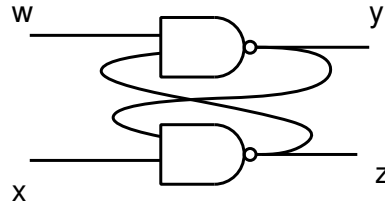


1997 Paper 2 Question 3

Digital Electronics

Explain the operation of the following circuit.



[5 marks]

Minimise the following functions f_i . The g_i indicate don't care conditions for the respective f_i ; g_i is one for an assignment of values if we do not care what the value of f_i is for that assignment.

(a) $f_1 = xyw + \bar{x}\bar{y}zy$
 $g_1 = yz\bar{x}w + x\bar{y}wz + \bar{x}\bar{y}\bar{z}w$ [5 marks]

(b) $f_2 = xy\bar{z}\bar{w} + x\bar{y}\bar{z}$
 $g_2 = xwz + \bar{x}\bar{w}\bar{z}$ [5 marks]

(c) $f_3 = wyzv + \bar{x}wzv + xyzw$
 $g_3 = x\bar{y}\bar{z}v + xy\bar{z}\bar{v}$ [5 marks]