5. (a) We recall the fact that the period is the reciprocal of the frequency. It is helpful to refer also to Fig. 33-1. The values of t when plate A will again have maximum positive charge are multiples of the period:

$$t_A = nT = \frac{n}{f} = \frac{n}{2.00 \times 10^3\,\text{Hz}} = n(5.00\,\mu\text{s}) \ ,$$

where $n = 1, 2, 3, 4, \cdots$.

(b) We note that it takes $t = \frac{1}{2}T$ for the charge on the other plate to reach its maximum positive value for the first time (compare steps a and e in Fig. 33-1). This is when plate A acquires its most negative charge. From that time onward, this situation will repeat once every period. Consequently,

$$t = \frac{1}{2}T + nT = \frac{1}{2}(2n+1)T = \frac{(2n+1)}{2f} = \frac{(2n+1)}{2(2 \times 10^3\,\text{Hz})} = (2n+1)(2.50\,\mu\text{s}) \ ,$$

where $n = 0, 1, 2, 3, 4, \cdots$.

(c) At $t = \frac{1}{4}T$, the current and the magnetic field in the inductor reach maximum values for the first time (compare steps a and c in Fig. 33-1). Later this will repeat every half-period (compare steps c and g in Fig. 33-1). Therefore,

$$t_L = \frac{T}{4} + \frac{nT}{2} = (1+2n)\frac{T}{4} = (2n+1)(1.25\,\mu\text{s}) \ ,$$

where $n = 0, 1, 2, 3, 4, \cdots$.