

科目：計算機概論（含程式設計）

適用：資管系二

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

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1. What is the function of Control Unit and Memory Address Register in CPU? 10%
2. How many bits would be needed to represent a character set containing 17 characters? 5% Why? 5%
3. Express -3 in (a) two's complement in 8-bit 5%, (b) one's complement in 8-bits. 5%
4. Convert the following numbers.
 - a. 101 (base 2-unsigned integer) to its (base 10) format. 5%
 - b. 25 (base 10) to its (base 8) format. 5%
5. Express -1 (a decimal number) to its Excess_127 format (8-bits). 10%
6. What is public key cryptosystem? 5% What are the functions a public key cryptosystem can achieve? 5%
7. What is direct addressing in memory access method? 10%
8. Design an algorithm to solve a sorting problem of n inputs, using the divide-and-conquer technique (you can describe it using pseudo code). 10%
9. Evaluate (simplify) the Boolean expression $(A + \bar{A}A)(\bar{A} + B\bar{B})$. 10%
10. Describe the following terms in Network: (a) network mask 5%, (b) message authentication code. 5%