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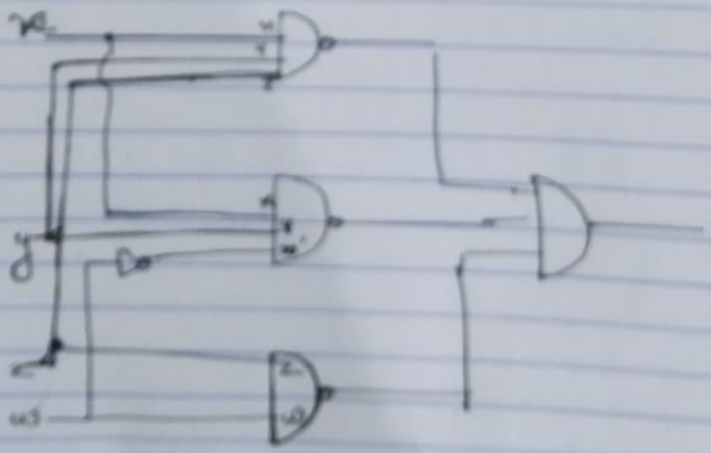
Ex- 4 to 2 priority Encoder.

$F = xyz + w'xy + wz$

$F' = (xyz + w'xy + wz)'$

$= (xyz)' \cdot (w'xy)' \cdot (wz)'$ | using De morgan's Theorem $(xy)' = x' + y'$ |

$= (x' + y' + z') \cdot (w + x + y) \cdot (w' + z')$

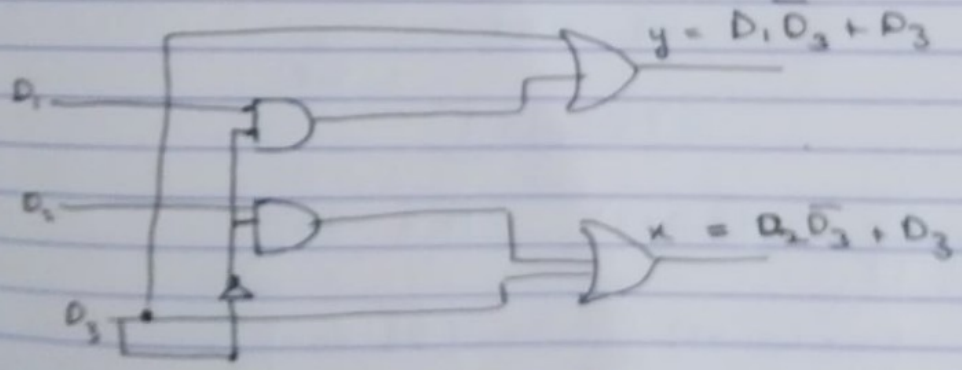


Q3 Design 4 to 2 Priority Encoder;

Inputs				Output	
D_2	D_1	D_3	D_0	x	y
1	0	0	0	1 ✓	0
x	1	0	0	0	1
x	x	1	0	1 ✓	1
x	x	x	1	1 ✓	0

$x = D_2\bar{D}_3 + D_3$ & $y = D_1\bar{D}_3 + D_3$

Realization using 4 to 2 encoder.



Q1 $(8A.104)_8 - (143.02)_7$

Converting Base 8 to 10

$11^1 \times 8 + A \times 11^0 + 11^{-1} \times 1 + 11^{-2} \times 0 + 11^{-3} \times 4$

$\left(88 + 10 + \frac{1}{11} + \frac{4}{113}\right)_{10} = (98.093)_{10}$

Now,

$(143.02)_7$

$= 7^2 \times 1 + 7^1 \times 4 + 7^0 \times 3 + 0 \times 7^{-1} + 2 \times 7^{-2}$

$= 49 + 28 + 3 + \frac{2}{49}$

$= (80.40408)_{10}$

converting $(98.093)_{10} = (118.074)_9$

$(80.40408)_{10} = (88.360)_9$

Now subtracting using (r-1)'s complement

$(118.074)_9 - (88.360)_9$

$= 9^2 - 9^{-3} - 88.360$

$= 88.888 - 88.360$

$= \boxed{00.520}$

$118.074 + 0.520 = 118.604$

Now taking $(x-1)$'s caplu of $(118.604)_q$,

$q^3 - q^{-3} = 118.604$.

$729 - q^{-3} = 118.804$

$= (610.394)$

$888.888 - 118.604$

$= \boxed{770.284}$ Ans

Row

1000.000
.001

~~9999~~

8888. 888

888.888
118.604
770.284