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

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**Name of the Student**:_____
**Max. Marks : 25 Marks** **Time : 25 Minutes**

Mark Schemes

## Q1.

(a) **A** constant speed / velocity

*accept steady pace*
*do **not** accept terminal velocity*
*do **not** accept stationary*

**1**

**B** acceleration

*accept speeding up*

**1**

**C** deceleration

*accept slowing down*
*accept accelerating backwards*
*accept accelerating in reverse*
*do **not** accept decelerating backwards*

**1**

(b) (i) the distance the car travels under the braking force

*accept braking distance*

**1**

(ii) speed/velocity/momentum

**1**

(c) (i) 5000 (N) to the left

***both** required*
*accept 5000(N) with the direction indicated by an arrow drawn pointing to the left*
*accept 5000(N) in the opposite direction to the force of the car (on the barrier)*
*accept 5000(N) towards the car*

**1**

(ii) to measure/detect forces exerted (on dummy / driver during the collision)

**1**

(iii) 4

*allow **1** mark for showing a triangle drawn on the straight part of the graph*
***or** correct use of two pairs of coordinates*

**2**

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m/s$^2$

*do **not** accept mps$^2$*

**1**

**[10]**

## Q2.

(a) **B**

*reason only scores if B is chosen*

**1**

gradient / slope is the steepest / steeper

*answers must be comparative*

*accept steepest line*

*ignore greatest speed*

**1**

(b) (velocity includes) direction

*'it' refers to velocity*

**1**

**[3]**

## Q3.

(a) 750

*allow **1** mark for correct substitution, ie 75 × 10 provided no subsequent step shown*

**2**

newton(s) / N

*do **not** accept n*

**1**

(b) Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response.
Examiners should also refer to the Marking Guidance, and apply a 'best-fit' approach to the marking.

**0 marks**
No relevant content.

**Level 1 (1-2 marks)**
There is a brief attempt to explain why the velocity / speed of the parachutist changes.
**or**
the effect of opening the parachute on velocity/speed is given.

**Level 2 (3-4 marks)**
The change in velocity / speed is clearly explained in terms of force(s)
**or**
a reasoned argument for the open parachute producing a lower speed.

**Level 3 (5-6 marks)**
There is a clear and detailed explanation as to why the parachutist reaches terminal velocity
**and**
a reasoned argument for the open parachute producing a lower speed

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**examples of the physics points made in the response to explain first terminal velocity**

- on leaving the plane the only force acting is weight (downwards)
  *accept gravity for weight throughout*
- as parachutist falls air resistance acts (upwards)
  *accept drag / friction for air resistance*
- weight greater than air resistance
  **or**
  resultant force downwards
- (resultant force downwards) so parachutist accelerates
- as velocity / speed increases so does air resistance
- terminal velocity reached when air resistance = weight
  *accept terminal velocity reached when forces are balanced*

**to explain second lower terminal velocity**

- opening parachute increases surface area
- opening parachute increases air resistance
- air resistance is greater than weight
- resultant force acts upwards / opposite direction to motion
- parachutist decelerates / slows down
- the lower velocity means a reduced air resistance

air resistance and weight become equal but at a lower (terminal) velocity

**6**

(c) (i) any **one** from:

- mass of the (modelling) clay
  *accept size/shape of clay size/amount/volume/shape of clay*
  *accept plasticine for (modelling)clay*
- material parachute made from
  *accept same (plastic) bag*
- number / length of strings

**1**

(ii) **C**

*reason only scores if **C** is chosen*

**1**

smallest (area) so falls fastest (so taking least time)

*accept quickest/quicker for fastest*

*if **A** is chosen with the reason given as 'the largest area so falls slowest' this gains **1** mark*

**1**

**[12]**

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