Review exercises – Sem1/2021-2022
DATABASE SYSTEMS
Date: 01/11/2021

Student fullname: _____ Student ID: _____

Students choose the MOST CORRECT answer for each question, and fill it in the below answer sheet. If your answer is "Other answer", please specify it clearly.

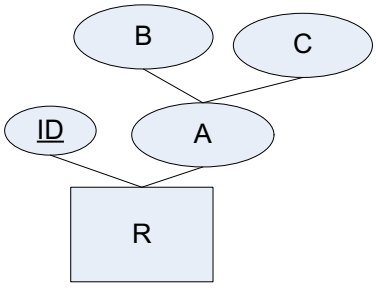
ANSWER SHEET

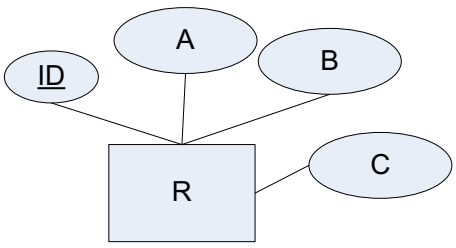
Q1	**Q2**	**Q3**	**Q4**	**Q5**
Q6	**Q7**	**Q8**	**Q9**	**Q10**
Q11	**Q12**	**Q13**	**Q14**	**Q15**

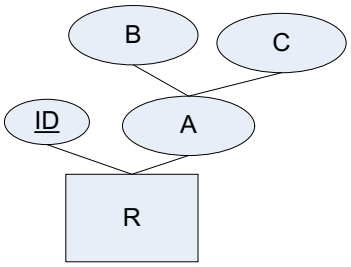
1. Choose a CORRECT answer about KEY:
   A. Foreign key must not be NULL.
   B. Super key is a key.
   C. All records in a relation must be ordered by a certain key.
   D. Answers B and C are correct.
   E. Other answer: _____

2. Choose a CORRECT answer about ERD/EERD:
   A. An entity type may have some candidate keys, but only the primary key is underline.
   B. A composite attribute is shown in a double-line oval.
   C. Degree of a relationship type is the number of participating entity types.
   D. Answers A and B are correct.
   E. Other answer: _____

3. Choose a CORRECT answer

A. 

equivalents to


B. 

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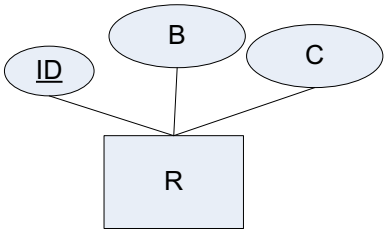
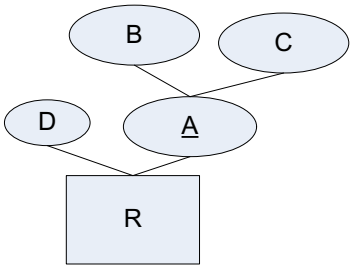
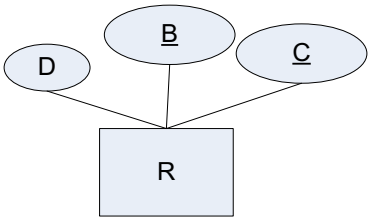


C. 

equivalents to


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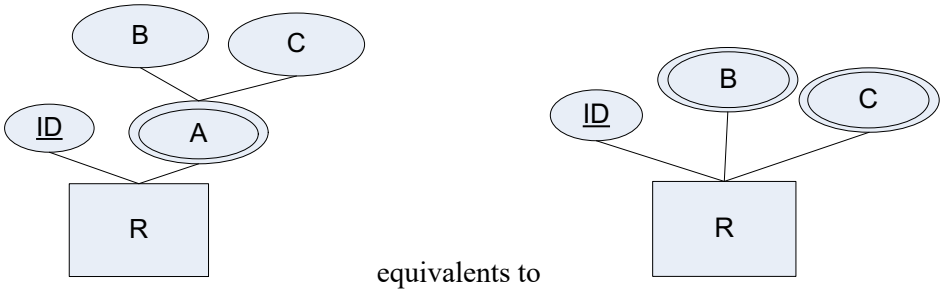
D. 

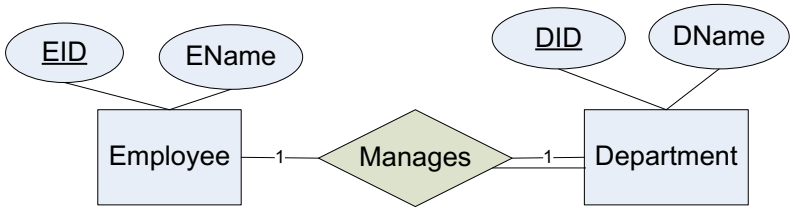
E. A and B are correct.

