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

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

Q1.

The diagram shows some springs inside a mattress.



(a) Which proportionality is true when a force is applied to a spring?

Tick (✓) **one** box.

Example of an empty box table

Force ∝ energy stored	☐
Force ∝ extension	☐
Force ∝ length	☐
Force ∝ spring constant	☐

(1)

A mattress contains 1200 identical springs.

A person lies on the mattress and the springs compress.

The mean force on each spring in the mattress is 0.49 N

(b) Calculate the mass of the person.

gravitational field strength = 9.8 N/kg

_____

_____

_____

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Mass = _____ kg

(4)

(c) The mean compression of each spring is 3.5×10^{-3} m

Calculate the spring constant of each spring in the mattress.

Give the unit.

Spring constant = _____

Unit = _____

(4)

(d) For a given force, different springs compress by different amounts.

Explain what property of the springs would make the mattress soft.

(2)

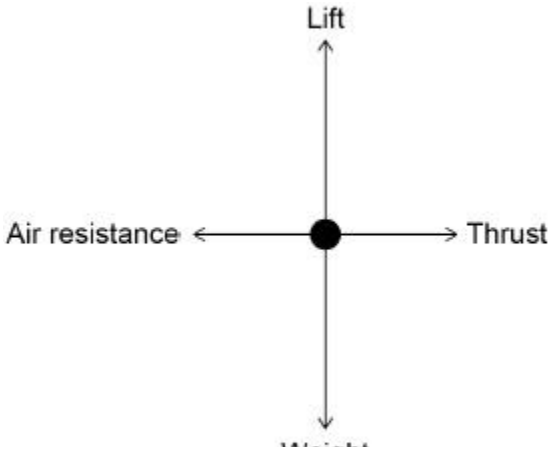
(Total 11 marks)

Q2.

Below is a free body diagram for an aeroplane flying at a constant speed and at a constant height.

The speed of the aeroplane is much greater than the speed at which the aeroplane lands.

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(a) Explain how the forces need to change so the aeroplane can land.

(4)

(b) The aeroplane lands at a speed of 80 m/s

After landing, the aeroplane takes 28 s to decelerate to a speed of 10 m/s

The mean resultant force on the aeroplane as it decelerates is 750 000 N

Calculate the mass of the aeroplane.

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Mass = _____ kg

(5)

(Total 9 marks)

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