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CSE350 Section: 13
Assignment 03

① a) This is a Digital to Analog converter, which is taking 2 bits as input.

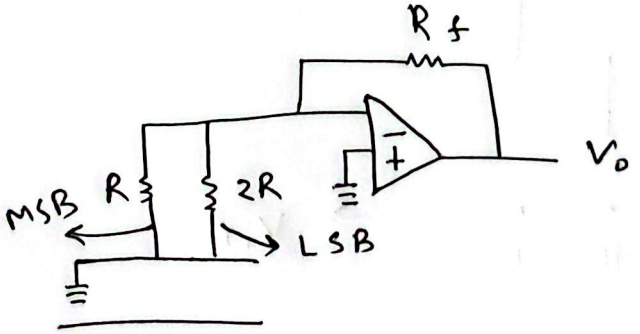
$$V_o = \frac{R_f}{R_i} V_{ref} \left(B_1 + \frac{B_2}{2} \right)$$

$$\Rightarrow 15 = \frac{2R}{R} V_{ref} \left(1 + \frac{1}{2} \right)$$

$$\Rightarrow 15 = 2 V_{ref} \left(\frac{3}{2} \right)$$

$$\therefore V_{ref} = 5V$$

b)



$-V_{ref} = -5V$

c)

Binary input	Analog value
00	0
01	5
10	10
11	15

$R_f = 2R$

$$V_{01} = \frac{2R}{R} \cdot 5\left(0 + \frac{0}{2}\right) = 0$$

$$V_{02} = \frac{2R}{R} \cdot 5\left(0 + \frac{1}{2}\right) = 5$$

$$V_{03} = \frac{2R}{R} \cdot 5\left(1 + \frac{0}{2}\right) = 10$$

$$V_{04} = \frac{2R}{R} 5\left(1 + \frac{1}{2}\right) = 15$$