

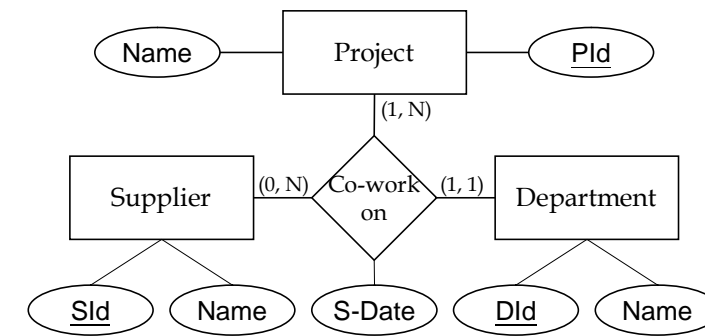
# 國立嘉義大學99學年度

## 資訊管理學系碩士班（乙組）招生考試試題

### 科目：計算機概論

- Please convert the following numbers in 32-bit IEEE format (Excess-127) to decimal. (10%)  
 (a) 0 10000101 100010101000000000000000  
 (b) 1 01111010 101000000000000000000000
- A binary tree has eight nodes. The inorder and postorder traversal of the tree are as follows, please draw the tree: (5%)  
 Postorder: FECHGDBA    Inorder: FECABHDG
- If the subprogram calculate(A, B, S, P) accepts the value of A and B and calculates their sum S and product P, which variable do you pass by value and which one by reference? (5%)
- If the subprogram smaller(A, B, S) accepts the value of A and B and finds the smaller of the two, which variable do you pass by value and which one by reference? (5%)
- Please define the “software lifecycle”. (10%)
- What is spatial compression compared to temporal compression? (5%)
- A computer has 64MB (megabytes) of memory. Each word is 4 bytes. How many bits are needed to address each single word in memory? (4%)
- The combination of n object taken k at a time using the definition in following Figure: (6%)  

$$C(n, k) = \begin{cases} 1 & \text{if } k = 0 \text{ or } n = k \\ C(n-1, k) + C(n-1, k-1) & \text{if } n > k > 0 \end{cases}$$
 using the definition to find the following : (a)  $C(5,5)$  , (b)  $C(2, 7)$
- Please list three commercial database management systems (DBMS). (9%)
- Please list at least three functions of a DBMS except for the inserting, deleting, updating, and retrieving data. (9%)
- Assume that an ER (schema) diagram is as follows, please transform it into the relational database schema (not required to specify the functional dependency between set of attributes). (12%)



- Please briefly describe the function of the concurrency control scheduler in a DBMS? (4%)
- Assume that a relation R and the functional dependencies in it are as  $R(A, B, C)$  , please answer the following questions:
  - Is the relation R in the Boyce-Codd Normal Form (BCNF)? If not, please normalize it into a number of BCNF relations. (4%)
  - Is the relation R in the third Normal Form (3NF)? If not, please normalize it into a number of 3NF relations. (4%)
- Two tables (i.e., EMPLOYEE and DEPARTMENT) in the COMPANY database are as follows, please use SQL to retrieve the specified data in the following.
  - The manager’s name of MIS department. (4%)
  - Each employee’s (i.e., all employees shall be included) name and his/her supervisor’s name. (4%)

#### EMPLOYEE

SSN	Name	Supervisor-SSN	DNumber	Salary
344930940	Adam	857685974	1	60,000
857685974	Brain	NULL	1	100,000
495843030	Cathy	148509489	2	60,000
148509489	Dan	265840234	2	70,000
849593094	Eve	265840234	3	60,000
265840234	Frank	453472604	3	80,000
943840985	Grace	453472604	4	60,000
453472604	Hammer	857685974	4	90,000

#### DEPARTMENT

DName	Manager-SSN	DNumber	Manager-Start-Date
MIS	857685974	1	01-Jan-00
Transaction	148509489	2	10-Feb-01
Marketing	265840234	3	20-Mar-02
Research	453472604	4	30-Apr-03