Answer on Question #76699, Physics / Electric Circuits

Two concentric thin metallic spheres having radii 30 cm and 20 cm carry 10 μC and 5 μC, charges respectively. Calculate the electric potential at a distance of 25 cm from the center of the spheres

Answer:

Potential inside of the sphere is: $\varphi_{inside} = \frac{kq}{R_{sphere}}$

Potential outside of the sphere is: $\varphi_{inside} = \frac{kq}{r}$

At a distance of 25 cm:$\varphi = \varphi_1 + \varphi_2 = \frac{kq_1}{R_1} + \frac{kq_2}{r_2}$

$$\varphi = \frac{kq_1}{R_1} + \frac{kq_2}{r_2} = \frac{9 * 10^9 * 10 * 10^{-6}}{0.3} + \frac{9 * 10^9 * 5 * 10^{-6}}{0.25} = 4.8 * 10^5 V = 480kV$$

Answer: 480kV

Answer provided by https://www.AssignmentExpert.com