F. Other answer: _____

4. In three-schema architecture, choose a CORRECT answer:
   A. A conceptual schema describes a part of the database that a particular user group is interested in.
   B. Logical data independence is the capacity to change the conceptual schema without having to change external schemas or application programs.
   C. A database may have many conceptual schemas for many user groups.
   D. A and C are correct.
   E. Other answer: _____

5. Choose a CORRECT answer, in relational data model:
   A. A relation may have many candidate keys.
   B. A relation cannot have more than one foreign key.
   C. A relation may have many primary keys.
   D. A candidate key cannot include foreign keys.
   E. Other answer: _____

6. Which is the most correct schema of the following ERD:



   A. Employee (EID, EName) ; Department (DID, DName) ; Manage (EID, DID)
   B. Employee (EID, EName, Managed-DID) ; Department (DID, DName).
   C. Employee (EID, EName) ; Department (DID, EID-Manager, DName).
   D. Employee (EID, EName) ; Department (DID, DName, EID-Manager).
   E. Other answer: _____

7. In SQL, choose a CORRECT answer
   A. Aggregate functions MIN, MAX, AVERAGE, SUM, COUNT(A) ignore NULL values
   B. Function COUNT(A) includes NULL values in the calculation.
   C. Function SUM consider NULL value as zero (0) in the calculation.
   D. A, B and C are INCORRECT.
   E. Other answer: _____

8. In ERD-to-relational mapping, a relation must be created for
   A. A composite attribute.
   B. A multi-valued attribute.
   C. A derived attribute.
   D. A weak entity type.
   E. Other answer: _____

9. Database design process consists of the following activities:

A. Requirements collection and Analysis, Functional Analysis, Conceptual Design, Logical Design, Physical Design.
B. Requirements collection and Analysis, Functional Analysis, Application Program Design, Transaction Implementation
C. Requirements collection and Analysis, Conceptual Design, Logical Design, Physical Design.
D. External Design, Conceptual Design, Internal Design.
E. Other answer: _____

10. Given the relation: Department (DeptID, Name, Revenue, BranchID)
Which line of the following query will raise an error?

```
SELECT Name, Revenue                  -- 1
FROM Department                        -- 2
WHERE Revenue = (SELECT MAX(Revenue) --3
                  FROM Department    -- 4
                GROUP BY BranchID)    --5
```

A. Line 1
B. Line 3
C. Line 5
D. The query is written correctly.
E. Other answer: _____

Thay dấu "=" bằng "IN" vì select return 1 set
Thiếu đấu ";"

11. *Cond1* and *cond2* are select conditions on the relation R; *list1* and *list2* are lists of attributes of the relation R.
Which statement is always CORRECT?
A. $\pi_{<list1>}(\pi_{<list2>}(R)) = \pi_{<list2>}(\pi_{<list1>}(R))$
B. $\sigma_{<cond1>}(\pi_{<list1>}(R)) = \pi_{<list1>}(\sigma_{<cond1>}(R))$
C. $\sigma_{<cond1>}(\sigma_{<cond2>}(R)) = \sigma_{<cond2>\ OR\ <cond1>}(R)$
D. $\sigma_{<cond1>}(\sigma_{<cond2>}(R)) = \sigma_{<cond2>AND\ <cond1>}(R)$
E. Other answer: _____

cond1 vế phải có thể áp dụng cho mọi attribute ngoài <list1> nhưng cond1 vế trái thì chỉ áp dụng cho những attribute trong <list1> - sau khi đã select distinct

12. Given a relation R(A1, A2, A3); P1 and P2 are relations which result from the following expressions:
$P1 \leftarrow \Pi_{A2,A3}(\sigma_{A2="a"}(R))$;
P2←SELECT A2,A3 FROM R WHERE A2 = "a".
Let |P1|, |P2| be the number of records of P1, P2. Which statement is always CORRECT?
A. |P1| = |P2|
B. |P1| > |P2|
C. |P1| < |P2|
D. Answers A, B and C are INCORRECT.
E. Other answer: |P1| <= |P2| _____

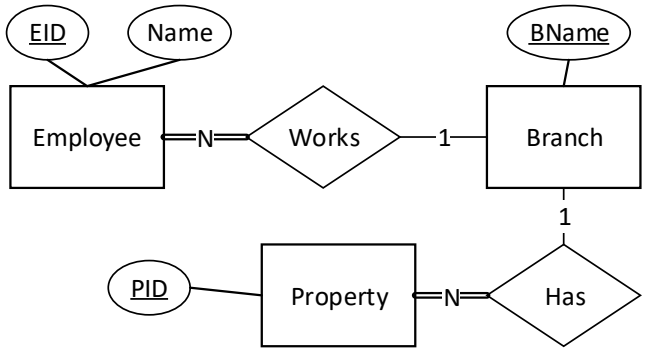
13. With SQL, how do you select all the records from a table named "Persons" where the value of the column "FirstName" starts with an "a"?
A. SELECT * FROM Persons WHERE FirstName = 'a'
B. SELECT * FROM Persons WHERE FirstName = '%a%'
C. SELECT * FROM Persons WHERE FirstName LIKE 'a%'
D. SELECT * FROM Persons WHERE FirstName LIKE '%a'
E. Other answer: _____

'%a' : kết thúc = a
'a%' : khởi đầu = a
'%a%' : có chứa a

14. The SQL WHERE clause:
A. Limits the column data that are returned.
B. Limits the row data are returned.
C. May be omitted.
D. B and C are correct.

E. Other answer: _____

15. Consider the following ERD:



This ERD cannot answer the question "Who is responsible for Property X?". So what is the problem of this diagram?

A. Conceptual trap
B. Chasm trap
C. Fan trap
D. Null trap
E. Other answer: _____