

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 starch ; [1]
- (iii) control/shows that breakdown depends on living seeds, ORA ; [1]
- (b) (i) (reducing) sugar is made (around the seeds/when the starch is broken down) ; [1]
- (ii) starch digested/changed/converted to sugar ; [1]
- (c) (improved) reliability/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) seeds 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) 68.0 ;
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 115g (ecf) ; [1]
- (d) density = $m/l \times t \times w$ (any order) ; [1]

[Total: 10]

| Page 3 | Mark Scheme | Syllabus | Paper |
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- 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 $\text{Fe}_2(\text{CO}_3)_3$ 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/change 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]

| Page 4 | Mark Scheme | Syllabus | Paper |
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- 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 ;
evaporate ;
filter ;
dry crystals with e.g. filter paper ;
(any 4)
OR
evaporate ;
(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]**