

ET-444  
Quiz 2 Spring 2022X

1. A certain coaxial cable has inductance of  $L = \frac{125nH}{ft}$  and capacitance of  $C = \frac{175pF}{ft}$ ;

find the characteristic impedance:  $Z_0$ :

2. What is a waveguide?

3. A transmission line has a length  $l = 7m$ , a propagation speed of  $s = .75c$  and must carry a signal of  $f = 150MHz$ ; find the electrical length (*e.l.*) of this line.

4. A transmission line has impedance of  $Z_0 = 50\Omega$  and is connected to an antenna with impedance of  $Z_L = 150\Omega$ ; find the standing wave ratio (*SWR*).

5. What is meant by standing wave ratio (SWR?)

6. A television transmitter antenna is located on a tall building 2000 ft above ground and a receiver antenna is located on the roof of a house, 25 ft above the ground, how far will the signal travel?

7. What is meant when we say that an antenna has a "gain" of +20 dB?

8. Which antenna has the highest gain and the narrowest beam width?

9. An audio signal of 15 kHz must be converted to digital; what is the Nyquist sampling rate needed?

11. A dish antenna must receive a signal of 600MHz:

a) What is the wavelength of this signal?

b) What is the diameter of this antenna?

10. A Yagi antenna must receive a signal of 300 MHz; find the following information:

a) the wavelength of this signal:

b) the length of the driven element: