VY. (given)

All superkeys must contain this primary key VY. From the given keys, key, which doesn't contain the VY.

Here, option 2: VWXZ

"VWXZ" doesn't contain the primary key VY. So, it is not a superkey.

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### MCQ Question 7

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Which one of the following is used to represent the supporting many-one relationships of a weak entity set in an entity-relationship diagram?



1. Diamonds with double/bold border
2. Rectangles with double/bold border
3. Ovals with double/bold border
4. Ovals that contain underlined identifiers

**Answer** (Detailed Solution Below)

Option 1 : Diamonds with double/bold border

### DBMS MCQ Question 7 Detailed Solution

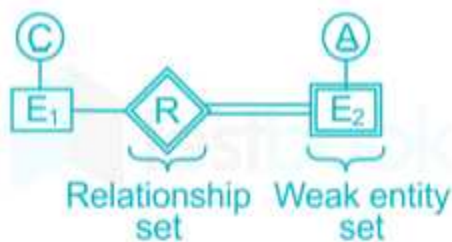
#### Concept:

An entity set which has determined an attribute or set of attributes to be a primary key is called a strong entity set.

If an entity set does not have enough attributes to form a primary key, it is called a weak entity set.

#### **Explanation:**

In E-R diagram, the many-to-one relationship with a weak entity set is represented by diamond with double borders.



#### **Important Point:**

The relationship with weak entity set would be represented by diamonds with double/bold borders.

The weak entity set itself would be represented by rectangle with double/bold border.

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### MCQ Question 8

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Consider the following statements S1 and S2 about the relational data model:

**S1: A relation scheme can have at most one foreign key.**

**S2: A foreign key in a relation scheme R cannot be used to refer to tuples of R.**

Which one of the following choices is correct?

1. S1 is true and S2 is false.
2. Both S1 and S2 are true.
3. Both S1 and S2 are false.
4. S1 is false and S2 is true.

**Answer** (Detailed Solution Below)

Option 3 : Both S1 and S2 are false.

### DBMS MCQ Question 8 Detailed Solution

**Answer:** Option 3

**Concept:**

**Foreign Key** :is the set of attributes in a particular relation whose values are belongs to primary key of same relation or other relation.

**Explanation:**

**Statement 1:** A relation scheme can have at most one foreign key.

There is **no such restriction** on how many number of Foreign keys a particular relation can have. A relation can have **as many number of Foreign keys as Required**.

So this statement is **false**.

**Statement 2:** foreign key in a relation scheme R cannot be used to refer to tuples of R.

There is no such constraint. Foreign key **can be used** to refer to primary key of the same relation. **Self-referencing relations** are examples of such foreign key. So this statement is also **false**.

So **option 3** is the correct answer.

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**MCQ Question 9**[View this Question Online >](#)

Consider the schema

Sailors(sid, sname, rating, age) with the following data

Sid	Sname	Rating	age
22	Dustin	7	45
29	Borg	1	33
31	Pathy	8	55
32	Robert	8	25
58	Raghu	10	17
64	Herald	7	35
71	Vishnu	10	16
74	King	9	35
85	Archer	3	26
84	Bob	3	64
96	Flinch	3	17

For the query

SELECT S.rating, AVG(S.age) AS avgage FROM Sailors S

Where S.age &gt;= 18

GROUP BY S.rating

HAVING 1 &lt; (SELECT COUNT(\*) FROM Sailors S2 where S.rating = S2.rating)

The number of rows returned is

1. 6

2. 5



3. 4

4. 3

### Answer (Detailed Solution Below)

Option 4 : 3

### DBMS MCQ Question 9 Detailed Solution

Without "having" clause query calculates the average age (where age  $\geq 18$ ) and groups by ratings so table returned is:

Rating	Average
1	33
3	45
7	40
8	40
9	35

After applying "having" clause table returned is:

Rating	Average
3	45
7	40
8	40


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### MCQ Question 10

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Consider a relational database containing the following schemes.

Catalogue		
sno	pno	Cost
S1	P1	150
S1	P2	50
S1	P3	100
S2	P4	200
S2	P5	250
S3	P1	250
S3	P2	150
S3	P5	300
S3	P4	250

Suppliers		
sno	sname	location
S1	M/s Royal furniture	Delhi
S2	M/s Balaji furniture	Bangalore
S3	M/s Premium furniture	Chennai

Parts		
pno	Pname	Part_spec
P1	Table	Wood
P2	Chair	Wood
P3	Table	Steel
P4	Almirah	Steel
P5	Almirah	Wood

The primary key of each table is indicated by underling the constituent fields.

```
SELECT s.sno, s.sname
FROM Suppliers s, Catalogue c
WHERE s.sno = c.sno AND
      Cost > (SELECT AVG (cost)
              FROM Catalogue
              WHERE pno = 'P4'
              GROUP BY pno);
```

The number of rows returned by the above SQL query is

1. 4

2. 5

3. 0

4. 2

**Answer** (Detailed Solution Below)

Option 1 : 4

### DBMS MCQ Question 10 Detailed Solution

Inner Query: *SELECT AVG (cost) FROM Catalogue WHERE pno = 'P4' GROUP BY pno*

The execution of the inner query gives the average of the cost of parts with part-id P4

Output:

Avg (cost)
225

Outer Query:

*SELECT s.sno, s.sname FROM Suppliers s, Catalogue c WHERE s.sno = c.sno AND Cost > (225)*

The execution of the entire query output the following table:

sno	sname
S2	M/s Balaji furniture
S3	M/s Premium furniture
S3	M/s Premium furniture



S3	M/s Premium furniture
----	-----------------------

Hence, there are 4 rows in the resultant table.