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## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

## MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

## **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 must be read in conjunction with the question papers and the report on the examination.

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aCambridge.com (a) A = hydrogen; **B** = sulfuric acid; C = ammonia; (b) carbon dioxide; goes cloudy / milky / forms white precipitate [independent marks]; [2] 2 (a) 12; [1] (b) (i) increased breathing rate / faster; increased depth of breathing / heavy breathing; [2] (ii) exercise / stress / any valid alternative; [1] 3 (a) for equilibrium / balance; (total) clockwise moment = (total) anticlockwise moment; [2] (b) (i) force x distance (from pivot) or  $8.0 \times 0.2$ ; [1] = 1.6; [1] Nm; (unit independent of numerical answer) (ii) 4.0 ecf (b)(i)/0.4; [1] (c)  $(2 \times 3)/1.5$ ; 4.0; [2] (a) uv / ultra violet ir / infra red gamma / γ [2] x-rays **(b)**  $f = c/\lambda \text{ or } 3 \times 10^8/1.5 \times 10^3$ ; [1]  $= 200 000 \text{ or } 2 \times 10^5$ ; [1] Hz / s<sup>-1</sup> do not accept hz; [1] (unit independent of numerical answer) 5 (a) 78-80%; [1] (b) corrosion of buildings / crops die / kills aquatic life / acid rain ; [1]

[1]

[incorrect statement = 0 mark, ignore air pollution]

(c) 6 2;

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(d) (i)  $N^{3-}$ ;

(ii) high melting point boiling point soluble in water conducts electricity when molten / when in solution

any 2 ;;

[5]

6 (a) A = oesophagus / gullet;

**B** = gall bladder;

C = pancreas;

**D** = ileum / small intestine ;

**E** = colon / large intestine ;

[do not accept no / different gravity]

[1] **(b) (i)** mouth;

[1] (ii) anus;

[1] (iii) ileum / D;

(c) pancreas / salivary gland; [1]

7 (a) force  $\times$  distance or  $5 \times 1.2$ ; [1]

[1] = 6; (correct answer gains 2 marks)

**(b)** power = energy/time **or (a)** / 0.5 ; [1] [1]

= 12; (correct or correct ecf answer gains 2 marks)

(c) gravity less any 1; weighs less [1] less force needed to lift

8 (a) removal of oxygen / addition of hydrogen; [1]

**(b)** 36 44;; [2]

11 (divide by 4); [1] 0.55 (divide by 20); [1]

(c) basic; metal oxide [independent]; [2]

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9	(a)	(more) germination / grow in dish <b>P</b> / with wet cotton wool; no germination / grow in dish <b>Q</b> / dry cotton wool; water needed for germination / cotton wool is wet; [mark candidate's response as a whole]	Cambridge.com
	(b)	improve reliability / validity / make sure results are typical / fair test; [ignore refs to accuracy]	[1]
	(c)	temperature [do not accept heat] light (intensity) / sunlight oxygen concentration type of cotton wool	[2]
10	(a)	I = P/V or 600/240; = 2.5; A; (unit independent of numerical answer)	[1] [1] [1]
	(b)	large current through earth / live ; fuse melts / blows ; live disconnected / breaks circuit ;	[1] [1] [1]
11	(a)	(i) fractional distillation ;	[1]
		(ii) aircraft <u>fuel</u> / jet <u>fuel</u> / <u>fuel</u> for oil stoves / lamps ; making roads ;	[2]
	(b)	(i) alkanes;	[1]
		(ii) 18;	[1]
	(	(iii) covalent ;	[1]
12	(a) pain / burning sensation on urination / frequent urination abnormal discharge (from urethra) inflammation / irritation of vagina / cervix / testes / prostate swollen / painful joints		
		swollen / painful joints	[2]
	(b)	syphilis;	[1]
	(c)	antibiotics/ penicillin ;	[1]
	(d)	AIDS / (non-specific) urethritis / herpes / hepatitis ; allow HIV	[1]

			Marila Oalia		W. W.	
	Pa	ge 5		me: Teachers' version  – October/November 2011	Syllabus 5129	er
13	(a)	measui	ring cylinder / burette ;		Syllabus 5129	ambric
	(b)	place s find diff <b>OR</b> fill displadd sto	re volume of liquid in c tone in liquid and mea erence between two v lacement can one and collect water re volume of water disp	sure new volume ; olumes ;		[1] [1]
14	(a)	elemen	t / copper	one type of atom ; mix or mixture = 0 mark		[1]
		compo	und / sodium chloride	two types of atom / elements co mixture or mix = 0 mark allow two types of atom / elements	•	[2]
		alloy / b	orass	mixture; two elements / types of atom; marks are independent		[2]
	(b)	conduc	ts electricity ;			[1]
15	(a)		ient food (to support th starvation, insufficient	e population) ; homes / houses / water		[1]
	(b) due to flooding insufficient / limited agricultural land large areas of non-agricultural land / mountains / forest any 2;;			nny 2 ;;	[2]	
	(c)	be	creased probability – n cause more demand fo ore not enough food	o mark) or food / more food needed ;		[1]
			creased probability – n cause plants need wat	o mark) er / increased chance of drought		
		(de be	ecreased probability – cause less (chance of) aswers to (c)(i) and (c)		obability)	[1]
16	(a)	(electro	omagnetic) induction ;			[1]

(b) number of turns / coils strength of magnet speed cross sectional area any 2;;

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(c) repels / pushes away;

17 (a) oxygen / O<sub>2</sub> not O;

**(b)** helium / He ; [1]

(c) ethene /  $C_2H_4$ ; [1]

(d) oxygen / O<sub>2</sub> allow O if used in (a) and (d); [1]

(a) an externally administered / swallowed /consumed / taken in / injected substance;
 [ignore food / medicine / pill / eat]
 which modifies / affects / changes chemical reactions / metabolism in the body;
 [2]

(b) reduced self-control / poor judgement
blurred / double vision
depression
addiction / withdrawal symptoms / DT's
liver disease / cirrhosis / hepatitis / liver cancer
cancer / inflammation of mouth / stomach / gut
brain damage
alcoholic poisoning
high blood pressure
impotence / infertility
dizzy / can't walk / difficulty standing / slurred speech
slow reactions

any 3 ;;;

[3]

ignore kill them / shorten lifespan / drink driving / divorce / crime / blindness / can't see