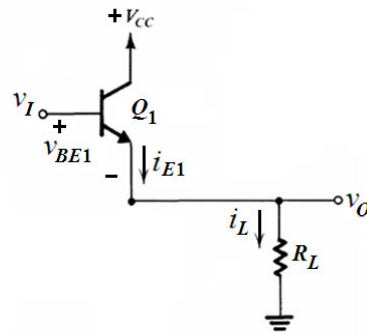


8.3) Review of Emitter Follower

8.3.1) Circuit diagram



- **Emitter follower circuit** is a Common Collector amplifier.

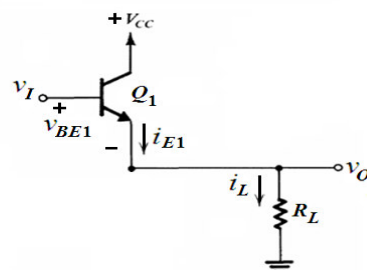
- The circuit has low output resistance.

Emitter follower – basic circuit

9

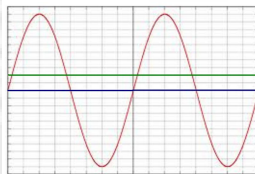
8.3) Review of Emitter Follower (Cont)

8.3.2) Input and output signals

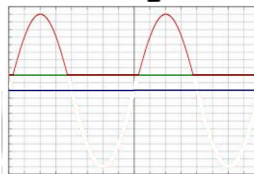


- An input signal, v_I as shown will produce an output signal, v_O as shown.

➔ Only signal that is above v_{BE1} will be available at v_O .



Input Signal, v_I



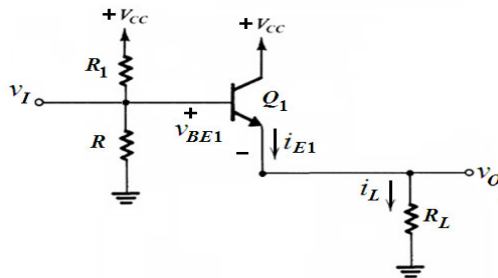
Output Signal, v_O

- If we want an output which is similar to the input, then need to modify the circuit with **appropriate biasing**.

10

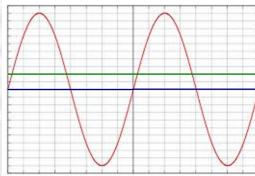
8.3) Review of Emitter Follower (Cont)

8.3.3) Bias with positive voltage at base

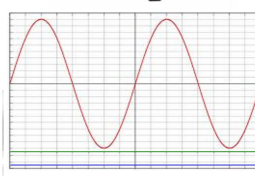


- By **voltage biasing at the base**, the input signal v_I is added with the bias voltage.

- This ensures that **voltage at the base of Q_1 is always above v_{BE1}** and this in turn will produce an output signal similar to the input signal.



Input Signal, v_I

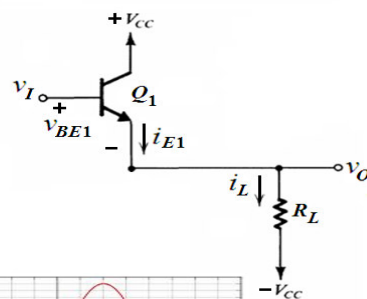


Input signal at base

11

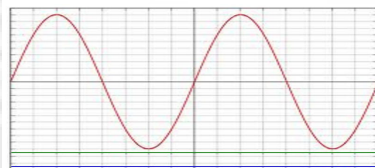
8.3) Review of Emitter Follower (Cont)

8.3.4) Lower voltage at emitter by connecting R_L to $-V_{CC}$



- **Voltage at the emitter** is lowered to a negative value equal to $-V_{CC} + i_L R_L$.

- This ensures that any **voltage at the base of Q_1 above $v_{BE1} - V_{CC} + i_L R_L$** will produce an output signal similar to the input signal.

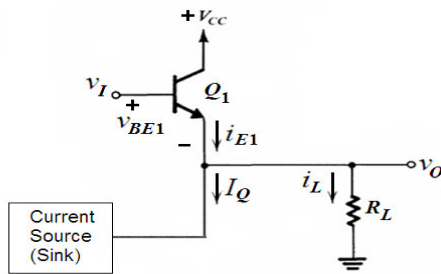


Input Signal, v_I compared to lower voltage at the emitter

12

8.3) Review of Emitter Follower (Cont)

8.3.5) Connect Current Source (Sink) to the emitter

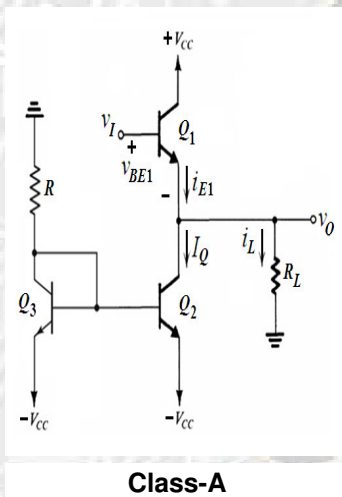


- Connecting the emitter to a current sinking CS **to enable negative current to flow** from the load helps lower the voltage at the emitter. **Enough** current sinking ensures that signal at the input will produce an output signal similar to the input signal.
- This circuit is a **Class-A output stage**.

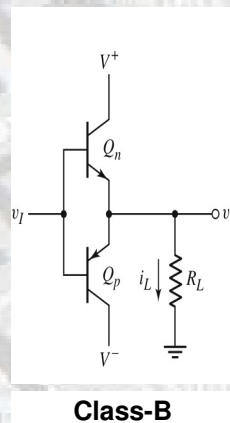
13

8.3) Review of Emitter Follower (Cont)

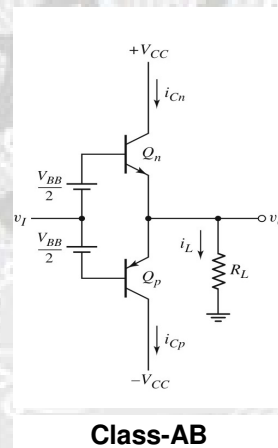
8.3.6) Emitter Follower in output stage circuits



Class-A



Class-B



Class-AB

14