Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/33**

Paper 3 Core Theory **October/November 2018**

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 2018 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.

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.

Question	Answer	Marks
1(a)	Line drawn from: *absorbs mineral ions* to any part of the root ; *makes carbohydrate* to any leaf ; *transports water to the leaves* to any part of the stem ; *absorbs carbon dioxide* to any leaf ;	**4**
1(b)	large petals ; **or** anther / stigma inside the flower ;	**1**
1(c)	Spiky / irregular surface ; sticks well to insects' bodies / stigma ;	**2**
1(d)(i)	for respiration ; **and one of** to release energy ; for growth ; building up large molecules ; cell division ; **Max 2**	**2**
1(d)(ii)	warmth / water ;	**1**

Question	Answer	Marks
2(a)	atomic / proton ; noble ; transition ;	**3**
2(b)(i)	covalent ;	**1**
2(b)(ii)	(electrons are) shared ;	**1**
2(c)	(electrons are) lost / gained / lost and gained ;	**1**

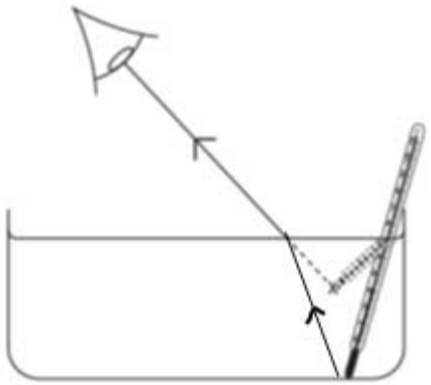
Question	Answer	Marks
2(d)(i)	filter / filtering / filtration ;	1
2(d)(ii)	evaporation ;	1
2(d)(iii)	physical **and** no new substance(s) is / are made ;	1

Question	Answer	Marks
3(a)	**Y** ;	1
3(b)(i)	C at any point on graph line between 5 and 10 s, or between 25 and 30 s ;	1
3(b)(ii)	(average) speed = (total) distance / (total) time **or** 20 / 30 ; = 0.67 (m / s) ;	2
3(c)(i)	chemical ; chemical ; kinetic ;	3
3(c)(ii)	converted / transformed into thermal energy;	1

Question	Answer	Marks
4(a)(i)	**A** oesophagus ; **B** pancreas ;	2
4(a)(ii)	ileum ;	1
4(a)(iii)	stores bile ;	1
4(b)	amylase from mouth cavity doesn't work ; in the acidic environment of the stomach ;	2

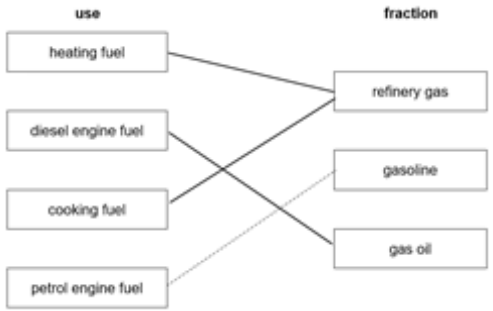
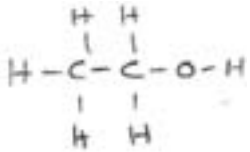
Question	Answer	Marks
4(c)	**any two of** ions / named ion, e.g. chloride ; carbon dioxide ; hormones ; any other soluble nutrient, e.g. amino acids ; **Max 2**	**2**
4(d)	in red (blood) cells ; by haemoglobin ;	**2**

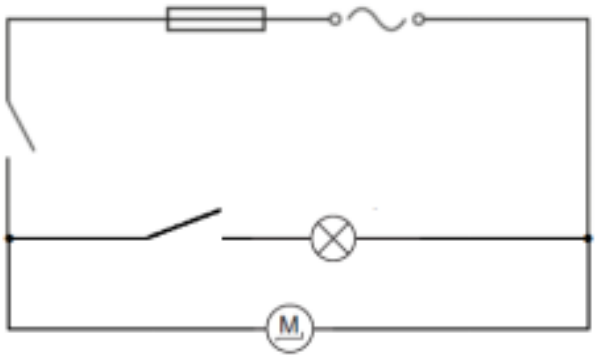
Question	Answer	Marks
5(a)(i)	time taken ; volume of gas ;	**2**
5(a)(ii)	(highest) calcium / Ca magnesium / Mg zinc / Zn (lowest) iron / Fe	**1**
5(a)(iii)	(magnesium) + hydrochloric acid → hydrogen + magnesium chloride magnesium chloride identified anywhere ; all species correct and in correct places ;	**2**
5(a)(iv)	(test) lighted splint ; (result) burns with a (squeaky) ‘pop’ ;	**2**
5(b)	(substance) carbon **and** (explanation) gains oxygen / O ;	**1**

Question	Answer	Marks
6(a)(i)	density / volume / cannot be compressed ;	1
6(a)(ii)	**(liquid)** molecules close together ; molecules can move around / slide over one another ; **(gas)** molecules far apart ; Molecules free to move apart ; **Max 2**	2
6(b)	example of use of gas expansion on heating (e.g. hot air balloon, convection heater) ;	1
6(c)(i)	evaporation ;	1
6(c)(ii)	conduction ; convection ;	2
6(d)(i)	refraction ;	1
6(d)(ii)	 ray from thermometer bulb to meet ray to eye at water surface ;	1

Question	Answer	Marks
7(a)	rate is reduced (no mark) haze / smoke particles reduce light / block stomata ;	1
7(b)	(reason) lack of tree roots in soil ; (explanation) roots stabilise the soil ; **or** (reason) trees and plants not present to protect soil / bare soil is exposed ; (explanation) wind and rain can easily reach soil to erode it ;	2
7(c)	*any two of* lose their habitats / move to new areas ; lose food supplies ; may be suffocated / burned by the burning process ; **Max 2**	2
7(d)	carbon dioxide is a greenhouse gas ; contributes to global warming ; any valid consequence of global warming ; **Max 2**	2

Question	Answer	Marks
8(a)(i)	coal (and) natural gas ; (either order)	1

Question	Answer	Marks
8(a)(ii)	 three correct lines = 2 marks one or two correct lines = 1 mark ;	**2**
8(a)(iii)	exothermic ;	**1**
8(b)(i)	ethene ;	**1**
8(b)(ii)	 C-C bond correct and C-H bonds correct ; O-H correctly bonded to C ;	**2**
8(c)(i)	atoms of more than one element joined together ;	**1**
8(c)(ii)	different chemical substances not joined together / can be separated by (suitable named) separation technique;	**1**

Question	Answer	Marks
9(a)(i)	 correct symbol for lamp ; parallel circuit with motor in one branch, lamp in other branch ; switch in series with lamp only ; complete workable circuit ;	**4**
9(a)(ii)	lamp can be switched off while motor remains on / if one component fails, the other will still work ;	**1**
9(a)(iii)	mains supply / (a.c.) power supply ;	**1**
9(a)(iv)	protection of components / circuit / wiring from excess current / overheating ;	**1**
9(b)	R (= V / I) / 240 / 1.25 ; = 192 ; Ω / ohm ;	**3**