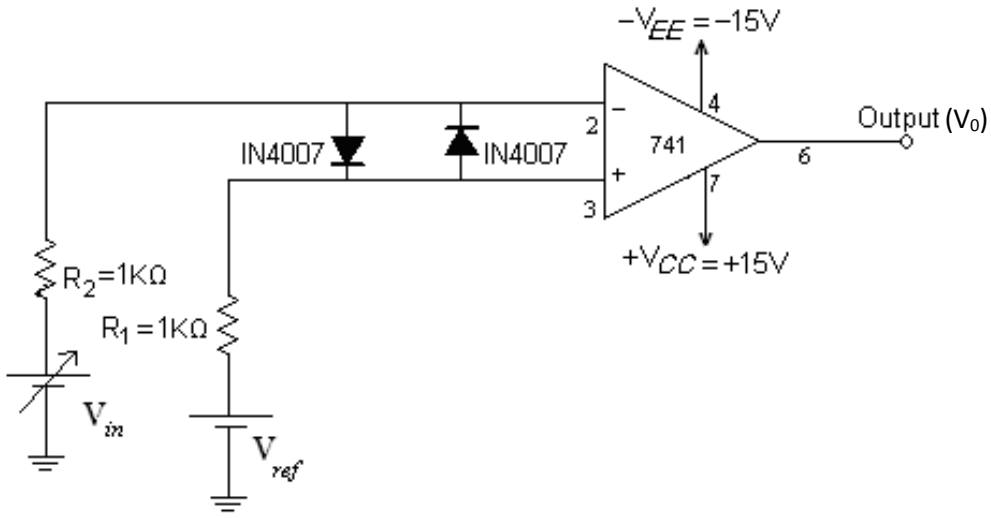
Answer on Question #77119, Physics -Electric Circuits:

Question: Design and draw a voltage comparator circuit using op-amp IC 741 to give $+V_{Sat}$ at the output if the input voltage is less than -3V and $-V_{Sat}$ for input more than −3V.

Solution:



Design: A fixed reference voltage V_{ref} and varying voltage V_{in} is applied as shown in Fig. Vary the input voltage above and below the V_{ref} and note down the output at pin 6 (V_0) of 741 IC.

Two Diodes IN 4007 are there for protection purpose.

Observe that, when V_{in} is less than V_{ref} = -3 V, Output voltage V_0 is $+V_{Sat}$ (= + V_{cc}).

And when V_{in} is greater than V_{ref} = -3 V, Output voltage V_0 is $-V_{Sat}$ (- V_{EE}).

Answer: Inverting comparator circuit.