Lab Experiment no 1.

Appratus:-
Force table.
Pulleys (3x)
Degree scale.
Masses.
Spring Balance.
Mass Hanger (5g)
string.

concurrent forces:-
When the forces are acting on the same point in space or x-y plane they are called as concurrent force.

Equilibriant force:-
The force on an body acting exactly opposite to the resultant force is known as the equilibriant force.

Aim & Procedure:-

(i) Set 2x masses at 2 different angles going over the pulley.

(ii) Find their resultant & prove that the equilibriant force must be equal to F_R to balance.

(iii) Initially also find $F_1 \Rightarrow$ at $\varphi 90°$ & $Fe \Rightarrow$ at $\varphi = 270°$

$$F_R = \sqrt{(\Sigma F_x)^2 + (\Sigma F_y)^2} = Fe \qquad \varphi = \tan^{-1}(F_y/F_x). \qquad F = mg.$$

(iv) Divide your data into experimental & calculated data.

(v) Convert mass into kilograms.

(vi) during resolution of the experiment we would take the other two forces directly on the x & y axis so that they will form the components of the equilibriant.

$$\therefore \text{error} \Rightarrow \left[\frac{\text{measured value} - \text{Realvalue}}{\text{Real value}}\right] \times 100.$$

Lab experiment no. 2 :-

Tape timer Experiment

Apparatus.

mass/weight
Tape timer apparatus
Graph paper, Carbon paper.
paperstrip.

AIM.- Tape timer ticker to measure the gravity.

Procedure :-

(i) Don't use the first dot as the mass may not have begun to move when the dot was made.

(ii) The first interval is 0 and 2nd is 1/40 (2/40 = 3rd) and so on.

∴ Δt at each interval will be 1/40.

(iii) $\langle v \rangle = \frac{\Delta x}{\Delta t}$ ✓ (Δt ✓ const 1/40)

(iv) graphing → y axis => $\langle v \rangle$
x axis => Δt.

(v) After graphing consider the best fit point to find the slope.

e.g $\frac{(2.04) - (1.72)}{9/40 - 8/40}$ where v_8 v_9 are average speeds.

∴ $g = \frac{\text{average speeds}}{\Delta(t_1 - t_2)} = \frac{\Delta v}{\Delta t}$ ✓

(vi) find uncertainity as well.

Lab Experiment no. 3

Conservation of Energy by projectile launcher.

Intial K.E $= \frac{1}{2} m v_0^2$ v_0 = muzzle speed.

→ at max height the K.E = 0 & P.E = mgh.

∴ Initial K.E = Final P.E

→ $x = v_0 t$ (Horizontal distance travelled by the ball).

$y = \frac{1}{2} g t^2$ (Vertical distance travelled by the ball.

$$t = \sqrt{\frac{2y}{g}} \quad \& \quad V_0 = \frac{x}{t}$$

→ set the projectile launcher on "Medium Range".

(i) To find the v_0, use projectile horizontally & five 10 shots.

(ii) mass of the ball is 9.7g.

measuring horizontal distances =?

measuring vertical =? distances.

Lab Experiment no. 4. similar to the experiment no. however donot use pulley.

Is there any restriction of setting the specific angles in experiment.

Lab Experiment no. 5:-

Appratus:-
Photogate timer with accesary photogate.
Air track System with one glider.

Aim:-
Average velocities relationship with instanteous velocities.

Procedure:-
(i) centre of the air track.
(ii) Place both Photogate equidistant from the centre. $D/2 \longrightarrow D \longleftarrow D/2$.

(iii) set timer to pulse & press the Reset button.

graphing distance xaxis
Vavg ⇒ yaxis.