Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/32**

Paper 3 Core Theory **March 2017**

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.

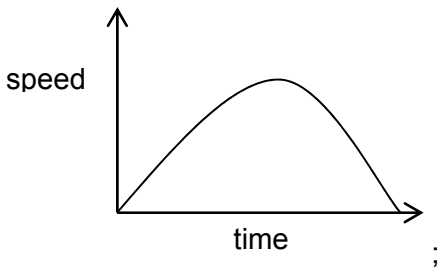
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the March 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

Question	Answer	Marks
1(a)	three lines drawn to connect 'Human liver cells' to contain cytoplasm ; destroy hormones ; have a cell membrane ;	3
1(b)	oesophagus correctly labelled ; gall bladder correctly labelled ;	2
1(c)	in either order chemical digestion ; many (digestive) enzymes are found there / food is broken down here ; absorption ; products of digestion enter the blood here ;	4
1(d)(i)	<u>bacteria;</u> feed on / breakdown sugar ; produce acid ;	2
1(d)(ii)	attacks enamel / causes decay ;	1

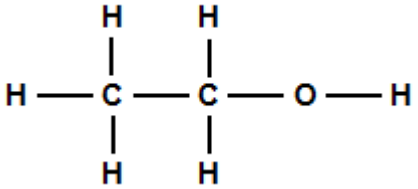
Question	Answer	Marks
2(a)(i)	carbon dioxide / CO_2 ;	1
2(a)(ii)	exothermic ;	1
2(a)(iii)	increase / goes to 7 ;	1
2(a)(iv)	fizzing / bubbles / gas / CO_2 stops / no more ;	1
2(a)(v)	filter(ing) / filtration ;	1

Question	Answer	Marks
2(b)(i)	(rate is) less / reduced ;	1
2(b)(ii)	(change) temperature / (use a) catalyst (change) surface area / particle size / stirring;	1
2(c)	(test) (add) silver nitrate (soln) ; (observation) white_solid / precipitate ;	2

Question	Answer	Marks
3(a)(i)	two opposite vertical arrows ; both arrows touching the lift ;	2
3(a)(ii)	(5000 N – no mark) lift not moving, so forces balanced / equal and opposite ;	1
3(a)(iii)	upward force must increase ;	1
3(b)(i)	speed = distance/time (or rearranged) ; time (= distance/speed) = 30/2 = 15 (s) ;	2
3(b)(ii)	kinetic / motion (energy) ;	1
3(b)(iii)	(gravitational) potential (energy) ;	1
3(c)	 ;	1

Question	Answer	Marks
4(a)(i)	2 ;	1
4(a)(ii)	1,3,5 ;	1
4(a)(iii)	eating ;	1
4(b)	excretion / egestion ; urine / faeces ;	2
4(c)	any two from change in weather patterns / climate ; ice melting ; flooding ; loss of habitat ; avp ;	2

Question	Answer	Marks
5(a)(i)	coal ;	1
5(a)(ii)	methane ;	1
5(a)(iii)	oxygen ; ***allow*** O_2 ***ignore*** O	1
5(b)(i)	<u>fractional</u> distillation ;	1
5(b)(ii)	compound / molecule of / containing carbon / C and hydrogen / H ; (C and H) only ;	2
5(c)(i)	water / H_2O ;	1

Question	Answer	Marks
5(c)(ii)	 ;; ***allow*** (1) if one missing bond ***or*** H atom	**2**

Question	Answer	Marks
6(a)	at least two diverging rays from filament to lens ; all rays emerging from lens parallel ;	**2**
6(b)	visible light in correct box ; radio (waves) in correct box ;	**2**
6(c)(i)	evaporation ;	**1**
6(c)(ii)	faster molecules ; have enough energy to escape ;	**2**
6(d)	(pitch) low (frequency / note) ; (amplitude) large ;	**2**
6(e)	(volume) expands ;	**1**

Question	Answer	Marks
7(a)	water enters / taken up by root ; root hair cells ; up stem (to leaves) ; through xylem ;	**[max3]**
7(b)(i)	heat produced by lamp ; increases transpiration rate ; increased light intensity; increases transpiration rate ;	**3**
7(b)(ii)	any suitable value less than 1.2 (cm) ; increased humidity reduces the rate of transpiration ;	**2**

Question	Answer	Marks
8(a)(i)	floats ;	**1**
8(a)(ii)	sodium + water ➔ sodium hydroxide + hydrogen LHS (either order) ; RHS (either order) ;	**2**
8(a)(iii)	sinks ; no reaction ; ***either order***	**2**
8(b)(i)	transition metals ;	**1**
8(b)(ii)	unreactive ;	**1**
8(b)(iii)	mass no. (35) number of protons + neutrons ; atomic no. (17) number of protons ;	**2**

Question	Answer	Marks
9(a)(i)	correct symbols for ammeter and lamp ; complete series circuit ;	**2**
9(a)(ii)	correct voltmeter symbol ; connected in parallel with lamp ;	**2**
9(b)(i)	$R = V/I$ = 1.5/0.6 (= 2.5 Ω) ;	**1**
9(b)(ii)	reading / current goes down / decreases ; because resistance has been increased ;	**2**