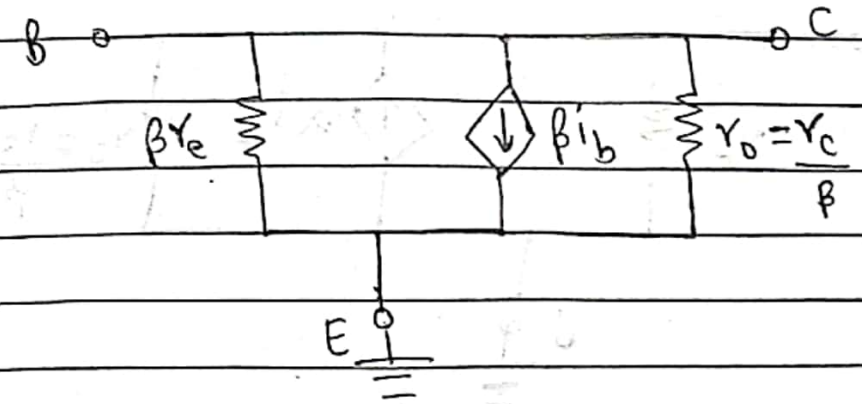
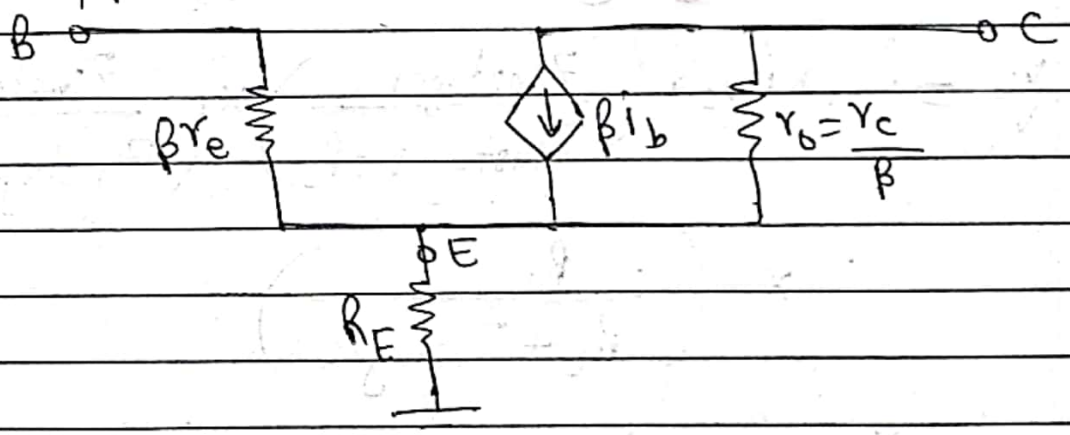
Tutorial II <Hints>

Date / /

1) CE Bypassed



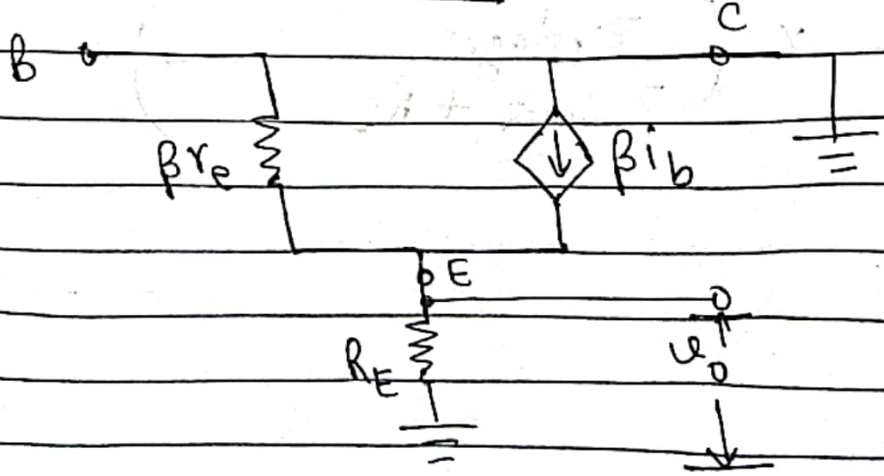
2) CE Unbypassed



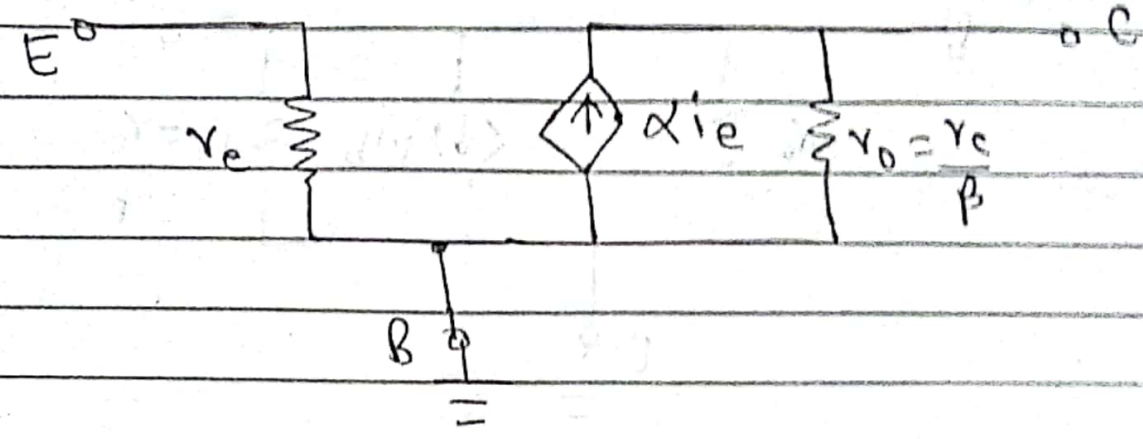
Nt:-

The value of 'r_o' is very large and can be neglected to simplify the circuit analysis.

3) CC (common collector)



4) Common Base



5) Overall voltage gain ($A_{vs} = \frac{V_L}{V_S}$)

$$\frac{V_L}{V_S} = A_{v1} \times A_{v2} \times \left(\frac{Z_{in\,stage1}}{Z_{in\,stage1} + R_S} \right) \times \left(\frac{Z_{in\,stage2}}{Z_{in\,stage2} + Z_{o\,stage1}} \right) \times \left(\frac{R_L}{R_L + Z_{o\,stage2}} \right)$$

6) overall current gain ($A_{IS} = \frac{i_L}{i_S}$)

$$\frac{i_L}{i_S} = A_{v1} \times A_{v2} \times \left(\frac{Z_{in\,stage1}}{Z_{o\,stage1} + Z_{in\,stage2}} \right) \times \left(\frac{Z_{in\,stage2}}{Z_{o\,stage2} + R_L} \right)$$