Quiz 6

1

A uniform plane wave with $\boldsymbol{E} = \boldsymbol{a_x} E_x$ propagates in a lossless simple medium ($\epsilon_r = 4, \mu_r = 1, \sigma = 0$) in the $+z$-direction. Assume that $\boldsymbol{E_x}$ is sinusoidal with a frequency 100 (MHz) and has a maximum value of $+10^{-4}(V/m)$ at $t = 0$ and $z = \frac{1}{8}(m)$.

a) Write the instantaneous expression for $\boldsymbol{E}$ for any t and z.

b) Write the instantaneous expression for $\boldsymbol{H}$.

c) Determine the locations where E_x is a positive maximum when $t = 10^{-8}(s)$

2

For the assumed $f(t)$ at $R = 0$ in Fig 1, sketch

a) $f(t - R/u)$ versus t.

b) $f(t - R/u)$ versus R for $t > T$.

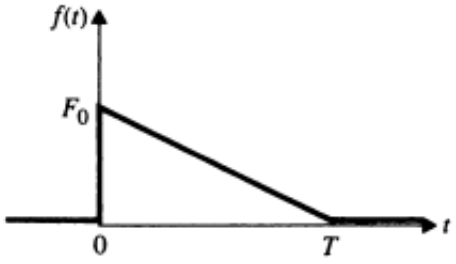

Figure 1: Figure for question 2