1. Design a common base amplifier shown below with the following specifications:

- \( A_v = 7.3 \)
- \( I_{C1} \) the value that results in symmetric clipping
- \( C_1 = C_2 = 20 \mu F \)
- \( C_E = 330 \mu F \)
- \( R_L = 10 \text{k}\Omega \)
- \( R_B = 100 \text{k}\Omega \)
- \( V^+ = -V^- = 15 \text{ V} \)
- \( R_C = 7.5 \text{k}\Omega \)

For the design calculations assume that the Early voltage is infinity, \( \beta = 100 \), the thermal voltage is 25.9 mV, and that the dc voltage drop from base-to-emitter is 0.65 V for each transistor.

2. Simulate the circuit designed in Problem 1 with SPICE. Use the SPICE parameters for the NPN transistors:

- \( \beta = 100 \)
- \( V_A = 170 \text{ V} \)
- \( I_S = 6.734 f \text{ A} \)
- \( r_x = 10 \Omega \)
- \( \tau_F = 301.2 \text{ ps} \)
- \( c_{jco} = 3.638 \text{ pF} \)

Obtain the dc operating point, an ac analysis, and a transient analysis sufficient to show the clipping behavior.