10% for each problem

1. For representing a negative number in a binary code, one's and two's are used to achieve the purpose. What is the difference between them? One's complement seems more convenient, why? Describe the possible advantage of two's complement.

2. For computer I/O operations, two schemes are employed: interrupt-driven and DMA (direct memory access). Describe the major differences between them and give an example for each of them.

3. What is the DLL (Dynamic Link Library)? What is the advantage and disadvantage of using DLL while executing a program?

4. Do you think that the meanings for parallel processing and concurrent processing are the same? If not, describe the differences.

5. To get the WWW service, you usually need to setup DNS. Regarding DNS as a function(函數), then what is the input and output for the function?

6. Your company may only have 5 public IP addresses but there are 30 employees who like to connect to Internet. NAT is a solution for achieving the service. What is NAT? How does it work?

7. Why do we need virtual memory? If an operating system does not provide virtual memory, what is the problem it may suffer? (*hint: considering to run a program)*

8. Have you heard "hashing function"? It is an important method for data accessing. What is the input and output for the function?

9. In designing a LAN for your company, you may use Hub or Switch Hub to connect computers. Describe the differences between them.

10. To construct a data base, you must know the term "*schema*". What is that?