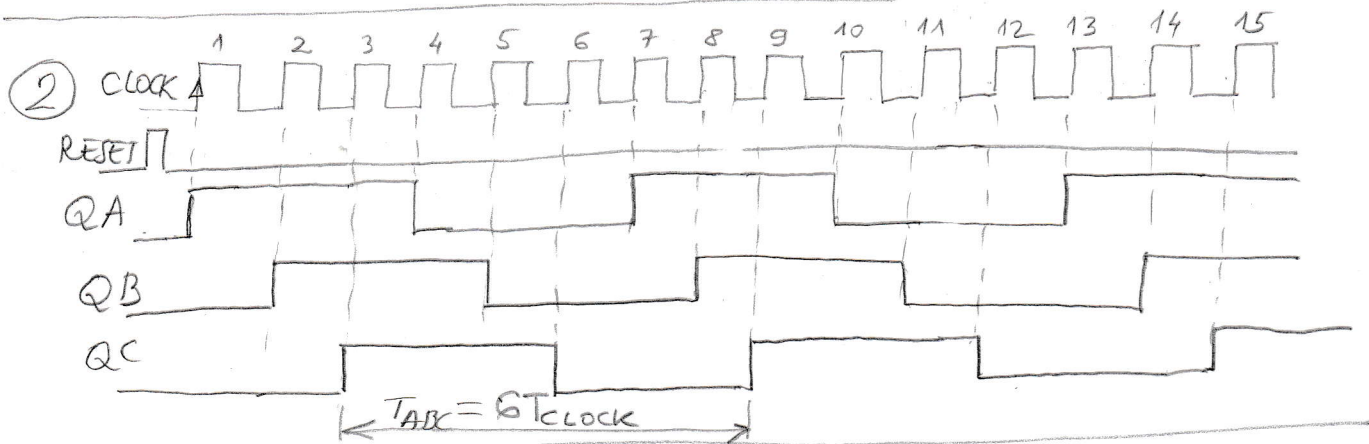
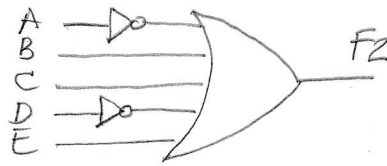
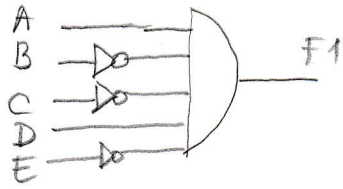


① $F_1 = A\bar{B}\bar{C}DE$

$F_2 = \bar{F}_1 = \overline{A\bar{B}\bar{C}DE} = \bar{A} + B + C + \bar{D} + E$



③ $M = 12 + 1 = 13$

$\text{output } [3:0] \ q;$ $\Rightarrow$ $\text{output } [4:0] \ q;$
 $\text{input } [3:0] \ d;$ $\Rightarrow$ $\text{input } [4:0] \ d;$
 $\text{reg } [3:0] \ q;$ $\Rightarrow$ $\text{reg } [4:0] \ q;$
 $q = 4'b0000;$ $\Rightarrow$ $q = 5'b00000;$
 $\text{if } (q == 12) \Rightarrow \text{if } (q == 0)$
 $q = 0$ $q = 18$
 else else
 $q = q + 1;$ $q = q - 1;$

