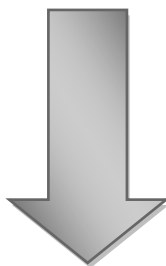


Problem-solving Example 2

An FM radio station transmits its signal at 122.5 MHz. What is the wavelength of the signal?

Solution

Solution :

$$\nu = (122.5 \text{ MHz} \times \frac{10^6 \text{ Hz}}{1 \text{ MHz}})$$

$$= 1.23 \times 10^8 \text{ Hz}$$

$$c = 2.998 \times 10^8 \text{ ms}^{-1}$$

$$\lambda = ? \text{ m}$$

$$c = \lambda \nu \text{ or } \lambda = \frac{c}{\nu} = \frac{2.998 \times 10^8 \text{ ms}^{-1}}{1.23 \times 10^8 \text{ Hz}} = 2.437 \text{ m}$$

$$\therefore \lambda = 2.437 \times 10^9 \text{ nm (Ans)}$$

Remember !
 $1 \text{ Hz} = 1 \text{ s}^{-1}$
↑
Hertz

$1 \text{ MHz} = 10^6 \text{ Hz}$