EE285 Electronics I

Please complete the following pre-lab before attending the lab on 8th November 2018. Make sure you have read through and bring the lecture notes.

PART 02 - ANALYSIS OE THE COMMON EMITTER AMPLIFIER

TRANSISTOR DATA: BC 109-NPN general purpose transistor. *(Please read the transistor datasheet for specifications)*

CIRCUIT DIAGRAM:

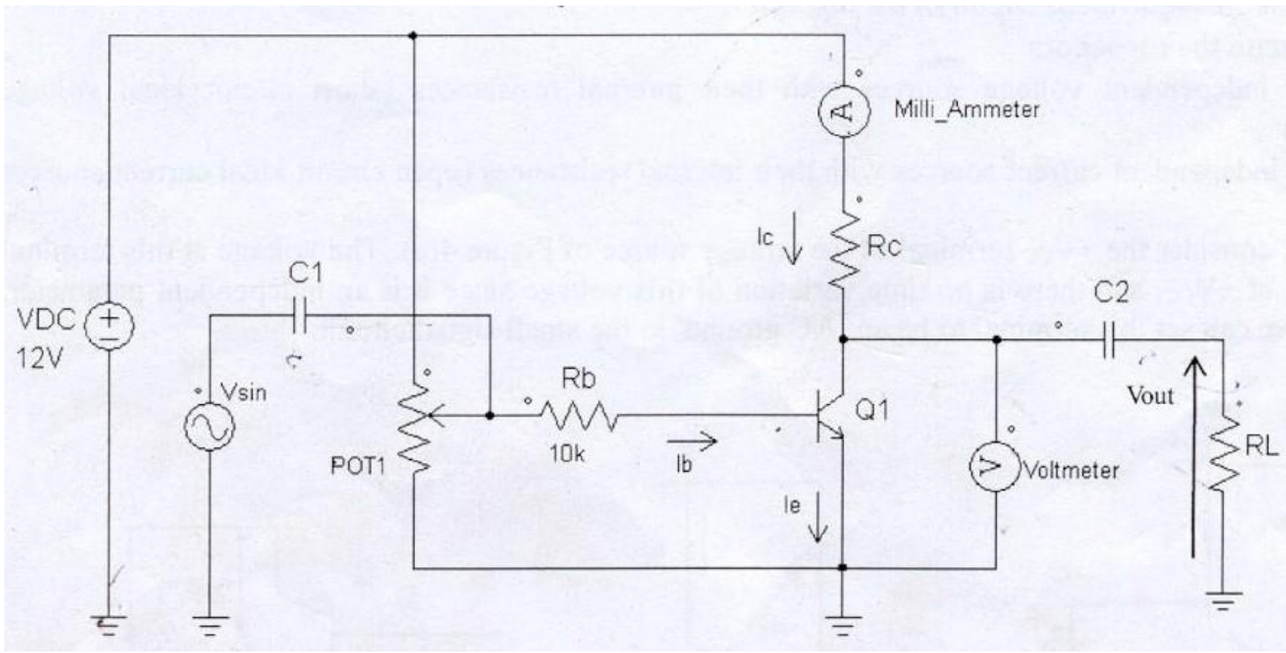

Figure 5 - Common Emitter Amplifier

PRE- CALCULATIONS:

1. Select your operating point as V_{CE} = 6V and I_C = 5mA for the circuit shown in Figure 5. Then calculate the value of R_C (Select a suitable resistor value for R_C from El 2 series).

2. Obtain an expression for I_C -V_{CE} relation and draw the DC load line.

3. Draw the AC equivalent circuit for the amplifier circuit with the load connected as shown in Figure 5. (*No need to draw the small signal model of the transistor*)

4. Obtain an expression for i_c - V_{ce} relation for the amplifier (*small signal relation*). Then draw the AC load line (Y*ou should draw DC and AC load lines on the same graph*). Also indicate the gradients of the two load lines.

   Note: the AC load line should pass though the Q-Point.