

淡江大學九十二學年度碩士班招生考試試題

系列：資訊管理學系

科目：資訊概論

准帶項目請打「○」否則打「x」
簡單型計算機
X

本試題共 1 頁

1. Solve each of the following programs in two's complement notation, but watch for overflow and indicate which answers are incorrect because of this phenomenon. (10%)

- a. $\begin{array}{r} 0101 \\ +0011 \end{array}$ b. $\begin{array}{r} 0101 \\ +0110 \end{array}$ c. $\begin{array}{r} 1010 \\ +1010 \end{array}$ d. $\begin{array}{r} 1010 \\ +0111 \end{array}$ e. $\begin{array}{r} 0111 \\ +0001 \end{array}$

2. Answer the following questions:

- a. What is the result of performing a three-bit left circular shift on the bit string 01101010? (5%)
- b. Express $5\frac{5}{8}$ in binary notation. (5%)
- c. Use hexadecimal notation to represent the bit pattern - 0110101011110010. (5%)

3. If a LAN based on the ring topology, what is a disadvantage of restricting the transfer of messages to a single direction? (5%)

4. a. What is the maximum number of entries that must be interrogated when applying the binary search to a list of 100000 entries? (10%)
- b. If we apply the quick sort to the list Carol, Alice, Bob, Larry, and John, what is the order of the names immediately after the first interchange of names? (10%)
- c. If a machine required a minimum of one second to sort a list of 100 names using the quick sort algorithm, how long do you expect it to take to sort 1000 names? (10%)

5. Give the definition of each of the following terms (25%)

- a. evolutionary prototyping b. abstract class
- c. encapsulation d. DHCP
- e. extendible (dynamic) hashing

6. Describe how the following components of an E-R diagram are transformed to relations: (15%)

- a. relationship (1:M) b. relationship (M:N) c. weak entity