Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Forces (High Demand Questions)

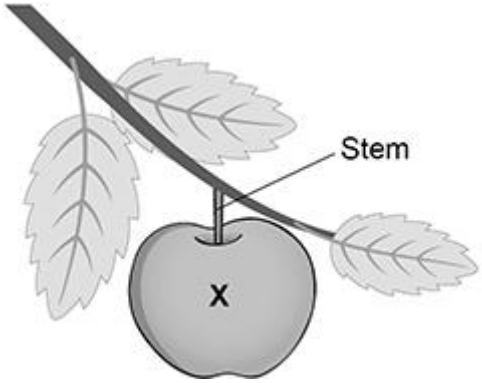
Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

The figure below shows a stationary apple hanging from a tree.

The **X** marks the centre of mass of the apple.



(a) Draw **two** arrows on the figure above to show the forces acting on the apple.

(2)

(b) It takes 0.50 s for the apple to fall to the ground.

The initial velocity of the apple is 0 m/s

acceleration due to gravity = 9.8 m/s^2

Calculate the distance fallen by the apple.

Use the Physics Equations Sheet.

Downloaded from www.merit-minds.com

Distance = _____ m

(6)

(c) In part (b) it was assumed that the acceleration was a constant 9.8 m/s^2

Evaluate this assumption.

(4)

(Total 12 marks)

Q2.

Scientists are developing a hypersonic aeroplane that will travel much faster than normal aeroplanes.

(a) An aeroplane accelerates from a low speed to a high speed with the engines at maximum power.

Explain why the acceleration is **not** constant.

Downloaded from www.merit-minds.com

_____

_____

(5)

(b) The hypersonic aeroplane will have jet engines and a rocket engine.

The speed of aeroplanes can be measured on a uniform scale called the Mach scale.

Mach 1 = 330 m/s

The jet engines will accelerate the aeroplane to Mach 5.5.

The rocket engine will accelerate the aeroplane from Mach 5.5 to Mach 25.5 in 300 s.

The average resultant force on the aeroplane when the rocket engine is used will be 630 000 N.

Calculate the mass of the hypersonic aeroplane.

Give your answer to 2 significant figures.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Mass (2 significant figures) = _____ kg

(6)

(Total 11 marks)

Downloaded from www.merit-minds.com