

Asg 1 Q.4

speed of light ($3 \times 10^8 \text{ m/s}$) $\rightarrow \frac{c}{\sqrt{\epsilon_r}} = \frac{1}{\sqrt{LC}}$ \leftarrow not given

$$Z_0 = \sqrt{\frac{L}{C}}$$

$$\frac{c}{\sqrt{\epsilon_r}} \cdot Z_0 = \frac{1}{\sqrt{LC}} \cdot \sqrt{\frac{L}{C}} = \sqrt{\frac{1}{c^2}} = \frac{1}{c}$$

$$C = \frac{\sqrt{\epsilon_r}}{c Z_0} \text{ F/m} \quad Z_0 = 80 \Omega$$

$$\epsilon_r = 2.2$$

$$c = 3 \times 10^8 \text{ m/s}$$

$$C = 6.2 \times 10^{-11} \\ = 62 \text{ pF/m}$$

Q: find inductance per meter.