



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



COIMBATORE-35

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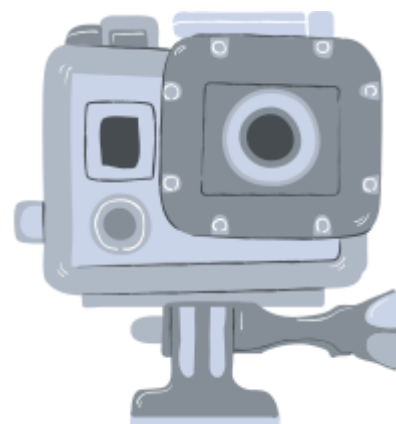
DEPARTMENT OF BIOMEDICAL ENGINEERING

COURSE NAME: 19EIB201/ ELECTRONIC DEVICES

II YEAR / III SEMESTER

Unit 3– Small Signal Amplifier

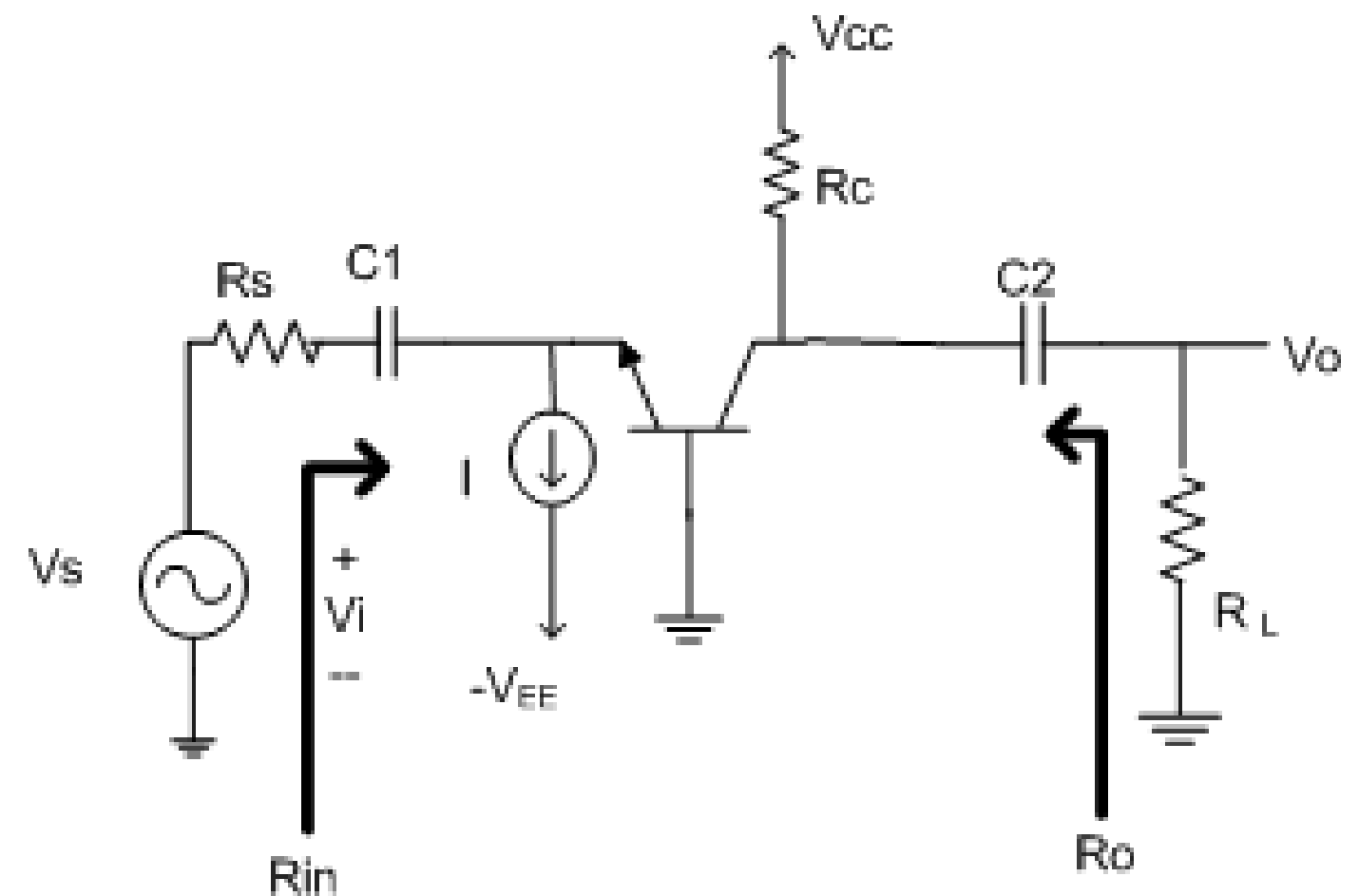
Topic 2: Common Base Amplifier





CB Amplifier

- A signal ground is attached to the base terminal.
- Emitter is turn into input terminal by attaching an input source V_s through R_s and C_1 .
- Output is taken across R_L , connected to the collector of the transistor.
- DC voltage V_{cc} provides biasing at the output terminal and a constant current biasing is provided at the input terminal.

