* 1. The SCR in Figure 1 below requires a 3 V trigger.  Using Multsim, design a system by which the gears are shifted when a CdS photocell resistance drops below 4k.

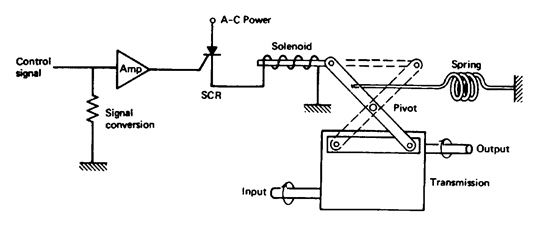


Figure 1

* 1. Using Multisim, design a system by which a control signal of 4 to 20 mA is converted into a force of 200 to 1000N.  Use a pneumatic actuator and specify the required diaphragm area if the pressure output is to be in the range of 20 to 100kPa.  An I/P converter is available that converts 0 to 5 V into 20 to 100 kPa.  A block diagraph of the system is shown below.  (Hint:  Use a differential amplifier.  You are only designing the circuit to interface into the I/P below)

