

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

- | | | |
|-----|---------------------------------------------------------------------------------------|------------|
| (a) | gravitational force | 1 |
| (b) | air resistance | 1 |
| (c) | the resultant force on the hailstones is zero | 1 |
| (d) | line extrapolated to 80 mm
<i>allow a straight line</i> | 1 |
| | 46 (m/s)
<i>allow 44 – 48 but not if inconsistent with their extrapolated line</i> | 1 |
| (e) | it has a greater weight | 1 |
| (f) | 0.48 (N) | 1 |
| (g) | upwards
<i>allow up</i>
<i>ignore north</i> | 1 |
| | | [8] |

Q2.

- | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------|---|
| (a) | centre of mass | 1 |
| (b) | weight is directly proportional to mass | 1 |
| (c) | reading from balance = 1.1 kg | 1 |
| | $\text{mass} = \frac{1.1}{5} = 0.22 \text{ kg}$ <i>allow correct calculation using incorrectly read value from the balance</i> | 1 |

- (d) weight = 0.22×9.8
allow ecf from part (c) 1
- 2.156 (N)
allow correct answer to 2 or 3 sig figs 1
- (e) 0.015 m 1
- (f) spring constant = $\frac{6.0}{0.015}$
allow ecf from part (e) 1
- 400 (N/m) 1
- (g) returns to its original length/shape
allow returns to 3.5 cm 1
- [10]**