

$$1. f(P, Q, R, S) = \sum(1, 3, 4, 6, 7, 11, 12, 14) + d(0, 5, 7, 13, 15)$$

PQ \ RS	00	01	11	10
00	m_0 \boxed{X}	m_1 $\textcircled{1}$	m_3 $\textcircled{1}$	m_2 0
01	m_4 $\textcircled{1}$	m_5 \boxed{X}	m_7 \boxed{X}	m_6 $\textcircled{1}$
11	m_{12} $\textcircled{1}$	m_{13} \boxed{X}	m_{15} \boxed{X}	m_{14} $\textcircled{1}$
10	m_8 0	m_9 $\textcircled{1}$	m_{11} $\textcircled{1}$	m_{10} 0

Here, by putting m_5, m_7, m_{13}, m_{15} don't care values @ 1, we get,

- (i) $m_1, m_3, m_5, m_7, m_{13}, m_{15}, m_9, m_{11}$ adjacents where ^{value} common is S
- (ii) $m_4, m_5, m_7, m_6, m_{12}, m_{13}, m_{15}, m_{14}$ adjacents where ~~common~~ value is Q

\therefore simplified function is $F = Q + S$

