

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

- (a) they changed direction

allow

deflected/reflected/repelled

1

- (b)

an answer of 0.000 03 (nm) or 3.0×10^{-5} (nm) scores 2 marks

$$\text{diameter} = \frac{0.18}{6000}$$

1

$$= 0.000\ 030\ (\text{nm})$$

allow 3.0×10^{-5} (nm)

1

- (c) A

1

- (d) 1100 (°C)

1

- (e) 8 (minutes)

allow 12 (minutes)

1

- (f) the rate of change of temperature of the gold

1

[7]

Q2.

- (a) it is the same size as the downward force

1

- (b) weight is a vector

1

- (c) centre of mass

1

- (d)

an answer of 441 (N) scores 2 marks

$$W = 45 \times 9.8$$

$$W = 441 \text{ (N)}$$

allow 440 (N)

1

- (e) **Level 2:** Some logically linked reasons are given. There may also be a simple judgement.

3-4

Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.

1-2

No relevant content

0

Indicative content

- as height changes gravitational potential energy changes
- gravitational potential energy decreases when moving to the lower bar
- as speed changes kinetic energy changes
- kinetic energy increases when moving to the lower bar
- transfer from gravitational potential energy to kinetic energy as height decreases
- the sum of the kinetic energy and gravitational potential energy is constant

- (f) reduces the force exerted

ignore impact

1

the risk of injury to gymnast is reduced

allow so the gymnast does not get injured

1

[11]