CSE - 206 (Online)

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Truth Table:

P	Q	R	S	F
0	0	0	0	X
0	0	0	1	1
0	0	1	0	X
0	0	1	1	1
0	1	0	0	0
0	1	0	1	X
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

$$f(P, Q, R, S) = \Sigma(1, 3, 7, 11, 15) + d(0, 2, 5)$$

$$= \overline{P}\overline{Q}\overline{R}S + \overline{P}\overline{Q}RS + \overline{P}QRS + \overline{P}\overline{Q}RS + PQRS$$

$$+ \overline{P}Q\overline{R}S + \overline{P}\overline{Q}\overline{R}S + \overline{P}Q\overline{R}S$$

KMAP:

$$\rightarrow \overline{P}\overline{Q}$$

Simplified Expression:

$$F = \boxed{\overline{P}\overline{Q} + \overline{P}S + RS}$$

$\overline{P}S$

RS

* Empty cells are 0

Circuit Diagram