

New
Specification



Rewarding Learning

General Certificate of Secondary Education
2012–2013

Double Award Science: Physics

Unit P1

Foundation Tier

[GSD31]

WEDNESDAY 14 NOVEMBER 2012

1.30 pm–2.30 pm

**MARK
SCHEME**

		AVAILABLE MARKS
1	<p>(i) strain/elastic [1]</p> <p>(ii) kinetic [1]</p> <p>(iii) potential/gravitational [1]</p> <p>(iv) chemical [1]</p>	4
2	<p>(a) distance is a scalar/displacement is a vector/ displacement involves direction [1]</p> <p>(b) (i) Stopped or at rest [1]</p> <p>(ii) (Av) speed = (total) distance/(total) time [1] = 120/100 [1] = 1.2 (m/s) [1]</p>	5
3	<p>(a) (i) Weight/gravity [1]</p> <p>(ii) 30(N) [1]</p> <p>(iii) Reaction [1] 30(N) Allow e.c.f. from (a) (ii) [1] Upwards [1]</p> <p>(b) Friction [1] [NB: not drag]</p>	6
4	<p>(i) $W = F \times d$ [1] = 75×12 [1] = 900(J) [1]</p> <p>(ii) Food [1]</p> <p>(iii) $E = (\text{useful}) \text{ energy out}/(\text{total}) \text{ energy in}$ [1] = $900/4500$ [1] e.c.f. from (i) = 0.2 [1] (or 20%)</p>	7
5	<p>(a) The point [1] where weight (appears to) act [1]</p> <p>(b) (i) Moment = $F \times d$ [1] = 12×80 [1] = 960 [1] Ncm [1]</p> <p>(ii) Anticlockwise [1]</p>	7

- 6 (a) (i) Immerse stone (in liquid) [1]
 in a measuring cylinder [1]
 find difference in readings [1]
 OR (Eureka vessel method)
 Add stone [1] filled eureka vessel [1] or displacement can
 measure overflow [1]

(ii) Precaution: e.g. stone fully immersed or ensure no splashing [1]

(b) $\rho = m/v$ [1]
 $= 320/40$ [1]
 $= 8 \text{ (g/cm}^3\text{)}$ [1]

7

7

	Name	Relative mass	Relative charge
●	electron		-1
⊕	proton	1	
○		1	0 or neutral

1 mark each [6]

6

- 8 (a) (i) C [1] (ii) A [1] (iii) B [1]

(b) (i) Ionisation [1]

(ii) Lose or gain electron/s [1]

- (c) e.g. Any two from:
 Use tongs/keep distance large [1]
 Keep exposure time low [1]
 Use shielding/wear protection [1]/safety badge/film badge

(d) Time [1] for activity to halve [1] [dept. marking]

9

- 9 (a) Find weight (or mass and multiply by 10) [1]
 Find total height of stairs [1]
 Time to climb stairs [1]
 Power = (weight × height)/time; [1]
 Any two instruments from scales/metre stick/stop clock [2]
 [1 mark each]

Response	Mark
Candidates give 5 or 6 of the above points. They use good spelling, punctuation and grammar. The form and style are of a high standard and specialist terms are used appropriately.	[5–6]
Candidates explain 3 or 4 of the above points. They use satisfactory spelling, punctuation and grammar. The form and style are of a satisfactory standard and they have made use of some specialist terms.	[3–4]
Candidates explain 1 or 2 of the above points. They use limited spelling, punctuation and grammar. The form and style is of a limited standard and they have made no use of specialist terms.	[1–2]
Response not worthy of credit.	[0]

[6]

- (b) $P = \text{Work done}/\text{time taken}$ (no marks)
 $= (3800)/5$ [1]
 $= 760$ [1]
 $= 0.76 \text{ (kW)}$ [1]

[3]

9

10 (i)

Depth h in m	0	10	20	30	40	50
W in bar	0	1	2	3	4	5
Total pressure in bar	1	2	3	4	5	6

3 or 4 correct [1]

All correct [2]

[2]

(ii) Vertical axis numbered with uniform scale [1], scale more than half [1]

3 or 4 correct [1]

5 or 6 points [2]

[4]

(iii) Best fit line [1]

(iv) Intercept (on vertical axis) OR when $h = 0$ pressure is 1 (bar) [1]

(v) 4.5 bar [1]

(vi) Line does not go through origin [1]

AVAILABLE
MARKS

10

Total

70