



The above diagram shows some of the parts in a design for a nightlight. When the room is dark enough, the voltage at A will drop to 0.5 volts. At this point, voltage should be applied to B, which will light the small lamp to provide a nightlight. The lamp's resistance is $15\ \Omega$, and is designed to operate at 15W. Design a circuit that will deliver 15W of power to B whenever the voltage at A is below 0.5 volts. The additional components must not use more than 2mW.