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CLASS: ELECTRICAL ENGINEERING YEAR 3

ASSIGNMENT 3

Conditional output box is located in the ASM chart in the question, it suggests the machine is a Mealy FSM. Here we have 3 states ST1, ST2 and ST3 so as per question, we require 3 flip flops D3 D2, D1

State assignment = > ST1 => 001

ST2 => 010

ST3 => 100

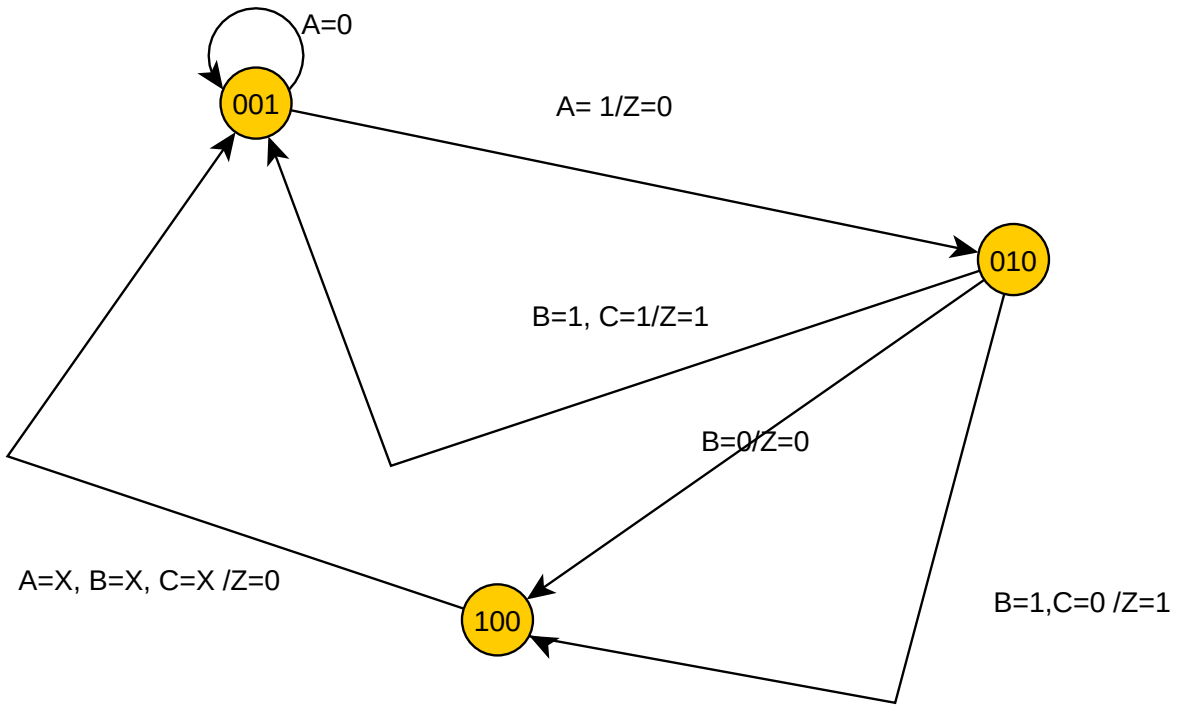

Figure 1(state diagram)

Present State $Q_3Q_2Q_1$	Inputs A	B	C	Next State Q3*Q2*Q1*	Output(z)
001	0	X	X	001	0
001	1	X	X	010	0
010	X	0	X	100	0
010	X	1	1	100	1
010	X	1	1	001	1
100	X	X	X	001	0

Using ***Quinn McCluskey***, the following equations were derived:

$D_3 = Q_3'Q_2Q_1'B' + Q_3'Q_2Q_1'C'$

$D_2 = Q_3'Q_2'Q_1A$

$D_1 = Q_3'Q_2'Q_1A' + Q_3'Q_2Q_1'BC + Q_3Q_2'Q_1'$

$Z = Q_3'Q_2Q_1'B$

ASSIGNMENT 3

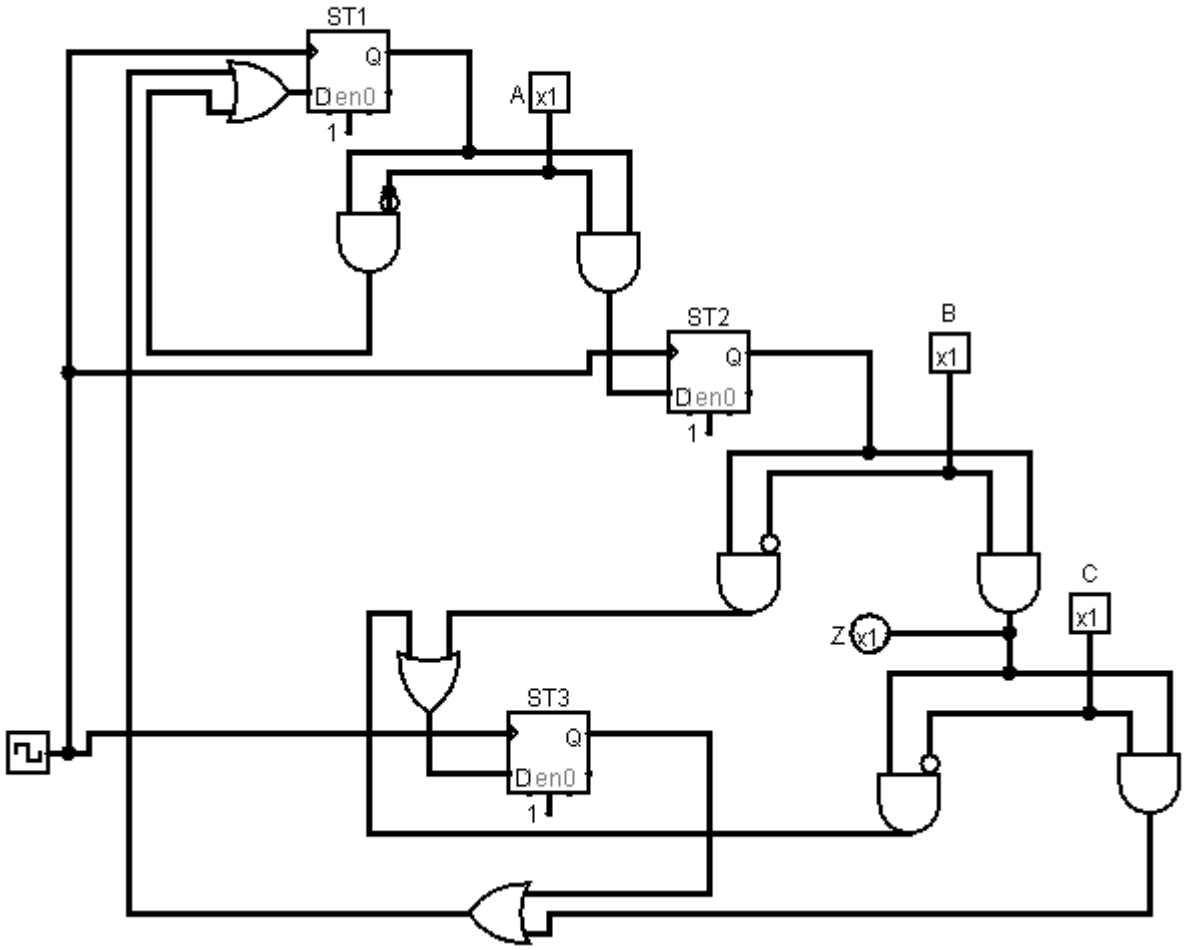

Figure 2 (ASM circuit drawn from chart)