

國立雲林科技大學資訊管理系
108 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：(7 題中請自行選擇 5 題作答)

1. What is the difference between a key and a superkey. (10%)
2. There are two approaches to implementing a view for querying: query modification and view materialization. Please explain and compare the two approaches. (10%)
3. Define the following terms of the ER (Entity-Relationship) data model: (a) derived attribute (b) composite attribute (10%)
4. What is the lossless (or nonadditive) join property of a decomposition? Why is it important? (10%)
5. When are two sets of functional dependencies equivalent? How can we determine their equivalence? (10%)
6. What are the relative merits of using DAC (Discretionary Access Control) or MAC (Mandatory Access Control) regarding database security? (10%)
7. What preventive measures are possible against SQL injection attacks? (10%)

第二部份：

1. 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'. (5%)
 - b. Retrieve the project names that are supplied by supplier 'S1' only. (5%)
2. Define Boyce-Codd normal form. How does it differ from 3NF? Why is it considered a stronger form of 3NF? (10%)

3. What are storage area networks? What flexibility and advantages do they offer? (10%)
4. Discuss the two main types of constraints on specializations and generalizations. (10%)
5. What is meant by the completeness and soundness of Armstrong's inference rules? (10%)