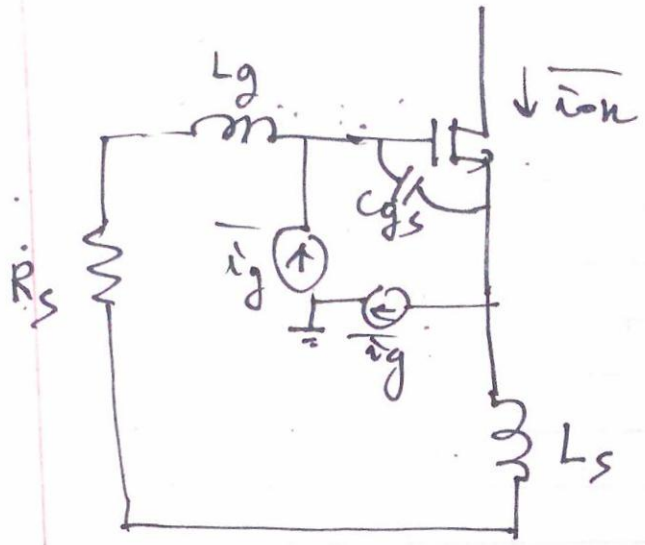
6) Output noise current due to induced gate noise current



$$\overline{i_{on}}\Big|_{\text{due to } \overline{i_g}} = \frac{R_s + sL_g + sL_s}{R_s + sL_g + sL_s + \frac{1}{sC_{gs}} + \frac{g_m L_s}{C_{gs}}} \times \overline{i_g} \times \frac{g_m}{sC_{gs}}$$

$$= \frac{1}{2R_s} \frac{\omega_T}{j\omega} \left(R_s + j\omega L_g + j\omega L_s \right) \overline{i_g}$$

$$\approx \frac{1}{2R_s} \frac{\omega_T}{j\omega} \left(R_s + j\omega L_g \right) \overline{i_g}$$

$$\therefore \overline{i_{on}}\Big|_{\text{Total}} = \overline{i_{on}}\Big|_{\text{due to } R_s} + \overline{i_{on}}\Big|_{\text{due to } R_g} + \overline{i_{on}}\Big|_{\text{due to } \overline{i_d}}$$

$$+ \overline{i_{on}}\Big|_{\text{due to } \overline{i_g}}$$