

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**0652 PHYSICAL SCIENCE**

**0652/61**

Paper 6 (Alternative to Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2011	0652	61

- 1 (a) Q ; [1]
- (b) ammeter, cell and battery in series ;  
voltmeter in parallel with cell ;  
polarities correct ; [3]
- (c) A = 0.55 (A) ;  
B = 0.3(0) (V) ; [2]
- (d) (i) movement of (named) ions ; (ignore electrons) [1]
- (ii) more (greater concentration) of ions present ; (reject: greater concentration of copper chloride soln.) [1]
- (e) (i) *cathode*: red / brown / pink solid deposit ; [1]
- (ii) *anode* ; bubbles / effervescence / fizzing ; [1]
- [Total: 10]**
- 2 (a) (i) 37 s ; 52 s ; 19 s ; (no tolerance) [3]
- (ii) C  
A  
B (correct order) ; [1]
- (b) (i) filter funnel showing filter paper and vessel to collect filtrate ; (labels not required) [1]
- (ii) copper hydroxide ; [1]
- (iii) copper oxide ; [1]
- (c) more bubbles from magnesium than from zinc ;  
no bubbles from metal X ; [2]
- (d) the carbonate of the more reactive metal does not decompose as easily / owtte ; [1]
- [Total: 10]**

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2011	0652	61

- 3 (a) (i) 45    60    75  
11.3 ; 11.2 ; 11.7 ; (1 mark for each pair) [3]
- (ii) all values correct (line 2 divided by 10) ; (allow 1 error) (allow e.c.f. from 3(a)(i)) [1]
- (iii) 1.14 ; (e.c.f.) [1]
- (b) (no), all results are within experimental error/close together/no correlation/trend/  
pattern ;  
**OR**  
(yes), because all results are not the same ; [max 1]
- (c) repeat (each part of the experiment several times) and find the average ; [1]
- (d) 0.3 ; [1]
- (e)  $g = \frac{39.5 \times 0.3}{1.14^2}$  ; (e.c.f.)  
= 9.1 (m/s<sup>2</sup>) ; [2]

[Total: 10]

- 4 (a) (i) 17 ;
- (ii) 5780 (m) ; [1]
- (b) (i) 4 ; [1]
- (ii) 0.5 (s) ; [1]
- (iii)  $4/0.5 = 8$  (Hz) ; [1]
- (iv)  $340/8 = 42.5$  (m) ; [1]
- (c) (i) greater number of waves than line 1 of Fig. 4.4 ; [1]
- (ii) greater amplitude than line 1 of Fig. 4.4 ;  
same number of waves as line 1 of Fig. 4.4 ; [2]
- (d) transverse ; [1]

[Total: 10]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2011	0652	61

- 5 (a) (i) water enters the gas-jar ; [1]
- (ii) air pressure pushes the water from the bowl into the gas-jar/air pressure greater outside (the jar) ;  
**OR**  
 water enters to take the place of the dissolved gas ; [max 1]
- (b) add named indicator ;  
*result for acid:* colour to match indicator ;  
*result for alkali:* colour to match indicator ; [3]
- (c) place glowing / lit splint into gas ;  
*result:* splint bursts into flame / relights / burns brighter ; [2]
- (d) place burning splint into gas ;  
*result:* gas burns accept 'pop' ; [2]
- (e) ammonia and sulfur dioxide (any order) ; [1]
- [Total: 10]**
- 6 (a) 12.1 cm ;  
 10.1 cm ; (both  $\pm 1$  mm) [2]
- (b) (i) **A** and **V** in correct places ; (e.c.f. if reversed) [1]
- (ii) 4.5 V ; 0.3 A ; (no tolerance) [2]
- (iii)  $R = V/I$  ;  
 $R = 4.5/0.3 = 15$  (ohms) ; (e.c.f.) [2]
- (c) (i) column 1 shows the data for wire **X** ;  
 column 2 shows data for wire **Y** ; [1]
- (ii) the thinner the wire, the greater the resistance/owtte ;  
 the longer the wire, the greater the resistance/owtte ;  
 (allow cross-sectional area for thickness of wire) [2]
- [Total: 10]**