2. a)

200020001

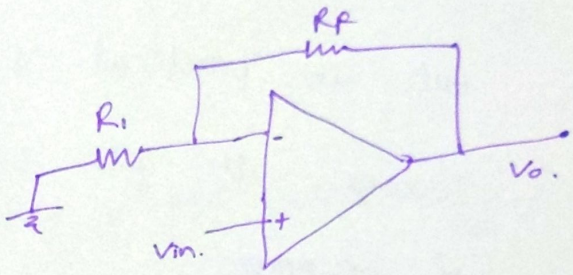
Part-B

1. $R_F = 10K\Omega$ $\quad x = 1$

$R_1 = 100\Omega$

$I_{bias} = (20 * x)\,nA = 20nA$

$V_{io} = 4.5mV.$



w.k.t $V_{of} = \left(1 + \frac{R_f}{R_1}\right) V_{io}$ due to i/p offset voltage.

$= \left(1 + \frac{10 \times 10^3}{100}\right) 4.5mV$

$= (101)\, 4.5mV$

$= 454.5mV$

and $V_{of} = R_F I_B$ due to i/p bias current.

$= (10K)(20nA)$

$= 200 \times 10^{-6} \times 10^{}$

$= 2 \times 10^{-4} = 0.2\,mV.$

So, total $V_{oof} = 454.5 + 0.2\ mV.$

$= 454.7\ mV$

V_{of} total $= 454.7mV$

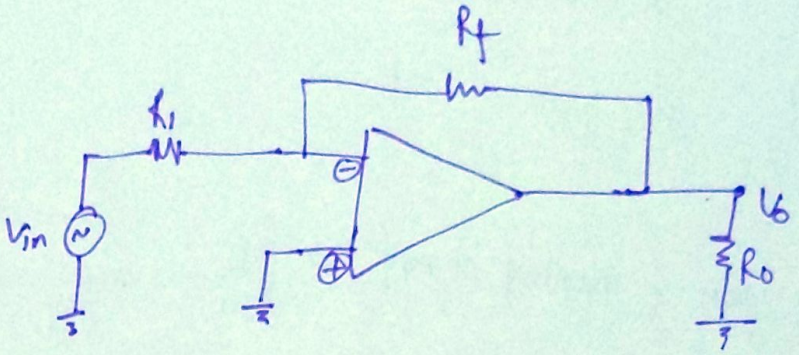
2. a)

$XY = 1$

so, gain $= -1$.

$$-\frac{R_f}{R_1} = -1$$

$$\boxed{R_f = R_1}$$



w.k.t o/p impedence of inverting OP-Amp is $R_1 + \left(\frac{R_F}{1+A} \parallel R_1\right)$

and output impedence is $\frac{R_o}{1+AB}$.

b)