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Roll no : P20-0108

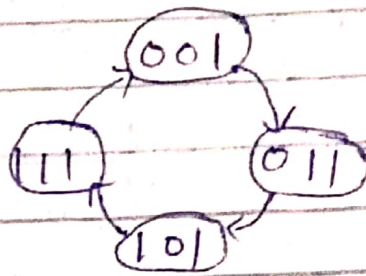
Section : 3D

Assignment : 6

Course : DLD

① State Diagram

First 4 odd numbers 1, 3, 5, 7



M	C ₂	C ₁	C ₀	C ₂	C ₁	C ₀	
0	0	0	0				
0	0	0	1	1	1	1	Down
0	0	1	0				
0	0	1	1	0	0	1	
0	1	0	0				
0	1	0	1	0	1	1	
0	1	1	0				
0	1	1	1	1	0	1	
1	0	0	0				
1	0	0	1	0	1	1	
1	0	1	0				up
1	0	1	1	1	0	1	
1	1	0	0				
1	1	0	1	1	1	1	
1	1	1	0				
1	1	1	1	0	0	1	

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Transition Table

For $y=0$ (Down)

$J_2 K_2$

1 X

0 X

X 1

X 0

$J_1 K_1$

1 X

X 1

1 X

1 X

$J_0 K_0$

X 0

X 0

X 0

X 0

For $y=1$ (UP)

0 X

1 X

X 0

X 1

1 X

X 1

1 X

X 1

X 0

X 0

X 0

X 0

K-MAP For J_2

m_2	00	01	11	10
00		1	0	
01		X	X	
10		X	X	
11		0	1	

$$J_2 = \overline{m}_{0,0} + m_{0,0}$$

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K-map For K_2

m_0 \ $Q_1 Q_0$	00	01	11	10
00		1	1	
01		1	0	
11		0	1	
10		1	1	

$$K_2 = Q_0 \bar{Q}_1 \bar{m} + Q_0 Q_1 m$$

K-map For J_1

m_0 \ $Q_1 Q_0$	00	01	11	10
00		1	1	
01		1	1	
11		1	1	
10		1	1	

$$J_1 = Q_1$$

K-map For J_1

$m_i \backslash q_i$	00	01	11	10
00		X	1	
01		X	X	
11		X	1	
10		X	1	

$$K_1 = 0$$

K-map For J_0

$m_i \backslash q_i$	00	01	11	10
00		0	0	
01		0	0	
11		0	0	
10		0	0	

$$K_0 = 0$$

Logical Expression

$$(i) \quad J_2 = \bar{m} \bar{Q}_1 Q_0 + m Q_1 Q_0 = (\bar{y} \oplus Q_1) Q_0$$

$$(ii) \quad J_1 = Q_0$$

$$(iii) \quad J_0 = 0$$

$$K_2 = Q_0 (\bar{y} \oplus Q_1), \quad K_1 = Q_0, \quad K_0 = 0$$

"Circuit"

