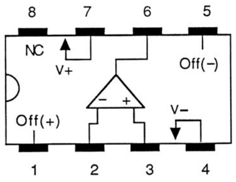

Figure 22.1 A single 741 type OpAmp

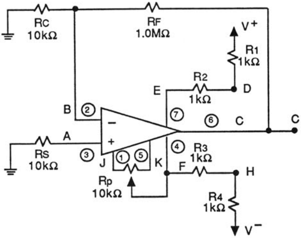

Figure 22.3 An Op-Amp Circuit for Supply-Voltage-Related Testing

E1.1 Input Bias Current

- power supplies is adjusted to ±20 V, and R_p set in the middle of its value (about 5k)
- Measure the voltages at C, D, E, F, H. Estimate the supply currents and input offset voltage.
- Now, while measuring node C, short R_S temporarily. Estimate the input bias current.

E2.1 Input Bias Voltage

- power supplies is adjusted to ±20 V, and R_p set in the middle of its value (about 5k)
- Measure the voltages V_{JK}, V_{JF}, V_{KF}.
- Now, measure the voltage at C, noting its value and then adjusting it to zero. Estimate input bias voltage.
- Now, remeasure V_{JK}, V_{JF}, V_{KF}.

E3.2 Current limiting

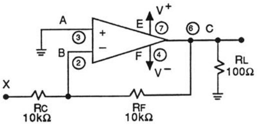

Figure 22.5 A Current-Limit Test Circuit

- power supplies is adjusted to ±10 V
- Measuring the voltage at node C with your DVM, join node X first to the negative, then to the positive supply. What limiting output voltages do you find at C?
- Then, with X negative, at −10V, lower V^+ slowly toward zero, until V_C lowers by 0.1V. Measure V^+. Return V^+ to +10V.
- Then, with X positive, at +10V, raise V^- slowly toward zero, until V_C raises by 0.1V. Measure V^-.

E3.3 Class-AB Operation

- Assemble circuit in figure 22.5 with Rc=100, RF=100, RL=100 and supplies +-15V
- With a triangular wave, initially of 0.2 Vpp amplitude at 1kHz at X, display the waveforms at nodes C
  Calculate the gain (Vc/Vx) ?

E3.4 Zero Crossing Effect

- Now, display the waveform at node E
- Now, raise the input signal, noting the waveform of the signal at node E change until it becomes triangular.