1. Which relational operation may be represented using a SELECT statement using the SELECT and FROM clauses:

a. Selection
b. Projection
c. Grouped aggregation
d. Ordering of rows based on a column

The query `SELECT C1 FROM T` will result in the elements from the column C1 of all the rows of the table being shown, which is similar to a `projection` in Relational algebra.

<table>
<thead>
<tr>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
</tr>
</tbody>
</table>

`SELECT C1 FROM T;`

http://en.wikipedia.org/wiki/Select_(SQL)
2. Which relational operation may NOT be represented using a SELECT statement with only the SELECT and FROM clauses:

a. Selection  
b. Projection  
c. Natural join  
d. Cross product

The query `SELECT * FROM T WHERE C1 = 1` will result in all the elements of all the rows where the value of column C1 is '1' being shown — in Relational algebra terms, a selection will be performed, because of the WHERE clause.

<table>
<thead>
<tr>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
</tr>
</tbody>
</table>

SELECT * FROM T WHERE C1 = 1;

<table>
<thead>
<tr>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
</tr>
</tbody>
</table>
3. Which clause of the SELECT statement is never needed to represent a Natural join query:
   a. SELECT
   b. FROM
   c. WHERE
   d. GROUP BY
4. Which is the following apply to the GROUP clause:

a. The GROUP BY clause must contain every column in the SELECT clause, as well as every aggregate expression in the SELECT clause, or the query will not be valid.
b. The SELECT clause must contain every column in the GROUP BY clause

c. The GROUP BY clause must contain all columns in the SELECT clause

d. The GROUP BY clause may not include columns in the SELECT clause

- SELECT: columns and aggregate expressions
- GROUP BY: all non-aggregate columns in SELECT
5. Which of the following statements is true about SQL tables?

a. Some SQL tables are not relational because they may be ordered by the primary key columns
b. Some SQL tables are not relational they may contain two columns with the same name.

c. Some SQL tables are not relational since they may contain duplicate rows.
d. All SQL tables have primary keys and are relational.

In terms of the relational model of databases, a table can be considered a convenient representation of a relation, but the two are not strictly equivalent. For instance, an SQL table can potentially contain duplicate rows, whereas a true relation cannot contain duplicate tuples.

http://en.wikipedia.org/wiki/Table_(database)
6. What mental steps in the query formulation process are addressed by the conceptual evaluation process and critical questions?

Formulating queries is a process of converting a problem statement into a database language, but conceptual evaluation understands the database language. In simple words, conceptual evaluation doesn’t help us in query formulations.

Critical Questions on the other hand gives us enough information about the tables that are involved, how they are related, and how the rows are organized through basic questions.