

Mass on a Spring

6. What factors influence the period of a mass bobbing up and down on a spring?

- 1) mass attached to spring
- 2) spring constant (stiffness of spring)

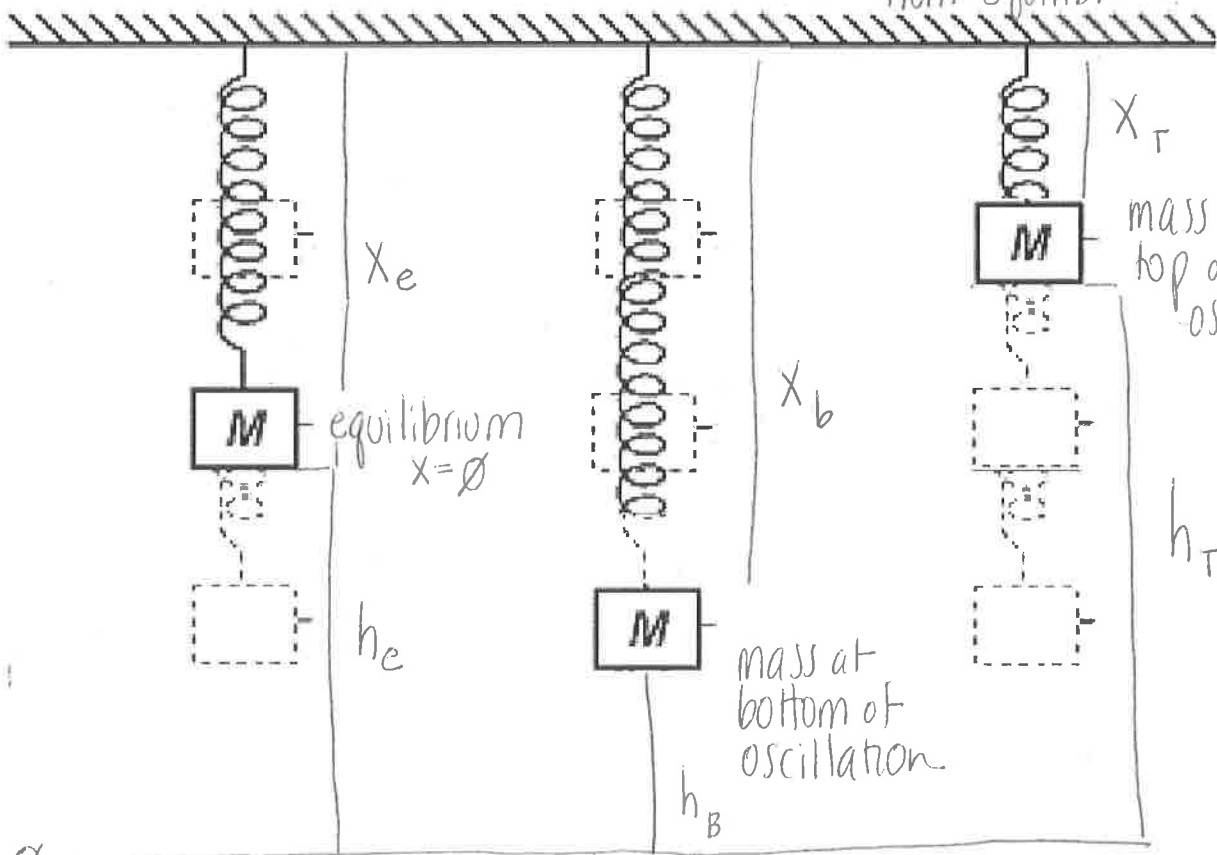
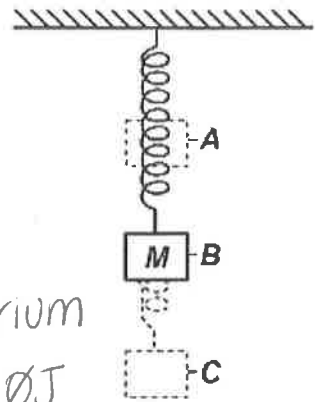
7. Which position is the equilibrium position? B $x = 0m$ at equilibrium

8. At what position(s) is the speed of the mass zero? A + C $\vec{v} = 0 \frac{m}{s}$ $KE = 0J$

9. Where is the mass moving the fastest? B KE_{max} \vec{v}_{max}

10. Where does the mass have the most potential energy?

$PE_g \max = \underline{A}$ $PE_s \max = \underline{A} + \underline{C}$ * (if spring were horizontal)
 * max compression vs. max extension from equilibrium



$h = 0m$

$PE_g + PE_s + KE$
 $mgh_e + \frac{1}{2}mv_e^2$ $(PE_s = 0J)$

$mgh_b + \frac{1}{2}Kx_b^2 + \frac{1}{2}mv_b^2$
 $v = 0m/s$

$mgh_t + \frac{1}{2}Kx_t^2 + \frac{1}{2}mv_t^2$
 $v = 0m/s$

$KE = 0J$

Total Mechanical Energy : $PE_g + PE_s + KE$