

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.

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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 0.2×180
36 (0.6 gains 1 mark) [2]
- (ii) $V = IR$ or 7×0.2
= 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°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 $300/80$
 $= 3.75$
 m/s^2 [3]

Page 4	Mark Scheme	Syllabus	Paper
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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⁺ [1]
- (b) (i) red [1]
- (ii) orange / yellow [1]
- (c) (i) $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$ [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⁻¹
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]