1. Briefly describe the following terms:
   (a) (5%) *Wikipedia* in Internet
   (b) (5%) *subnet mask (子網路遮罩)* in TCP/IP
   (c) (10%) *Router, Bridge, and Gateway* in network (LAN)

2. (20%) Write a recursive function with your favor computer language (or use pseudo language) to find the 8 bits of a one byte length variable. (You need to define the input argument(s) and the function output. If you can't write it in recursive approach, at least write it in a regular approach.)

3. (15%) In MS-Window system, the user can adjust the color bit-depth (色彩品質) of the display (顯示器) as 8-bit, 16-bit, or 24-bit etc. What is this color bit-depth means and how it works?

4. (4%) Write down the binary and hexadecimal representations of 77.
   (11%) With 8-bit two's complement representation, write down the binary computation of
   $20 + (-121) = (-99)$.

5. (10%) With the logical variables A and B, what would be the outcome of ((A xor B) xor B), where xor means exclusive OR?

6. (20%) What does it mean when we say that the speed of the CPU is 1GHz? What is the booting process of a computer system? (Describe as detailed as you can.)