F.

$PE = KE + E_{lost}$

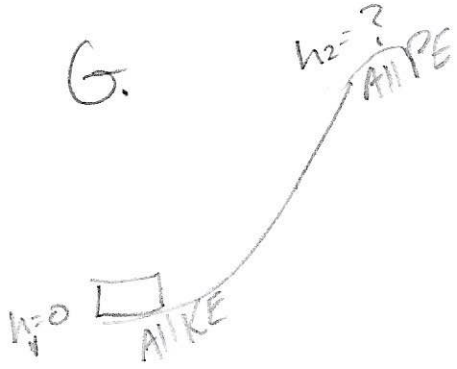
$PE - KE = E_{lost}$

$mgh - \frac{1}{2}mv^2 = E$

$E = (8.1\,kg)(9.81\,m/s^2)(3.8\,m) - \frac{1}{2}(8.1\,kg)(6.8\,m/s)^2$

$E = 114.6798 = \boxed{110\,J}$

G.



$KE = PE$

$\frac{1}{2}mv^2 = mgh$

$h = \frac{\frac{1}{2}mv^2}{mg}$

$h = \frac{v^2}{2g} = \frac{(20.6\,m/s)^2}{2(9.81\,m/s^2)} = 21.62895$

$\boxed{h = 21.6\,m}$

H.

$E_{spring} = \frac{1}{2}kx^2$

$= \frac{1}{2}\left(1420\,\frac{N}{m}\right)(0.49\,m)^2 = 170.471 = \boxed{170\,J}$

$Work = \Delta E$

I.

$e = \frac{W_{out}}{W_{in}}$

$W_{in} = \frac{W_{out}}{e} = \frac{170.471}{0.78} = 218.55 = \boxed{220\,J}$