

**MARK SCHEME for the May/June 2013 series**

**5129 COMBINED SCIENCE**

**5129/22**

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, which would have considered the acceptability of alternative answers.

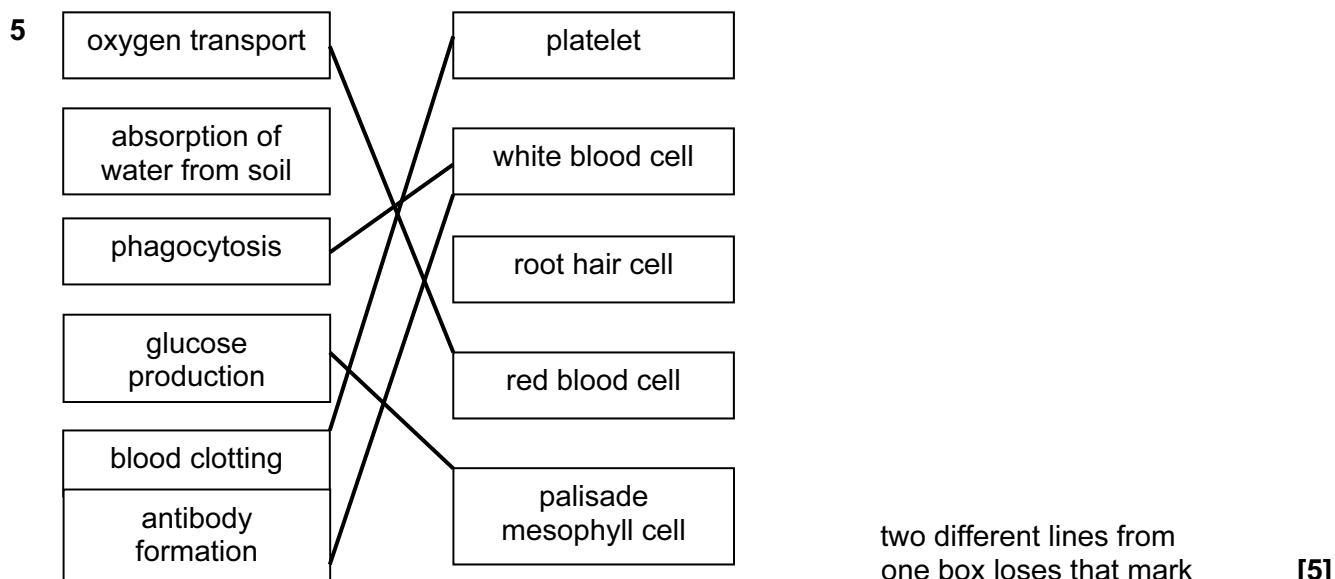
Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5129	22

- 1 (a) Chemical Chlorophyll carbon dioxide / CO<sub>2</sub> [3]
- (b) nitrogen / N<sub>2</sub> [1]
- 2 (a) 56 200 [2]  
5.6 20 (divide by 10) [1]  
3.33 (divide by 6) [1]
- (b) combination of metal and non-metal [1]
- (c) 78-80 [1]  
20-22 (both required) [1]
- 3 (a) 26 [1]
- (b) density = mass/volume OR 20.8/26 OR 20.8/(a) = 0.8 [1]  
g/cm<sup>3</sup> unit independent [1]  
1.16 scores 1 out first two marks (30.2/26) [1]
- 4 (a) (i) 1  
(ii) 4 [2]
- (b) velocity has direction, speed does not/runner changes direction accept velocity is a vector / speed is a scalar [1]
- (c) a = F/m or 175/70 = 2.5 [1]  
[1]



Page 3	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5129	22

- 6 (a) R.....S.....P.....Q [2]  
one error gains one mark
- (b) (i) lighted splint [2]  
explodes with pop  
result is dependent on correct test
- (ii)  $\text{SCl}_2$  [1]
- (c)  $\text{ZnO} + \text{H}_2$  [1]
- 7 (a)  $W = F \times s$  (or equivalent) OR  $1700 \times 2$  [2]  
 $= 3400$
- (b) chemical, [1]  
gravitational potential/potential/gravitational and kinetic [1]
- 8 (a) horizontal arrow left **or** right [1]
- (b) (i) No. of oscillations **or** complete waves per second [1]
- (ii)  $\lambda = c/f$  ( $v/f$ ) OR  $340/200$  [2]  
 $= 1.7 \text{ m}$
- 9 (a) maltose/glucose [1]
- (b) amylase digested/broke down starch (to maltose/glucose) [2]  
no starch present (to give black colour)
- (c) (i) B [1]
- (ii) tube A at lower temperature / tube B at higher temperature  
allow correctly stated pair of numbers  
amylase worked more slowly in A / more quickly in B [2]
- (iii) starch not digested / starch present [2]  
amylase destroyed/denatured by high temperature

Page 4	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5129	22

- 10 (a) (i) A = steam/water/H<sub>2</sub>O  
 B = hydrogen/H<sub>2</sub>  
 C = oxidation [3]
- (ii) D = carbon dioxide/CO<sub>2</sub>  
 E = water/H<sub>2</sub>O [2]
- (b) (i) drawn structure of ethanol [1]
- (ii) solvent  
 Perfumes  
 fuel  
 hand sterilisation } any one [1]
- 11 (a) none [1]
- (b) if current exceeds 3A  
 fuse melts/circuit is broken [2]
- (c) (i) 0.6 [1]
- (ii)  $P = VI$  OR  $240 \times .25$   
 = 60 [1]  
 [1]
- 12 (a) N S [1]
- (b) (i) attracted [1]
- (ii) repelled [1]
- 13 (a) 8  
 13  
 17  
 18 [4]
- (b) drawn as 2, 6 [1]

Page 5	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5129	22

- 14 (a) (i) attract insects to flower (colour/smell) [1]  
(ii) production of pollen [1]
- (b) (i) B  
D [2]  
(ii) store of food/nutrients  
accept example of stored nutrient (for developing plant embryo) [1]
- (c) (i) wind  
animals (stuck to fur of animals etc.)  
seed buried as a food store by some animals  
(moving) water  
self dispersal } any 2 [2]
- (ii) moved away from parent plant  
prevents competition (with others of same species)  
can colonise new habitats } any 1 [1]
- (d) 1 2;  
identical to parent offspring dissimilar to parents; [2]
- 15 (a) (i) air is a poor conductor/good insulator [1]  
(ii) convection (only) transfers heat upwards/hot air rises [1]
- (b) matt black is better/good absorber/white is better reflector [1]
- (c) microwave  
radio [2]
- 16 (a) (i) iron  
(ii) copper  
(iii) lead  
(iv) zinc [4]
- (b) (i) mixture of metals [1]  
(ii) to change the properties  
accept specific properties e.g. stronger [1]

Page 6	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5129	22

- 17 (a) current produces magnetic field  
magnet repelled [2]
- 18 (a) (i) externally administered chemical  
modifies chemical reaction in the body [2]
- (b) (i) slows down nerve impulses/reaction times increase  
co-ordination reduced/reduce muscle control  
reduced rationality/loss of inhibition/aggression  
reduced sensation of pain  
dilation of blood vessels/lowered blood pressure  
increased heart rate  
blurred vision  
slurred speech  
increase urine production  
intestinal/gastric problems  
memory loss/ mental health problems/dementia  
liver cirrhosis; } any 3 [3]
- (ii) heroin/cocaine/ecstasy/steroids/cannabis  
accept any valid suggestion or current street name [1]
- 19 solution  
insoluble  
filtration  
solute [4]