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Grade	**18.00** out of 39.00 (**46**%)

Question 1

Incorrect

Mark 0.00 out of 3.00

Flag question

Consider the following relations P(AC), Q(ABD) and R(AE). Assume that there is a foreign key defined on Q to P on the column A and a foreign key defined from R to P also on the column A. Both the foreign keys are defined as "on update cascade".

P(AC)

A1	B1
A2	B1
A3	B3

Q(ABD)

A1	B1	2
A1	B2	5
A2	B3	6
A3	B4	1

R(AE)

A1	E1
A2	E2
A4	E3
A4	E4

What will be the result of the following SQL statement:

```
Update R set A =
(Select NULL from Q x, R y where x.A=y.A and x.D=5)
where A='A1'
```

Select one:

- The statement has syntax error. ✗
- Value of column A in the first row of R will be set NULL.
- Value of column A in the first row of R will be set NULL, Value of column A in the first two rows of Q will be set NULL and Value of column A in the first row of P will be set NULL.
- The statement will be rejected due to foreign key violation
- Value of column A in the first row of R will be set NULL and Value of column A in the first two rows of Q will be set NULL

The correct answer is: Value of column A in the first row of R will be set NULL.

Question 2

Correct

Mark 3.00 out of 3.00

Flag question

Consider that there is a database table named Employee and the following sequence of database authorizations is executed (Here the name in parenthesis for any authorization command denotes who is executing the authorization command and is strictly not a part of the authorization command itself. DBA stands for Database Administrator).

Create role instructor (DBA); Create role dean (DBA); Grant instructor to dean (DBA); Grant dean to Suresh with grant option (DBA); Grant select, delete on Employee to Priya with grant option (DBA); Grant delete on Employee to Ajit (Priya); Grant dean to Ajit (Suresh); Grant insert, select on Employee to instructor (DBA);

Determine which of the following accesses Ajit has on the table Employee.

Select one:

- Select, Insert
- No access
- Delete
- Select, Insert, Delete ✓

The correct answer is: Select, Insert, Delete

Question 3

Correct

Mark 3.00 out of 3.00

Flag question

Consider the following relations P(ABC), Q(ABD) and R(AE):

P(ABC)

A1	B1	C1
A2	B1	C2
A3	B3	C2

Q(ABD)

A1	B1	2
A1	B2	5
A2	B1	6
A3	B3	1

R(AE)

A1	E1
A2	E2
A4	E3
A4	NULL

How many rows will be returned by the following query:
Select P.A, count(*) from P, Q, R where P.A=Q.A and Q.D>1 group by P.A having count(*)>3

Answer: 2 ✓

The correct answer is: 2

Question 4

Correct

Mark 3.00 out of 3.00

Flag question

Consider the following relations P(ABC), Q(ABD) and R(AE):

P(ABC)

A1	B1	C1
A2	B1	C2
A3	B3	C2

Q(ABD)

A1	B1	2
A1	B2	5
A2	B1	6
A3	B3	1

R(AE)

A1	E1
A2	E2
A4	E3
A4	NULL

How many rows will be returned by the following query:
Select * from P, Q, R where Q.A=R.A and Q.D>1

Answer: 9 ✓

The correct answer is: 9

Question 5

Incorrect

Mark 0.00 out of 3.00

Flag question

Consider that there is a database table named Student and the following sequence of database authorizations is executed (Here the name in parenthesis for any authorization command denotes who is executing the authorization command and is strictly not a part of the authorization command itself. DBA stands for Database Administrator).

Create role instructor (DBA); Create role dean (DBA); Grant instructor to dean (DBA); Grant dean to Suresh with grant option (DBA); Grant select, delete on Student to Priya with grant option (DBA); Grant delete on Student to Ajit (Priya); Grant dean to Ajit (Suresh); Grant insert, select, delete on Student to instructor (DBA); revoke delete on Student from Ajit (Priya);

Determine which of the following accesses Ajit has on the table Student.

