



School of Applied Sciences

Campus Paralakhemundi Batch : 20

Code : BSPH Subject : Edit Here Date : 00.00.20

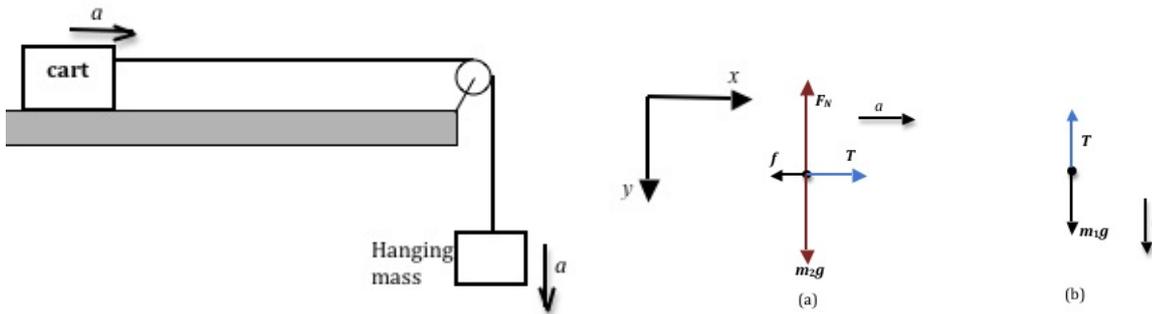
Applied and Action Learning

(Learning by doing and discovery)

Name of the Experiment :

To find the acceleration of the cart from Newton's law of motion

SKETCH



Material, Tools & Equipment Required (if any)

Sl.No.	Name	Specification	Qty.
	A cart, pulley, Hanging weight, stop watch, String, pointer		

THEORY

The acceleration of the cart is given by the formula

$$a = \frac{mg - \mu Mg}{M + m}$$

where

a = acceleration of the cart,

m = mass of the hanging weight,

g = gravitational acceleration (simulator used earth's 9.8m/s²,

μ = coefficient of friction,

M = mass of the wagon.

The distance can be found out by

$$s = \frac{1}{2}at^2$$

S = displacement of the cart,

a = acceleration of the cart,

t = time for the cart to travel distance S.

OBSERVATIONS, CALCULATIONS, GRAPH

Mass attached to the string (m) = 200 gms.

Mean diameter of axel (d) = 2 cms

Mean radius of the axel (r) = $d/2 = \dots\dots\dots 1 \dots\dots$ cms.

Circumference of fly wheel(s) = $2\pi r$ cms

RESULT:

The moment of inertia of the flywheel about the axis of rotation = _____ gm. cm.².

Safety Precaution:

1. The string should wound round the axel evenly without any overlapping.
2. The loop slipped on the peg should be loose.
3. The flywheel should start of its own accord under the action of the mass attached to it without giving any push

Application and Inference

1. Flywheels can be used to store energy and used to produce very high electric power pulses for experiments, where drawing the power from the public electric network would produce unacceptable spikes. A small motor can accelerate the flywheel between the pulses.
2. The phenomenon of precession has to be considered when using flywheels in moving vehicles. However in one modern application, a momentum wheel is a type of flywheel useful in satellite pointing operations, in which the flywheels are used to point the satellite's instruments in the correct directions without the use of thrusters rockets.
3. Flywheels are used in punching machines and riveting machines. For internal combustion engine applications, the flywheel is a heavy wheel mounted on the crankshaft. The main function of a flywheel is to maintain a near constant angular velocity of the crankshaft.

ASSESSMENT

MARKING PROCEDURE		Full Mark	Marks Obtained	Remarks
Accuracy & Process	Sketch	10		
	Sequence of operation	10		
	Use of Tools & Equipment	10		
	Safety Observations	5		
Report	Observations, Calculations, Graph	25		
Inference		30		
Viva		10		
Total		100		

Signature of Faculty

Signature of Student:
Name:
Registration Number: