Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

Q1.

(a) a vector has direction (a scalar does not)

1

(b) accept any vector quantities eg
- velocity
- force
- weight
- acceleration
- displacement

1

(c) mass × velocity

*do **not** accept speed for velocity*
*do **not** accept symbols*

1

(d) kilogram(s) metre per second

allow kg m/s

1

(e) 1.8 ms = 0.0018 s

*an answer of 60 (m/s) scores **4** marks*

1

$$1500 = \frac{0.045 \times v\,(-0.045 \times 0)}{0.0018}$$

1

$$v = \frac{1500 \times 0.0018}{0.045}$$

1

v = 60 (m/s)

*an answer of 60 000 scores **3** marks*

1

(g) longer the time of contact the greater the change of momentum

allow the converse

1

since the mass of the golf ball is constant

1

the velocity of the golf ball must increase

1

increasing the distance the golf ball travels

1

[12]

Q2.

(a) Third Law

1

(b) elastic potential

1

(c) weight = mass × gravitational field strength

accept gravity for gravitational field strength

1

accept W = mg

*accept correct rearrangement ie mass = weight / gravitational field strength **or** m = W / g*

(d) 343 = m × 9.8

1

$m = \frac{343}{9.8}$

1

m = 35

1

*allow 35 with no working shown for **3** marks*

(e) force = spring constant × compression

accept force = spring constant × extension

accept F = k e

*accept correct rearrangement ie constant = force / extension **or** k = F / e*

1

(f) compression = 0.07m

1

343 = k × 0.07

1

k = 343 ÷ 0.07

1

k = 4900

1

*allow 4900 with no working shown for **4** marks*

*allow 49 with no working shown for **3** marks*

[11]