

*Every free-response point is a specific claim, a set-up with units, or a proposal someone could actually carry out. Everything below is a rule the readers apply.* 自由作答题要给出具体主张、带单位的算式、可执行的方案。

## Calculations and the task verbs

✗ Writing a percentage-change answer with no set-up.

✓ **Show the whole expression, including the multiplication by 100.**

The guidelines award a point for the correct set-up, and require the  $\times 100$  to be visible.

百分比变化要写出算式

SG 2 years

✗ Giving a calculated answer with no units.

✓ **Carry the units through the working and attach them to the answer.**

The guidelines state the set-up must include units to earn the point.

计算要带单位

SG 2 years

✗ Answering IDENTIFY with a paragraph, or EXPLAIN with a name.

✓ **IDENTIFY names it; DESCRIBE gives its characteristics; EXPLAIN gives the cause; PROPOSE gives a specific action.**

The verbs are defined in the course and answering the wrong one earns nothing.

看清指令词

CED Skill 1

✗ Proposing a solution in general terms – ‘reduce pollution’.

✓ **Name the action, who does it, and what it changes: ‘mandate carbon monoxide detectors in all homes’.**

The guidelines print exactly that kind of specific, actionable proposal as the response that earns the point.

方案要具体可执行

SG2023

✗ Justifying a solution by saying it helps the environment.

✓ **Name the drawback too, when asked: hydrogen fuel cells cost more to manufacture and their hydrogen takes energy to obtain.**

The guidelines print the accepted disadvantages, and a one-sided answer misses the point that asks for them.

也要写出缺点

SG2023

■ Where a question supplies data, use its numbers in your answer. A claim without them cannot earn the analysis point.

要引用题目数据

CED Skill 5

## 1 · The Living World: Ecosystems 生物世界：生态系统

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✗ Saying energy ‘cycles’ through an ecosystem.

✓ **Energy FLOWS through and is lost as heat; matter cycles.**

The distinction is foundational and reversing it makes the trophic reasoning wrong.

能量单向流动, 物质循环

CED 1.8

✗ Using 10% efficiency without saying what it is 10% of.

✓ **About 10% of the energy at one trophic level is available at the next.**

The rule is only usable when the levels are named.

十分之一定律要说明营养级

CED 1.9

## 2 · The Living World: Biodiversity 生物世界：生物多样性

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✗ Saying an ecosystem with more organisms has higher biodiversity.

✓ **Biodiversity depends on the number of SPECIES and their evenness, not the head count.**

Richness and evenness are the assessed components of the measure.

生物多样性看物种数与均匀度

CED 2.1

✗ Treating primary and secondary succession as the same process.

✓ **Primary starts with no soil; secondary follows a disturbance that left the soil.**

The starting condition determines the timescale, which is what questions ask about.

初生演替从无土壤开始

CED 2.5

## 3 · Populations 种群

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✗ Reading an age-structure diagram without checking the base.

✓ **A wide base means rapid growth; a narrow one means decline.**

The shape is the answer, and it is read from the youngest cohorts.

年龄金字塔看底部宽窄

CED 3.6

✗ Calculating a doubling time without the rule of 70.

✓ **Doubling time in years is approximately 70 divided by the percentage growth rate.**

It is one of the few formulas the course expects from memory.

倍增时间 =  $70 \div \text{增长率}$

CED 3.5

## 5 · Land and Water Use 土地与水资源利用

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✗ Describing a land-use practice without its environmental consequence.

✓ **Name the practice and the effect: tilling exposes soil, so erosion increases.**

The consequence is what the explanation point is for.

要写出环境后果

CED 5.3

## 6 · Energy Resources and Consumption 能源资源与消耗

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✗ Calling all non-fossil energy renewable.

✓ **Nuclear is non-renewable; check the fuel, not the emissions.**

The classification is by whether the source is replenished, which is a standard discriminator.

核能不是可再生能源

CED 6.4

## 7 · Atmospheric Pollution 大气污染

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✗ Confusing tropospheric with stratospheric ozone.

✓ **In the stratosphere it shields us; near the ground it is a pollutant.**

The two are the same molecule with opposite significance, and questions rely on that.

