**2016 QE (Digital Logic Part)**

1. (25 points) What is the difference between a Mealy FSM (Finite State Machine) and a Moore FSM? Design a sequence detector for the sequence 110 as a Moore FSM. Note that it **must** be a Moore FSM (a Mealy FSM solution will only be given at most 50% credit).
2. (10 points) Given the binary bit sequence 11110101, what is the value being represented if (a) unsigned binary, (b) 2’s complement, (c) 1’s complement, (d) sign-magnitude, or (e) excess-127 notation is being used, respectively.
3. (15 points) A 4-bit binary-to-BCD (BCD = Binary Coded Decimal) circuit is to be designed as a combinational logic circuit. Derive the necessary truth tables (4 of them) and use Karnaugh-map minimization to derive this circuit.