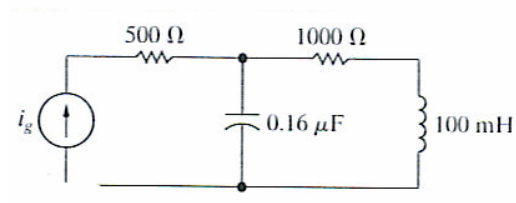


**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS**  
**ELECTRICAL ENGINEERING DEPARTMENT**  
**EE-201 ELECTRIC CIRCUITS**  
**Dr. Ibrahim O. Habiballah**

Sec: 9    Quiz # 8    Ser. #    Name:

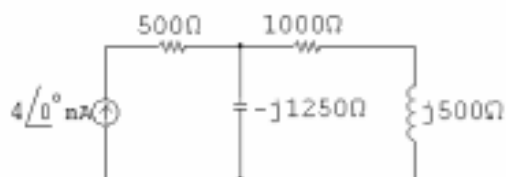
I.D.#

Find the average power delivered by the current source;  $i_g(t) = 4\cos 5000t$  mA.



**Solution**

$$I_g = 4\angle 0^\circ \text{ mA}; \quad \frac{1}{j\omega C} = -j1250 \Omega; \quad j\omega L = j500 \Omega$$



$$Z_{\text{eq}} = 500 + [-j1250 \parallel (1000 + j500)] = 1500 - j500 \Omega$$

$$P_g = -\frac{1}{2} |I|^2 \text{Re}\{Z_{\text{eq}}\} = -\frac{1}{2} (0.004)^2 (1500) = -12 \text{ mW}$$

The source delivers 12 mW of power to the circuit.