KRISH SHAH Section A2 U75802512

(1)

(a)

z \ x,y	00	01	11	10
0	0	1	0	0
1	0	1	1	0

PIs = $x'y$ yz

EPIs = $x'y$ yz

$\bar{x}y + yz$

(b)

z \ x,y	00	01	11	10
0	1	1	0	0
1	1	1	0	1

PIs: x' $y'z$

EPIs: x' $y'z$

$\bar{x} + \bar{y}z$

(2)

(a)

AB \ CD	00	01	11	10
00	0	1	1	0
01	0	1	0	0
11	1	1	0	1
10	0	1	0	0

PIs = $\bar{C}D$ $\bar{A}\bar{B}D$ $AB\bar{C}$ $AB\bar{D}$

EPIs = $\bar{C}D$ $\bar{A}\bar{B}D$ $AB\bar{D}$

$\bar{C}D + \bar{A}\bar{B}D + AB\bar{D}$

(b)

AB \ CD	00	01	11	10
00	0	0	1	0
01	1	1	1	1
11	1	0	0	0
10	0	0	1	0

PIs: $\bar{A}B$ $B\bar{C}\bar{D}$ $\bar{A}CD$ $\bar{B}CD$

EPIs: $\bar{A}B$ $B\bar{C}\bar{D}$ $\bar{B}CD$

$\bar{A}B + B\bar{C}\bar{D} + \bar{B}CD$

(3)

(a)

AB\CD	00	01	11	10
00	1	0	0	X
01	0	X	X	1
11	0	1	X	1
10	X	0	X	1

$C\bar{D} + BD + \overline{BCD}$

(b)

AB\CD	00	01	11	10
00	0	X	1	X
01	X	0	0	X
11	0	0	1	0
10	1	X	1	1

$A\bar{B} + \bar{B}C + ACD$

(4)

(a)

WX\YZ	00	01	11	10
00	1	0	0	1
01	1	0	0	1
11	0	0	0	0
10	1	1	0	1

SOP: $w\bar{x} + \overline{xz} + w\bar{x}\bar{y}$

POS: $(w+\bar{z})(\overline{w+x}) + (\overline{y+z})$

(b)

WX\YZ	00	01	11	10
00	1	0	1	0
01	1	0	0	1
11	1	0	0	0
10	1	0	1	0

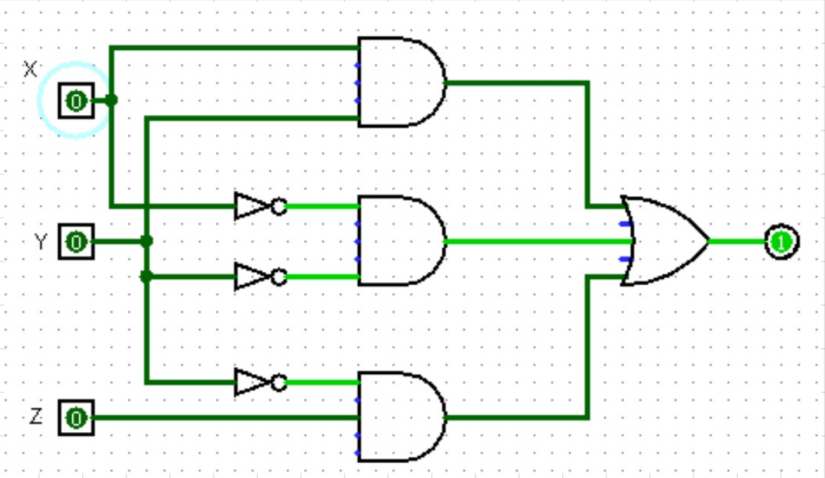
SOP: $\bar{y}\bar{z} + \bar{x}yz + \bar{w}x\bar{z}$

POS: $(y+\bar{z})(\bar{x}+z)(\bar{w}+\bar{y}+z)(x+\bar{y}+z)$

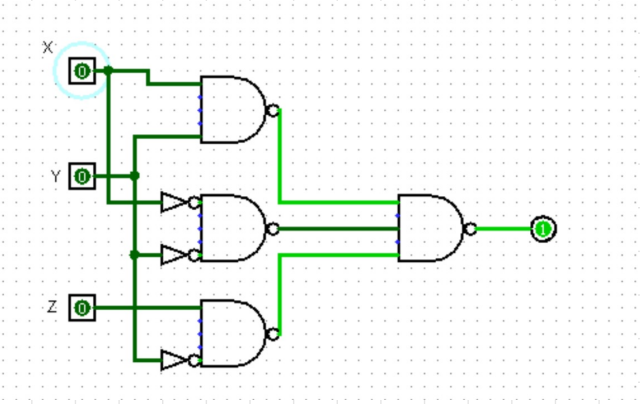
(5) (a)

$z \backslash xy$	00	01	11	10
0	1	0	1	0
1	1	0	1	1

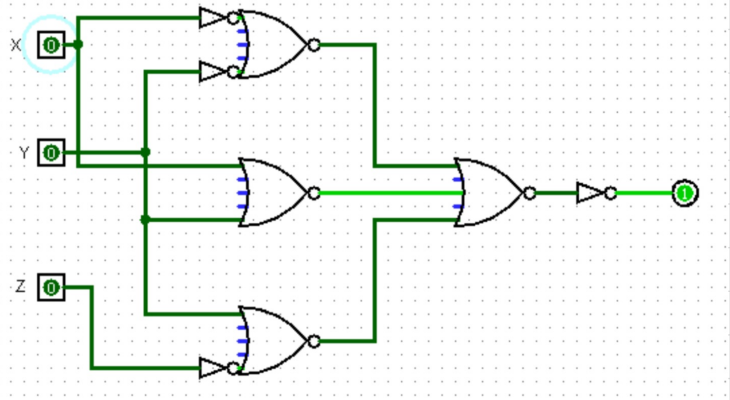
$xy + \overline{xy} + \overline{y}z$



(b) $\overline{\left((\overline{xy})\overline{(\overline{xy})}\ \overline{(\overline{y}z)} \right)}$



(c) $\overline{(\overline{x+y})} + \overline{(x+y)} + \overline{(y+\overline{z})} = \overline{\overline{\left[(\overline{x+y}) + \overline{(x+y)} + \overline{(y+\overline{z})} \right]}}$



(6)

wx \ yz	00	01	11	10
00	0	0	1	0
01	1	1	0	0
11	1	1	1	1
10	0	0	1	0

$$\overline{\left(\overline{(x\bar{y})}\ \overline{(wx)}\ \overline{(\bar{x}yz)}\right)}$$

(7)

wx \ yz	00	01	11	10
00	0	0	1	0
01	1	1	0	0
11	1	1	1	1
10	0	0	1	0

$$\overline{\left(\overline{(\bar{x}+y)} + \overline{(w+x)} + \overline{(x+\overline{y+z})}\right)}$$

(8) (a)

xyz	
000	1
001	1
010	1
011	0
100	0
101	0
110	0
111	0

z \ xy	00	01	11	10
0	1	1	0	0
1	1	0	0	0

$F = \overline{xy} + \overline{xz}$

(b)

xyz	
000	0
001	1
010	0
011	1
100	0
101	1
110	0
111	1

z \ xy	00	01	11	10
0	0	0	0	0
1	1	1	1	1

$F = z$

(9)

```
module question9 (A, B, S, F);
    output F;
    input A, B, S;

    wire w1, w2, w3;

    not (w1, S);
    and (w2, A, w1);
    and (w3, B, S);
    or ( F, w2, w3);

endmodule
```