Assignment

12.8 - 6

EE23BTECH11034 - Prabhat Kukunuri

Question

A charged particle oscillates about its mean equilibrium position with a frequency of $10^9 Hz$. What is the frequency of the electromagnetic waves produced by the oscillator?

Solution

An oscillating charged particle in space produces electromagnetic waves. The frequency of the generated electromagnetic waves is equal to the frequency of the oscillating charged particle.

$$f = f_{osc} \tag{1}$$

The oscillating frequency of charged particle is $10^9 Hz$

$$f = 10^9 Hz \tag{2}$$

The frequency of the electromagnetic waves produced by the oscillator is $10^9 Hz$.

Symbol	Value	Description
y	$\cos(2f_c\pi t)$	amplitude of electromagnetic wave
f_c	10^9	frequency of electromagnetic wave
t	seconds	used to observe the nature amplitude

TABLE 0
Variable description

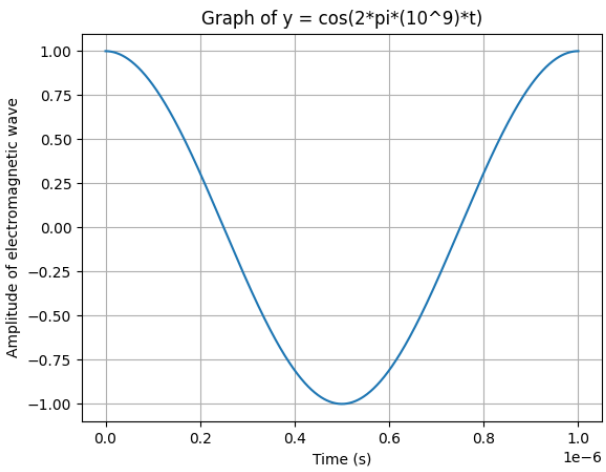

Fig. 0. Amplitude *vs* Time