
COMBINED SCIENCE**0653/51**

Paper 5 Practical Test

May/June 2018

MARK SCHEME

Maximum Mark: 30

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.

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This document consists of **6** printed pages.

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)	results for $t = 30$ seconds ; full set of results ; recorded to nearest 1 cm^3 ;	3
1(b)	at least four points plotted correctly \pm half small square ; smooth curve ;	2
1(c)	correct reading from graph ;	1
1(d)	gloves because enzyme present / goggles to protect eyes from splashes ;	1
1(e)	same volume of peroxide / same volume of butter bean puree / same batch of puree / same time ; minimum of 5 different concentrations of peroxide ; sensible range of concentrations of peroxide solution ;	3

Question	Answer			Marks									
2(a)(i)	<table border="1"> <tr> <td data-bbox="322 220 766 268">test</td> <td data-bbox="779 220 1227 268">solution H</td> <td data-bbox="1227 220 1680 268">solution J</td> </tr> <tr> <td data-bbox="322 268 766 316">(add silver nitrate solution)</td> <td data-bbox="779 268 1227 316">white ppt. ;</td> <td data-bbox="1227 268 1680 316">cream ppt. / yellow ppt. ;</td> </tr> <tr> <td data-bbox="322 316 766 403">(add excess ammonia solution and stir)</td> <td data-bbox="779 316 1227 403">ppt. disappears / colourless solution ;</td> <td data-bbox="1227 316 1680 403">ppt. remains ;</td> </tr> </table>	test	solution H	solution J	(add silver nitrate solution)	white ppt. ;	cream ppt. / yellow ppt. ;	(add excess ammonia solution and stir)	ppt. disappears / colourless solution ;	ppt. remains ;			4
test	solution H	solution J											
(add silver nitrate solution)	white ppt. ;	cream ppt. / yellow ppt. ;											
(add excess ammonia solution and stir)	ppt. disappears / colourless solution ;	ppt. remains ;											
2(a)(ii)	no need to eliminate carbonate / cannot be a carbonate ;			1									
2(b)(i)	<table border="1"> <tr> <td data-bbox="322 507 766 555">test</td> <td data-bbox="779 507 1227 555">solution H</td> <td data-bbox="1227 507 1680 555">solution J</td> </tr> <tr> <td data-bbox="322 555 766 643">(add chlorine water)</td> <td data-bbox="779 555 1227 643">no change / slightly yellow AND...</td> <td data-bbox="1227 555 1680 643">...AND yellow / orange / brown ;</td> </tr> <tr> <td data-bbox="322 643 766 722">(then add a few drops of starch solution)</td> <td data-bbox="779 643 1227 722">(no change)</td> <td data-bbox="1227 643 1680 722">blue-black ;</td> </tr> </table>	test	solution H	solution J	(add chlorine water)	no change / slightly yellow AND...	... AND yellow / orange / brown ;	(then add a few drops of starch solution)	(no change)	blue-black ;			2
test	solution H	solution J											
(add chlorine water)	no change / slightly yellow AND...	... AND yellow / orange / brown ;											
(then add a few drops of starch solution)	(no change)	blue-black ;											
2(b)(ii)	iodine / I ₂ ;			1									
2(b)(iii)	(halogen) displacement / redox ;			1									
2(c)	H is (sodium) chloride AND J is (sodium) iodide ;			1									

Question	Answer	Marks
3(a)(i)	l_0 recorded to the nearest millimetre ;	1
3(a)(ii)	view perpendicular to scale / view scale at eye level / ruler close to spring / use of fiducial aid ;	1
3(b)(i)	l present in the table ;	1
3(b)(ii)	all readings present ; lengths increasing down the table ;	2
3(c)(i)	suitable choice of scales (\geq half the grid used) ; at least 4 points plotted correctly to half a small square ; good best-fit straight line judgement ;	3
3(c)(ii)	same intercept on l axis ; steeper gradient graph ;	2