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C

(1) (A) $= (x\bar{Y} + \bar{Z}) + \neg(\bar{Z} + (\bar{X} + Y)(\bar{X} + \bar{Y}))$

minimal DNF

$\neg(x\bar{Y} + Z) = \bar{Z}(x\bar{Y}) = \bar{Z}(\bar{X} + Y)$

$= \bar{Z}\bar{X} + \bar{Z}Y$

(B) Full DNF

$\bar{Z}Y + \bar{Z}X = \bar{Z}Y(X + \bar{X}) + \bar{Z}\bar{X}(Y + \bar{Y})$

$= \bar{Z}YX + \bar{Z}Y\bar{X} + \bar{Z}\bar{X}Y + \bar{Z}\bar{X}\bar{Y}$

$= XY\bar{Z} + \bar{X}Y\bar{Z} + \bar{X}Y\bar{Z} + \bar{X}\bar{Y}\bar{Z}$

$= XY\bar{Z} + \bar{X}Y\bar{Z} + \bar{X}\bar{Y}\bar{Z}$

(C)

X	Y	Z	$\bar{Y}$	$X\bar{Y}$	$X\bar{Y}+Z$	$\overline{(\bar{X}Y+Z)}$	$\bar{X}\bar{Y}\bar{Z}+\bar{X}Y\bar{Z}+X\bar{Y}\bar{Z}$
0	0	0	1	0	0	1	1
0	0	1	1	0	1	0	0
0	1	0	0	0	0	1	1
0	1	1	0	0	1	0	0
1	0	0	1	1	1	0	0
1	0	1	1	1	1	0	0
1	1	0	0	0	0	1	1
1	1	1	0	0	0	1	1

C

(2) $R = \bar{Y}(X \oplus Z) + X(Y \oplus \bar{Z}) + Y(X \oplus Z)$

(A) Minimal DNF $\bar{Y}(X \oplus Z)$

(B) $= \bar{Y}(X\bar{Z} + \bar{X}Z)$

$= \bar{Y}X\bar{Z} + \bar{X}Z\bar{Y}$

$= X\bar{Y}\bar{Z} + \bar{X}\bar{Y}Z$

~~$= (\bar{Y}(X\bar{Z} + \bar{X}Z)) =$~~

(C)

X	Y	Z	$\bar{Y}$	$X \oplus Z$	$(\bar{Y}(X \oplus Z))$	$X\bar{Y}\bar{Z}$	$\bar{X}\bar{Y}Z$
0	0	0	1	0	0		
0	0	1	1	1	1		
0	1	0	0	0	0		
0	1	1	0	1	0		
1	0	0	1	1	1		
1	0	1	1	0	0		
1	1	0	0	1	0		
1	1	1	0	0	0		

(3)

Y	Z	X=0	X=1
0	0	1	
0	1	1	
1	1	1	1
1	0	0	0

$\bar{Y}$

$YX + Z$

DNF = $YX + Z$

~~2. DNF = Z~~

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X	Y	Z	R
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

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

YZ

XY

$\bar{X}\bar{Y}\bar{Z} + YX + ZY$

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X	Y	Z	R
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

RY \ X	0	1
00	0	1
01	0	1
11	0	1
10	0	1

DNF = X

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X	Y	Z	R
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

$\bar{X}Y\bar{Z}$

R

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

$\bar{Y}$

Z

Z

$\bar{X}+Y+Z+\bar{X}Y\bar{Z}$

$= \bar{X}+\bar{Y}$

$\bar{X}Y\bar{Z}+X\bar{Y}+\bar{Y}Z+XZ$