Lecture 22

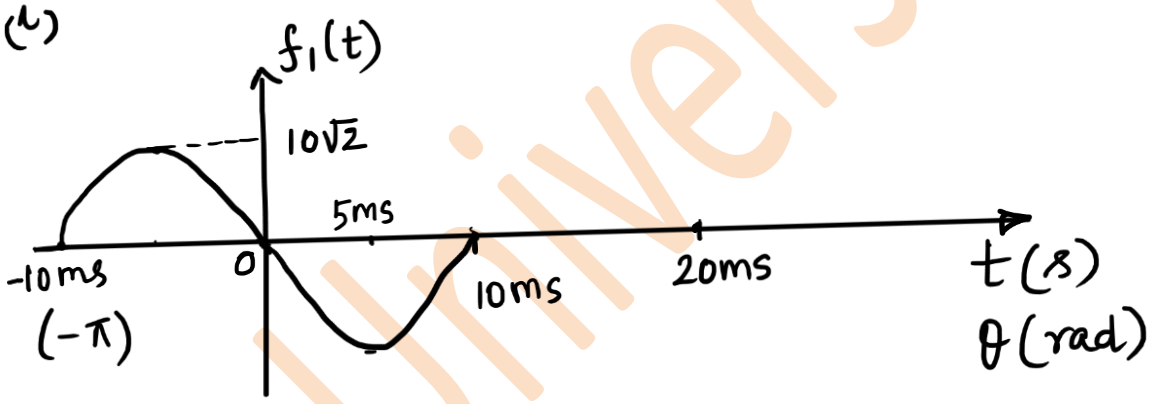
1.Deduce the instantaneous expressions for the following sinusoidal waves

(i) Wave with 50 Hz frequency, with rms value of 10 units, reaching its negative maximum at 5th ms.

(ii) Wave with 50 Hz frequency, with maximum value of 6 units, reaching its positive maximum at 10th ms. Comment on the phase relation of the above two waves

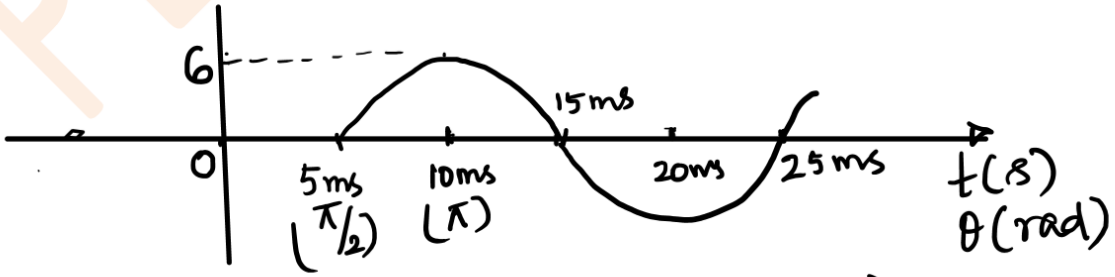
Solution:

(i)



$$f_1(t) = 10\sqrt{2}\sin(100\pi t + \pi)$$

(ii)



$$f_2(t) = 6\sin(100\pi t - \pi/2)$$

$\Rightarrow$ f_1 leads f_2 by $\frac{3\pi}{2}$ rad