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Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/33**

Paper 3 Core Theory **October/November 2019**

MARK SCHEME

Maximum Mark: 80

Published

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 International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
1(a)(i)	**R** cell membrane ; **S** cytoplasm ;	**2**
1(a)(ii)	*any two from:* (it has a) cell wall ; (it has a large) vacuole ; (it has) chloroplasts ;	**2**
1(b)	(LHS) carbon dioxide + water ; (RHS) glucose + oxygen ;	**2**
1(c)(i)	snail ;	**1**
1(c)(ii)	thrush ;	**1**
1(c)(iii)	decrease **and** (they have) less food / no food ;	**1**

Question	Answer	Marks
2(a)(i)	cracking ;	**1**
2(a)(ii)	(from) brown / orange / yellow / red-brown ; (to) colourless / lighter ;	**2**
2(a)(iii)	poly(ethene) ;	**1**
2(b)(i)	hydrocarbon ;	**1**
2(b)(ii)	covalent ;	**1**
2(b)(iii)	carbon dioxide / CO_2 ; water / H_2O ;	**2**

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Question	Answer	Marks
2(b)(iv)	three further hydrogen atoms drawn around the carbon atom ; one pair of electrons between each hydrogen and the carbon ;	**2**

Question	Answer	Marks
3(a)(i)	horizontal arrow to the right ;	**1**
3(a)(ii)	*any two from:* changes (object's) shape ; changes (object's) size ; changes (object's) motion ;	**2**
3(a)(iii)	force (applied) ; distance (moved) ;	**2**
3(b)	kinetic ; gravitational ;	**2**
3(c)	density = mass / volume **or** density = 6.0 (g) / 0.75 (cm^3) ; = 8.0 **or** 8 (g/cm^3) ;	**2**

Question	Answer	Marks
4(a)(i)	**A** petal ; **B** sepal ;	**2**
4(a)(ii)	pollen nucleus fuses ; with a nucleus in the ovule ;	**2**
4(b)(i)	stigma / carpel / style / ovary ;	**1**
4(b)(ii)	anthers / stamen ;	**1**
4(c)(i)	oviduct ;	**1**

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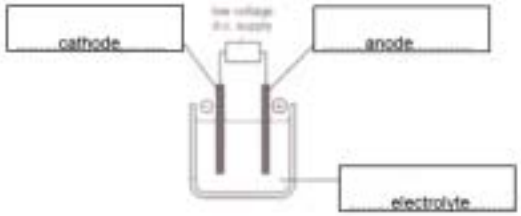
Question	Answer	Marks
4(c)(ii)	zygote ;	1
4(c)(iii)	wall / lining ; of the uterus ;	2

Question	Answer	Marks
5(a)(i)	 all three correct = 2 marks one or two correct = 1 mark	2
5(a)(ii)	sodium hydroxide / NaOH ; hydrogen / H_2 ;	2
5(a)(iii)	(test) damp litmus paper ; (result) (blue / red to) white ;	2
5(b)	(protons) 11 ; (neutrons) 12 ;	2
5(c)	(chlorine atom) 2, 8, 7 drawn ; (chloride ion) 2, 8, 8 drawn ;	2

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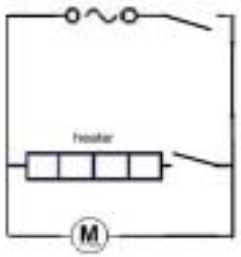
Question	Answer	Marks
6(a)	 heater inserted in a parallel branch ; second switch in series with heater in same branch ;	2
6(b)(i)	use of $R = V / I$ **or** $R = 240 / 3$; = 80 ; Ω / ohm(s) ;	3
6(b)(ii)	5 A ;	1
6(c)(i)	evaporation ;	1
6(c)(ii)	escape of faster (water) molecules ;	1
6(c)(iii)	*any two from:* thermal energy transferred from body (to water molecules) ; remaining molecules slower (on average) ; slower molecules means lower temperature ;	2

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Question	Answer	Marks
7(a)	molecules ; absorbed ;	**2**
7(b)(i)	(test-tube **1**) red / orange / yellow / green ; (test-tube **2**) blue ;	**2**
7(b)(ii)	boiling makes the enzyme inactive ;	**1**
7(c)	(digestion) mouth / stomach / small intestine ; (egestion) anus ; (ingestion) mouth ;	**3**

Question	Answer	Marks
8(a)(i)	alloy(s) ;	**1**
8(a)(ii)	(electrical / heat / thermal) conductor / malleable / high melting point / high boiling point ;	**1**
8(b)(i)	 LHS ; carbon dioxide ;	**2**
8(b)(ii)	reduction ;	**1**
8(b)(iii)	releases / gives out (heat / thermal) energy ;	**1**

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Question	Answer	Marks
9(a)	positive **and** negative ;	**1**
9(b)	volt(s);	**1**
9(c)	loss / gain / transfer of electrons (between molecules) ;	**1**
9(d)	visible light; ultraviolet ;	**2**
9(e)(i)	speed = distance / time **or** d = speed × time = 330 × 5.0 ; = 1650 (m) ;	**2**
9(e)(ii)	light travels (much) faster than sound ;	**1**

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