GradeMax

Pearson

Mark Scheme (Results)

January 2026

Pearson Edexcel International Advanced Level In Biology
WBI16/01

GradeMax

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Using the Mark Scheme

Examiners should look for qualities to reward rather than faults to penalise. This does NOT mean giving credit for incorrect or inadequate answers, but it does mean allowing candidates to be rewarded for answers showing correct application of principles and knowledge. Examiners should therefore read carefully and consider every response: even if it is not what is expected it may be worthy of credit.

The mark scheme gives examiners:

- an idea of the types of response expected
- how individual marks are to be awarded
- the total mark for each question
- examples of responses that should NOT receive credit.

/ means that the responses are alternatives and either answer should receive full credit.
( ) means that a phrase/word is not essential for the award of the mark, but helps the examiner to get the sense of the expected answer.
Phrases/words in **bold** indicate that the meaning of the phrase or the actual word is **essential** to the answer. ecf/TE/cq (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

Candidates must make their meaning clear to the examiner to gain the mark. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct context.

Quality of Written Communication

Questions which involve the writing of continuous prose will expect candidates to:

- write legibly, with accurate use of spelling, grammar and punctuation in order to make the meaning clear · select and use a form and style of writing appropriate to purpose and to complex subject matter · organise information clearly and coherently, using specialist vocabulary when appropriate.

Full marks will be awarded if the candidate has demonstrated the above abilities.
Questions where QWC is likely to be particularly important are indicated (QWC) in the mark scheme, but this does not preclude others.

Question Number	Answer	Additional Guidance	Mark
1(a)	An answer that includes the following: • suitable risk identified (1) • method of reducing risk (1)	 e.g. Allergy to plant / sunburn/wind so sand in eyes/heatstroke/stings/bites salt in eyes gloves qualified	**2**

Question Number	Answer	Additional Guidance	Mark
1(b)	A description that includes five of the following: • transect (line) (1) • use of quadrat (1) • defined size of quadrat/or transect at 90 degrees to shoreline (1) • standardised method of placing quadrat (1) • {record/count number of plants/ %cover} in quadrat (1) • {measure/monitor} one named variable (1) • Repeat at least one more transect (1)	 Accept description Accept up to $5m^2$ Accept stated distance or regular intervals Accept ACFOR scale e.g. pH/salinity of sand/humidity/temp/wind speed/time of year/aspect accept repeat the experiment	**5**

Question Number	Answer	Additional Guidance	Mark
1(c)	A description that includes max three from structure or function *Structure* • Xylem has a larger lumen than phloem (1) • Xylem has {hollow/dead/no cell contents} whereas phloem has {living cells/companion cells} (1) • Xylem has **no end walls** whereas phloem has **sieve plates** (1) • Xylem has {secondary thickening/lignified} whereas phloem does not (1) *Function* • Xylem transports water/mineral (ions) phloem transports organic molecules (1) • Xylem transport is one way whereas phloem transport is two way (1) • Xylem contributes to support but phloem does not (1) • Xylem transport is a passive process but phloem uses active process (1)	Allow piecing together ORA Ignore pits Accept secondary cell wall E,g, sucrose/amino acids Ignore refs to transpiration/translocation Accept cytoplasmic streaming/active transport	**4**

(Total for question 1 = 11 marks)

Question Number	Answer	Additional Guidance	Mark
2(a)	• correct calculation (1) • correct answer to two significant figures (1)	(8.0 - 1.8) ÷ 4 = 1.55 1.6 Correct answer with no working (2) Correct rounding of an incorrect calculation shown to two sig figs for second mark only	**2**

Question Number	Answer	Additional Guidance	Mark
2(b)(i)	any two of the following: • temperature (1) • substrate **concentration** (1) • oxygen **concentration** (1)	Ignore dead cells Accept glucose/minerals/nutrients	**2**

Question Number	Answer	Additional Guidance	Mark
2(b)(ii)	• description of an appropriate method of control (1)	Candidates will express this in different ways Ignore waterbath unqualified Accept thermostatic/AC/incubator	**1**

