



$$I_1 = \frac{V_s}{5 + Z_2} = \frac{V_s}{6 + 2j}$$

①  $S_1 = \frac{1}{2} V_s \cdot I_1^*$  (SUPPLIED!)  $V_s \uparrow I_1$

$$= \frac{1}{2} V_s \frac{V_s^*}{6-2j} = \frac{|V_s|^2}{2} \cdot \frac{6+2j}{40} = \frac{100 \cdot 2}{2} \cdot \frac{(6+2j)}{40} \quad P_1 = \text{Re}[S_1]$$

$$\boxed{P_1 = 15 \text{ W}}$$

②  $S_2 = \frac{1}{2} V_1 I_1^* = \frac{1}{2} \cdot Z_{5\Omega} \cdot I_1 \cdot I_1^* = \frac{1}{2} Z_{5\Omega} |I_1|^2$

$$S_2 = \frac{1}{2} \cdot 5 \cdot \frac{|V_s|^2}{|6+2j|^2} = \frac{5}{2} \cdot \frac{100 \cdot 2}{40} = 12.5$$

$$\boxed{P_2 = 12.5 \text{ W}}$$

③  $I_2 = I_1 \cdot \frac{2j}{2j + Z_1} = I_1 \cdot \frac{2j}{2j + 4 - 2j} = I_1 \cdot \frac{2j}{4} = I_1 \cdot \frac{j}{2}$

$$S_3 = \frac{1}{2} Z_{4\Omega} |I_2|^2 = \frac{1}{2} \cdot 4 \cdot |I_1|^2 \cdot \frac{|j|^2}{4} = \frac{|I_1|^2}{2} = \frac{1}{2} \cdot \frac{|V_s|^2}{|6+2j|^2}$$

$$= \frac{1}{2} \cdot \frac{100 \cdot 2}{40} = 2.5$$

$$\boxed{P_3 = 2.5 \text{ W}}$$

WE KNOW A CAPACITOR AND INDUCTOR ONLY  
HAVE REACTIVE POWER  $\Rightarrow \boxed{P_4 = P_5 = 0}$

CHECK:  $P_{\text{REC.}} = P_{\text{SUPPLIED}} \Rightarrow 12.5 + 2.5 = 15 \quad \underline{\text{OK}}$