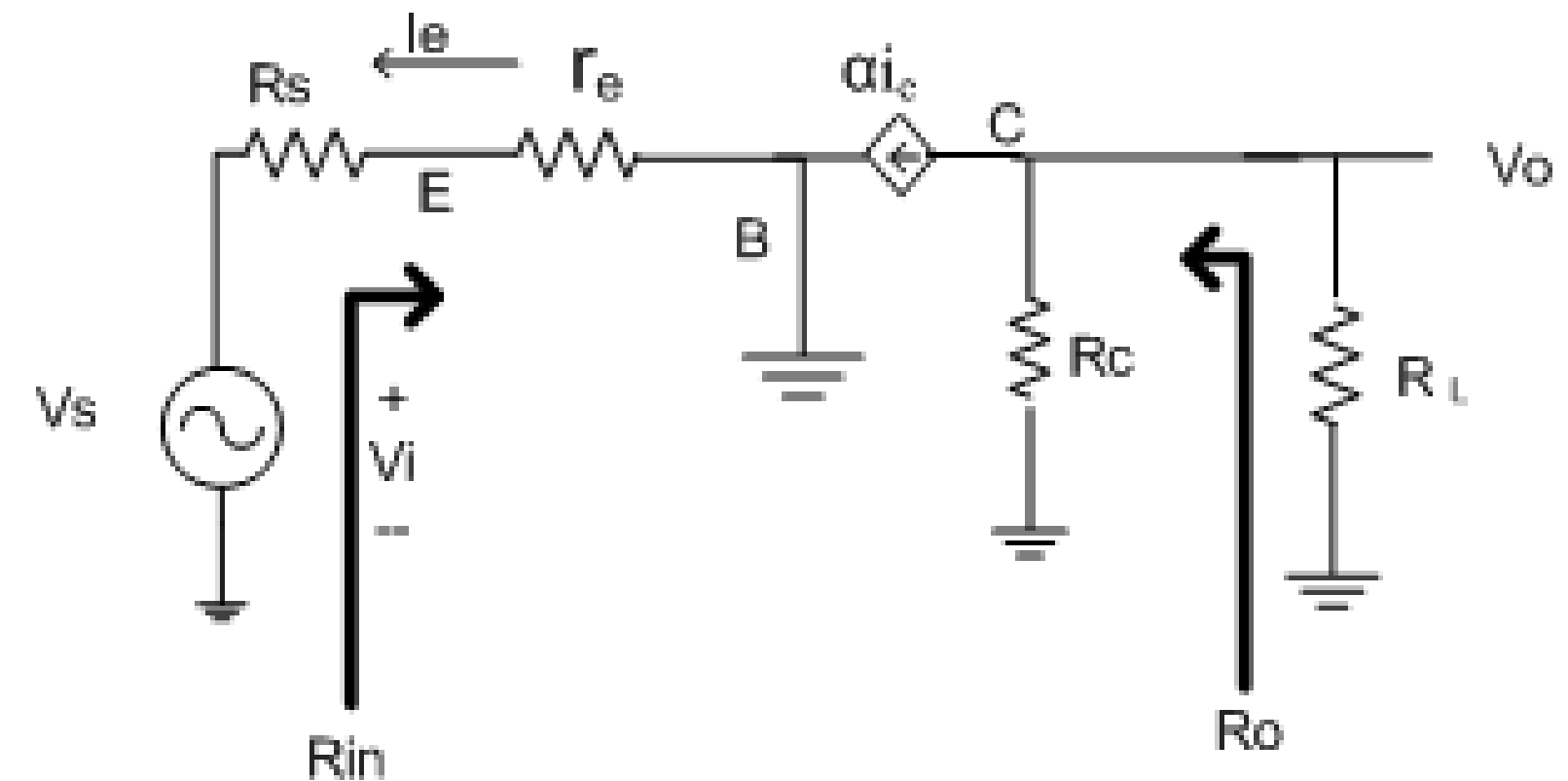
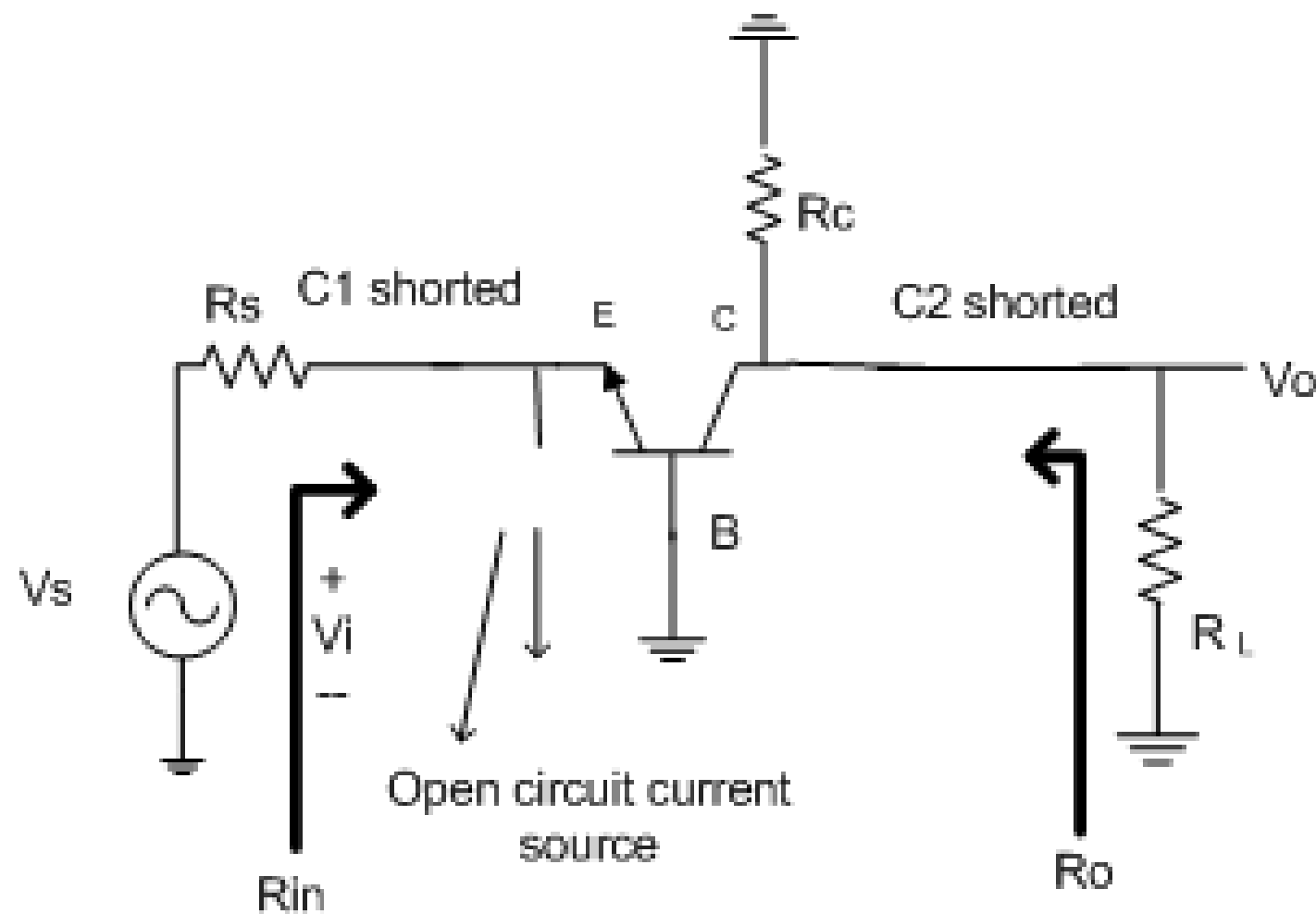




Small signal equivalent model



1. D C voltage sources are replaced by ground
2. D C current sources are open circuited
3. Capacitors are shorted





Parameters of CB model



(a) Input resistance (R_{in})

- Input resistance is got by looking into the input side of the circuit from the mark as given in fig. This is because R_S is taken as a source resistance and usually not consider for input resistance calculation of the circuit can be calculated by.

$$R_{in} = r_e$$

- CB amplifier has a low input resistance because the value of r_e is usually a few ohms to few tens of ohms.



Parameters of CB model



(b) Output resistance (R_0)

- Again to get the output resistance, look into the circuit from right side of arrow.

$$R_0 = R_c$$

(c) Voltage Gain (A_v):

$$A_v = \frac{V_0}{V_i}$$

$$V_i = -i_e r_e$$

$$V_0 = -\alpha i_e (R_c \parallel R_L)$$

$$A_v = \frac{\alpha (R_c \parallel R_L)}{r_e}$$



SUMMARY



ASSESSMENT

Dear student,

Quiz is posted in your Google class room

Allotted time for quiz is 5 min

No of Questions is 10





KEEP
LEARNING..
Thank u

SEE YOU IN NEXT CLASS