

Entrance Examination of M.S. Program on Engineering Management
Introduction to Computer Science

1. The personal computers (PC) have made progress from 16-bit to 32-bit CPUs, and even to the 64-bit. Explain why it did not updated from 16 bits to 24 bits. (10%)
2. Is virtual machine hardware or software? J VM (Java Virtual Machine) uses stack-based instructions rather than register-based instructions. Can you figure out the reason? (10%)
3. Internet service providers (ISPs) usually facilitate the WWW service with *proxy* servers. Explain the functions of *proxy* server and its impacts on Internet bandwidth. (10%)
4. A *hash function* is usually employed for a quick data (or record) search. What are the input and output of the function? (10%)
5. You can run several applications simultaneously on your personal computer with a single CPU and run a process whose code size is greater than the installed RAM. How can the situations be achieved? (10%)
6. (a) What are the key elements for a data communication system (6%)
(b) Describe the three communication mode (6%)
(c) What are the difference between synchronous transmission and asynchronous transmission (8%)
7. (a) What are the main functions for a DBMS (Data Base Management System) (5%)
(b) Describe the difference for DDL (Data Definition Language) and DML (Data Manipulation Language) (10%)
8. (a) What is called structured program (5%)
(b) Explain system flowchart and program flowchart (5%)
(c) How to convert a high level language to a computer executable machine language (5%)