9.11 week two

2.1 (a) $Y = \bar{B} + A = (\bar{B}+A)(A+\bar{A}) = A\bar{B} + \bar{A}\bar{B} + A(B+\bar{B}) = AB + A\bar{B} + \bar{A}\bar{B}$

(c) $Y = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + A\bar{B}C + ABC$

(e) $Y = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}CD + \bar{A}B\bar{C}D + \bar{A}BC\bar{D} + A\bar{B}\bar{C}D + A\bar{B}C\bar{D} + AB\bar{C}\bar{D} + ABCD$

2.3. (a) $Y = (A+\bar{B})$

(c) $Y = (A+B+\bar{C})(A+\bar{B}+\bar{C})(\bar{A}+\bar{B}+C)$

(e) $Y = (A+B+C+\bar{D})(A+B+\bar{C}+D)(A+\bar{B}+C+D)\cdot$
$(A+\bar{B}+\bar{C}+\bar{D})(\bar{A}+B+C+D)(\bar{A}+B+\bar{C}+\bar{D})(\bar{A}+\bar{B}+C+\bar{D})(\bar{A}+\bar{B}+\bar{C}+D)$

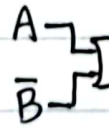
2.5. (a) $Y = A + \bar{B}$

(c) $Y = \bar{A}\bar{C} + A\bar{B} + ABC = \bar{A}\bar{C} + AB(C+\bar{C}) + ABC$
$= \bar{A}\bar{C} + AC + A\bar{B}\bar{C} = \bar{A}\bar{C} + AC + \bar{B}C$

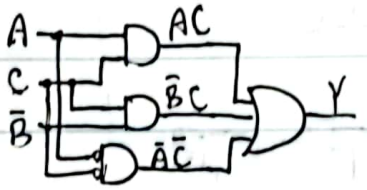
(e) $Y = \bar{A}\bar{B}C(\bar{C}\bar{D}+CD) + \bar{A}BC(\bar{C}\bar{D}+C\bar{D}) + A\bar{B}(\bar{C}D+C\bar{D}) + ABC\bar{C}\bar{D} + CD$
$= (\bar{C}\bar{D}+CD)(\bar{A}\bar{B}+AB) + (\bar{A}B+A\bar{B})(\bar{C}D+C\bar{D})$

2.7. 2.9

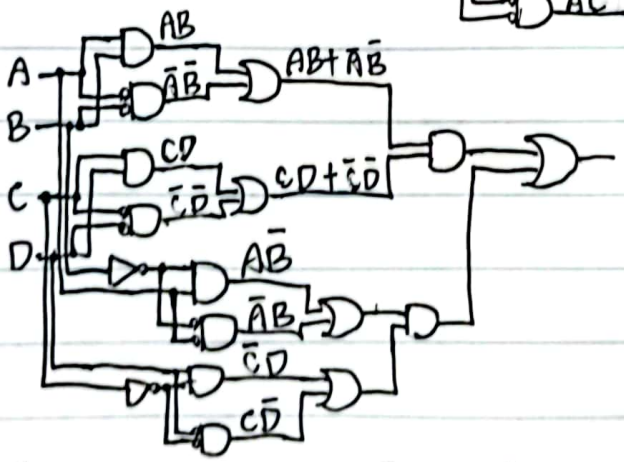
(a)



(c)



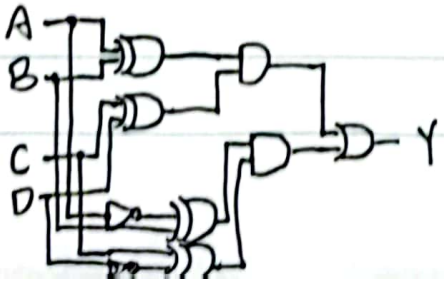
2.9 (e)



只使用了与或非门，这样是比较简单的。

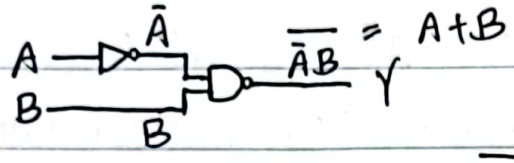
2.7 (e) 若要门较少？ $\bar{A}B + A\bar{B} = A \oplus B$ (异或门).

(带4个异或门)



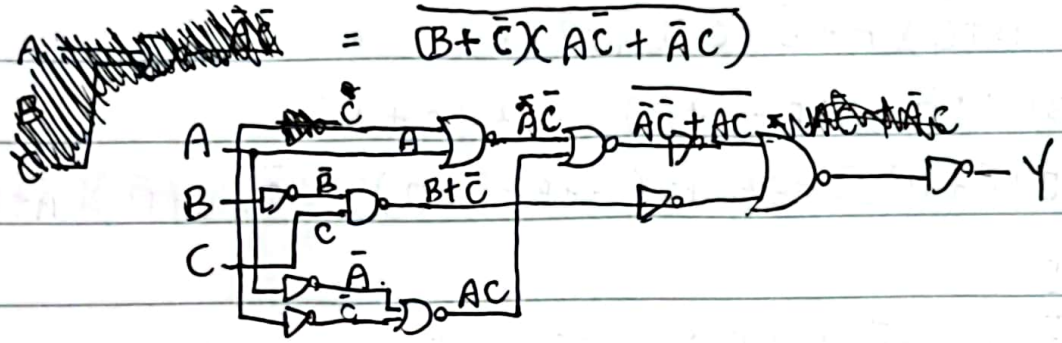
(只使用非门、与非门，或非门)

题2.11. (a) 解 $Y = A + \bar{B}$



(c) $Y = \bar{A}\bar{C} + AC + \bar{B}C = \overline{(\bar{B}C)(\overline{\bar{A}\bar{C} + AC})}$

$= \overline{(B + \bar{C})(A\bar{C} + \bar{A}C)}$



(e) $(AB + \bar{A}\bar{B})(C\bar{D} + \bar{C}D) + (A\bar{B} + \bar{A}B)(C\bar{D} + \bar{C}D) = Y$