Assignment 3

1. Two waves $E_z = 4\sin(ky - \omega t)$ and $E_x = 3\sin(ky - \omega t)$ overlap in space. Describe completely the state of polarization.

2. Describe completely the state of polarization of each of the following waves

(a). $\vec{E} = \hat{\imath}E_0\cos(kz - \omega t) - \hat{\jmath}E_0\cos(kz - \omega t)$

(b). $\vec{E} = \hat{\imath}E_0\sin(\omega t - kz) - \hat{\jmath}E_0\sin(\omega t - kz - \pi/4)$

(c). $\vec{E} = \hat{\imath}E_0\sin(kz - \omega t) - \hat{\jmath}E_0\cos(kz - \omega t)$

3. Consider the disturbance given by the expression. $\vec{E}(z,t) = [\hat{\imath}\cos\omega t + \hat{\jmath}\cos(\omega t - \pi/2)]\,\mathrm{E}_0\sin kz$. What kind of wave is it ?

4. If natural light of flux density I_i passes through two sheets of HN-38 whose transmission axes are parallel, what will be the flux density of the emerging beam ?

5. A polaroid is introduced in the path of the beam and polaroid is rotated about the direction of propagation of the beam. If there is no variation in intensity. What would be the states of the wave.