ME 274 – 11:30 section – Quiz 5 Name_____

You may work in groups. You may use your book. You may not use the internet.

Particle A (of mass m) is released from rest at elevation 1. Particle B (of mass m and connected to lightweight bar OB) is also released from rest at elevation 1. Circle the answer below that correctly describes the speeds of A and B (v_{A2} and v_{B2}, respectively) at elevation 2.

(a) $v_{A2} > v_{B2}$
(b) $v_{A2} = v_{B2}$ (2pts)
(c) $v_{A2} < v_{B2}$

For both A and B: $T_2 + V_2 = T_1 + V_1 + U_{12}^{NC}$
$\frac{1}{2}mv_2^2 = mgL$, thus $v_2 = \sqrt{2gL}$ (1 pts)

Justify your response with equations and/or words.

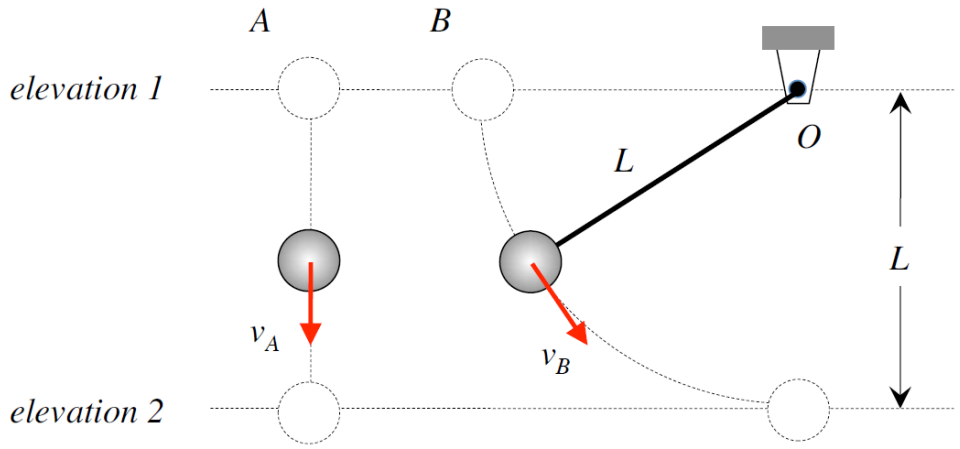
Circle the answer below that correctly describes the times required for A and B to reach elevation 2 (t_{A2} and t_{B2}, respectively).

(a) $t_{A2} > t_{B2}$
(b) $t_{A2} = t_{B2}$
(c) $t_{A2} < t_{B2}$ (1 pts)

A: $\sum F_y = ma_{A_y} = -mg$
B: $\sum F_y = ma_{B_y} = -mg + Fsin(\theta)$

- Change in height is the same for both A and B.
- F is a two-force member in tension and θ is in the first quadrant, thus $Fsin(\theta) > 0$ and $|a_{A_y}| > |a_{B_y}|$
- Considering both of the above $t_{A_2} < t_{B_2}$. (1 pts)

Jus with equations and/or words.



FBDs needed for kinetics analysis in justification (1 point)