

a)  
i)

	$\overline{x}$			
$y$	1	1	X	
		1	X	
		1	X	1
		1	X	
	$z$			$w$

Electronics  
Q1

2002

Answer

$p^2 q^2$   
 $p \parallel q$   
IML

$$g_1 = z + \bar{x}w\bar{y}$$

$$g_1 = yx\bar{w} + zy + zw + \bar{x}y\bar{w}$$

ii)

	$x$			
$y$	1			1
				X
				X
	1			1
	$z$			$w$

$$g_2 = \bar{x}\bar{z}\bar{w}$$

b)  $2^n - 1$

c) mainly in next state control is JK flip flops  
also in states not in the system spec  
(but can have self starting problems)