**EEE361**

**ASSIGNMENT**

**SET-6**

1. An expression for an electric field is given below

ay V/m

Is incident on a dielectric slab (Z ≥ 0) 5.5With µr = 1.0 and εr = 2.5 Find:

1. The polarization of the wave
2. The angle of incidence
3. The reflected E and H field
4. The transmitted E and H field

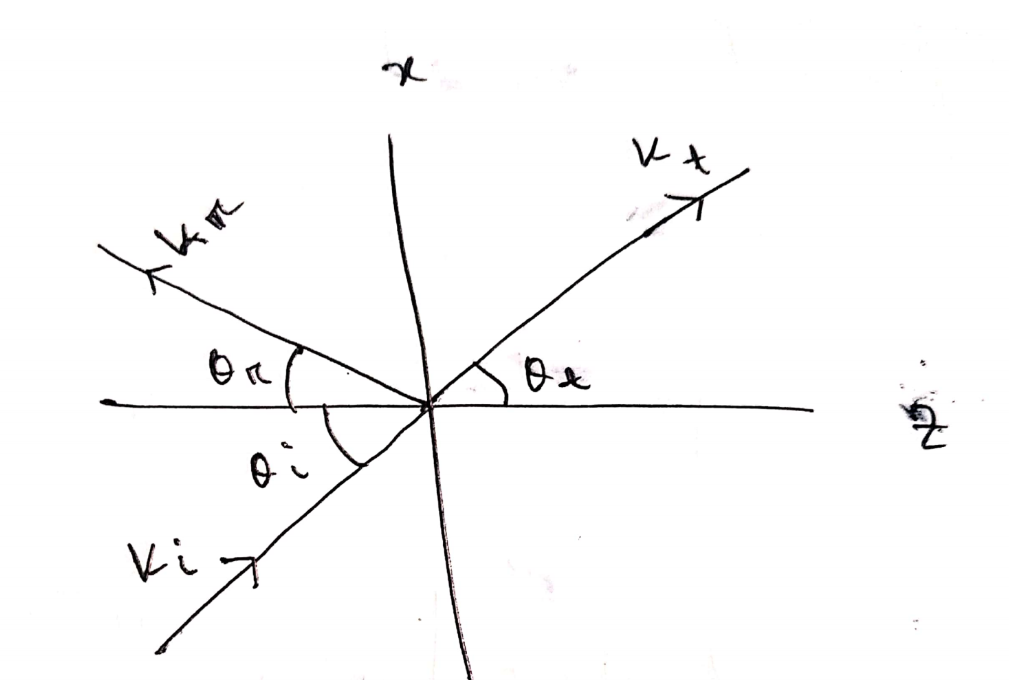


Fig: Problem 1

1. Suppose **E** fields and **H** fields are:

k = kxax + kyay + kzaz and r = xax+yay+zaz

Show that can be expressed as K E = and deduce ak aE = aH

For the same fields:

Show that Maxwell’s equation in a source-free region can be written as

k.E = 0

k.h=0

k E =

k H =

From these equations deduce ak aE = aH and ak aH = aE

1. a. let and calculate the divergence and curl of F1 and F2. Which one can be written as the gradient of a scalar? Find a scalar potential that does the job.

Which one can be written as the curl of a vector? Find a suitable vector potential.

b. Show that can be written both as the gradient of a scalar and as the curl of a vector. Find scalar and vector potentials for this function.

1. For time varying fields: Find which if the following equations are not satisfy Maxwell’s Equation. Also state why the expression/s don’t satisfy Maxwell’s Equation? (Show Calculation)
2. In free space ay V/m, Find:
3. Jd
4. H