Answer on Question#38196 – Physics – Other

Two waves y1 = A cos(0.5 πx − 100 πt)
and y2 = A cos(0.46 πx − 92 πt) are travelling in a pipe placed along x-axis. Find the number of times intensity is maximum in time interval of 1 sec.
a)4   b)6   c)8   d)10

Solution:

Frequency for the first and second wave:

$$f_1 = \frac{100\pi}{2\pi} = 50\text{Hz}; \quad f_2 = \frac{92\pi}{2\pi} = 46\text{ Hz}$$

Number of times intensity of maximum in time interval of 1 sec:

$$N = (f_1 - f_2) \cdot 1\text{sec} = (50\text{Hz} - 46\text{ Hz}) \cdot 1\text{sec} = 4$$

Answer: a) 4.