

Answers to EEE210 Quiz #4 AY2013-2014

1. Set all DC sources to 0, replace all capacitors by short-circuits, replace the MOSFET by its small signal AC model with:

$$g_m = 14 \text{ mS}$$

and redraw. Easy. Refer to notes.

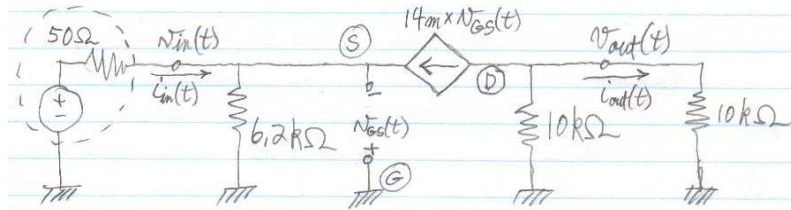


Figure 1:

- 2.

$$A_V = 70$$

$$A_I = 0.494$$

$$A_P = 34.59$$

$$Z_{in} = 70.6 \Omega$$

$$Z_{out} = 10 \text{ k}\Omega$$

- 3.

$$I_D(t) = 0.913 \text{ mA} - (14 \text{ mS}) v_{in}(t)$$

$$V_{DS}(t) = 5.22 \text{ V} + 69 v_{in}(t)$$

4. $-72 \text{ mV} < v_{in}(t) < 65 \text{ mV}$.