



eduresourceza.com



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/62

Paper 6 Alternative to Practical

February/March 2021

MARK SCHEME FINAL for examiners

Maximum Mark: 40

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.

Question	Mark scheme	Mark	Guidance
1 (a)(i)	table drawn with minimum three columns and a header line ; appropriate column / row headings, with units ; Accept mm or cm four correct measurements with the stated ranges ;	3	MP1 Ignore extra columns MP2 Reject units in data cells MP3 units must correspond with order of magnitude of measurements
1 (a)(ii)	S = 19 ± 1 (mm) <u>and</u> DW = 0 (mm) ;	1	Accept 1.9 and 0 cm if units stated
1 (a)(iii)	to allow comparison / to calculate the difference accurately / AW ;	1	Accept consistent / accurate / AW, results
1 (a)(iv)	water entered, the dialysis tubing bag filled with sucrose / bag S / AW (and did not in bag DW) ; concentration gradient, allows water movement / osmosis ;	1	Accept osmosis occurred in S / water moves in because sucrose (is too big) to move out
1 (a)(v)	sucrose / sugar, concentration (in the dialysis tubing bag) ;	1	Accept presence of sucrose / water potential / concentration of solution Accept contents / solution, of the bag Ignore concentration / solution, unqualified Reject volume / amount of solution

Question	Mark scheme	Mark	Guidance
1 (a)(vi)	to identify anomalous results / to calculate an average ;	1	Accept look for errors Ignore prevent error Accept to check the data is reliable
1(b)	<i>idea of</i> contamination ;	1	Accept changes the concentration (of sucrose)
1(c)	add Benedict's (solution) ; heat ;	2	Accept warm Ignore water bath unqualified
1(d)(i) 1 2 3	(initial) length / surface area (of cylinders) ; (soaking) time ; type of, potato / same potato ;	2	Reject mass of potato Reject amount / concentration of sucrose MP1 Accept size / shape / volume MP3 Accept age (of potato)
1(d)(ii)	(-) 17.1(%) ;;;	3	MP1 for evidence of dividing by 2.51 MP2 for correct percentage MP2 ecf from wrong shown % change calculation MP3 for correct rounding to one decimal place MP3 ecf correct rounding from correct working
11(d)(iii)	A (xes) – labelled with units ; S (cale) – linear scale and occupies at least half the grid ; P (lot) – first five points plotted accurately $\pm$ half a small square ; L (ines) – suitable (curved) line of best fit drawn ;	4	A minimum axes labels: (sucrose) concentration / mol per dm ³ <u>and</u> percent change in mass or % change in mass S Accept ecf from 1(d)(iii) P Reject 'dots' larger than a small square L curve must not dip below last point $\pm$ 1 small square L Reject extrapolation of line of more than 1 square beyond first or their last plot points on x axis

Question	Mark scheme	Mark	Guidance
1(d)(iv)	sucrose concentration value at which candidate's graph line intersects at 0.0 percentage change in mass $\pm$ half small square;	1	approximately 0.26 (mol per dm ³)
1(d)(v)	(to allow comparison as) the initial masses were different ;	1	
1 (e)	iodine (solution) ; blue-black ;	2	MP2 Accept black / dark blue / indigo
2(a)(i)	Outline - single clear outer line no shading ; Size - size use at least half available space ; Detail ;;	4	S width $\geq$ 7 cm or height $\geq$ 6 cm S Reject drawings into text or off page D1: 6 to 10 seeds each side (correctly positioned) D2: cut surface <u>and</u> edge of fruit shown (<i>idea that 3D</i>)
2(a)(ii)	method of extracting juice / preparing tomato ; add <u>DCPIP</u> ; becomes colourless if (vitamin C) present ;	3	MP2 Accept DCPIP turns pink MP2 Accept blue colour disappears
2(b)	length of line PQ = 106 ± 1 (mm) ; 2.1 mm ;; Accept 2 mm	3	MP1 correct measurement MP2 correct manipulation of formula i.e. their length $\div$ 50 MP2 ecf from MP1 MP3 correct unit MP3 Accept cm or μm if matches calculated value e.g. 0.21 cm

Question	Mark scheme	Mark	Guidance
2(c) 1 2 3 4 5 6 7&8&9 10	at least 3 different temperatures ; method of maintaining the different temperatures ; moist medium for growing seeds described e.g. soil / cotton wool / agar ; large number of seeds at each temperature / two or more further repeats (of entire experiment) ; count the number of seeds germinated after a particular time / measure time taken for seeds to germinate ; observation of germination described ; variables kept constant ;;; relevant safety precaution ;	6	MP3 Accept in a dish / test-tube etc., with moisture MP4 Accept ≥ 3 seeds (per temperature) MP5 Accept growth for germination MP6 Accept appearance of shoot / root / seed leaves etc. MP7, 8 or 9 • volume of water (used) Accept humidity • pH • variety of (tomato) seed / age of seeds • oxygen (concentration) • type of soil or growing medium / AW MP10 e.g. use gloves / forceps (to, handle soil / avoid allergens / protect from heat) or washing hands afterwards