

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

- (a) kinetic 1
- thermal 1
- this order only*
- (b) (minimum braking) distance increases with increasing speed
allow positive correlation 1
- (c) increases 1
- (d) $12.5 - 5.0 = 7.5 \text{ (m/s)}$ 1
- $t = \frac{7.5}{0.25}$
this mark may be awarded if the change in velocity is incorrectly calculated 1
- $t = 30 \text{ (s)}$
allow a correctly calculated answer using a change in velocity incorrectly calculated 1
- (e) $F = 1600 \times 0.25$ 1
- $F = 400 \text{ (N)}$ 1
- (f) initial height of the ruler above the person's hand 1
- (g) there will be more variation in distances
allow reaction times for distances
allow the three students tested are not typical 1
- (h) carry out the experiment listening to music 1

then not listening to music (and compare the results)
allow compare with original results

1

[13]

Q2.

(a) a satellite

1

(b) arrow drawn towards the centre of the Earth from the Hubble Space Telescope

1

(c) any correct change in distance with the correct change in time
e.g. 38 (km) and 5 (s)

1

a correct substitution of a correct pair of values

e.g. $v = \frac{38}{5}$

1

a correctly calculated answer

e.g. $v = 7.6 \text{ (km/s)}$

1

(d) galaxy **C**

1

(e) galaxy **C**

1

(f) to check the observations are correct

1

[8]