01:07

QUESTION

What is the propagation time if the distance between the two points is 12,000 km? Assume the propagation speed to be 2.4×10^8 m/s in cable.

Given

Distance = 12000 Km

Propagation speed = 2.4×10^8 m/s

To Find

Propagation Time

03:11

SOLUTION

$$\text{Propagation Time} = \frac{\text{Distance}}{\text{Propagation speed}}$$

$$\text{Propagation Time} = \frac{12000 \times 1000}{2.4 \times 10^8} \text{ sec}$$

$$\text{Propagation Time} = \frac{5000 \times 1000}{10^8} \text{ sec}$$

$$\text{Propagation Time} = \frac{5000 \times 1000}{10^8} \times \frac{10^{-3}}{10^{-3}} \text{ sec}$$

$$\text{Propagation Time} = \frac{5000 \times 1000}{10^8} \times \frac{1}{10^{-3}} \text{ millisec}$$

$$\text{Propagation Time} = \frac{5000 \times 1000}{10^8} \times \frac{10^3}{1} \text{ millisec}$$

$$\text{Propagation Time} = \frac{50 \times 100 \times 1000}{10^8} \times \frac{10^3}{1} \text{ millisec}$$

Propagation Time = 50 millisec OR 50 ms