



國立雲林科技大學 112 學年度
碩士班招生考試試題

系所：電子系

科目：計算機概論(4)

本試題共 8 題，每題得分如各題中所示，共計 100 分，請依題號作答並將答案寫在答案卷上，違者不予計分。

1. (10 pt.) Convert the following 2's complement binary numbers to decimal.

- (a) 1010
- (b) 0110
- (c) 01011010
- (d) 11111110
- (e) 0011100111010011

2. (10 pt.) Convert the following unsigned binary numbers to hexadecimal.

- (a) 1101 0001 1010 1111
- (b) 001 1111
- (c) 1111 1111
- (d) 1
- (e) 1110 1101 1011 0010

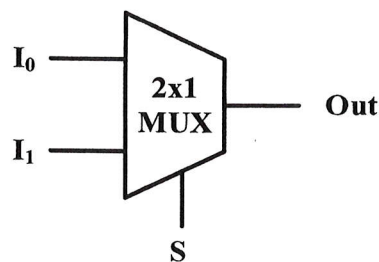
3. If the Y is output and A, B is input, the XOR function can be shown as follows:

$$Y = \bar{A}B + A\bar{B}$$

Implement the XOR function by means of:

- (a) (10 pt.) NAND gates only.
- (b) (10 pt.) NOR gates only.

4. (10 pt.) A symbol of 2-to-1 MUX is shown in Fig. 4. Please draw the gate-level circuit of 2-to-1 mux.





5. (10 pt.) Assume that the scheduling of a processor is shown in the following table. There are three procedures to be done. Procedure P1 is the first to be processed, procedure P2 is the last to arrive, and procedure P3 arrived between them. The execution time of the procedures is 15, 9, and 12 milliseconds (ms), respectively. Based on a first-come, first-serve (FCFS) basis, what is the average waiting time for a processor?

Procedures	Orders of arrival	Execution time
P1	1	15
P2	3	9
P3	2	12

6. (8 pt.) Show the single precision representation to the decimal number 5.75₍₁₀₎

7. William always encrypts texts using RSA encryption when communicating with Judy. At this time, William selects $p=3$, $q=11$, and $e=3$

(a).(10 pt.) What is the value of public key d ?

(b).(10 pt.) Assume that the encrypted information is 2, what is the original information?

8. Describe the Open Systems Interconnection (OSI) model.

(a). (5 pt.) How many layers of the OSI model are there?

(b). (7 pt.) Briefly describe the purpose of each layer.