10. We apply the loop rule to the entire circuit:

$$\begin{aligned}
\mathcal{E}_{\text{total}} &= \mathcal{E}_{L_1} + \mathcal{E}_{C_1} + \mathcal{E}_{R_1} + \cdots \\
&= \sum_j \left(\mathcal{E}_{L_j} + \mathcal{E}_{C_j} + \mathcal{E}_{R_j}\right) \\
&= \sum_j \left(L_j \frac{di}{dt} + \frac{q}{C_j} + iR_j\right) \\
&= L\frac{di}{dt} + \frac{q}{C} + iR \qquad \text{where } \; L = \sum_j L_j \; , \;\; \frac{1}{C} = \sum_j \frac{1}{C_j} \; , \;\; R = \sum_j R_j
\end{aligned}$$

where we require $\mathcal{E}_{\text{total}} = 0$. This is equivalent to the simple LRC circuit shown in Fig. 33-22(b).