Lahari
CS20B1007

DIC

1) a) Sum of products (SOP)

① $F_1 = \bar{x}\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\bar{z} + xyz$

$F_2 = \bar{x}yz + x\bar{y}z + xy\bar{z} + xyz$

② $F_1 = \bar{x}\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\bar{z} + xyz$

$F_2 = \bar{x}\bar{y}z + \bar{x}y\bar{z} + \bar{x}yz + xyz$

POS

① $F_1 = (x+y+z)(x+\bar{y}+\bar{z})(\bar{x}+\bar{y}+z)(\bar{x}+\bar{y}+z)$

$F_2 = (x+y+z)(x+y+\bar{z})(x+\bar{y}+z)(\bar{x}+y+z)$

② $F_1 = (x+y+z)(x+\bar{y}+\bar{z})(\bar{x}+y+\bar{z})(\bar{x}+\bar{y}+z)$

$F_2 = (x+y+z)(\bar{x}+y+\bar{z})(\bar{x}+y+z)(\bar{x}+\bar{y}+z)$

2) b)

1) k-map for f_1 in SSOP form

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

$\Rightarrow x'y'z + x'yz' + xy'z' + xyz$

k-map for f_2 in SSOP form

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

$f_2(x,y,z) = yz + xz + xy$

k map for f_1 in SPOS form

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

$f_1(x,y,z) = (x+y+z)(x+y'+z')(x'+y+z)(x'+y'+z)$

k-map for f_2 using k-map

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

$\{ Y = (A+B)(A+C)(B+C)$

$f_2(x,y,z) = (x+y)(x+z)(y+z)$

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b) SSOP for f_1 using k-map

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

$f_1(x,y,z) = x'y'z + x'z'y + xy'z' + xyz$

SSOP for f_2 using k-map

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

$f_2(x,y,z) = A'C + A'B + BC$

SPOS for f_1 using kmap

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

$f(xyz)' = (x+y+z)(x+y'+z')(x'+y+z')(x'+y'+z)$

SPOS for f_2 using k-map

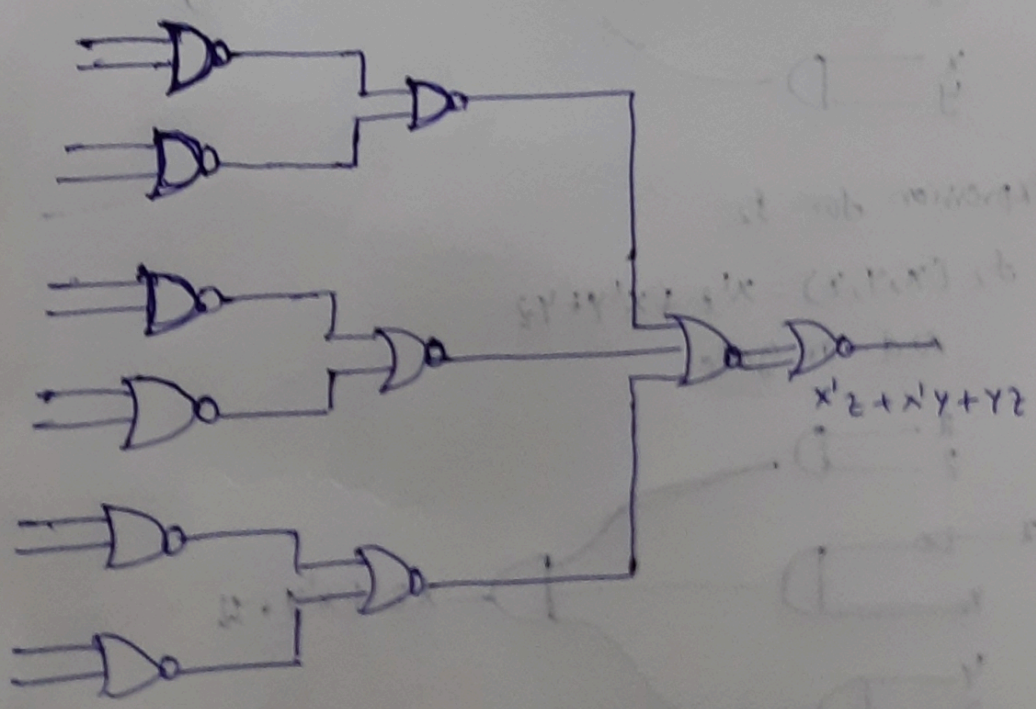
x \ yz	00	01	11	10
0	0	1	1	1
1	0	0	1	0

$f(xyz) = (y+z)(x'+y)(x'+z)$

d) (i)

