Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/06**

Paper 6 Alternative to Practical **For examination from 2019**

MARK SCHEME

Maximum Mark: 40

Specimen

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

CAMBRIDGE International Examinations

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.

mark scheme abbreviations

;	separates marking points
/	alternative responses for the same marking point
not	do not allow
allow	accept the response
ignore	mark as if this material was not present
ecf	error carried forward
avp	any valid point
ora	or reverse argument
owtte	or words to that effect
underline	actual word given must be used by candidate (grammatical variants excepted)
( )	the word/phrase in brackets is not required but sets the context
max	indicates the maximum number of marks
any [number] from:	accept the [number] of valid responses
note:	additional marking guidance

[Turn over

Question	Answer	Marks	Guidance
1(a)(i)	large (at least half of the area) neat pencil drawing ; drawing clearly shows petals, stamens, carpel ;	**2**	allow: any orientation (i.e. horizontal or vertical)
1(a)(ii)	anther and filament correctly labelled ;	**1**	
1(a)(iii)	anther/filament marked as male and carpel marked as female ;	**1**	
1(b)(i)	clear pencil drawing of carpel cross-section ;	**1**	
1(b)(ii)	ovary / ovary wall / carpel wall correctly labelled ; ovule correctly labelled ;	**2**	

Question	Answer	Marks	Guidance
2(a)	Benedict's solution;	**1**	
2(b)	**apparatus** reagents in a suitable container (e.g. test tube) and use of Bunsen burner (or other heating device) and water bath ; **method – max 3** minimum of 5 temperatures ; temperatures at least one below, one at and one above 40 °C ; heat Benedict's ; same volume / concentration of starch solution ; same volume / concentration of Benedict's / amylase / enzyme ; wear goggles / wear gloves / amylase or enzyme is an irritant ; **measurements** measure time for colour change ; **processing and use of results** greatest activity is at temperature with shortest time for colour change ; greatest activity identified from graph of time against temperature ;	**6**	max 6 in total note: to gain 6 marks at least 1 mark must come from each of: • apparatus • method • measurements • processing and use of results

Question	Answer	Marks	Guidance
3(a)	17 ; 65 ;	**2**	
3(b)(i)	changes colour with <u>iodine</u> / acts as an indicator for <u>iodine</u> ;	**1**	
3(b)(ii)	to keep total volume constant / so concentration proportional to volume ;	**1**	

Question	Answer	Marks	Guidance
3(b)(iii)	syringe / burette / graduated pipette / 10 cm^3 measuring cylinder ;	**1**	
3(c)(i)	time increases as volume decreases **or** inverse relationship ;	**1**	
3(c)(ii)	rate increases with increasing concentration / proportional relationship ;	**1**	
3(d)	white paper with cross on it under flask ; measure time taken for cross to disappear ;	**2**	
3(e)	keep volume of potassium salt solution constant ; vary volume of reducing agent (from 10 to 4) and water (from 0 to 6) ;	**2**	
3(f)	time greater than 0 but less than 10 ; increase in temperature increases rate ;	**2**	

Question	Answer	Marks	Guidance
4(a)(i)	77.9 **and** 75.5 ;	**1**	accept ±0.1 cm on all values
4(a)(ii)	27.9 **and** 25.5 ;	**1**	ecf
4(a)(iii)	0.036 **and** 0.039 ;	**1**	
4(b)(i)	axis labelled and scales linear and over half of grid ; points correct within ½ square ;	**2**	
4(b)(ii)	straight line of best fit ;	**1**	
4(b)(iii)	mass *m* ;	**1**	
4(b)(iv)	points identified on the graph and correct ; calculation of gradient ;	**2**	
4(c)	M = 1 ÷ (gradient × 45) ;	**1**	ecf on **(b)(iv)**
4(d)	metre rule will break (splinter in person's eye) / mass and ruler might fall off pivot (onto someone's foot) ;	**1**	
4(e)(i)	possible source of error (e.g. judging middle of mass *m*, parallax error in reading position of mass/ reading length *x*, identifying if pivot at 50 cm mark) ;	**1**	

[Turn over

Question	Answer	Marks	Guidance
4(e)(ii)	suggestion to overcome problem (e.g. hang the masses from the ruler using cotton, ensure that eye is at right angles to both 50 cm mark and position of *m*, mark underneath of the ruler at 50 cm mark) ;	**1**	