CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0653 COMBINED SCIENCE

0653/62 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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

CAMBRIDGE
International Examinations

1 **(a)** *Benedict's:* (reducing) sugar ;
biuret: protein ;
iodine: starch ; [3]

(b)

Benedict's	*biuret*	*iodine*
green / yellow / orange / red ;	purple / lilac	*(orange)*
(blue)	purple / lilac (both) ;	blue-black / black ;

[3]

(c) **(i)** dissolve in / mix with ethanol ; [2]
add water ;

(ii) cloudy / milky / white emulsion ; [1]

(iii) milk is white / milky / cannot see the result / AW ; [1]

[Total: 10]

2 **(a)** apply a lighted splint / flame **AND** gas ignites / a flame is seen ; [1]

(b) **(i)** suitable diagram of CO_2 passing into limewater ;
white ppt. / white / milky ; [2]

(ii) carbon dioxide ; [1]

(c) calcium carbonate / calcium hydrogencarbonate ; [1]

(d) **(i)** litmus paper / pH paper / universal indicator (in the vapour) ;
blue to red *(blue can be line above)* ;
OR
full range indicator / universal indicator / pH indicator ;
red / orange / yellow ; [max 2]

(ii) to avoid ejection of hot acid / to avoid vapour of nitric acid / to avoid acid touching the paper ; [1]

(e) connect a gas syringe to the tube / collect in measuring cylinder over water / counting bubbles (in water) ;
find the volume of gas evolved in a fixed time / time taken to give out a certain volume of gas / number of bubbles in a fixed time / time taken for a certain number of bubbles ; [2]

[Total: 10]

3 **(a)** *d = 25 cm:* 0.69 (amps) ;
d = 40 cm: 0.48 (amps) ;
1.1 and 1.2 both required *(volts, for d = 25 and 40 cm respectively)* ; [3]

(b) **(i)** points correctly plotted ± ½ small square *(allow one error)* ;
straight line drawn ; [2]

(ii) indication on graph of how data obtained **AND** at least half of line used ;
correct calculation for triangle method using data from graph ; [2]

(iii) 0.67 or 0.7 ; [1]

(c) **(i)** the ammeter reading will be off the scale / current greater than 1A / the ammeter may be damaged ; [max 1]

(ii) the wire will heat up / (so that) the resistance (of the wire) will be changed ; [1]

[Total: 10]

4 **(a)** **(i)** 39 ± 2 (mm) ;; [2]
*(**OR** (for max 1): 39 ± 4 (mm) **or** 3.9 ± 0.2 / (cm))*

(ii) shows measurement of the scale bar in working 20 mm ± 1 mm ;
answer = 0.4 (mm) ; [2]

(b) 32
72
45
10 *(all four numbers to be correct)* ; [1]

(c) **(i)** axes labelled with units;
suitable linear scale;
at least 4 plots correct ± half small square;
best-fit line peaking at or above 0.5 mol / dm^3 ; [4]

(ii) read from peak of graph ± half small square ; [1]

[Total: 10]

5 **(a)** **(i)** rusty ; [1]

(ii) the nail has not rusted / no change ; [1]

(iii) the paint excludes air / oxygen / water / cannot react with air / oxygen / water / prevents oxidation ; [1]

(b) (i) lighted splint **AND** pops ; [1]

(ii) (add aqueous) ammonia / sodium hydroxide **AND** green precipitate ; [1]

(iii) yellow / orange / brown / red-brown ; [1]

(iv) (add aqueous ammonia / sodium hydroxide and) orange / red-brown / brown precipitate ; [1]

(c) hang mass from iron wire **AND** steel wire ;
measure deflection / bend / distance with the ruler;
use wires of same thickness / same length ; [3]

[Total: 10]

6 (a) (teat) pipette / dropper ; [1]

(b) (i) **A**: 16.5 ;
B: 8.0 ;
C: 11.5 ; [3]

(ii) **A**
C
B ; [1]

(c) (anhydrous) copper sulfate / cobalt chloride ;
boiling / freezing point / melting point ; [2]

(d) (i) measuring cylinder *(to measure)* volume ;
balance / scale(s) *(to measure)* mass ; [2]

(ii) the mass is divided by the volume / $\frac{\text{mass}}{\text{volume}}$; [1]

[Total: 10]