**Series N° 04**

**DYNAMICS**

**Exercise n°01 :**

Two blocks of masses m1 and m2 are connected by a string of negligible mass which passes over a pulley connected with plane as shown in the figure. We neglect the mass and friction forces of the pulley.

1. Represent all the forces acting on the system.
2. Knowing that m2=2.0 kg, find the value of m1 in

m2

equilibrium.

m1

1. We give m1=2.5 kg and m2=2.0 kg, plot the forces

applied to the system. Using the second Newton's law,

45°

30°

calculate the acceleration of motion.

**Exercise n°02:**

We consider an object of mass m=5 Kg on an inclined plane making an angle $α=30° $with the horizontal. From point O, we launch the object upwards with an initial speed $v\_{0}=2 m/s$

Knowing that the coefficient of dynamic friction$ μ\_{d}=0,2$ and applying the fundamental principle of dynamics, calculate:$ $

1. The acceleration of the object.
2. The distance traveled by this object before stopping at point A.
3. The minimum value of the coefficient of static friction $μ\_{s} $so that the object does not slide down once stopped.

**Exercise n°03 :**

We launch a block (M) of mass m, from the top of inclined plane AB = 1m with α = 45° with respect to the horizontal, and with an initial speed$ v\_{A}=1 m/s$

1. Knowing that the coefficient of friction $μ=0,5 $on AB,$ $

$$α$$

**A**

**(M)**

calculate the acceleration of the motion on AB and the speed of (M)

when it reaches point B.

1. We consider that the friction forces are negligible

On the horizontal plane BC.

What is the nature of motion on the horizontal plane BC? Justify.

**C**

**B**

- At what distance from point B will block (M) stop?