

RC Circuits Homework

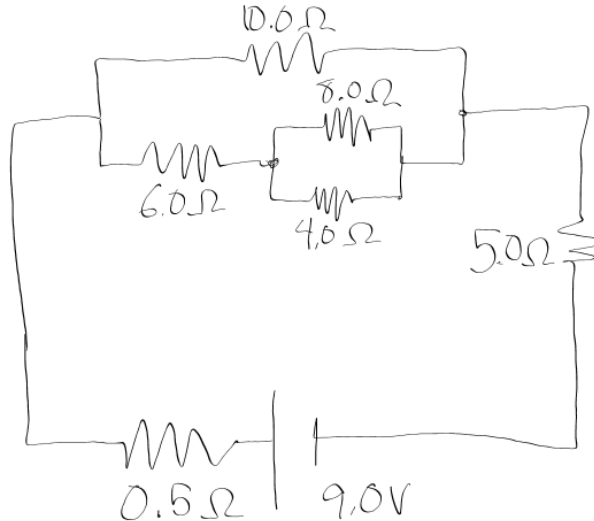
Physics

All problems taken from Physics, Giancoli, 2nd Ed. P. 437, #44, 45, 46

1. If the circuit below has a time constant of 3.0 s, what is the value of R? [1,000,000 Ohms]



2. Suppose a $4.0 \mu\text{F}$ capacitor were placed across the 6.0 Ohm resistor in the circuit below. Calculate the charge on the capacitor in its steady state (after the capacitor is fully charged). [11.4 μC]



3. A heart pacemaker is designed to operate at 70 beats/min using a $7.0 \mu\text{F}$ capacitor. What value of resistance should be used if the pacemaker is to fire when the voltage reaches 63% of maximum? [1.22e5 Ohms]