

$$3-1) i = 8 \cos(2\pi \times 10^6 t - 0.025x)$$

①

a) Direction of Propagation  
Positive Propagation

b) Peak Value

$$I_p = 8$$

c) Angular frequency.

$$\omega = 2\pi \times 10^6 \text{ rad/s}$$

d) Phase constant

$$\beta = 0.025$$

e) cyclic frequency

$$f = \frac{\omega}{2\pi} = \frac{2\pi \times 10^6}{2\pi} = 1 \text{ MHz}$$

f) Period

$$T = \frac{1}{f} = \frac{1}{1 \times 10^6} = 1 \mu\text{s}$$

g) Velocity of Propagation.

$$v = \frac{\omega}{\beta} = \frac{2\pi \times 10^6}{0.025} = 2.5 \times 10^8 \text{ m/s}$$

3-2).

$$v = 15 \cos(10^8 t + 0.35x)$$

a) Direction of Propagation

negative Propagation

b) Peak Value

$$V_p = 15 \text{ V.}$$

Fernando Hernandez  
Chapter #3

c) Angular frequency.

$$\omega = 10^8 \text{ rad/s}$$

d) Phase constant

$$B = 0.35$$

e) cyclic frequency.

$$f = \frac{\omega}{2\pi} = \frac{10^8}{2\pi} = 15.9 \times 10^6 = 15.9 \text{ MHz}$$

f) Period

$$T = \frac{1}{f} = \frac{1}{15.9 \times 10^6} = 62.8 \text{ ns}$$

g) wavelength

$$\lambda = \frac{2\pi}{B} = \frac{2\pi}{0.35} = 17.9 \text{ m}$$

h) velocity of propagation.

$$v = \frac{\omega}{B} = \frac{10^8}{0.35} = 2.8 \times 10^8 \text{ m/s}$$

3-?? sinusoidal current.

$$\rightarrow I_p = 2 \text{ A}; f = 50 \text{ MHz}$$

$\rightarrow$  Positive Propagation

$$\rightarrow v = 2 \times 10^8 \text{ m/s}$$

a) Period

$$T = \frac{1}{f} = \frac{1}{50 \times 10^6} = 20 \text{ ns}$$

b) angular frequency.

$$\omega = 2\pi f = 2\pi(50 \times 10^6) = 100\pi \times 10^6$$

