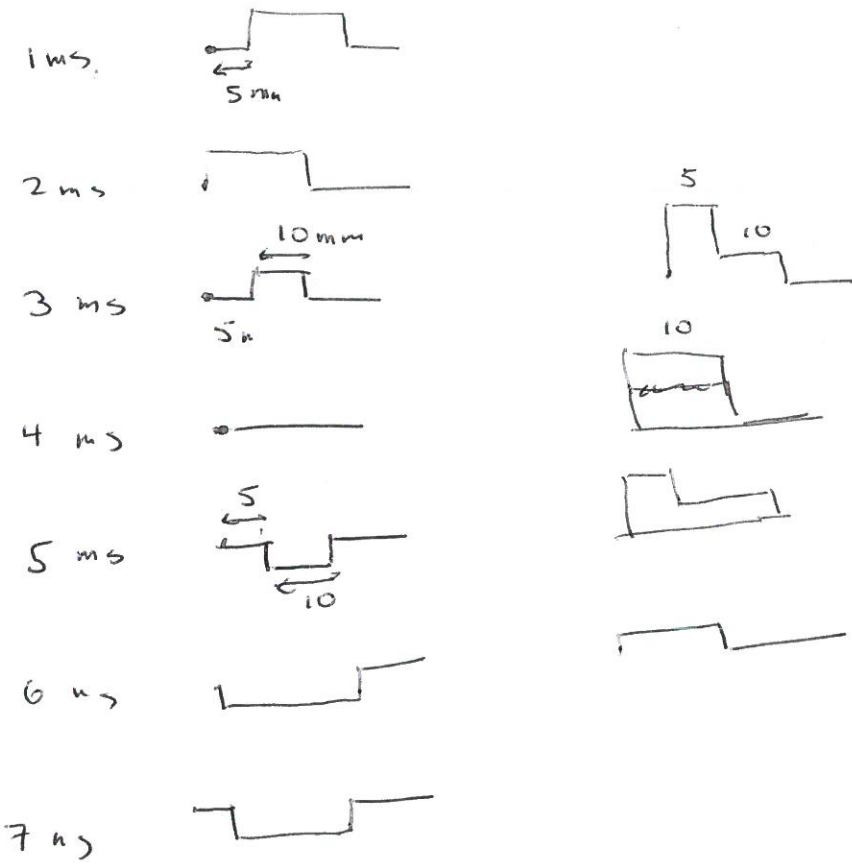


class 5 15: 31, 36, 39, 44

31.  $t = 1 \text{ ms} \Rightarrow d = 5 \text{ mm}$ ;  $2 \Rightarrow 10 \text{ mm}$ ,  $3 \Rightarrow 15 \text{ mm}$  etc  
 $\uparrow$   
 contact  $6 \text{ ms} \Rightarrow \text{exit}$



36 anti nodes =  $\frac{\lambda}{2} \Rightarrow \lambda = 30 \text{ cm}$   $A = .85 \text{ cm}$   $T = .075 \text{ s}$   
 (a) nodes =  $\frac{\lambda}{2} = 15 \text{ cm}$  (b)  $v = \lambda \frac{1}{T} = 400 \frac{\text{cm}}{\text{s}}$ ; travel wave  $A_{\text{amp}} = \frac{A}{2} = .425 \text{ cm}$   
 (c) speed  $\rightarrow \pm A\omega = (.85) \frac{(2\pi)}{.075} = 17 \text{ cm/s}$   $\Delta + \text{ } -$   
 node - antinode =  $\frac{\lambda}{4} = 7.5 \text{ cm}$

39  $\lambda = 160 \text{ cm}$  }  $v = 96 \text{ m/s} = \sqrt{\frac{T}{\mu}}$ ;  $T = v^2 \mu = 461 \text{ N}$   
 $f = 60$   $\leftarrow \frac{.04}{.8 \text{ m}}$

$(v_y)_{\text{max}} = A\omega = .3 \text{ cm} \cdot 2\pi \cdot 60 = 1.13 \text{ m/s}$   
 $(a_y)_{\text{max}} = A\omega^2 = 426 \text{ m/s}^2$

44  $f = \frac{344 \text{ m/s}}{.765} = 450 \text{ Hz} = 3 \frac{1}{2} \frac{v}{\lambda} \Rightarrow v = \sqrt{\frac{T}{\mu}} = 225 \text{ m/s} \Rightarrow T = 590 \text{ N}$   
 $\uparrow .75$   $\uparrow \frac{.00875}{.75}$