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

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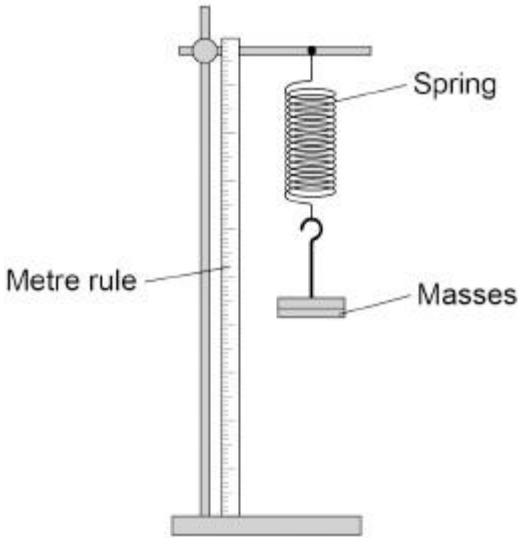
Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

The figure below shows a stretched spring.

The spring is elastically deformed.



(a) What is meant by 'elastically deformed'?

Tick (✓) **one** box.

As the force on the spring increases the length of the spring increases.	☐
Only a very small force is needed to stretch the spring.	☐
The force on the spring causes it to change shape.	☐
The spring will return to its original length when the force is removed.	☐

(1)

(b) Describe a method to determine the extension of the spring.

_____

_____

_____

_____

(2)

(c) The extension of the spring is 80 mm.

spring constant = 40 N/m

Calculate the elastic potential energy of the spring.

Use the Physics Equations Sheet.

_____

_____

_____

_____

_____

Elastic potential energy = _____ J

(3)

(d) Write down the equation which links extension (*e*), force (*F*) and spring constant (*k*).

_____

(1)

(e) A force of 300 N acts on a different spring.

The force causes the spring to extend by 0.40 m.

Calculate the spring constant of the spring.

_____

_____

_____

_____

_____

Spring constant = _____ N/m

(3)

(Total 10 marks)

Q2.

Professional rugby players wear a tracking device that measures their velocity and acceleration.

Figure 1 shows a player wearing a tracking device.

The player is tackling another player who is running with the ball.

Figure 1

(a) Velocity and acceleration are both vector quantities.

What is a vector quantity?

Tick (✓) **one** box.

A quantity with both magnitude and direction	☐
A quantity with direction only	☐
A quantity with magnitude only	☐

(1)

(b) Which of the following is a vector quantity?

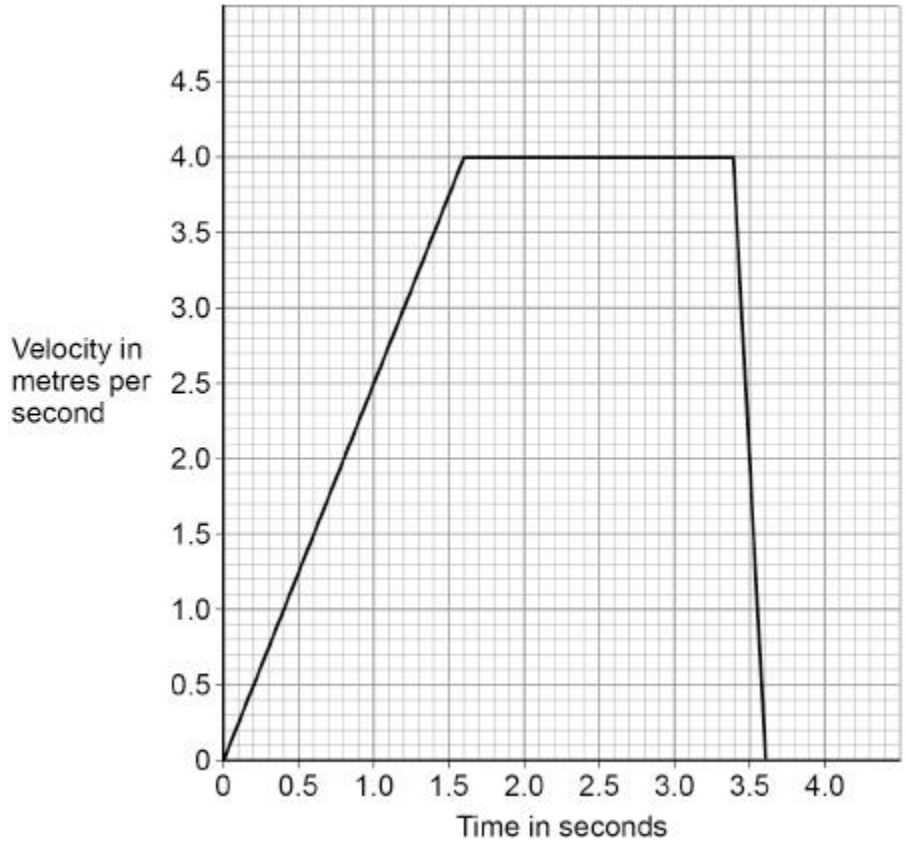
Tick (✓) **one** box.

Displacement	☐
Distance	☐
Time	☐
Work done	☐

(1)

Figure 2 shows a velocity–time graph for the player running with the ball.

Figure 2



(c) Determine the acceleration of the player between 0 and 1.6 s.

_____

_____

_____

Acceleration = _____ m/s^2

(2)

(d) Describe the motion of the player between 3.4 s and 3.6 s.

_____

_____

(1)

The force exerted on the player when she is tackled causes her to accelerate.

(e) Write down the equation which links acceleration (*a*), mass (*m*) and resultant force (*F*).

_____

(1)

(f) The player accelerates at 25 m/s^2 when a resultant force of 1800 N acts on her.

Calculate the mass of the player.

_____

_____

_____

_____

_____

Mass = _____ kg

(3)

(g) The tracking device sends data to a computer during the game.

Suggest **one** advantage of the data being sent during the game.

_____

_____

(1)

(Total 10 marks)