1. $\mathcal{E}_2 = -\sqrt{L_1 L_2}\dot{I}_1$, yes it is constant.
2. $L = 4\pi^2$
3. a, e
4. $R\dot{Q} + Q/C = 0$, $Q(t) = Q_0 e^{-t/RC}$
5. a, d
6. $L\ddot{Q} + Q/C = 0$, $Q(t) = Q_+ e^{i\sqrt{1/LC}t} + Q_- e^{-i\sqrt{1/LC}t}$ where $Q_\pm = \pm I_0\sqrt{LC}/2i$
7. a, e
8. $L\ddot{Q} + R\dot{Q} = 0$, this is a second order ODE so we need two boundary values to specify $Q(t)$, a possibility would be to specify $\ddot{Q}(0)$. If we don't care about $Q(t)$, we can solve this as a first order ODE for $\dot{Q}(t)$
9. a, c, d, e
10. $L\ddot{Q} + R\dot{Q} + Q/C = 0$, $Q(t) = Q_+ e^{\omega_+ t} + Q_- e^{\omega_- t}$ where $\omega_\pm = (-R \pm \sqrt{R^2 - 4L/C})/2L$ and $Q_+ + Q_- = Q_0$ and $\omega_+ Q_+ + \omega_- Q_- = I_0$
11. $U_L(t) = \frac{1}{2}L(\omega_+ Q_+ e^{\omega_+ t} + \omega_- Q_- e^{\omega_- t})^2$, $U_C(t) = \frac{1}{2}(Q_+ e^{\omega_+ t} + Q_- e^{\omega_- t})^2/C$. The sum is only constant–indicating energy conservation–when $R = 0$
12. Let us consider initial conditions so that $Q(t) = Q_0 e^{\omega_+ t}$. Now, since there is both oscillatory and decay behavior $4L/C > R^2$, so $\omega_+ = \mathrm{Re}(\omega_+) + i\mathrm{Im}(\omega_+) = (-R/2L) + i(\sqrt{R^2 - 4L/C}/2L)$. Now, we want $0.001 = 2\pi/\mathrm{Im}(\omega_+) = 2\pi/(\sqrt{R^2 - 4L/C}/2L)$ and $\frac{1}{2} = e^{\mathrm{Re}(\omega_+)1} = e^{(-R/2L)1}$. So we have two equations with three free variables. One solution is to fix $L = 1$ [H], and find $R = 2\ln(2) \approx 1.386$ [Ω] and $C \approx 0$ [F].