NCERT 11.15. Q10

EE23BTECH11052 - Abhilash Rapolu *

Question: A radio can tune in to any station in the 7.5 MHz to 12 MHz band. What is the corresponding wavelength band? **Solution:** The wavelength (λ) of a radio wave is inversely proportional to its frequency (f).

Parameter	Value
f_{max}	$12MhZ$
f_{min}	$7.5MhZ$

TABLE 1
GIVEN PARAMETERS LIST

$$\lambda = c/f$$

$$\lambda_{max} = c/f_{min}$$

$$\lambda_{max} = (3 \times 10^8)/(7.5 \times 10^6) = 40 \quad (1)$$

For 12MHz:

$$\lambda_{min} = c/f(max)$$

$$\lambda_{min} = (3 \times 10^8)/(12 \times 10^6) = 25 \quad (2)$$

Therefore, the radio can tune in to wavelengths ranging from 25 meters to 40 meters.