CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0654 CO-ORDINATED SCIENCES

0654/63 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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CAMBRIDGE International Examinations

1 **(a)** **(i)** good quality drawing ;
carpel, stamen and at least two petals drawn ; [2]

(ii) stamen correctly labelled ;
carpel correctly labelled ; [2]

(b) **(i)** correct measurement from photograph – 68 (mm) ; [1]

(ii) correct measurement of drawing given ; [1]

(c) magnification calculated by dividing the length of drawing by the length of the petal in photo (ensure both in the same units) ; [1]

(d) stigma labelled **Z** ; [1]

(e) select anther (allow top of stamen) ;
squash / cut to open anther ;
use a microscope to observe ; [max 2]

[Total: 10]

2 **(a)** **(i)** **A** and **F** (both required, either order) ; [1]

(ii) bubbles with sodium carbonate ;
no reaction with hydrochloric acid ; [2]

(b) *copper(II) chloride:* blue ppt ;
becomes (dark) blue solution ;
aqueous ammonia: no change / no reaction ; [3]

(c) **(i)** no observable change / no ppt ; [1]

(ii) sulfuric ;
zinc sulfate: no change / no ppt ;
barium chloride: white ppt ; [3]
(zero marks is hydrochloric acid is used)

[Total: 10]

3 **(a)** 73.5 ;
71.0 ; [2]

(b) axes correct and labelled and use of grid ;
points (allow 1 error) ;
smooth curve ; [3]

(c) **(i)** two figures from graph / 90 ;
correct rounding ; [2]

(ii) value less than **(i)** ; [1]

(d) size of beaker / surface area of water / volume of water ;
external temperature ;
wind ;
material of beaker ; [max 2]

[Total:10]

4 **(a)** increases ; [1]

(b) **(i)**

pulse rate / beats per min
104
80
72

;;

(3 correct = 2 marks, 2 correct = 1 mark) [max 2]

(ii) *beats* = 256 ; [1]

(c) **F** = 93.75 / 94 / 93.8 ;
fitness rating: excellent ; [2]

(d) **(i)** *twin* **A**: 400 **AND** *twin* **B**: 393 ;

(ii) *twin* **A**: poor **AND** *twin* **B**: average ; [1]

(iii) true according to Table 4.3 / owtte ;
experimental error ;
arbitrary cut off ;
variations from minute to minute in heart rate ;
AVP ; [max 2]

[Total: 10]

5 **(a)** **(i)** axes correct and labelled ;
use of grid ;
points (allow 1 error) ;
curve ; [4]

(ii) from candidate's graph (about 15) ;
accuracy / extrapolation ; [2]

(iii) lowers it ; [1]

(iv) from graph 132 – 42 (marking on candidate's graph) ;
= 90 ; [2]

(b) slower process / heating at one position ; [1]

[Total: 10]

6 **(a)** **(i)** ammeter in series ;
voltmeter in parallel ;
correct cell ; [3]

(ii) A = 0.35 ;
V = 1.55 ; [2]

(iii) *resistance* = 4.43 ; (ecf)
unit = Ω (allow ohm) ; [2]

(b) **(i)** (ammeter reading) decreases **AND** (brightness) not as bright / dimmer
(both required) ; [1]

(ii) brighter as more current flows ; [2]
then 'blows' as filament melts ;

[Total: 10]