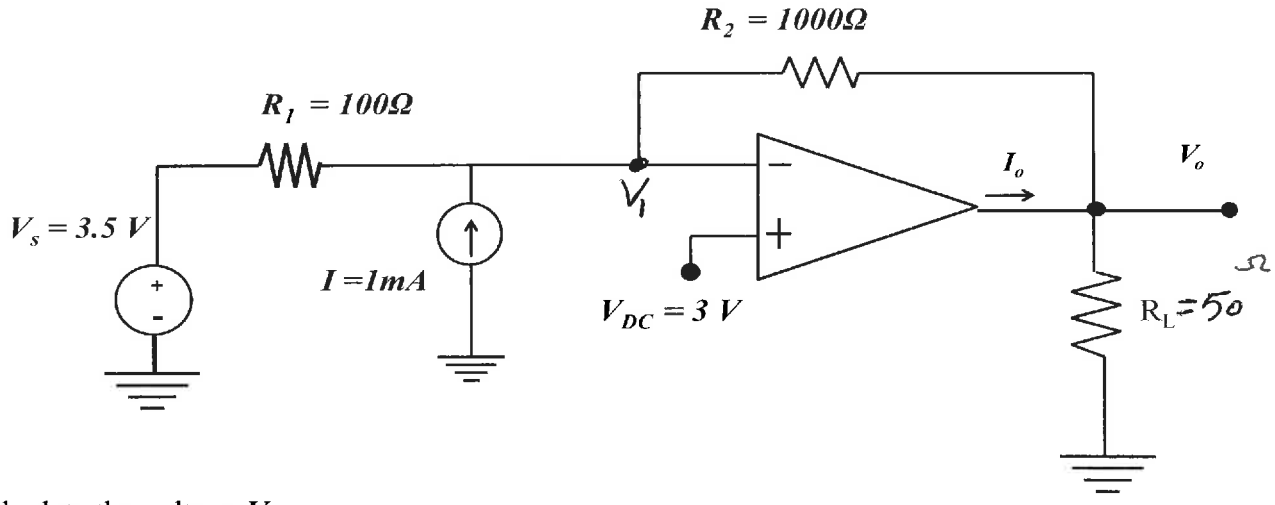
EECS 215-002 Quiz 5 Fall 2017

Name : **ID #**

Problem # 1(20 Points)
Assuming the opamp in this circuit is ideal:



a) Calculate the voltage V_o.

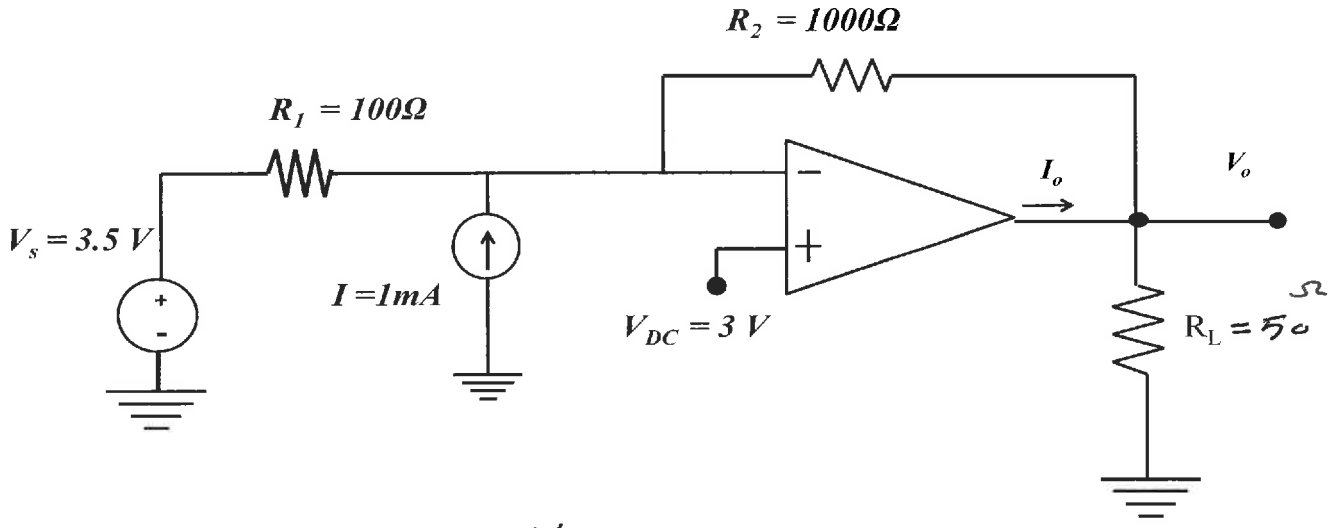
write KCL at V_1, where $V_1 = 3\ V$

$$-1\ mA + \frac{3 - 3.5\ V}{0.1\ k\Omega} + \frac{3 - V_o}{1\ k\Omega} = 0$$

$$-1\ mA - 5\ mA + 3\ mA - V_o/1k\Omega = 0$$

$$V_o = -3\ V$$

b) Determine the current I_o at the output of opamp.



$$-I_o + \frac{V_o}{R_L} + \frac{V_o - 3}{R_2} = 0$$

$$I_o = \frac{-3\ V}{50\ \Omega} + \frac{-3-3\ V}{1000\ \Omega}$$

$$I_o = -60^{mA} - 6^{mA} = -66^{mA}$$