



Computer Systems Engineering Department

**Computer Design Lab**  
**ENCS411**

**Experiment #3**  
**Pre-Lab**

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Section: 3

1. What is the effect of assembly instructions ROR, ROL?

ROL instruction rotates the operand by a specific number of bits, all bits are shifted to the left and the bit on the left most goes out to the carry flag and it is also inserted to the right most position.

ROR instruction rotates the operand by a specific number of bits, all bits are shifted to the right and the bit on the right most goes out to the carry flag and it is also inserted to the left most position.

2. What does “stepper motor resolution” means?

Stepper motor resolution is the difference in angle between each step and another. For example, a 10° resolution means that the stepper motor rotates 10° at each step which means that there are 36 steps in each round.

3. Fill the 1-phase excitation table (counter-clockwise), 2-phase excitation table (clockwise).

1-Phase excitation

	A	B	A'	B'	HEX
Step1	1	1	1	0	E
Step2	1	1	0	1	D
Step3	1	0	1	1	B
Step4	0	1	1	1	7

2-Phase excitation

	A	B	A'	B'	HEX
Step1	0	0	1	1	3
Step2	1	0	0	1	9
Step3	1	1	0	0	C
Step4	0	1	1	0	6