Physics 132 Name_____

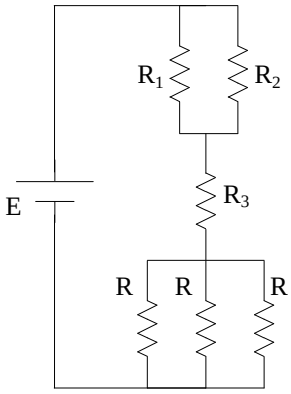
Recitation Instructor (circle one): Dick Jane Sally Pete Spot

QUIZ #5 **25 points, 18 minutes** SCORE_____

$\vec{E} = \rho\vec{j}$ $R = \rho L/A$ J = i/A $\vec{J} = (ne)\vec{v}_d$ $i = \frac{dq}{dt}$ V = iR e = 1.6 x 10^{-19} C

(1) [15 points]. In the circuit given in the figure:
E = 100 V, R_1 = 100 Ω, R_2 = 100 Ω, R_3 = 400 Ω, and R = 600 Ω.

- Find i = the current supplied by the battery.
- V_3 = the voltage across R_3.
- i_1 = the current through R_1.



(2) [10 points]. A conductor is in the shape of a cylinder of length 5.0 mm and radius 1.0 mm. A current is flowing through it with current density magnitude 5.0 x 10^5 A/m^2. The conductor has resistivity 3.0 x 10^{-2} Ωm. What is the voltage across the conductor?