

In vacuum, which color of light travels with the highest speed?

(a) red

(b) green

(c) blue

(d) x-rays

(e) they are all the same.

Given the plane waves described by:

$$E_x(z,t) = E_{\max} \cos(kz - \omega t)$$

$$B_y(z,t) = B_{\max} \cos(kz - \omega t)$$

In which direction does energy flow?

a) There is no energy flow

b) x

c) y

d) -y

e) z

The Intensity of an EM wave is:

- a) the average energy in a wave
- b) the instantaneous energy in a wave
- c) the average momentum flowing through a unit area per unit time
- d) the average energy flowing through a unit area per unit time

If an EM wave has electric field

$$E_y(x,t) = E_{\max} \cos(kx + \omega t)$$

What is the B field?

(a) $B_x(x,t) = B_{\max} \cos(kx - \omega t)$

(b) $B_y(x,t) = B_{\max} \cos(kx - \omega t)$

(c) $B_z(x,t) = -B_{\max} \cos(kx + \omega t)$

(d) $B_z(x,t) = B_{\max} \cos(kx + \omega t)$

For the reflected wave shown on the board, what direction does the Poynting vector point at A?

a) $-\hat{i}$

b) \hat{i}

c) \hat{k}

d) It depends

In a material with index of refraction $n > 1$, the wavelength is :

a) the same as in vacuum

b) greater than in vacuum

c) less than in vacuum