

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DEPARTMENT OF PHYSICS

PYP – 001-07

I.D. #

Name: Key

QUIZ No. 2

- 1- Calculate the acceleration of the 2 Kg cart moving horizontally when the three identical 1 Kg masses are attached to the string.

Answer:

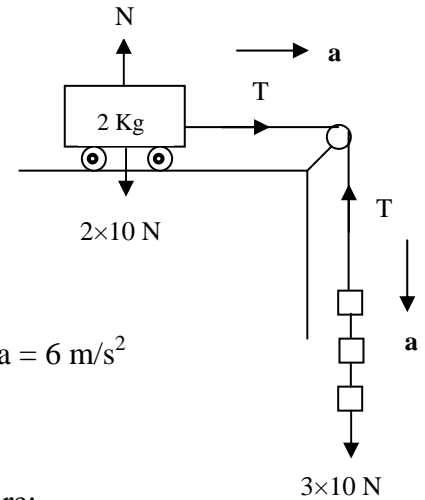
The horizontal cart:

Horizontally: $\sum F = m a \Rightarrow T = m a \Rightarrow T = 2 a \dots\dots\dots (1)$

Vertically (No motion): $\sum F = m a \Rightarrow \sum F = 0 \Rightarrow T - 2 \times 10 = 0$
 $T = 20 \text{ N} \dots\dots\dots (2)$

The vertical masses: $\sum F = m a \Rightarrow 3 \times 10 - T = m a \Rightarrow 30 - T = 3 a \dots (3)$

Solve the equation (1) and (3) for (a), you can find: $30 - 2a = 3a \Rightarrow 30 = 5a \Rightarrow a = 6 \text{ m/s}^2$



- 2- When a man stand on an elevator, the two forces of third Newton's law are:

- a- His pushed force vertical downward and the normal force upward.
- b-** His weight force vertical downward and the normal force vertical upward.
- c- His pushed force vertical upward and the normal force vertical upward.
- d- His weight force vertical upward and the normal force vertical upward.
- e- All above answers are wrong.