1. Please describe the Von Neumann computer architecture and the main functionality of five units. (25%)

2. TCP/IP is the common network protocol stack used in the current Internet. Please explain (1) Transmission Control Protocol (TCP) and (2) User Datagram Protocol (UDP) and then compare the difference between these two protocols. (10%)

3. Relational Database is widely-deployed for data storage. Please describe how a relational database works. In other words, please explain what structure is inside a relational database, how to establish the relationship between tables and what the normalization process is. (15%)

4. Please describe the role of the operation system in a computer system and how does process manager in an operation system work? (15%)

5. Please explain what the formal definition of an algorithm is and the three constructs usually used in structured programming. Write a pseudocode related to bubble sort algorithm. (15%)

6. Please describe the concept of the object-oriented paradigm and give an example of defining a class and a method in an object-oriented language. (20%)