



Interactive Example Candidate Responses

Paper 4 (May / June 2016), Question 5

Cambridge IGCSE™
Physics 0625



In order to help us develop the highest quality resources, we are undertaking a continuous programme of review; not only to measure the success of our resources but also to highlight areas for improvement and to identify new development needs.

We invite you to complete our survey by visiting the website below. Your comments on the quality and relevance of our resources are very important to us.

www.surveymonkey.co.uk/r/GL6ZNJB

Would you like to become a Cambridge International consultant and help us develop support materials?

Please follow the link below to register your interest.

www.cambridgeinternational.org/cambridge-for/teachers/teacherconsultants/

Copyright © UCLES 2017

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

UCLES retains the copyright on all its publications. Registered Centres are permitted to copy material from this booklet for their own internal use. However, we cannot give permission to Centres to photocopy any material that is acknowledged to a third party, even for internal use within a Centre.

- 5 (a) A student carries out an experiment to find the relationship between the pressure p and the volume V of a fixed mass of gas. The table contains four of her sets of measurements.

p/kPa	250	500	750	1000
V/cm^3	30.0	15.2	9.8	7.6

- (i) Use the data in the table to suggest the relationship between the pressure and the volume in this experiment. Explain how you reach your conclusion.

as the ~~gas~~ pressure ~~decreases~~ increases
the volume ~~increases~~ decreases. therefore
therefore pressure is inversely proportional to volume

[2]

- (ii) State the property of the gas, apart from the mass, that remains constant during the experiment.

temperature

[1]

- (b) A lake is 5.0 m deep. The density of the water is 1000 kg/m^3 .

- (i) Calculate the pressure at the bottom of the lake due to this depth of water.

$$p = \rho gh$$

$$p = 1000 \times 10 \times 5 = 50000$$

pressure = 50000 Pa

[2]

- (ii) A bubble of gas escapes from the mud at the bottom of the lake and rises to the surface.

Place one tick in each row of the table to indicate what happens to the volume, the mass and the density of the gas in the bubble. Assume that no gas or water vapour enters or leaves the bubble.

	increases	stays the same	decreases
volume of bubble	✓		
mass of gas in bubble		✓	
density of gas in bubble	✓		

[2]

[Total: 7]

Your
Mark

5(a)(i)

5(a)(ii)

5(b)(i)

5(b)(ii)

Q5 Mark scheme

(a)(i)	$P \times V$ values are 7500 or about 7500 OR If P /pressure doubles, V /volume halves OR vice versa (so) $PV = \text{constant}$ OR $P \propto 1/V$ OR either in words
(a)(ii)	temperature
(b)(i)	$P = \rho gh$ OR $5.0 \times 10 \times 1000$ 50 000 Pa or 50 kPa
(b)(ii)	Volume of bubble <u>increases</u> Mass of gas <u>stays the same</u> Density of gas <u>decreases</u>

- 5 (a) A student carries out an experiment to find the relationship between the pressure p and the volume V of a fixed mass of gas. The table contains four of her sets of measurements.

p/kPa	250	500	750	1000
V/cm^3	30.0	15.2	9.8	7.6

- (i) Use the data in the table to suggest the relationship between the pressure and the volume in this experiment. Explain how you reach your conclusion.

Pressure is inversely proportional to volume.
This is because ~~the~~ when the volume decreases
the pressure increases.

[2]

- (ii) State the property of the gas, apart from the mass, that remains constant during the experiment.

Energy

[1]

- (b) A lake is 5.0 m deep. The density of the water is 1000 kg/m^3 .

- (i) Calculate the pressure at the bottom of the lake due to this depth of water.

$$p = \rho gh$$

$$= 1000 \times 10 \times 5$$

$$= 50,000$$

pressure = 50,000 Pa [2]

- (ii) A bubble of gas escapes from the mud at the bottom of the lake and rises to the surface.

Place one tick in each row of the table to indicate what happens to the volume, the mass and the density of the gas in the bubble. Assume that no gas or water vapour enters or leaves the bubble.

	increases	stays the same	decreases
volume of bubble	✓		
mass of gas in bubble			✓
density of gas in bubble			✓

[2]

[Total: 7]

Your
Mark

5(a)(i)

5(a)(ii)

5(b)(i)

5(b)(ii)

Q5 Mark scheme

(a)(i)	$P \times V$ values are 7500 or about 7500 OR If P /pressure doubles, V /volume halves OR vice versa (so) $PV = \text{constant}$ OR $P \propto 1/V$ OR either in words
(a)(ii)	temperature
(b)(i)	$P = \rho gh$ OR $5.0 \times 10 \times 1000$ 50 000 Pa or 50 kPa
(b)(ii)	Volume of bubble <u>increases</u> Mass of gas <u>stays the same</u> Density of gas <u>decreases</u>

$$P = \frac{m}{\text{volume}}$$

- 5 (a) A student carries out an experiment to find the relationship between the pressure p and the volume V of a fixed mass of gas. The table contains four of her sets of measurements.

p/kPa	250	500	750	1000
V/cm^3	30.0	15.2	9.8	7.6

- (i) Use the data in the table to suggest the relationship between the pressure and the volume in this experiment. Explain how you reach your conclusion.

new
volume

Pressure is inversely proportion to Volume
As Pressure increases then Volume ~~also~~
decreases.

[2]

shape
volume.

- (ii) State the property of the gas, apart from the mass, that remains constant during the experiment.

~~Weight~~ Density [1]

- (b) A lake is 5.0m deep. The density of the water is 1000kg/m^3 .

- (i) Calculate the pressure at the bottom of the lake due to this depth of water.

$$\text{pressure} = \frac{5}{1000} \times 1000$$

$$\text{pressure} = \frac{5000}{1000} = 5000$$

- (ii) A bubble of gas escapes from the mud at the bottom of the lake and rises to the surface.

Place one tick in each row of the table to indicate what happens to the volume, the mass and the density of the gas in the bubble. Assume that no gas or water vapour enters or leaves the bubble.

	increases	stays the same	decreases
volume of bubble		✓	
mass of gas in bubble			✓
density of gas in bubble			✓

[2]

[Total: 7]

Select
page

Your
Mark

5(a)(i)

5(a)(ii)

5(b)(i)

5(b)(ii)

Q5 Mark scheme

(a)(i)	$P \times V$ values are 7500 or about 7500 OR If P /pressure doubles, V /volume halves OR vice versa (so) $PV = \text{constant}$ OR $P \propto 1/V$ OR either in words
(a)(ii)	temperature
(b)(i)	$P = \text{hdg}$ OR $5.0 \times 10 \times 1000$ 50 000 Pa or 50 kPa
(b)(ii)	Volume of bubble <u>increases</u> Mass of gas <u>stays the same</u> Density of gas <u>decreases</u>

Cambridge Assessment International Education
The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA, United Kingdom
t: +44 1223 553554
e: info@cambridgeinternational.org www.cambridgeinternational.org

Copyright © UCLES September 2017