

國立雲林科技大學資訊管理系
111 學年度第 1 學期博士班資格考

科目：資訊庫系統

時間：4 小時 (Closed book)

作答時，請注意各題之比例配分，並清楚標示題號

第一部份：(以下 6 題中請自行選擇 5 題作答；作答超過 5 題，僅計作答的前 5 題之分數)

1. Define the following two terms of the relational data model: *foreign key* and *Boyce-Codd Normal Form (BCNF)*. (10%)
2. What preventive measures are possible against SQL injection attacks? (10%)
3. What is the difference between *discretionary* and *mandatory* access control in database security? (10%)
4. Two main approaches to implementing a view for querying a database are *query modification* and *view materialization*. Please describe what *query modification* and *view materialization* are. (10%)
5. What is the difference between *logical data independence* and *physical data independence*? (10%)
6. Please describe the difference between the **Entity-Relationship (ER)** model and the **Enhanced Entity-Relationship (EER)** model. (10%)

第二部份：(請全部作答)

7. Consider a database that consists of the following relations:

SUPPLIER (Sno, Sname)

PART (Pno, Pname)

PROJECT (Jno, Jname)

SUPPLY (Sno, Pno, Jno)

The database records information about suppliers, parts, and projects, and includes a ternary relationship between suppliers, parts, and projects. This relationship is a many-many-many relationship. Specify the following queries in relational algebra.

- a. Retrieve the names of suppliers who supply more than two parts to project 'J1'. (10%)
 - b. Retrieve the project names that are supplied by supplier 'S1' only. (10%)
8. What is the difference between a specialization hierarchy and a specialization lattice? (10%)
 9. What are the important factors that influence physical database design? (10%)
 10. What is a minimal set of functional dependencies? Does every set of dependencies have a

minimal equivalent set? Is it always unique? (10%)