Assignment 8

Due on 2021-01-17, 23:59 EST

1. Identify the type of coupling indicated by the type.

2. In a linear system, what is the input impedance?
   - \( Z_{in} \)
   - \( Z_{out} \)
   - \( Z_{v} \)
   - \( Z_{w} \)

3. What is the simplest matching condition for coupling using a quarter-wavelength transformer?
   - \( Z_{in} = Z_{out} \)
   - \( Z_{in} = 0 \)
   - \( Z_{out} = 0 \)
   - \( Z_{in} = \frac{Z_{out}}{2} \)

4. What is the output impedance of a perfect transformer?
   - \( Z_{out} \)
   - \( Z_{in} \)
   - \( Z_{v} \)
   - \( Z_{w} \)

5. Which of the following is correct for a perfect transformer?
   - \( Z_{in} = Z_{out} \)
   - \( Z_{in} = 0 \)
   - \( Z_{out} = 0 \)
   - \( Z_{in} = \frac{Z_{out}}{2} \)

6. What is the power efficiency of a transformer?
   - \( \eta = \frac{P_{out}}{P_{in}} \)
   - \( \eta = \frac{P_{in}}{P_{out}} \)
   - \( \eta = \frac{P_{out}^2}{P_{in}^2} \)
   - \( \eta = \frac{P_{in}^2}{P_{out}^2} \)

7. What is the relation between coupling coefficient and transmission coefficient?
   - \( k = \sqrt{T} \)
   - \( T = k^2 \)
   - \( k = \frac{T}{1-T} \)
   - \( T = \frac{k^2}{1-k^2} \)