

Mathematics Questions by Topics

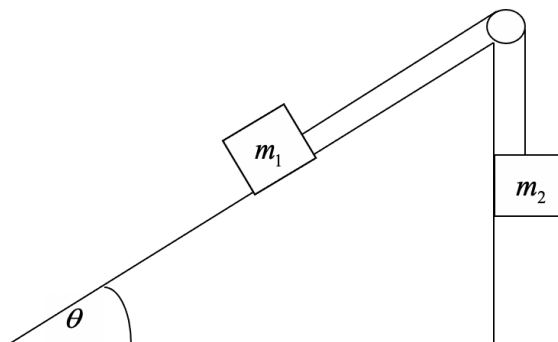
Motion and Force

Question 11

Source: K18SM2Q15

Question 11

A particle of mass m_1 kg is on a smooth plane, inclined at an angle of θ to the horizontal. It is connected by a light string which passes around a smooth pulley to another mass of m_2 kg hanging vertically, as shown in the diagram.



Then which of the following is **false**?

- A. If $\theta = 30^\circ$ and $\frac{m_2}{m_1} = \frac{1}{2}$ then the system is in equilibrium.
- B. If $\theta = 30^\circ$ and $\frac{m_2}{m_1} < \frac{1}{2}$ then the mass m_2 moves upwards.
- C. If $\theta = 45^\circ$ and $\frac{m_2}{m_1} = \frac{\sqrt{2}}{2}$ then the system is in equilibrium.
- D. If $\theta = 60^\circ$ and $\frac{m_2}{m_1} = \frac{\sqrt{3}}{2}$ then the system is in equilibrium.
- E. If $\theta = 60^\circ$ and $\frac{m_2}{m_1} < \frac{\sqrt{3}}{2}$ then the mass m_2 moves downwards.