一共五大題，每大題各 20 分。

1. Please describe the constraints that may be placed on participating entities in a relationship. Describe the purpose of integrity constraints and identify the main types of integrity constraint. (20%)

2. Please describe the main objective of conceptual database design. Identify the main tasks associated with conceptual database design. Identify and describe the purpose of documentation gathered during conceptual database design. (20%)

3. Please describe the advantages and disadvantages of creating data marts. Contrast the following terms: independent data mart, dependent data mart, and logical data mart. Explain the pros and cons of each of these three types of data mart. (20%)

4. Please give examples to explain how E-R entities are transformed into relations. (20%)

5. Please contrast the following terms: (20%)
   a. optimistic concurrency control; pessimistic concurrency control
   b. authorization; authentication
   c. push replication; pull replication
   d. dynamic view; materialized view