## ECE 357S Waves on Transmission Lines - Laboratory Worksheet

**Section A:** Value of  $Z_o =$ 

Section B: Generator Voltage  $V_g = V_l(t,0) = R_{series} = Z_o =$ 

Section C: Refer to the figure below;



1. Plot *V* vs. *t* at *C*, *D*, *E*, *F* for  $R_L = 50\Omega$ .

2. Plot *V* vs. *z* for pertinent values of *t* (complete at home).

Section D: Complete the following table;

z (m)	t (s)	U(m/s)
C		
D		
E		
F		

Average v =

Dielectric Constant of the insulating medium ( $\varepsilon$ ) =

## Section E: Complete the following table;

$R_L(\Omega)$	$\Gamma_L(meas) = V_{reflect}/V_{incident}$	$\Gamma_L$ (calculated)
$0 \ \Omega$		Complete at home
20 Q		Complete at home
100 Q		Complete at home
$\infty$		Complete at home

- 1. Plot *V* vs. *t* at *C* for  $R_L = 0 \Omega$ , 20  $\Omega$ , 100  $\Omega$  and  $\infty$
- 2. Plot *V* vs. *t* at *F* for  $R_L = 20 \Omega$ , 100  $\Omega$  and  $\infty$
- 3. Plot *V* vs. *t* at *C*, *D*, *E*, and *F* for  $R_L = 20 \Omega$ .
- 4. Plot *V* vs. *z* for pertinent values of *t* for  $R_L = 20 \Omega$  (complete at home).

Section F: Plot *V* vs. *t* at *C*, *D*, *E*, and *F* (complete at home).

## Section G:

Complete the following table with the line terminated in a short circuit:

	0		
Frequency (MHz)	Length $(\lambda)$	$V_1$	$V_g$

Complete the following table with the line terminated in a 0.01  $\mu$ f capacitor:

Frequency (MHz)	Length $(\lambda)$	$V_1$	$V_g$



Figure 2. Transmission Line Test Set