UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2006 question paper

0653 and 0654 COMBINED SCIENCE AND CO-ORDINATED SCIENCES

0653/06 and 0654/06 Paper 6 (Alternative to Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and students, 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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

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CIE is publishing the mark schemes for the October/November 2006 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1 (a) 67, 44 +/- 0.5°

(b) (i) suitable scale chosen and axes labelled correctly (1)
points plotted correctly (2) (allow 1 mistake in each curve)
suitable curves drawn (not joined by straight lines) (1) **[4]**

(ii) tube **B** (1)
air trapped round **A** (1) cotton wool is a poor conductor of heat (1)
B is wet therefore heat is lost (faster) (1) **[3]**

(c) identical test-tubes/same volume of water/same temperature /thermometers read at same times/same surroundings for the tubes (any three points) **[3]**

(d) oil is removed so water wets fur (1)
AND therefore heat is lost (1)
OR (air not trapped) no insulation (1) **[2]**

[Total: 14]

2 (a) 12 mm, 63 mm: 17 mm, 60 mm (+/- 1 mm) **[4]**

(b) (i) axes correct and labelled (1) points plotted (+/- 1 mm) (1)
straight line drawn cutting *y*-axis (1) **[3]**

(ii) 72 mm +/- 2 mm (or answer checked with candidate's graph)
(allow answer derived from any line cutting *y*-axis on graph)
no marks for answers in cm **[1]**

(iii) line correctly drawn (ecf) **and** point **M** labelled **[1]**

(c) the weight of the card is not acting at point **N**/
N is not the centre of mass/
one side of the card is heavier than the other OWTTE **[1]**

[Total: 10]

3 (a)

	sodium carbonate	ammonium chloride	aqueous ammonia
acid	√		√
base		√	
salt	√		√

4 or 5 correct (2) 2 or 3 correct (1) 1 or 0 correct (0) (score is decreased by excess of ticks greater than 5) **[2]**

(b) solid **B** is an acid/carbon dioxide is given off by reaction with **B**/solid **C** contains a metal/**A** is not an acid/other suitable conclusion **[1]**

(c) (i) litmus (Universal Indicator)(paper) (1) is turned from red to blue(purple) (1) other suitable test for ammonia **[2]**

(ii) solid **A** is a base (alkali) **[1]**

(d) (i) neutralisation/ammonia is neutralised/exothermic **[1]**

(ii) (zinc or aluminium)(metal) **hydroxide**(essential) (metal need not be named for the mark) **[1]**

(e) (i) add barium chloride (nitrate) (or lead nitrate) **[1]**

(ii) white solid/white precipitate seen **[1]**

[Total: 10]

4 (a) Clear outline of shapes and internal structure (1)
seeds clearly shown (1) **[2]**

(b) (i) eaten by animals (1) not digested/pass through gut and deposited in faeces (1)
(accept other descriptions) **[2]**

(ii) animals are attracted (1) by juicy(fleshy) fruit (NOT colour)
(allow 1 mark for mention of large number of seeds)
(mark parts **(b)(i)** and **(ii)** together) **[2]**

[Total: 6]

5 (a) 73, 97° C, (2)
67, 73 cm^3 (2) no tolerance

(b) sensible scale chosen and axes labelled (1)
points plotted (1) (+/- 1°C and 1 cm)
straight line drawn (1) **[3]**

(c) when heated molecules have more energy (1)
molecules collide with walls (with each other) OWTTE
with greater force (1)
(reject "vibrate")
pressure (volume) is raised (1) any 2 points **[2]**
(do not accept "molecules move faster therefore occupy more space")

(d) gas becomes liquid/gas condenses/sublimation/solid formed/change of state/phase change
(do not accept "molecules are frozen") **[1]**

[Total: 10]

6 (a) 52.5, 48.8, 47.3, 50.0 (must say 50.0) no tolerance **[4]**

(b) **B** and **C** (1), **D**, **A** (in correct order) (1) **[2]**

(c) **C**, **B** (in correct order) ecf from part **(a)** **[1]**

(d) hydrocarbon will burn in air with a yellow(smoky) flame
alcohol burns with a blue flame
alcohol will react with conc. sulphuric acid
alcohol will form an ester
other suitable suggestion (any 1) **[1]**

(e) add silver nitrate solution (1), gives a white precipitate (1)
OR yellow (orange) (1) flame test (1) **[2]**

[Total: 10]