1. Please write programs using C language to compute the sequence $\{A_n\}$:

    $A_0 = 1.0$

    $A_1 = 2.0$

    $A_3 = 3.0$

    $A_n = A_{n-1} + \log(A_{n-2}) + A_{n-3}$　　　　if　n > 3

    A. Using the recursive function call to compute the first 10 item of this sequence (8 %)

    B. Please write a program to find the minimum integer M such that $A_M > 10000$ (8 %)

2. A *perfect number* is a positive integer N such that the sum of all proper divisors of N equal to itself, for example:

    6　　=　　1+2+3

    28　　=　　1+2+4+7+14

    496　　=　　1+2+4+8+16+31+62+124+248

    Please use C Language to design following programs:

    A. Design a function *Divisors* input a positive integer argument and return the all proper divisors (Please using　ointer? not　rray　data format to declare your function). (7 %)

    B. Using the result of A, finds out all perfect number between 1 and 1000. (5 %)

    C. Analyze the complexity of your algorithm. (3 %)

3. The College of Management of NUK using network address range is 140.127.220.0/24. If your desktop PC is in this network range and using DHCP to get an IP address dynamically from a local network DHCP server, please consider 1).Can you connect to Network Neighborhood. 2).Can you use Outlook to send an Email 3).Can you use MSN to send or receive your friend message.　4). Can you using the browser to see the web page of http://140.127.220.122. Please answer at the following situations:

    A. Please describe what will happen in detail, when the DHCP Server has problem (5 %)

    B. Please describe what will happen in detail, if the DNS Server has problem (5 %)

    C. Please s describe what will happen in detail, if the Default Gateway has problem (5 %)

    (*Note: in the situations A, B and C please answer these questions independently)

4. The **PHP, Java** and **Java Script** are three kinds of techniques for implement in web programming. Please explain the different and compare these with each other. (8 %)

5. Please explain following computer terminologies:
   A. Virtue Machine **(3 %)**
   B. Samba **(3 %)**
   C. RAID **(3 %)**
   D. GPS **(3 %)**
   E. GPRS **(3 %)**

6. Please description of the following computer network protocol :
   A. ICMP **(3 %)**
   B. IGMP **(3 %)**
   C. ARP **(3 %)**
   D. What different of ICMP and IGMP, what the effect of the ICMP transformation if we using the firewall to drop all the IGMP package in some network **(4 %)**
   E. What is the ARP Spoofing attack? What happen if we using the firewall to drop the all ARP packages in some network **(5 %)**

7. Please explain the following questions:
   A. Why database need index? **(3 %)**
   B. What is Primary key, Foreign key **(4 %)**
   C. Consider following relational schema: **(6 %)**

Qid	Sid	No	Title	DesignerID	DesignerName	Desc	No	Content	{Date}

   Qid→{Title, DesignerID, DesignerName}

   {Qid, Sid}→{Desc, No}

   {Qid, Sid, No} → Content

   - Please decomposing as 1NF(Normal Form) , but not 2NF
   - Please decomposing as 2NF, but not 3NF
   - Please decomposing as 3NF