

1. (15 %) Explain the following terminology generally used in data communication:  
(a) IP Address; (b) Baud Rate; (c) ftp; (d) Bulletin Board System; (e) WWW.
2. (15 %) Explain the use of the following memory in DOS:  
(a) conventional memory (b) expanded memory (c) extended memory (d) high memory area (e) reserved memory.
3. (15 %) Please give examples of call-by-address and call-by-value in computer languages. List the possible advantages and disadvantages of both methods.
4. (15 %) Please write a program with your favorite computer language to measure the frequency of a sinusoidal signal (range: 10 - 100 Hz). Assumed the signal, sampled at 1 KHz, is stored in an array called wave1.
5. (20 %) A physician in National Cheng Kung University wishes to setup a PC-based system for automatic temperature control in infant incubator. Assumed that the temperature measurement device provides a RS232 interface for transmitting temperature data in ASCII form. In addition, a voltage-controlled heater is available.  
(a) Please give your setup and specifications (such as D/A, A/D, communication rate, PC system, etc.).  
(b) Describe your algorithm for controlling temperature at  $37 \pm 0.2$  °C and showing the updated average temperature during the entire experiment.
6. (20 %) Please give an example of microprocessor-based automation system (such as air conditioner, washing machine, etc.). Please describe the  $\mu$ p-based system in block diagram and principles of operation in your example.