

Almost every point lost on the free response is a claim made without the data, or a process named instead of explained. Everything below is a rule the readers apply.

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Answering the task verb

✗ Explaining at length where the verb was IDENTIFY.

✓ **IDENTIFY wants a name; DESCRIBE wants characteristics; EXPLAIN wants a cause; JUSTIFY wants the claim supported by the data.**

The verbs are defined in the rubric. An explanation for an IDENTIFY earns the point but costs minutes; a description for an EXPLAIN earns nothing.

CED Skill 1

✗ Predicting an outcome with no reason attached.

✓ **Predict AND justify: what will happen, and the mechanism that makes it happen.**

The guidelines score the prediction and its justification as separate points, and a prediction alone is half the answer.

SG2023 Q1

✗ Repeating the stem's own information as your answer.

✓ **Add something the question did not give you.**

A sentence that only restates the question cannot earn a point, however accurate.

CED Skill 4

✗ Offering two possible answers where one was asked for.

✓ **Commit to one.**

A wrong alternative alongside a right one can make the whole response wrong.

MS

✗ Writing 'the treatment worked'.

✓ **Cite the data: 'growth rose from 12 mm to 31 mm, an increase of 158%'.**

The rubric's justification points require the claim to be supported by the numbers the question supplied.

CED Skill 5

✗ Calling a difference significant when the error bars overlap.

✓ **Overlapping bars mean the difference is probably not significant – and saying so is often the point.**

Interpreting error bars is an explicitly assessed statistical skill in this course.

CED Skill 5

- Where an estimate is asked for, the readers accept a range: the guidelines specify the first two digits must fall between stated bounds. An answer far outside it is wrong, not approximate.

SG2023 Q4

1 · Chemistry of Life

- ✗ Saying water moves ‘from high to low concentration’ in osmosis.
- ✓ **From HIGHER to LOWER water potential – from a dilute solution to a concentrated one.**
Concentration of what is ambiguous; water potential is the quantity the course uses.

CED 2.8

- ✗ Describing enzymes as ‘used up’ or ‘killed’.
- ✓ **They are catalysts, unchanged by the reaction; denaturation changes the active site’s shape.**

The wrong verb makes the mechanism wrong, and the mechanism is what the explanation point is for.

CED 3.3

2 · Cell Structure and Function

- ✗ Saying a secreted protein ‘goes to the membrane’.
- ✓ **It is transported to the endoplasmic reticulum first, then through the Golgi, then out.**
The guidelines set out this pathway as the required content – naming the destination skips the process.

SG2022 Q1

- ✗ Explaining active transport by saying the pump ‘uses energy’.
- ✓ **Say what the energy is for: moving ions AGAINST their concentration gradients.**
The guidelines print exactly this as the required explanation for the sodium-potassium pump.

SG2021 Q3

3 · Cellular Energetics

- ✗ Saying the cell ‘makes energy’.
- ✓ **Energy is transferred; respiration releases it from glucose and stores it in ATP.**
The course treats energy transfer precisely, and ‘makes’ is scored as a misconception.

CED 3.5

- ✗ Predicting an effect on photosynthesis without naming the products.
- ✓ **Say what runs short: insufficient ATP and NADPH for the Calvin cycle, so less carbohydrate.**

The guidelines give this as the justification that earns the point.

ATP NADPH

SG2023 Q2

- ✗ Justifying a higher oxygen demand by saying the organism ‘works harder’.
- ✓ **More electrons are transferred, so more oxygen is needed as the final electron acceptor.**
The guidelines print this as the accepted justification.

SG2022 Q2

- ✗ Explaining a signalling pathway by naming the hormone and the effect.
- ✓ **Give the steps: ligand binds a receptor, a transduction cascade follows, and the cell’s response changes.**
The explanation point is for the mechanism between the signal and the outcome.

CED 4.2

4 · Cell Communication and Cell Cycle

- ✗ Confusing the outcomes of mitosis and meiosis.
- ✓ **Mitosis gives two identical diploid nuclei; meiosis gives four genetically distinct haploid cells.**
Mark schemes award points for the features that DIFFER – number of divisions, crossing over, ploidy – so the pair must be kept apart.

MS

- ✗ Drawing a chromosome diagram with duplicated chromosomes after meiosis II.
- ✓ **Each cell must show ONE unduplicated chromosome of each pair, carrying one allele.**
The guidelines specify exactly this for the diagram point.

SG2023 Q5

5 · Heredity

- ✗ Saying homologous chromosomes ‘pair up’ without saying why it matters.
- ✓ **Crossing over in meiosis I is required for homologues to pair and segregate correctly.**
The guidelines make the consequence the scored part, not the observation.

SG2023 Q1

- ✗ Applying Hardy-Weinberg without stating its conditions.
- ✓ **No selection, no mutation, no migration, random mating, large population – then $p^2 + 2pq + q^2 = 1$.**
The conditions are what make the calculation meaningful, and are separately assessed.

CED 7.5

- ✗ Confusing $p + q = 1$ with $p^2 + 2pq + q^2 = 1$.
- ✓ **The first is allele frequencies, the second is genotype frequencies.**
Substituting into the wrong one gives a plausible number that is wrong.

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CED 7.5

✗ Reading a pedigree and naming the inheritance pattern with no evidence.

✓ **Point at the generation that rules the alternatives out – two unaffected parents with an affected child means recessive.**

The justification point is for the reasoning from the diagram, not for the conclusion.

CED 5.4

6 · Gene Expression and Regulation

✗ Saying mRNA ‘makes the protein’.

✓ **It carries the code to the ribosome, where translation builds the protein.**

The distinction between the message and the machinery is the content the question tests.

mRNA ,

CED 6.4

✗ Explaining an mRNA vaccine without mentioning stability.

✓ **The mRNA must remain intact long enough for the encoded protein to be produced.**

The guidelines name this as the required idea.

mRNA

SG2022 Q3

7 · Natural Selection

✗ Saying organisms ‘adapt’ or ‘try’ to survive.

✓ **Variation exists first; the environment selects among it.**

The teleological wording is a named misconception and reverses the mechanism.

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CED 7.1

✗ Saying mutations are always harmful.

✓ **Most are neutral, and the beneficial minority is what selection acts on.**

The claim contradicts the mechanism the course teaches.

CED 7.2

✗ Choosing between molecular and morphological data with no reason.

✓ **Say why: molecular data are generally more reliable for inferring relationships.**

The guidelines print this as the accepted justification.

SG2021 Q4

✗ Saying a mutation in a regulatory sequence changes the protein.

✓ **It changes how MUCH protein is made, or when – the coding sequence is unaltered.**

The course separates regulation from coding, and the distinction is what the question tests.

CED 6.6

8 · Ecology

✗ Saying an invasive species ‘harms the ecosystem’.

✓ **Give the process: it outcompetes native species for a resource, so their populations fall and biodiversity drops.**

The guidelines state the explanation requires a process or relationship, not an outcome.

SG2023 Q1

✗ Drawing a predicted bar without checking which direction the prediction requires.

✓ **Compare it explicitly with the control bar the figure already shows.**

The guidelines specify the direction each bar must take relative to the original.

SG2023 Q5

■ When a diagram or graph is asked for, label every axis and every element. Diagram points in these guidelines are itemised, and an unlabelled element earns none of them.

SG 3 years