$f_2(x,y,z) = x'z' + x'y + yz$

N-or gate



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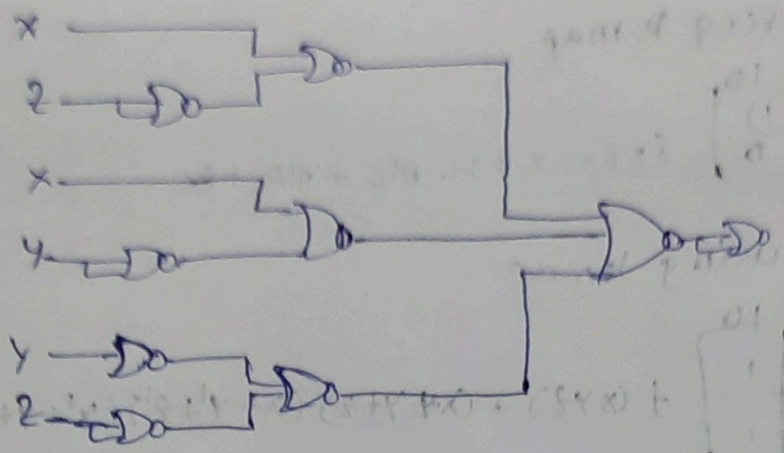
d) ii) $f_2(x,y,z) = x'z + x'y + yz$

Nor gate for f_2

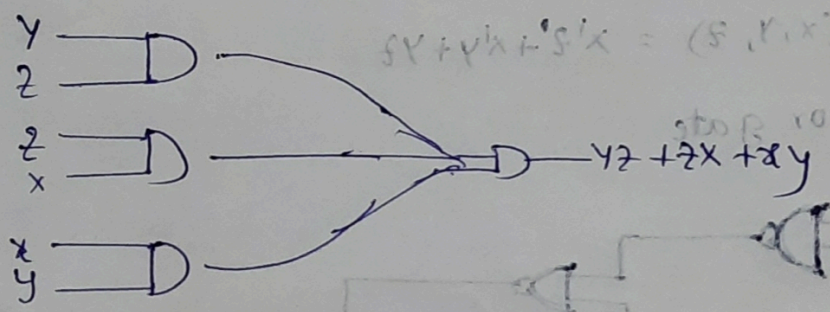


c) ① ~~[illegible]~~

Expression for f_2

$f_2(x,y,z) = yz + zx + xy$

And - or gate

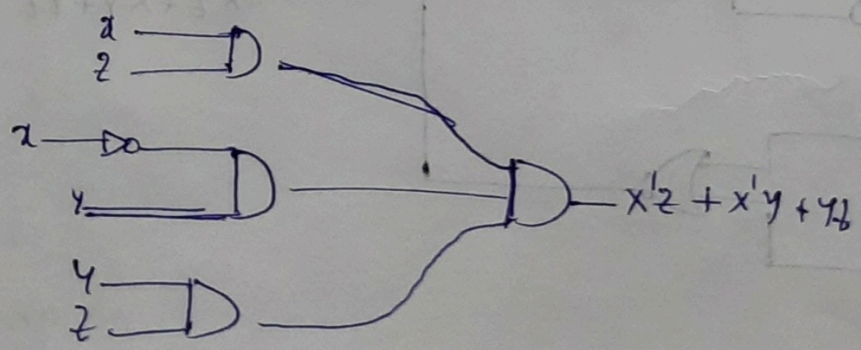


2)

Expression for f_2

$f_2(x,y,z) = x'z + x'y + yz$

And - or gate



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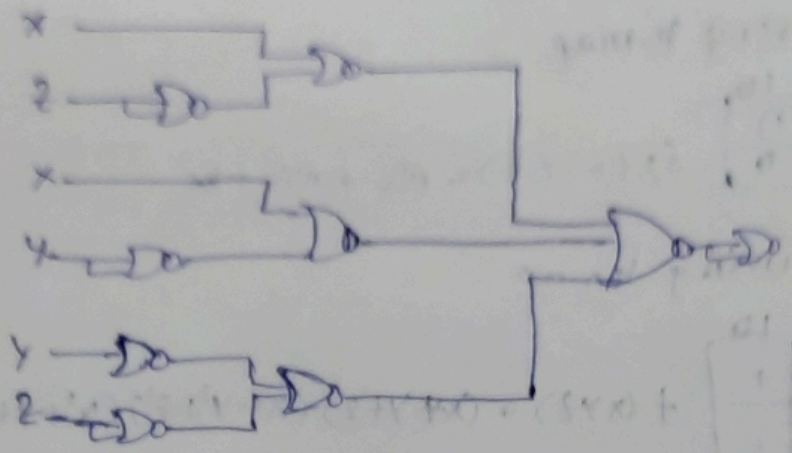
2) b) $f_2(x,y,z) = x'z + x'y + yz$

