THE INTERNATIONAL UNIVERSITY (IU)
VIETNAM NATIONAL UNIVERSITY - HCMC

ASSIGNMENT

SUBJECT: PHYSICS 1

GROUP: 7 – 10 STUDENTS

(To submit the 31th JULY 2023)

Student Name:_____**Student ID:**_____

Question 1 (25 pts) A 2-kg box is projected with an initial speed of 3 m/s up a rough plane inclined at 60º above horizontal. The coefficient of kinetic friction is 0.3.

(a) What is the energy dissipated by friction as the box slides up the plane?

(b) What is the speed of the box when it again reaches its initial position'

Question 2 (25 pts) Consider a block on a table as shown in Figure 1. This block is pushed by a spring attached to the wall, slides across the table, and then falls to the ground. The block has a mass m =1.35 kg. The spring constant is k = 560 N/m, and the spring has been compressed by 0.11 m. The block slides a distance d = 0.65 m across the table of height h = 0.75 m.

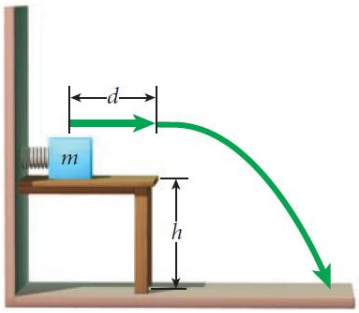

Fig. 1

(a) Consider the situation without the friction force. What speed will the block have when it lands on the floor?

(b) The coefficient of kinetic friction between the block and the table is μ_k = 0.16. What speed will the block have when it lands on the floor?

Question 3(25 pts) A particle of mass 5 kg, moving at 2 m/s, collides with a particle of mass 8 kg initially at rest. If the collision is elastic, find the velocity of each particle after the collision

(a) if the collision is head-on.

(b) if the first particle is defected 50º from its original direction of motion. Express all directions relative to the direction of the incoming particle.

Question 4 (25 pts) An electric fan is turned off, and its angular velocity decreases uniformly from 500 rev/min to 200 rev/min in 4.00 s.

(a) Find the angular acceleration in rad/s^2 and the number of revolutions made by the motor in the 4.00-s interval.

(b) How many more seconds are required fur the fan to come to rest if the angular acceleration remains constant at the value calculated in part (a)?

THE END