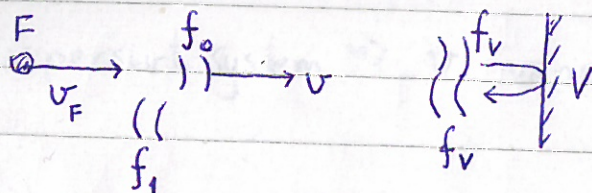


10



$$f_1 = (1 + v_F/v) f_0 = (1 + v_F/v) \cdot \frac{f_0}{1 - v_F/v}$$

$$= \frac{1 + 10/340}{1 - 10/340} \cdot 100 \text{ kHz} = 106 \text{ kHz}$$

3

B

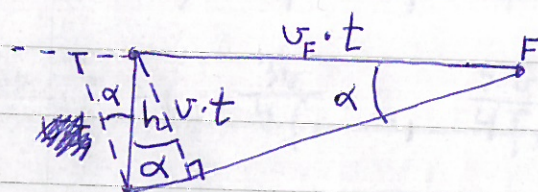
11

$$\Delta p = 0 \text{ i begge ender} \Rightarrow L = \lambda/2$$

$$v = \lambda f \Rightarrow L = v/2f = \frac{340}{2 \cdot 480} = 0,354 \text{ m} = 354 \text{ mm}$$

C

12



$$\sin \alpha = \frac{v}{v_F} = \sqrt{1 - \cos^2 \alpha}$$

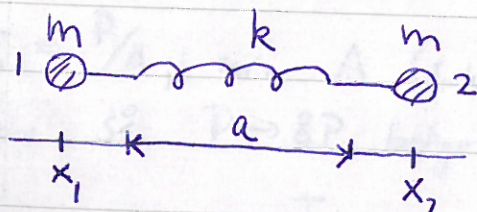
$$\cos \alpha = vt/h$$

$$\Rightarrow \left(\frac{v}{v_F}\right)^2 = 1 - \left(\frac{vt}{h}\right)^2$$

$$\Rightarrow t = \frac{h}{v} \sqrt{1 - \left(\frac{v}{v_F}\right)^2} = \frac{800}{340} \cdot \sqrt{1 - \frac{1}{1,75^2}} \approx 1,9 \text{ s}$$

B

13



$$\text{Strek i fjæra: } x_2 - x_1 - a = s$$

$$\begin{aligned} \Rightarrow m \ddot{x}_1 &= k(x_2 - x_1 - a) \\ m \ddot{x}_2 &= -k(x_2 - x_1 - a) \end{aligned} \Rightarrow \begin{aligned} m \ddot{s} &= -2ks \\ \ddot{s} + \frac{2k}{m} s &= 0 \end{aligned} \Rightarrow \omega = \sqrt{2k/m}$$

D