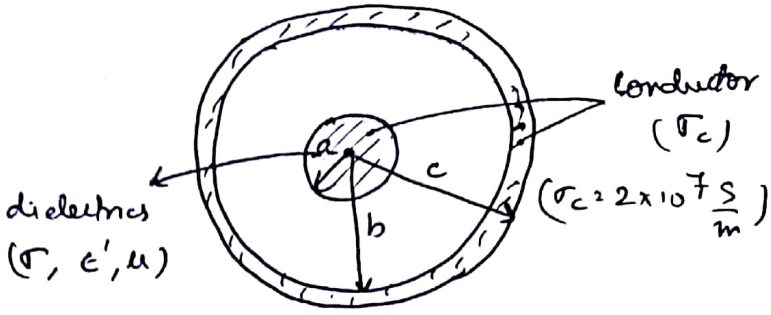
Solution

$$L_{ext} = \frac{\mu}{2\pi} \ln\left(\frac{b}{a}\right)$$



Putting values

$$L = 0.295 \frac{\mu H}{m}$$

$a = 4mm$

$b = 17.5mm$

$c = 20mm$

$\epsilon_R' = 3$; $\mu_R = 1$; $\frac{\sigma}{\omega\epsilon'} = 0.025$

$$C = \frac{2\pi\epsilon'}{\ln(b/a)}$$

$$C = 113.1 \, pF/m$$

$$G = \frac{2\pi\sigma}{\ln(b/a)}$$

$$\sigma = 0.025 \times 2\pi \times 150\times10^6 \times \epsilon'$$

$$= 6.255\times10^{-4} \frac{S}{m}$$

$$\therefore G = 2.66\times10^{-3} \frac{S}{m}$$

$$R = \frac{1}{2\pi\delta\sigma_c}\left[\frac{1}{a} + \frac{1}{b}\right]$$

$$\delta = \frac{1}{\sqrt{\pi f \mu \sigma}} = 9.188\times10^{-6} \, m$$

$$\therefore R = 0.266 \frac{\Omega}{m}$$

For further reference please refer page no. 444 of William Hayt.