1. Using the data obtained from the Keysight transistor curve tracer calculate the parameters $\beta$, $V_{TO}$, and $\lambda$ for the N Channel JFET.

2. Design the Common Source Amplifier circuit shown below so that $V_{DD} = V_{SS}/2$. Use $C_1 = 10 \mu F$, $C_2 = 22 \mu F$, and $C_S = 100 \mu F$. The dc power supply is $V^+ = 15 \text{ V}$ and $V^- = -15 \text{ V}$. The load resistor $R_L = 10 \text{ k}\Omega$, $V_D = 5 \text{ V}$, $V_S = -5 \text{ V}$, and the small signal midband input impedance is $80 \text{ k}\Omega$. Design the circuit for maximum small signal midband voltage gain.

3. Perform a SPICE simulation of the Common Source Amplifier to obtain the dc operating point, the frequency response (AC analysis), and the Clipping behavior.