1. Please explain the following terminology. (12%)
   (a) Cyclic Redundancy Check (CRC)
   (b) Choke Packet
   (c) Security Policy and Procedure
   (d) Frequency Hopping Spread Spectrum (FHSS)

2. (a) What is WiMax? What is Wi-Fi? Compare their difference. (8%)
   (b) Explain the hidden station problem and the exposed station problem of
       WiMax. (10%)

3. Assume the inorder and the postorder traversal sequences of a tree are “g d h b e i a f j c”
   and “g h d i e b j f c a”, respectively. Please draw this binary tree. (6%)

4. (a) Please define the complexity classes: P, NP, NP-Complete. (6%)
   (b) Show that P=NP if we can reduce an NP-complete problem to a P problem. (7%)

5. Write down the postfix expression for A/B-C+D×E÷A×C. (6%)

6. (a) Let $A_{4 \times 5}$, $B_{5 \times 3}$, $C_{3 \times 6}$, $D_{6 \times 4}$ be four matrices of integers. Calculate the numbers of scalar
   multiplications required by $((A \times B) \times C) \times D)$ and $(A \times B) \times (C \times D)$, respectively. (3%)
   (b) Let $A_1$, $A_2$, ..., $A_m$ be $m$ matrices of integers with dimensions $n_1 \times n_2$, $n_2 \times n_3$, ..., $n_m \times n_{m+1}$.
   We want to optimally parenthesize the matrix product $A_1 \times A_2 \times ... \times A_m$ such that the
   number of scalar multiplications is minimum. Denote the optimal number of scalar
   multiplications by $T(1,m)$. Give a recurrence formula of $T(1,m)$. (6%)

7. (a) Show that any tree with $n > 1$ nodes has an even number of odd-degree nodes. (2%)
   (b) State the if-and-only-if condition for an undirected graph to permit the existence of
       Eulerian cycles. (3%)
   (c) Given a tree $T$ that has $n_1$ odd-degree nodes and $n_2$ even-degree nodes, determine the
       minimum number of edges to be added into $T$ such that Eulerian cycles exist in the
       resulting graph. (3%)
   (d) Assume a cost $c(i, j)$ is assigned to each pair of nodes $v_i$ and $v_j$. Repeat question (c), but
       now we want to minimize the total cost of newly added edges. Design an algorithm
       to achieve the least-cost insertion. (3%)
8. A program is a list of instructions for the computer to follow to process data. Programming, also known as software development, is a six-step procedure for creating that list of instructions. What are the procedures? (6%)

9. A particular microprocessor has a 12-bit address bus. (8%)
   (a) How many memory locations can it address?
   (b) Write down the lowest address.
   (c) Write down the highest address.
   (d) How many hex digits are needed to specify an address?

10. According to Degrees of Separation, how many intermediary persons between the first sender and the target person by passing a message along a chain of acquaintances? Please explain it. (3%)

11. (8%) The Fibonacci series
    
    0,1,1,2,3,5,8,13,21,34,55, ....
    
    begins with the terms 0 and 1 and has the property that each succeeding term is the sum of the two preceding terms.
    (1) Write a non-recursive function in C language Non_Fibonacci(n) which calculates the nth Fibonacci number.
    (2) Write a recursive function in C language Re_Fibonacci(n) that calculate the nth Fibonacci numbers.
    註：If you don’t know C language, please specify the programming language you know and write down the codes.

題目結束