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PRE-STANDARDISATION

Cambridge IGCSE™

SUBJECT	**0610/62**
Paper 3 Alternative to Practical	**March 2024**
MARK SCHEME	
Maximum Mark: 40	

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Cambridge Assessment International Education – 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.

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Science-Specific Marking Principles

1.	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2.	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3.	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane/ethene, glucagon/glycogen, refraction/reflection).
4.	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5.	'List rule' guidance (see examples below)

For questions that require *n* responses (e.g. State **two** reasons…):

- The response should be read as continuous prose, even when numbered answer spaces are provided
- Any response marked *ignore* in the mark scheme should not count towards *n*
- Incorrect responses should not be awarded credit but will still count towards *n*
- Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response.
- Non-contradictory responses after the first *n* responses may be ignored even if they include incorrect science

6.	Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form, (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this

general principle will be noted in the mark scheme.

7. <u>Guidance for chemical equations</u>

   Multiples/fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

   State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Examples of how to apply the list rule

State **three** reasons…. [3]

A

1. Correct	✓	
2. Correct	✓	**2**
3. Wrong	✗	

B
(4 responses)

1. Correct, Correct	✓, ✓	
2. Correct	✓	**3**
3. Wrong	ignore	

C
(4 responses)

1. Correct	✓	
2. Correct, Wrong	✓, ✗	**2**
3. Correct	ignore	

D
(4 responses)

1. Correct	✓	
2. Correct, CON (of 2.)	✗, (discount 2)	**2**
3. Correct	✓	

E
(4 responses)

1. Correct	✓	
2. Correct	✓	**3**
3. Correct, Wrong	✓	

F
(4 responses)

1. Correct	✓	
2. Correct	✓	**2**
3. Correct	✗	
CON (of 3.)	(discount 3)	

G
(5 responses)

1. Correct	✓	
2. Correct	✓	
3. Correct	✓	**3**
Correct	ignore	
CON (of 4.)	ignore	

H
(4 responses)

1. Correct	✓	
2. Correct	✗	**2**
3. CON (of 2.)	(discount 2)	
Correct	✓	

I
(4 responses)

1. Correct	✓	
2. Correct	✗	**2**
3. Correct	✓	
CON (of 2.)	(discount 2)	

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Question	Answer	Marks	Guidance
1 (a)(i)	table drawn with minimum two columns and a header line; appropriate column / row headings, with units for concentration and time ; recording of three concentrations and three times ; correct conversion to seconds ;	4	minimum table eg <table><tr><td>percentage concentration of glucose</td><td>time taken (for blue colour to disappear) / s</td></tr><tr><td>0(.0)</td><td>(>)600</td></tr><tr><td>0.5</td><td>362</td></tr><tr><td>1(.0)</td><td>132</td></tr></table> A times recorded in minutes
1 (a)(ii)	a greater rate of respiration at a higher glucose concentration / AW / ora ;	1	I description of results ecf from their data - answer must be consistent with the data in the table in (a)(ii)
1 (a)(iii)	concentration (of glucose) ;	1	

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Question	Answer	Marks	Guidance
1 (a)(iv)	*any one from* volume / concentration of yeast ; total volume of glucose and water ; type of yeast ; time for equilibration / AW ; temperature ; volume / concentration of methylene blue ; height / type of oil ;	1	
1(a)(v)	*any two from* idea of uniform distribution of yeast cells / dispersing foam ; ensures each 5 cm^3 of yeast suspension is the same concentration ;	1	
1(b)(i)	*any two from* repeat at each concentration / AW ; method to identify end point eg colour chart / white card behind test-tube / colorimeter / colour standard ; do different concentrations at different times / individually /AW	2	
1(b)(ii)	2.5 cm^3 of 0.5% glucose ;	2	

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Question	Answer	Marks	Guidance
	2.5 cm^3 of distilled water ;		
1(b)(iii)	add Benedict's ; heat ;	2	<mark>For discussion at STM:</mark> Vetters comment: The mark scheme is fine but generous! For a method don't you have to state what a positive result would be? The mark scheme is fine provided the question was intended to be a low demand. If you want to toughen it: add Benedict's reagent and heat ; green / orange / brick red, precipitate/colour indicates a positive result ; This is an EFG
1(c)(i)	*any one from* upturned measuring cylinder with delivery tube ; collect it over water with a measuring cylinder ; <u>gas</u> syringe ;	1	A labelled diagram A burette for measuring cylinder
1(c)(ii)	a result that does not fit the pattern / AW ;	1	
1(c)(iii)	did not include sample 2 in the calculation / used only samples 1 and 3 / AW ;	1	A (1.8 + 2.0) / 2 = 1.9 I repeat reading

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Question	Answer	Marks	Guidance
1(c)(iv)	*any two from* the volume of carbon dioxide is (always) higher at 35 ^{o}C / ORA ; the volume of carbon dioxide levels off / becomes constant / AW at 35 ^{o}C and continues to increase at 25 ^{o}C ; no carbon dioxide produced in the first 10 minutes at 25 ^{o}C and carbon dioxide is produced at all times at 35 ^{o}C / AW ;	2	Statements need to be comparative. ==For consideration at STM: allow a comparative data quote for 1 mark?==
1(c)(v)	**A**(xes) – labelled with units ; **S**(cale) – suitable linear scale and data occupies at least half the grid in both directions ; **P**(lot) – points plotted accurately ± half a small square ; **L**(ines) – two suitable lines drawn ; **K**(ey) – lines labelled / suitable key	5	x axis – time / minutes y axis – volume / cm^3 STM to decide how many plots to check A curved line of best fit / points joined with a ruler, no extrapolation
1(c)(vi)	answer consistent with line on graph ; indication on graph ;	2	estimated value is 22-23
1(d)	(red to) orange / yellow	1	

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Question	Answer	Marks	Guidance
		Total: [27]	
2(a)(i)	Outline - single clear line no shading ; Size – equal to or greater than 80 mm wide ; Detail ;; e.g. shape of cell wall / projections of cytoplasm / location of nucleus	4	
2(a)(ii)	0.226 / 0.229 / 0.232 ;;;	3	MP 1 measuring line PQ = 78 ± 1 mm ; MP2 correct calculation of actual size ; MP3 correctly rounded to 3 sig. fig ;
2(b)	*independent variable* 2 different concentrations of sodium chloride solution / sodium chloride solution and distilled water ; *dependent variable* measuring, length / mass of plant tissue; *detail of method* cutting cylinders / pieces of potato ; putting cylinders /pieces into sodium chloride ; measuring length /mass before and after ;	6	Accept alternative correct methods ask TL if unsure. Onion cell plasmolysis A reference to percentage plasmolysis A method of removing onion epidermis A making slides A counting plasmolysed cells before and after

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Question	Answer	Marks	Guidance
	constant variables;; surface area / initial length / initial mass / temperature / volume of sodium chloride solution / variety of potato AW / incubation time 2 or more repeats ; relevant safety eg ref to cutting / allergies and gloves ;		A type of onion / temperature / volume of sodium chloride / incubation time
		Total: [13]	