

## MARK SCHEME for the May/June 2008 question paper

### **5129 COMBINED SCIENCE**

**5129/02**

Paper 2 (Theory), maximum raw mark 100

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.

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.

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Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2008	5129	02

- 1 (a) (i) tree / grass / flower [1]
- (ii) cow / snail / rabbit [1]
- (b) Box 2 = snail  
Box 4 = hawk [2]
- (c) Sun / sunlight (not light alone) [1]
- (d) decomposer / bacteria / fungi [1]
- (e) energy supply is limited  
energy is used by the organisms  
energy is lost at each stage  
insufficient energy left (for another level) } any 2 [2]
- 2 (a) copper / Cu [1]
- (b) potassium / K [1]
- (c) iron / Fe [1]
- (d) copper / Cu [1]
- (e) zinc / Zn [1]
- 3 (a) (i)  $Q = It$  or  $0.2 \times 180$   
36 (0.6 gains 1 mark) [2]
- (ii)  $V = IR$  or  $7 \times 0.2$   
= 1.4 [2]
- (b) 0.6 / 2.0–(a)(ii) [1]

Page 3	Mark Scheme	Syllabus	Paper
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- 4 (a) limewater  
milky / cloudy / white (precipitate) [2]
- (b) (i)  $\text{CH}_4 = 16$   
 $\text{CO}_2 = 44$  [2]
- (ii)  $16 \rightarrow 44$   
 $\therefore 4 \rightarrow 44 \times 4/16 = 11 \text{ g}$  [2]  
correct method from wrong numbers in (b)(ii) gains 2
- 5 (a) blue pink [1]
- (b) (i) transpiration [1]
- (ii) **upper surface** has waxy layer  
fewer / no stomata [2]  
answer could be in terms of **lower surface**
- (c) root hair  
osmosis [2]
- 6 (a) reduction [1]
- (b) conducts electricity  
conducts heat  
malleable  
ductile  
high density  
high melting point  
high boiling point } any 2 [2]
- (c) boils at  $100^\circ\text{C}$ /boils at single temperature [1]
- 7 (a) (i) gravity / weight [1]
- (ii) gravitational / potential [1]
- (b) line is curved / not straight [1]
- (c)  $F = ma$  or  $a = F/m$  or  $300/80$   
 $= 3.75$   
 $\text{m/s}^2$  [3]

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- 8 (a) matt black is a better absorber / shiny is a better reflector [1]
- (b) (i) stays the same / no change / none [1]
- (ii) decreases / gets less / lowers [1]
- (c) microwaves and radiowaves (either order) [2]
- 9 (a) cuts / grinds food  
large pieces to smaller pieces  
mixes food with saliva  
dissolves (soluble particles) } any 2 [2]
- (b) secrete liquid / saliva  
secrete enzymes / amylase  
lubricate / softens food  
enzymes convert starch to maltose / sugar } any 2 [2]
- (c) bacteria  
cavities / enamel to dissolve / tooth decay [2]
- 10 (a) hydrogen / H<sup>+</sup> [1]
- (b) (i) red [1]
- (ii) orange / yellow [1]
- (c) (i)  $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$  [1]
- (ii) magnesium carbonate  
magnesium hydroxide  
magnesium oxide } any 2 [2]
- 11 (a) like charges (repel) [1]
- (b) positive [1]

Page 5	Mark Scheme	Syllabus	Paper
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- 12 frequency = Hz or s<sup>-1</sup>  
period = s [2]
- 13 (a) diagram showing 3 bonding pairs  
and one lone pair  
(if inner shell drawn it must be correct) [2]
- (b) 400–500 °C  
200–300 atm  
iron [3]
- (c) potassium  
phosphorus (either order) [2]
- 14 (a) lack of (enough) food [1]
- (b) lack of (enough) rain / water  
not enough light  
too much rain / water / floods  
civil unrest / war  
  
earthquake / hurricane  
cause and explanation gains 2 marks  
  
plants die / crop fails  
no photosynthesis / growth  
plants washed away / die  
no one to tend crops  
or crops destroyed  
food destroyed / lost [4]
- 15 (a) sinusoidal shape with  
both positive and negative values  
with two cycles shown [3]
- (b) increased speed of rotation  
stronger magnet  
more turns in coil } any 1 [1]
- 16 (a)  $0.1 \times 30 = W \times 0.2$   
 $W = 0.15$  [2]
- (b) tips anticlockwise / iron rod goes down / left goes down  
iron rod attracted by the magnet [2]

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- 17 (a) (i) electronic structure drawn as 2 8 [1]
- (ii) +3 [1]
- (b) group 3  
forms a positive ion  
on the left of the Periodic Table  
trend across period is metal to non-metallic } any 2 [2]
- (c) protected by a layer of (aluminium) oxide  
OR oxide layer / on surface of metal [2]
- 18 (a) A = testa  
B = cotyledon  
C = plumule  
D = radicle [4]
- (b) water  
oxygen  
suitable / named temperature [3]
- 19 (a)  $26 - 14 = 12 \text{ cm}^3$   
(one correct reading from diagrams gains 1 mark) [2]
- (b) 0.24 or (a)/50 [1]
- 20 (a) 5 [1]
- (b) extension = 10 (cm)  
load = 4 [2]