Quiz #5 A

No books, no notes
no electronics except for clicker
Question #1: 2 min

What is the minimum number of required states and D-FFs needed to design a counter that counts all even numbers represented with 4 bits? Answers are in form #states, #D-FFs.

A. 4, 2
B. 7, 3
C. 8, 3
D. 16, 4
E. None of the above
The output $Z$ is high when the serial input $X_3X_2X_1X_0$ is:

A. 1110

B. 0111

C. 1000

D. 0001

E. None of the above
Question #3: 2 min

For the FSM shown, which of the following is true

A. It recognizes a pattern 1101 and is a Mealy FSM

B. Minimum number of bits required to encode the state is 3

C. All of the above

D. None of the above
Question #4: 3 min

For the FSM of the circuit shown, which of the following represent a valid transition sequence for $Q_0Q_1$.

A. 00 → 01 → 10 → 10

B. 00 → 01 → 11 → 10

C. 01 → 11 → 01 → 11

D. Both B and C

E. None of the above
The FSM shown below has two inputs, A & B, & one output, Q. Assume the states are encoded as follows: S0: $Y_1 Y_0 = 00$, S1: $Y_1 Y_0 = 01$, S2: $Y_1 Y_0 = 10$. The following is true for this FSM:

A. $Q = Y_1(t)$  
B. $Y_1(t+1) = Y_0(t)$  
C. A and B  
D. None of the above

A. $Q = Y_1(t)$  
B. $Y_1(t+1) = Y_0(t)$