1. Terminology: (Detail description please) (20%)
   (a.) **Domain Name Server**
   (b.) **Asymmetric Digital Subscriber Line**
   (c.) **Integrated Service Digital Network**
   (d.) **HyperText Transfer Protocol**
   (e.) **Proxy Server**

2. Please describe in detail what is the major difference between an **interpreter** and a **compiler** of programming languages? Please give an example language you know for both of them. (15%)

3. What are the **basic phases** and **extra phases** a modern compiler may have? Please draw a figure and then describe in detail the functionalities of each phase. (15%)

4. When developing a complex and evolving software system, such as Windows Vista, the idea of software reuse becomes an important issue. What features or constructs of modern programming languages help easily achieving software reuse? (15%)

5. In modern computerized enterprises, data backup becomes a critical work to keep an enterprise's free from disasters. After the 911 attack, many companies can restore their data and go back to normal operations in a very short time. How do they achieve this? Please propose a detail scheme that can have the same achievement. (15%)

6. In a modern computer system, the speed of CPU is still much faster than the speed of RAM and I/O devices. How would you do to narrow the gap in both hardware and software? (10%)

7. What the main features must be added to an **operating system** to turn it into a **Network Operating System (NOS)**? (10%)