國立雲林科技大學 108 學年度
碩士班招生考試試題
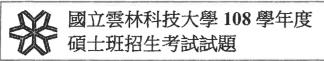
系所：電子系
科目：計算機概論(1)

1. Convert the following hexadecimal representations of 2's complement binary numbers to decimal number. (10 points)
(a) xF0
(b) x7FF
(c) x16
(d) x8000
(e) x1

2. Without changing their values, convert the following 2's complement binary numbers into 8-bit 2's complement numbers. (10 points)
(a) 1010
(b) 011001
(c) 1111111000
(d) 01
(e) 110

3. Implement a 4-to-1 mux using only 2-to-1 muxes making sure to properly connect all of the terminals. Remember that you will have 4 inputs, 2 control signals, and 1 output. Write out the truth table for this circuit. (10 points)

4. Given the following truth table, generate the gate-level logic circuit, using the Programmable Logic Array (PLA). Remember that this circuit have 3 inputs and 2 outputs. (20 points)

A	B	C	F_0	F_1
0	0	0	1	1
0	0	1	0	1
0	1	0	0	0
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	1
1	1	1	0	0

5. Give the definition of the von Neumann model of a computer. Describe a robot with the von Neumann model. (10 points)

6. Prove there are infinite prime numbers. (10 points)

7. Write an algorithm, with a positive input integer n, to list all prime numbers less than n. (10 points)

8. What is supervised learning in machine learning? Describe how a neural network does supervised learning. (10 points)

9. Describe three instructions of an assembly language that you know. Describe how an assembly language program is assembled into machine code. (10 points)