3-3. b a b c.

3-11. 3-4. (a). 源极缺少电阻提供负偏压. $U_{GS}=0$. 导致静态栅极电流过大.
动态范围小. 不能正常放大.

(b). 没有栅极电阻. 使交流输出信号到地短路. U_o 无法取出.

(c). 可以正常放大

(d) 不可以. 自给偏压式共源放大电路只适用于耗尽型. 不适用增强型.

3-7. (1) $I_D = I_{DSS}\left(1-\frac{U_{GS}}{U_{GS(off)}}\right)^2 = 2\times\left(1-\frac{-2}{-4}\right)^2 mA = 0.5(mA)$.

$U_{GSQ} = U_{GQ} - U_{SQ} \approx -I_D \cdot R_{S1}$.

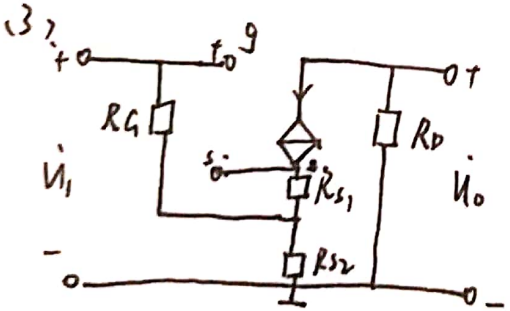
$R_{S1} = -\frac{U_{GSQ}}{I_D} = 4\ k\Omega$.

(2). $U_{DS} \geq U_{GS} - U_{GS(off)}$ $U_{DS_{min}} = -2-(-4) = 2\ V$.

$I_D\cdot(R_{S1}+R_D+R_{S2max}) = V_{DD} - V_{DSmin}$ $R_{S2max} = \frac{V_{DD}-V_{DSmin}-I_D\times(R_{S1}+R_D)}{I_D}$

$= 2(k\Omega)$.

(3).

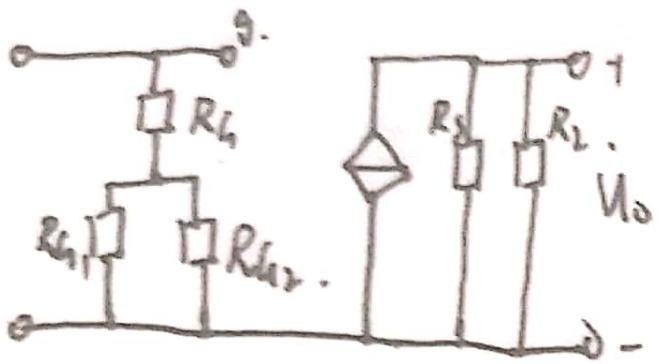


$g_m = -\frac{2I_{DSS}}{U_{GS(off)}}\cdot\left(1-\frac{U_{GS}}{U_{GS(off)}}\right) = 0.5\ mS$.

$A_u = \frac{\dot{U}_o}{\dot{U}_i} = \frac{-g_m\cdot U_{gs}}{U_{gs}+g_m U_{gs}(R_{S1}+R_{S2})}$.

$= \frac{-g_m}{1+g_m(R_{S1}+R_{S2})} = -0.36$.

3-11.



$$A_u = \frac{\dot{U}_o}{\dot{U}_i} = \frac{g_m \cdot U_{gs} \cdot (R_S // R_L)}{V_{gs} + g_m \cdot U_{gs} (R_S // R_L)} = 0.857.$$

$$R_i = R_G + R_{G1} // R_{G2} = 2.075 (M\Omega).$$

$$R_o = R_S // \frac{1}{g_m} = 0.92 (K\Omega).$$