

國立臺北護理學院九十七學年度碩士班招生
資訊管理系碩士班
計算機概論試題

注 意	1.請用中文或英文作答。 2.請標明題號依序於答案卷上作答。
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1. (a) Please convert the unsigned binary number 1101100110 to its Hexadecimal representation. (5%)
(b) Use 16 bits to represent the decimal value -99 in 1's complement form. (5%)
(c) Explain how you compute the result of the subtraction operation "98-23" by using addition of the 1's complement of binary number. Please illustrate the procedures step by step. (10%)
2. Write a C or VB program to meet the following requirements: (15%)
INPUT: an odd number N larger than 3
OUTPUT: a rectangle sheep of numbers from 1 to N
For example:
INPUT: 5
OUTPUT: 1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
3. In an image of 1024 pixels by 768 pixels, how many bytes of memory are needed to store the image in the each of the following formats: (15%)
(a) as a black and white image
(b) as a 256 colors image
(c) as a true color image
4. Suppose you are conducting a RFID system to a hospital for improving health examination efficiency.
(a) What main components (including hardware and software) do you think it is necessary to recognize the customers and store automatically the examination records. (10%)
(b) Please explain your scenario for the RFID system to improve the health examination efficiency. (10%)

5. There are three wrongs about cabling the devices in the following network topology, as shown in Figure 1. Please identify and correct these wrongs related to the cabling issue. Note that the Router and Switch will not support MDI/MDIX auto cable sensing function. (6%)

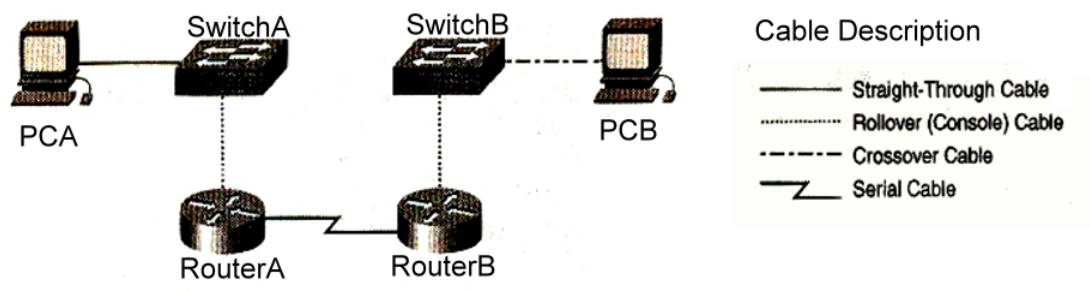


Figure 1

6. There are two wrongs about IP address configuration in the following network topology, as shown in Figure 2. Please identify and correct these wrongs related to the IP address configuration issue. (4%)



Figure 2

7. You are a senior network engineer and need to design a new network topology as the following diagram for your company including **four branch departments** and **four links**, as shown in Figure 3. Now you have one Class C network 192.168.100.0/24 and you need to provide different usable subnet per department while allowing enough usable host addresses for each department. All links between branches must be assigned a minimum address space.

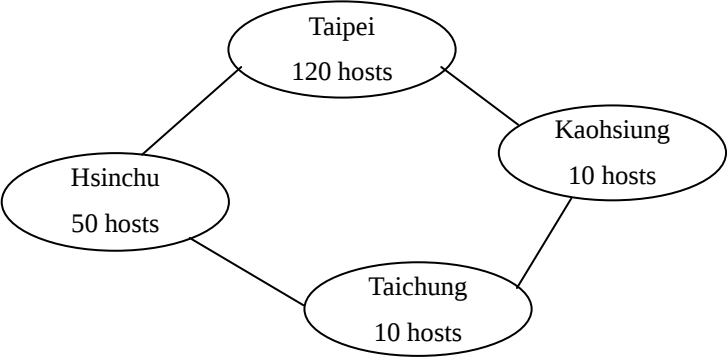


Figure 3

Please assign the IP space and its subnet mask for the **four departments** and **four links**. (20%)