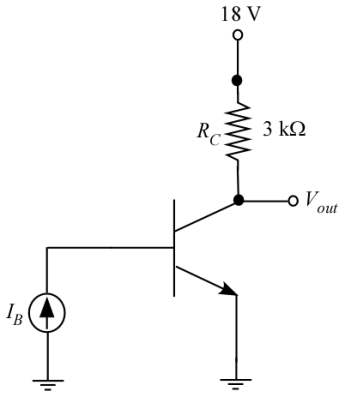
ECE 342: Electronic Circuits **Summer 2026**
Problem Set #6 **Due Date: 5pm, Tue, July 14, 2026**
1[C7.6], 2[C7.12]

1 Given that the BJT in the figure below has a value of $\beta = 150$, find the output voltage, including dc and ac components, when

(a) $I_B = (20 + 10 \sin \omega t)$ μA

(b) $I_B = (40 + 10 \sin \omega t)$ μA

Compare the ac output voltages in (a) and (b), and explain any differences.



2 The short-circuit ac current gain from base to collector is defined as

$$\beta = \frac{\Delta I_C}{\Delta I_B} \qquad \text{with } V_{CE} \text{ constant}$$

Taking ΔI_B as 10 μA, use the characteristics of the figure below to evaluate b at V_{CE}= +10 V and

(a) I_C = 1 mA

(b) I_C = 2 mA

(c) I_C = 3 mA

(d) I_C = 4 mA