Midterm Preparation

The midterm will be open books, open notes, and will last 80 minutes.

Question 1: Assume a boolean function $f = \Sigma(1,3,5)$. Give the maxterm canonical form of f.

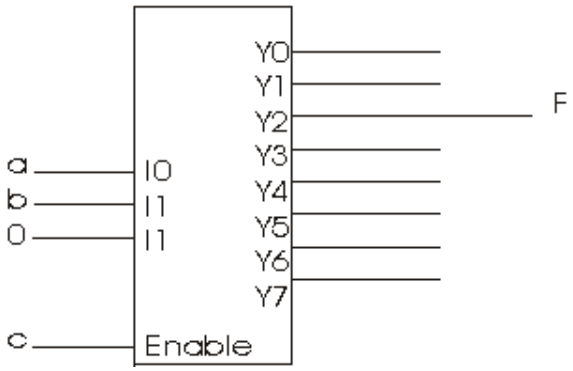
Question 2: Implement f above with NANDs only. With NORs only.

Question 3: Implement the function below with a 4-to-16 decoder. Be efficient in your design.

$$f = \sum(0,1,3,4,5,6,7,8,9,10,11,12,14)$$

Question 4: Implement a 3-to-8 decoder with several 2-to-4 decoders. You may assume that the decoders have enable inputs, and you are free to choose active-high or active-low signals.

Question 5: What is the boolean representation of the function f shown in the figure below? Express f in its simplest form.



Question 7: What is the state diagram of the sequential circuit shown below, if D2 is set to 1 always? If D2 is set to 0 always?