

Find I_o using mesh analysis

$$I_1 = 2 \text{ mA} \quad (1)$$

$$I_2 = 2 \text{ mA} \quad (1)$$

$$= 2(I_3 - I_4)$$

$$\therefore I_2 = 2I_3 - 2I_4 \quad (1)$$

KVL I_3 $-2V_x + 1k(I_3 - I_4) + 1k(I_3 - 2\text{mA}) = 0$

But $V_x = 1k(I_2 - I_4)$

$$-2k(I_2 - I_4) + 1k(I_3 - I_4) + 1kI_3 - 2 = 0$$

$$(2) \quad -2kI_2 + 2kI_3 + 2kI_4 = 2 \quad (2)$$

KVL I_4

$$2kI_4 - 1kI_3 - 1kI_2 = -6 \quad (3)$$

$$(2) \quad I_o = I_1 - I_2 \quad (1)$$

Solving the equations only one mark

$$I_2 = 5.7 \text{ mA}$$

$$I_3 = 5.4 \text{ mA}$$

$$I_4 = 2.5 \text{ mA}$$