平流层臭氧有益, 近地臭氧有害

CED 7.7

✗ Saying a thermal inversion causes pollution.

✓ **It TRAPS pollution that is already being emitted, by preventing vertical mixing.**

The mechanism is the point; the inversion produces nothing itself.

逆温是聚集污染, 不是产生

CED 7.5

## 8 · Aquatic and Terrestrial Pollution 水生与陆地污染

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✗ Explaining eutrophication as ‘fertiliser kills fish’.

✓ **Nutrients feed an algal bloom, the algae die, decomposers use the oxygen, and the fish suffocate.**

Every step in that chain is a separate scored idea.

富营养化要写出完整链条

CED 8.6

✗ Saying a substance biomagnifies because there is a lot of it.

✓ **It biomagnifies because it is persistent and fat-soluble, so it concentrates up the food chain.**

The properties are what the question is testing.

生物放大靠难降解与脂溶性

CED 8.9

## 9 · Global Change 全球变化

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✗ Using ozone depletion and the greenhouse effect interchangeably.

✓ **They are separate problems with separate causes and separate treaties.**

Conflating them is a named misconception and makes both answers wrong.

臭氧空洞与温室效应不同

CED 9.4

✗ Saying the greenhouse effect is harmful.

✓ **The natural effect keeps the planet habitable; the ENHANCED effect is the problem.**

The distinction is course content and the unqualified claim is scored as incorrect.

自然温室效应是必要的

CED 9.3

## 4 · Earth Systems and Resources 地球系统与资源

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✗ Naming a soil horizon without saying what is in it.

✓ **O is organic litter, A is topsoil with humus, B is the zone of accumulation, C is weathered parent rock.**

The horizons are assessed content and questions ask what each contains.

土壤层次的组成要记清

CED 4.5

✗ Confusing weather with climate.

✓ **Weather is the condition now; climate is the pattern over decades.**

The distinction underlies the global-change unit and is a standard discriminator.

天气 vs 气候

CED 4.4

✗ Explaining El Niño as ‘warm water’.

✓ **Weakened trade winds let warm water move east, changing rainfall on both sides of the Pacific.**

The mechanism is what lets you predict the regional effects the question asks for.

厄尔尼诺是信风减弱导致

CED 4.8

## 5 · Land and Water Use 土地与水资源利用

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✗ Saying irrigation is bad for soil.

✓ **Name the process: evaporation leaves salts behind, so salinisation reduces fertility.**

The mechanism is the explanation point.

灌溉导致盐碱化

CED 5.6

✗ Describing overfishing as ‘catching too many fish’.

✓ **Catching faster than the stock can reproduce, so the population and the catch both fall.**

The rate comparison is what makes it unsustainable.

捕捞速度超过繁殖速度

CED 5.12

## 6 · Energy Resources and Consumption 能源资源与消耗

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✗ Comparing energy sources by cost alone.

✓ **Compare on several axes: emissions, land use, reliability, and cost.**

The trade-off questions expect more than one dimension.

能源比较要多角度

CED 6.6

✗ Saying a power station is ‘inefficient’ with no figure.

✓ **State the conversion: useful energy out over energy in, as a percentage.**

Efficiency is a calculated quantity in this course.

效率要给出数值

CED 6.3

## 7 · Atmospheric Pollution 大气污染

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✗ Confusing primary and secondary air pollutants.

✓ **A primary pollutant is emitted directly; a secondary one forms in the atmosphere, like tropospheric ozone.**

The control measure depends on which it is.

一次污染物直接排放

CED 7.2

✗ Explaining acid rain as ‘pollution making rain acidic’.

✓ **Sulfur and nitrogen oxides react with water to form sulfuric and nitric acid.**

The named reactants are the scored content.

要写出硫氧化物和氮氧化物

CED 7.9

## 9 · Global Change 全球变化

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✗ Saying an invasive species is ‘bad for nature’.

✓ **Say what it does: outcompetes a native species for a resource, so native populations fall.**

The competitive mechanism is the explanation point.

入侵物种要写竞争机制

CED 9.9