4. (a) We use $\mathcal{E} = -d\Phi_B/dt = -\pi r^2 dB/dt$. For $0 < t < 2.0\,\text{s}$:

$$\mathcal{E} = -\pi r^2 \frac{dB}{dt} = -\pi(0.12\,\text{m})^2 \left(\frac{0.5\,\text{T}}{2.0\,\text{s}}\right) = -1.1 \times 10^{-2}\ \text{V} .$$

(b) $2.0\,\text{s} < t < 4.0\,\text{s}$: $\mathcal{E} \propto dB/dt = 0$.

(c) $4.0\,\text{s} < t < 6.0\,\text{s}$:

$$\mathcal{E} = -\pi r^2 \frac{dB}{dt} = -\pi(0.12\,\text{m})^2 \left(\frac{-0.5\,\text{T}}{6.0\,\text{s} - 4.0\,\text{s}}\right) = 1.1 \times 10^{-2}\ \text{V} .$$