MARK SCHEME for the October/November 2013 series

0654 CO-ORDINATED SCIENCE

0654/62   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.

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1 **(a)** **(i)** brown colour around where the seeds / grains were, (blue / black elsewhere) ;   [1]

  (ii) enzyme / seeds / grains breaking down / use / need / converted the <u>starch</u> ;   [1]

  (iii) control / shows that breakdown depends on living seeds, ORA ;   [1]

(b) **(i)** (reducing) <u>sugar</u> is made (around the seeds / when the starch is broken down) ;   [1]

  (ii) <u>starch</u> digested / changed / converted to <u>sugar</u> ;   [1]

(c) (improved) <u>reliability</u> / because one seed might not be active / owtte ;   [1]

(d) **(i)** larger brown areas ;   [1]

  (ii) smaller brown areas (accept no brown area / all blue-black) ;   [1]

(e) (use different varieties of) seed<u>s</u> on different dishes / (different parts) of the same dish ;
keep (named) conditions constant ;
compare diameters / sizes of brown areas ;   [max 2]

[Total: 10]

2 **(a)** **(i)** 68.<u>0</u> ;
86.2 (±0.1) ;   [2]

  (ii) 8(0),
16.2 (ecf) ; ;   [2]

(b) **(i)** points plotted correctly ; (allow 1 error)
suitable straight line drawn ;   [2]

  (ii) clear evidence on graph ;
allow 1.2 to 1.3 inclusive ;   [2]

(c) 150/candidates answer = between 125 and 115 g (ecf) ;   [1]

(d) density = m /$l \times t \times w$ (any order) ;   [1]

[Total: 10]

3 **(a) (i)** *observation:* bubbles ;
conclusion: transition elements / metals ; [2]

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

    (iii) *observation:* white precipitate ; [1]

  (b) (i) hydroxide

[1]

    (ii) *test:* litmus (ignore colour) or Universal Indicator ;
observation: blue ; [2]

    (iii) brown, yellow or orange ; [1]

  (c) iron(III) chloride $FeCl_3$ and copper carbonate $CuCO_3$;;
    OR
    iron(III) carbonate $Fe_2(CO_3)_3$ and copper chloride $CuCl_2$;; [max 2]
    (allow 1 for two correct names or formulae)

[Total: 10]

4 **(a) (i)** 11.7 cm (no tolerance) ;
13.9 cm (no tolerance) ; [2]

    (ii) suitable scale and label on *x* axis;
not starting *y* axis at 0 ;
smooth curve drawn ; [3]

    (iii) 0.0417 or 0.042 cm / g;
0.01 or 0.010 cm / g; [2]

  (b) (i) (allows aorta to stretch) to allow surge of blood through / recoil propels blood
between beats / smoothes out blood flow / <u>change</u> in pressure ; [1]

    (ii) resistant to bursting / breaking / tearing ; [1]

  (c) e.g. same width of sample taken / same part of body of animal / same animal ; [1]

[Total: 10]

5 (a) (i) 22.5 ;
25.1 ;
27.8 ;   [3]

   (ii) **C** is the most concentrated, **A** is the least concentrated ;   [1]

(b) (i) sodium ethanoate + water ;   [1]

   (ii) orange or yellow, (reject red) ;   [1]

(c) same volume of acid and alkali ;
without indicator ;
<u>evaporate</u> ;
filter ;
dry crystals with e.g. filter paper ;
(any 4)
OR
<u>evaporate</u> ;
(heat / boil etc.) to concentrate / crystallisation point / saturation etc. ;
leave or cool ;
filter ;
dry crystals with e.g. filter paper ;
(any 4)   [max 4]

[Total: 10]

6 (a) (i) the amplitude decreases / gets smaller ;   [1]

   (ii) 4.0 cm (±0.1 cm) ;   [1]

   (iii) frequency = speed/wavelength, 10/4 ;
= 2.5 (Hz) ;   [2]

(b) (i) 1.1 cm (±0.1 cm) ;   [1]

   (ii) (1.1/0.25) = 4.4 (ecf) ;
cm / s ;   [2]

(c) (i) distance = 2.2 cm (±0.1 cm) ;   [1]

   (ii) speed = 2.2 / 0.25 = 8.8 (ignore units, ecf) ;   [1]

(d) speed at 9th wave is greater than speed at 4th wave, owtte (must refer to two
things, wave numbers, part numbers or speeds) ;   [1]

[Total: 10]