

Computer Systems Engineering Department

ENCS411 – Computer Design Laboratory

Experiment (3) – Pre Lab

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Section (1) – Thursday 8.00 – 11.00 am

Date: Feb 15, 2012

**(Q)1 What is the effect of assembly instructions ROR, ROL?**

ROL Rotate operand left by a number of rotates, it shift all bits left, the bit that goes off is set to CF and the same bit is inserted to the right-most position.

ROR Rotate operand right by a number of rotates shift all bits right, the bit that goes off is set to CF and the same bit is inserted to the left-most position.

**(Q2) What does “stepper motor resolution” means?**

The degrees by which a stepper motor rotates per pulse.  A 5 degree resolution means that the motor rotates by 5 degrees per pulse and it would require 72 pulses to complete one full rotation of 360 degrees

**(Q3) Fill the 1-phase excitation table (counter-clockwise), 2-phase excitation table (clockwise).**

a) 1-phase excitation (counter-clockwise)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | A’ | B’ | HEX value |
| Step 1 | 1 | 1 | 1 | 0 | E0h |
| Step 2 | 1 | 1 | 0 | 1 | D0h |
| Step 3 | 1 | 0 | 1 | 1 | B0h |
| Step 4 | 0 | 1 | 1 | 1 | 70h |

b) 2-phase excitation (clockwise)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | A’ | B’ | HEX value |
| Step 1 | 0 | 0 | 1 | 1 | 30h |
| Step 2 | 1 | 0 | 0 | 1 | 90h |
| Step 3 | 1 | 1 | 0 | 0 | C0h |
| Step 4 | 0 | 1 | 1 | 0 | 60h |