Select one:

- Delete
- Select, Insert, Delete, Update
- No access
- Select, Insert, Delete
- Select, Insert ✗

The correct answer is: Select, Insert, Delete

Question 6

Correct

Mark 3.00 out of 3.00

Flag question

Consider two tables T1(C11, C12, C13) and T2(C11, C22, C23) with the rows indicated below. C11 is the primary key of T1. C11, C22 together form the primary key of T2.

T1 ((1, 'abc', 10.00), (2, 'def', NULL), (3, NULL, 30.00))

T2((1, 100, 35.00),(1, 200, 40.00),(2,300,NULL), (4, 200, 20.00))

How many rows will be returned by the following query: Select * from T1 full outer join T2 on T1.C11=T2.C11.

Answer: 5

The correct answer is: 5

Question 7

Correct

Mark 3.00 out of 3.00

Flag question

Consider the following relations P(ABC), Q(ABD) and R(AE):

P(ABC)

A1	B1	C1
A2	B1	C2
A3	B3	C2

Q(ABD)

A1	B1	2
A1	B1	5
A2	B1	6
A3	B3	1

R(AE)

A1	E1
A3	E2
A4	E3
A4	NULL

What will be the output of the following DRC query?

$\{<b,d,a> \mid \exists c,e\ (<d,e,c> \in P \wedge <d,e,a> \in Q \wedge <d,b> \in R \wedge a>1)\}$

Select one:

- Three rows (E1, A1, 2), (E1, A1, 5) and (E1, A2, 6)
- One row (A1, 2, E1)
- One row (E1, A1, 2)
- Two rows (E1, A1, 5) and (E1, A1, 2)
- No rows
- One row (E1, A1, 5)

The correct answer is: Two rows (E1, A1, 5) and (E1, A1, 2)

Question 8

Incorrect

Mark 0.00 out of 3.00

Flag question

Consider the following relations P(ABC), Q(ABD) and R(AE):

P(ABC)

A1	B1	C1
A2	B1	C2
A3	B3	C2

Q(ABD)

A1	B1	2
A1	B2	5
A2	B1	6
A3	B3	1

R(AE)

A1	E1
A3	E2
A4	E3
A4	NULL

What is the result of the following relational algebra expression?

$$\Pi_{ACD}\left[\left(\sigma_{(B=B3 \vee C=C2)}[P \bowtie R]\right) \bowtie \left(\sigma_{(D>1)}[Q \bowtie R]\right)\right]$$

Select one:

- Two rows (A3, C2, 1) and (A2, C2, 6)
- One row (A2, C2, 2)
- Two rows (A1, C1, 2) and (A2, C2, 6)
- Two rows (A1, C1, 2) and (A1, C1, 5)
- No rows ✗
- Three rows (A1, C1, 2), (A1, C1, 5) and (A2, C2, 6)

The correct answer is: Two rows (A1, C1, 2) and (A1, C1, 5)

Question 9

Incorrect

Mark 0.00 out of 3.00

Flag question

Consider two tables: student (id, tot_credit), course(course_id, credits) and takes (id,course_id,grade). Let the following trigger be defined:

```
create trigger credits_update after update of takes on (grade)
referencing new row as nrow
referencing old row as orow
for each row
when nrow.grade <> 'F' and nrow.grade is not null
   and (orow.grade <> 'F' or orow.grade is null)
begin atomic
    update student
    set tot_cred= tot_cred + (select credits from course where
course.course_id= nrow.course_id)
    where student.id = nrow.id;
end;
```

Assume that the initial rows in the tables are as follows (Ignore any discrepancy between the initial values of the tot_credit column of the student table and the rows in the takes table):

student ((1,10),(2,12)), course((1,3),(2,4)) and takes((1,1,'F'),(1,2,'A'), (2,1,NULL)).

