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EE23BTECH11052

ASSIGNMENT 1

January 9, 2024

Question 12.8.5

A radio can tune in to any station in the 7.5 MHz to 12 MHz band. What is the corresponding wavelength band?

Solution:

Given:

f_{min}	7.5MHz
f_{max}	12MHz

The wavelength (lambda) of a radio wave is inversely proportional to its frequency (f).

$$lambda = c/f$$

$$lambda(max) = c/f(min)$$

$$lambda(max) = (3 * 10^8)/(7.5 * 10^6) = 40 \tag{1}$$

For 12MHz:

$$lambda(min) = c/f(max)$$

$$lambda(min) = (3 * 10^8)/(12 * 10^6) = 25 \tag{2}$$

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