30] \[ f_{\text{beat}} = |f_2 - f_1| \] so \[ f_v = 43/7 \] Increasing the tension increases the \( f_v \). Since this action reduces \( f_{\text{beat}} \), it brings \( f_v \) and \( f_{\text{open}} \) closer, i.e., \( f_v < f_{\text{open}} \)

34] \( \lambda_1 = 2L \) \[ f_1 = \frac{v}{\lambda_1} = \frac{200 \text{ Hz}}{2 \lambda_1} \]

38] 3rd harmonic \[ v = \sqrt{F/\mu} = \frac{50\text{ m/s}}{\lambda} = \frac{2}{3} \]

44] \( a) T_{\max} = \frac{1}{4} = 10^{-7} \text{ s} \quad b) \Delta W \Delta t = 2 \quad \Delta f = \frac{\Delta W}{\Delta t} = \frac{1}{3} \times 2 = 1.6 \text{ kHz} \]

96] \[ f = \frac{v}{\lambda} = \sqrt{F/\mu} = \frac{\mu}{2L \sqrt{F/\mu}} = 2 \sqrt{F/\mu} \]

b) \[ \frac{dF}{F} = 2 \frac{df}{f} \quad \Delta F = 2(2\text{ Hz}) = 4 \text{ Hz} = 0.16 \text{ Hz or } 1.6\% \]