

Solutions to Problems Marked with a \* in  
Logic and Computer Design Fundamentals, 3rd Edition

## Chapter 3

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**3-4.\***

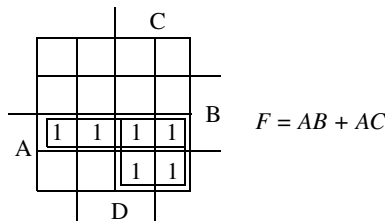
The longest path is from input C or  $\bar{D}$ .

$$0.078 \text{ ns} + 0.078 \text{ ns} + 0.052 \text{ ns} + 0.078 \text{ ns} = 0.286 \text{ ns}$$

**3-9.\***

X	Y	P-Logic				N-Logic					
		NAND	NOR	X	Y	NAND	NOR	X	Y	NAND	NOR
L	L	H	H	0	0	1	1	1	1	0	0
L	H	H	L	0	1	1	0	1	0	0	1
H	L	H	L	1	0	1	0	0	1	0	1
H	H	L	L	1	1	0	0	0	0	1	1

**3-11.\***



**3-24.\*** (Errata: Replace equations with  $F = \bar{W}$  and  $G = \bar{W}\bar{Y} + WZ$ . See Fig. 4-10 for decoder diagram/table.)

$$F = \overline{D_{0U} \cdot D_{1U} \cdot D_{2U} \cdot D_{3U}} = D_{0U} + D_{1U} + D_{2U} + D_{3U} = \bar{W}(\bar{X}\bar{Y} + \bar{X}Y + X\bar{Y} + XY) = \bar{W}$$

$$G = \overline{D_{0U} \cdot D_{2U} \cdot D_{1L} \cdot D_{2L}} = D_{0U} + D_{2U} + D_{1L} + D_{3L} = \bar{W}(\bar{X}\bar{Y} + X\bar{Y}) + W(\bar{X}Z + XZ) = \bar{W}\bar{Y} + WZ$$