國立台灣科技大學九十八學年度碩士班招生試題

系所組別： 電機工程系碩士班戊組

科　　目： 計算機概論

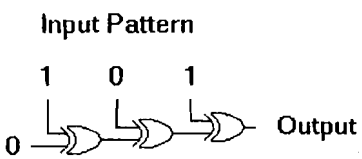
（總分爲 100 分）

1. What is the largest value that can be represented in a floating-point system in which each value is encoded by a byte whose most significant bit is the sign bit, the next three bits represent the exponent field in excess notation, and the last four bits represent the mantissa? (10%)

2. What are the three steps (phases) in a machine cycle when an instruction is being executed. (9%)

3. How many errors in a single code pattern could be corrected when using an error-correcting code in which each code pattern is a Hamming distance of at least seven from any other code pattern? (10%)

4. a. What is the output of the circuit below? (6%)



b. In general, how does the three-bit input pattern across the top of the diagram relate to the circuit's output? (15%)

5. a. Show the efficiency of ***quicksort*** (10%)
b. Use ***quicksort*** to sort the following array in ascending, show the results pass by pass. (10%)
Original array: 51, 41, 11, 31, 91, 71, 81, 61, 21.

6. Give a code to implement *insert* operation for a ***linked list queue.*** (15%)

7. Given an ***infix*** "(A+B)*(C+D-E)*F", please find the related binary tree, and its ***prefix*** and ***postfix*** by using ***traversal.*** (15%)

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