Question Number	Answer	Additional Guidance	Mark
2(c)	A description that includes five of the following: • description of method to measure turbidity (1) • Use of same strain/species/type/age of yeast (1) • standardised method of (starting) each liquid culture (1) • use of buffer (1) • measure turbidity at each time interval (1) • suitable method of agitating culture (1)	Accept optical density/light transmission/colourimeter Other valid method E.g. mass yeast/conc of sucrose/sugar/same temp/volume of broth Accept agitation of starting culture or sampling	**5**

(Total for question 2 = 10 marks)

Question Number	Answer	Additional Guidance	Mark
3(a)	• there are no (significant) **differences** between the number of **species** between the site A and site B (1)	Candidates will express this in different ways Accept between the two sites/ different % grass covers	**1**

Question Number	Answer	Additional Guidance	Mark
3(b)	An answer that includes the following: • table with complete headings and units (1) • data entered correctly (1) • means calculated correctly (1)	number of species site A site B Ignore additional column for traps / number Reject incorrect columns 16.2 11.5 or 16 and 12	**3**

Question Number	Answer	Additional Guidance	Mark
3(c)	An answer that includes the following: • bar graph with linear scale starting at **zero** and axes labelled, with units (1) • means plotted correctly from the table (1) • range bars plotted correctly (1)	**mean** number of species Site A and site B or 20% cover and 40% cover A 20 12 B 19 8	**3**

Question Number	Answer	Additional Guidance	Mark
3(d)(i)	An answer that includes the following: • correct substitution of given $(S_A)^2$ and $(S_B)^2$ (1) • correct answer from substitution on formula (1)	Using 16.2 and 11.5 = 3.50 (3.5) or 2.53 with no working 2 marks Alternatives Using 16 and 12 with correct formula =2.98 with printed formula 2.15 for two marks Or using 16 and 11 correct formula 3.73 Printed formula 2.69	**2**

Question Number	Answer	Additional Guidance	Mark
3(d)(ii)	A description that includes three of the following points: • the calculated value of t (3.50) is **more than** the critical value **2.10** (1) • therefore reject the null hypothesis (1) • there is a difference between the number of species in two areas (1) • correct comment about variability of data (1)	ignore repeat the experiment/correlation accept lower value less than 2.10 so ora for MP1, 2 and 3 accept % grass cover e.g. results might be less valid	**3**

Question Number	Answer	Additional Guidance	Mark
3(e)	A description that includes two of the following points: • repeat at other locations/change the % grass cover (1) • leave traps for more than 5 days (1) • take samples at different times of year (1)	accept more than 10 pitfall traps	**2**

(Total for question 3 = 14 marks)

Question Number	Answer	Additional Guidance	Mark
4(a)	• the plant is not an endangered species / is a farmed crop/food plant (1)	Candidates will express this in a number of ways Ignore ref to pain/nervous system	**1**

Question Number	Answer	Additional Guidance	Mark
4(b)	An answer that includes the following points: • clear statement of the **dependent** variable e.g. length of shoot after stated time (1) • description of {(same/stated) number of seeds/age/source} of seeds (1) • (at least two) temperatures stated (1) • use of standardised method of watering (1) • description of **shoot** measuring technique (1) • method of calculating rate (of growth) (1) • **two** variables that need to be controlled (1) • and method of control of **one** variable (1) • repeats to give mean **and** SD (at each temperature) (1)	Ignore amount Accept per unit time Between 20-35°C Accept same volume/timing Ignore root/leaf/ mass/seedling Ignore PH and buffer Accept carbon dioxide in excess accept to measure variability of data	**9**

Question Number	Answer	Additional Guidance	Mark
4(c)	A description that includes three of the following: • table for **raw** data with headings and units, with means calculated from repeats (1) • line graph with several temps used (1) • and then a correlation test (1)	Depends on table shown accept description of mean calculated in text or mean on one graph label bar graph format with labelled axes (1) not histogram use of a *t* test for difference (with a bar graph showing only **two** different treatments)	**3**

Question Number	Answer	Additional Guidance	Mark
4(d)	An answer that includes two of the following: • difficult to control one aspect of seed (1) • difficult to control a named variable (1) • reason given for difficulty in measuring shoot (1)	e.g. source/storage conditions, age disease/genetic variation/mutation/viability e.g. control of humidity/light/pests e.g. it is curved/bent, difficult to judge where shoot starts	**2**

(Total for question 4 = 15)