

$$1a. \quad C = \epsilon_0 \frac{W}{d} [L + (k-1)s] = 3.62 \text{ nF} \quad \textcircled{I}$$

$$= 4.07 \text{ nF} \quad \textcircled{II}$$

$$1b. \quad \Delta U = \frac{1}{2} \epsilon_0 \frac{W}{d} (L-s)(k-1)V^2 = 8.68 \times 10^{-8} \text{ J} \quad \textcircled{I}$$

$$= 2.06 \times 10^{-7} \text{ J} \quad \textcircled{II}$$

$$2a. \quad \vec{\tau} = N i s B \sin \vartheta \hat{l} \quad (\sin \vartheta = \frac{\sqrt{3}}{2} \text{ nei due casi.})$$

$$\vartheta = 120^\circ, \quad \tau = 6.27 \times 10^{-2} \text{ Nm} \quad \textcircled{I}$$

$$\vartheta = 60^\circ, \quad \tau = 9.40 \times 10^{-2} \text{ Nm} \quad \textcircled{II}$$

$$2b. \quad K = (1 - \cos \vartheta) N i s B$$

$$= \frac{3}{2} N i s B = 0.108 \text{ J} \quad \textcircled{I}$$

$$= \frac{1}{2} N i s B = 5.43 \times 10^{-2} \text{ J} \quad \textcircled{II}$$

$$3a. \quad Z = \sqrt{R^2 + \left(\omega L - \frac{1}{\omega C}\right)^2} = 13.4 e^{j68^\circ} \Omega \quad \textcircled{I}$$

$$= 11.0 e^{j63^\circ} \Omega \quad \textcircled{II}$$

$$3b. \quad P = \frac{V_{eff}^2}{|Z|^2} R = \frac{V_{eff}^2}{|Z|} \cos \vartheta = 4.02 \text{ W} \quad \textcircled{I}$$

$$= 9.25 \text{ W} \quad \textcircled{II}$$

$$P/P_{max} = 0.140 \quad \textcircled{I}$$

$$0.206 \quad \textcircled{II}$$