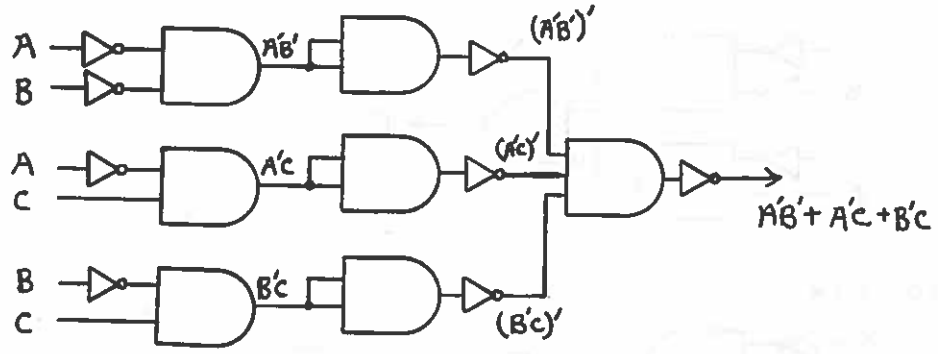
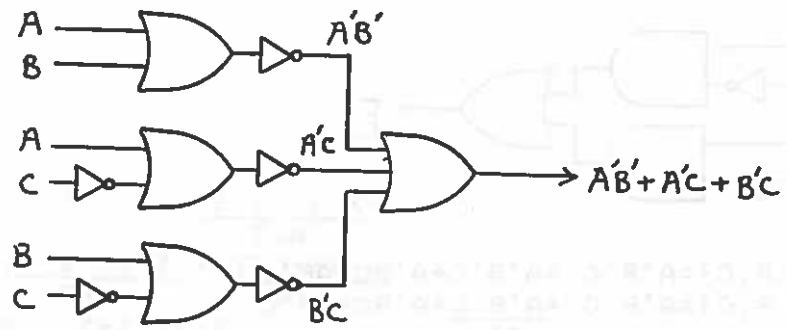
(c)



(d)



2.20 (a) Truth table

X	Y	Z	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

(b) $F=\underbrace{X'Y'Z+X'YZ}_{P4b}+\underbrace{XY'Z+XYZ}_{P4b}$

$=X'Z(\underbrace{Y'+Y}_{P5a})+XZ(\underbrace{Y'+Y}_{P5a})$

$=\underbrace{X'Z+XZ}_{P4b} \quad =Z(\underbrace{X'+X}_{P5a}) \quad =Z$

Z ⟶ F

Chapter 3

MINIMIZATION OF BOOLEAN FUNCTIONS

3.1

C \ AB	00	01	11	10
0	1	d	0	0
1	1	1	d	d

C \ AB	00	01	11	10
0	0	0	d	0
1	1	1	1	1

(a) $P'=\sum m(4,5,6) + d(2,7)$
(b) $P'=\prod M(0,1,3) + d(2,7)$
(c) $P'Q=\sum m(5) + d(6,7)$
(d) $P'+Q=\prod M(0) + d(2)$

3.2 (1)

Z \ XY	00	01	11	10
0				1
1	1	1		1

XY'+X'Z+Y'Z
Identity is false

Z \ XY	00	01	11	10
0		1		
1	1	1		1

X'Y+X'Z

(2)

D \ BC	00	01	11	10
0	1	1		
1	1	1	1	

(B'+C)(B'+D)
Identity is true

D \ BC	00	01	11	10
0	1	1		
1	1	1	1	

B'+CD

(3)

CD \ AB	00	01	11	10
00			1	
01		1	1	
11		1		
10		1		

A'BC+ABC'+A'BD
Identity is false

CD \ AB	00	01	11	10
00		1	1	
01			1	
11				
10		1	1	

BD'+ABC'

(4)

Z \ XY	00	01	11	10
0		1		
1	1	1	1	1

X'Z+X'Y+XZ
Identity is false

Z \ XY	00	01	11	10
0		1		
1	1	1		

X'YZ'+X'YZ+X'Z