



Cambridge International Examinations
Cambridge Ordinary Level

COMBINED SCIENCE

5129/22

Paper 2 Theory

October/November 2016

MARK SCHEME

Maximum Mark: 100

Published

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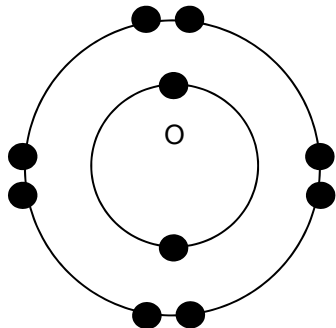
Page 2	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
1(a)	5.91	1
1(b)	$d = m/v$ or 24/2.5 9.6	2

Question	Answer	Mark
2(a)(i)	C = pancreas D = small intestine	2
2(a)(ii)	<i>acid</i> B <i>bile</i> A	2
2(b)	any two from • enzyme / biological catalyst • acts on / breaks down starch • converts it to maltose / glucose	2
2(c)	any two from • emulsifies fats • produces large surface area • for enzyme activity / speeds up fat digestion	2

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Question	Answer	Mark
3(a)	0.043	1
3(b)(i)	0 to 10	1
3(b)(ii)	$F = ma$ or 0.043×0.4 0.0172	2
3(b)(iii)	15×4 60	2

Question	Answer	Mark
4(a)(i)	85	1
4(a)(ii)	170 32 4.25	3
4(b)(i)		1
4(b)(ii)	O^{2-}	1
4(c)	acetylene	1

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Question	Answer	Mark
5	<u>toxic</u> <u>aerobic respiration</u> <u>liver</u> <u>kidneys</u> <u>amino acids</u>	5

Question	Answer	Mark
6(a)	A = copper carbonate B = sulfuric acid C = water D = magnesium	4
6(b)	filtration	1
6(c)	limewater goes milky / cloudy / white precipitate	2

Question	Answer	Mark
7(a)	transfer of energy In the same direction as the vibration	2
7(b)	$v = f\lambda$ or 6×0.9 $= 5.4$	2

Page 5	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
8(a)	$RI = \sin i / \sin r$ $\sin 30 / \sin 19$ or $0.5 / 0.326$ ($= 1.54$)	2
8(b)	line labelled W to the right of the refracted ray for glass and inside the line where the ray passes straight through	1

Question	Answer	Mark
9		5

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark															
10(a)	<table border="1"> <tr> <td></td><td>metal</td><td>non-metal</td></tr> <tr> <td>melting point</td><td>high</td><td>low</td></tr> <tr> <td>malleability</td><td>yes / malleable</td><td>no / brittle</td></tr> <tr> <td>electrical conductivity</td><td>yes / conducts</td><td>no / insulator</td></tr> <tr> <td>type of oxide</td><td>basic / alkaline</td><td>acidic</td></tr> </table>		metal	non-metal	melting point	high	low	malleability	yes / malleable	no / brittle	electrical conductivity	yes / conducts	no / insulator	type of oxide	basic / alkaline	acidic	4
	metal	non-metal															
melting point	high	low															
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electrical conductivity	yes / conducts	no / insulator															
type of oxide	basic / alkaline	acidic															
10(b)	strength / low density resistance to corrosion	2															

Question	Answer	Mark
11(a)(i)	0.5	1
11(a)(ii)	0.25	1
11(b)	any two from • <u>more</u> turns (on electromagnet) • <u>decrease</u> resistance (in circuit) • <u>increase</u> current • <u>increase</u> voltage	2

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Question	Answer	Mark
12(a)	sun	1
12(b)	tree small bird / beetle / hawk moth / caterpillar	3
12(c)	any three from - energy is lost (at each trophic level) - as heat / during movement / in urine or faeces - only small proportion of energy available for next (trophic) level - insufficient energy available from top consumers to support a higher trophic level	3

Question	Answer	Mark
13(a)	molecule / compound containing carbon and hydrogen <u>only</u>	2
13(b)(i)	8 5 6	1
13(b)(ii)	limited supply of oxygen	1
13(c)(i)	contains <u>carbon to carbon double bond</u>	1
13(c)(ii)	addition ethane	1

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Question	Answer	Mark
14	by the same / positive charge placed at P (like charges) repelled	2

Question	Answer	Mark
15(a)	stomata are on underside of leaves stomata on L are blocked / covered by the grease water vapour cannot escape from L	3
15(b)	no stomata on upper surface stomata are not blocked / covered in both N and M	2

Question	Answer	Mark
16	alkali one electron hydroxide and hydrogen / H ₂ more	4

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Question	Answer	Mark
17(a)	light kinetic	2
17(b)(i)	no change	1
17(b)(ii)	move apart	1
17(c)	$V = IR$ or $I = V/R$ or $I = 1.5/3$ 0.5 A	3

Question	Answer	Mark
18	<i>contains seeds</i> C <i>produces pollen</i> B <i>protects flower</i> D	3

Question	Answer	Mark
19(a)(i)	hydroxide	1
19(a)(ii)	8 – 10	1
19(b)	nitric acid	1
19(c)	any one from - phosphorus - potassium	1

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Question	Answer	Mark
20(a)	alpha, beta and gamma alpha	2
20(b)	${}^4_2\text{He}$	2