

COSE 483-00

# Homework 3

김상준

2016320256

Date

No.

$$1. P_{avg} = \frac{1}{2} \frac{|V_o r|^2}{Z_o} (1 - |r|^2)$$

$$r = \frac{Z_L - Z_o}{Z_L + Z_o} = \frac{130 + j90 - 50}{130 + j90 + 50}$$

$$= \frac{80 + j90}{180 + j90}$$

$$= \frac{20.416 \angle 41.63^\circ}{201.2966 \angle 63.43^\circ}$$

$$= 0.598 \angle 21.8^\circ = 0.56 + j0.22$$

$$P_{inc} = \frac{1}{2} \operatorname{Re}[V_o r^* (I_o r)] = 1 = \frac{1}{2} \frac{|V_o|^2}{Z_o} - 1$$

$$\frac{|V_o|^2}{Z_o} = 2$$

$$|V_o|^2 = 100$$

$$P_{avg} = \frac{1}{2} \frac{|V_o|^2}{Z_o} (1 - |r|^2)$$

$$= \frac{1}{2} \frac{100}{50} (1 - |r|^2)$$

$$= (P_{inc}) (1 - |r|^2)$$

$$= 1 - |r|^2$$

$$= 1 - 0.598^2$$

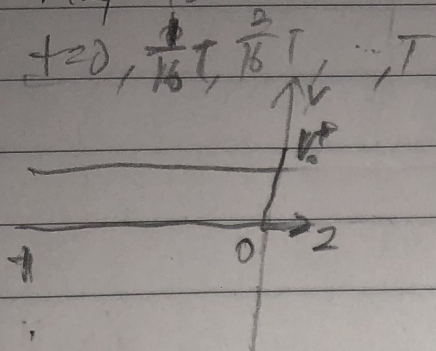
$$= 1 - 0.358$$

$$= 0.642 \text{ W}$$



$$2. V(z) = V_0 e^{-j\beta z}$$

$$V(z) = V_0 e^{-j\beta z}$$



$$3. V(z) = |V_0| (1 + \Gamma e^{2j\beta z})$$

$$= |V_0| (1 + 0.2 e^{2j\beta z})$$

$$|V(z)|_{max} = |V(z)| (1 + |\Gamma_L|)$$

$$= |V(z)| (1.2)$$

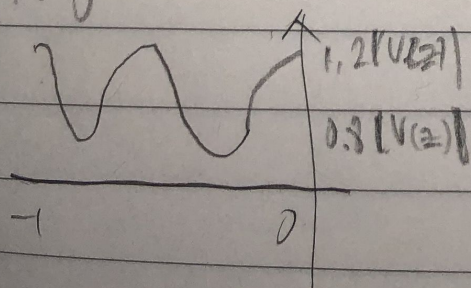
$$= 1.2 |V(z)|$$

$$|V(z)|_{min} = |V(z)| (1 - |\Gamma_L|)$$

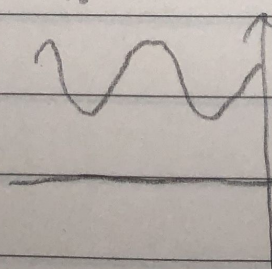
$$= |V(z)| (0.8)$$

$$= 0.8 |V(z)|$$

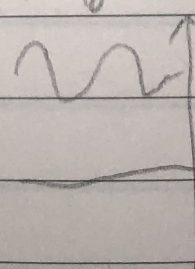
$$t=0$$



$$t = \frac{1}{6}T$$



$$t = \frac{2}{6}T$$



$$t = \frac{3}{6}T$$