NOR gate for f_2

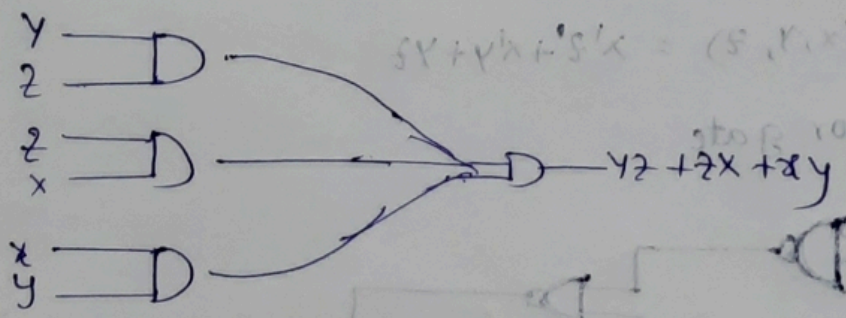


c) ①

Expression for f_2

$f_2(x,y,z) = yz + zx + xy$

And - or gate

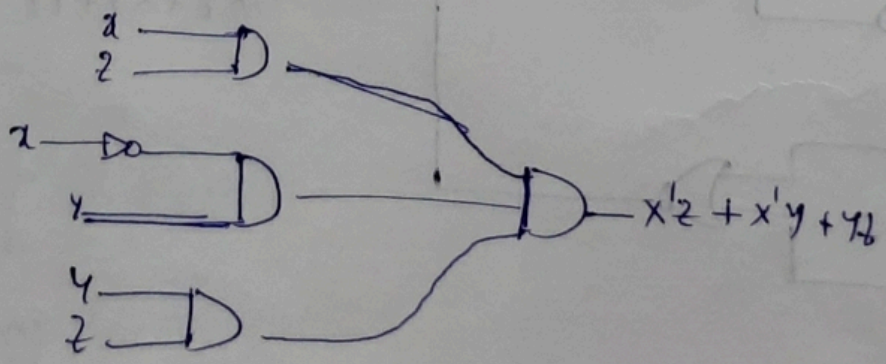


2)

Expression for f_2

$f_2(x,y,z) = x'z + x'y + yz$

And - or gate



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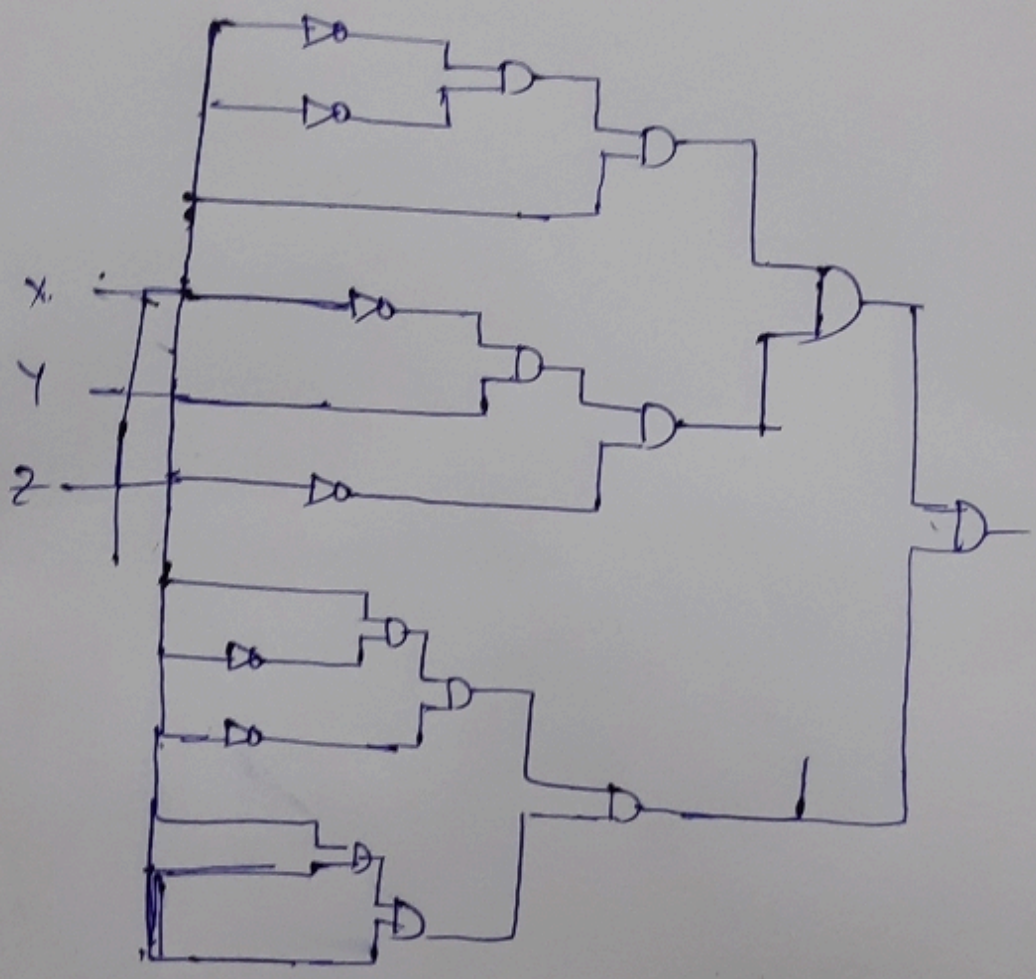
c) i) expression for f.

$f(x,y,z) = x'y'z + x'z'y + xy'z' + xyz$

And



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