



FM: 20

Time 1 Hr

Date of Exam: June 07, 2022

1. Draw the circuit diagram of BJT based common collector amplifier. Explain why the amplifier is named as emitter follower. Discuss the application of such amplifier with example. [4]
2. The CE amplifier of circuit of Fig (I), has $R_1=20K\Omega$, $R_2=20K\Omega$, $R_C=2.3K\Omega$, $R_E=5K\Omega$, $R_L=5K\Omega$, $\beta = 75$ and $V_A=200V$. Draw the ac equivalent circuit. Determine the small signal voltage gain and output resistance R_o and R_o' .

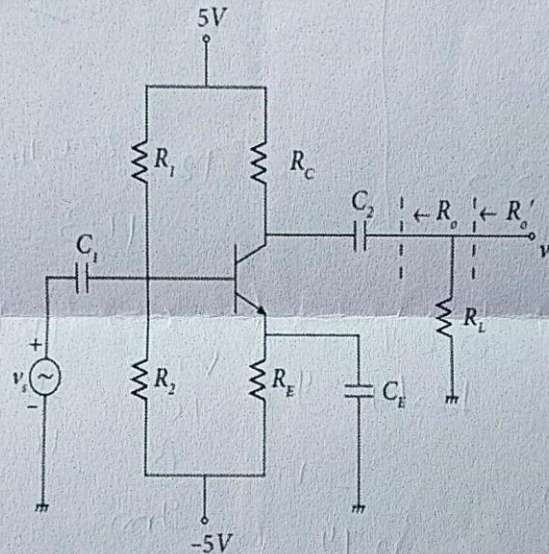


Fig. (I)

[6]

3. Draw the output characteristics of n-p-n BJT operating in CE mode and clearly indicate various region of operation. Define Early effect and discuss on its implication in design of the amplifier. [5]
4. a) Draw the 3-d schematic diagram of a JFET with proper voltage supplies. Explain, the different ways to control the conductivity of a JFET.
b) Define the various parameters of JFET and establish the relation between them. For a JFET, using suitable expression establish that,

$$g_m = g_{m0} \left(1 - \frac{V_{GS}}{V_P} \right), \text{ symbols have their usual meaning.}$$

[5]

-----All the Best-----