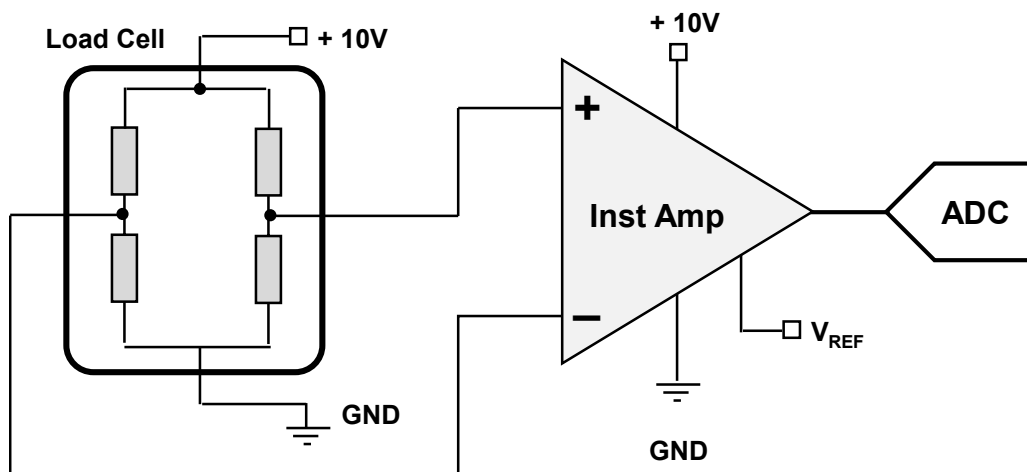


1 problem for 20 pts

Digital Weighing Scale

An application requires a digital weighing scale that can measure up to 100 kg with a sensitivity of 10 g. The only available components are the following:

- Load cell with $RO = 2.5 \text{ mV/V @ 200 kg}$ and $V_S = +10\text{V}$
- Instrumentation amplifier with $A_d = 500$ and $V_{REF} = 3\text{V}$
- ADC operating from 0 to +10V with 14 bits
- Measurement noise voltage = $0.2 \text{ mV}_{\text{RMS}}$.



- a) Does this system satisfy the maximum load specification? Show all work!
- b) Does this system satisfy the desired sensitivity? Show all work!

(extra sheet for work)