What will be the content of the student table if the following SQL is executed:

Update takes set grade='B'

Assume that the above trigger was defined prior to execution of this update statement.

Select one:

- a. Two rows (1,14) and (2,15)
- b. Two rows (1,10) and (2,13)
- c. Two rows (1,13) and (2,15) ✗
- d. Two rows (1,17) and (2,15)

The correct answer is: Two rows (1,14) and (2,15)

Question 10

Correct

Mark 3.00 out of 3.00

Flag question

Consider the following relations P(ABC), Q(ABD) and R(AE):

P(ABC)		
A1	B1	C1
A2	B1	C2
A3	B3	C2

Q(ABD)		
A1	B1	2
A1	B2	5
A2	B1	6
A3	B3	1

R(AE)	
A1	E1
A3	E2
A4	E3
A4	NULL

What will be the output of the following TRC query?

{t| ∃s∈P(t[A]=s[A]^t[B]=s[B]^(∀u ∈Q(u[D]>1➔∃r∈R(r[A]=t[A]^t[B]=u[B])))}

Select one:

- No rows
- One row (A1, B1, C1, 2, E1)
- Three rows (A1, B1), (A2, B1) and (A3, B3)
- One row (A1, B1) ✓
- Two rows (A1, B1) and (A2, B1)
- Three rows (A1, B1, C1, 2, E1), (A2, B1, C2, 6, NULL) and (A3, B3, 1, E2)

The correct answer is: One row (A1, B1)

Question 11

Complete

Mark 0.00 out of 3.00

Flag question

Consider two tables **employee** (**emp_cd** int, **sales** decimal(10,2) not null with default 0.0) and **emp_manager** (**emp_cd** int, **mgr_emp_cd** int). Here **emp_cd** is the employee code of an employee and **mgr_emp_cd** is the employee code of the manager of an employee. If there is no manager for an employee, the value of **mgr_emp_cd** is the same as the **emp_cd** for that employee.

The same employee can report to multiple managers directly or transitively. However, there are no multiple paths of reporting from an employee to a manager. **sales** is the amount of business sales in rupees directly made by an employee.

Write a recursive SQL to determine the total sales for each employee either directly (which is already given in the employee table) or through the employee(s) reporting to him/her.

For example, for employee 4, total sales is 70.00 (direct 40.00 + 20.00 through employee 2 + 10.00 through employee 1).

employee (emp_cd, sales)	
1	10.00
2	20.00
3	30.00
4	40.00
5	50.00

emp_manager (emp_cd, mgr_emp_cd)	
1	2
2	3
2	4
3	5
4	4
5	5

The output format should be (emp_cd, total_sales).

```
with recursive
```

Question 12

Incorrect

Mark 0.00 out of 3.00

Flag question

The disadvantage(s) of view materialization is/are as follows:

Select one or more:

- a. Query time will be longer ✗

- [x] b. Too much redundant data may have to be stored ✓
- [x] c. All the materialized views may have to be updated whenever the base tables are updated ✓
- [ ] d. None of the options is correct

The correct answer is: Too much redundant data may have to be stored, All the materialized views may have to be updated whenever the base tables are updated

Question 13

Complete

Mark 0.00 out of 3.00

Flag question

Consider that in an ER Diagram, there are three entities (E1, E2 and E3) and two binary relationships (R1 and R2).

At most one of the entities can be weak, at most one of the relationships can be many to many and at most one attribute (of all the three entities together) can be multi-valued. Assume all the relationships are total.

Suppose we derive a database schema from such an ER diagram where there is no redundant table.

What is the maximum number of tables that you can obtain under the above-mentioned constraints (taken together)?

Briefly justify your answer by mentioning how E1, E2, E3 should be related through R1 and R2, the cardinalities of the various relationships, types of entity (weak/strong) for E1, E2 & E3, and which entity has the multi-valued attribute.

Finish review

QUIZ NAVIGATION

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Finish review