CBSE CLASS X

Science (086)

QUESTION PAPER

AI-generated question paper

Code: SK2J4H **Questions: 31** **Maximum Marks: 90** **Generated: 2026-06-25 17:26**

SELECTIONS USED

Subject	Science
Lessons	13 Our Environment
Level of understanding	Thorough understanding
Question selection	Curated chapter coverage (~5 questions per section + 8 synthesis)
Model	claude-sonnet-4-6

Composition — Difficulty: 18 medium · 13 deep | Types: 25 Short · 3 MCQ · 3 Long

Q1. medium · thorough-understanding · § Introduction **[3]**

A garden and a forest both contain living organisms interacting with their physical surroundings, yet one is considered a natural ecosystem and the other an artificial one. Identify the fundamental criterion that distinguishes a natural ecosystem from an artificial one. In what way does the role of abiotic components differ, if at all, between the two types of ecosystems?

◆ Our Environment

Q2. medium · thorough-understanding · § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[3]**

A garden and a forest both contain living organisms interacting with physical factors. What makes one a natural ecosystem and the other an artificial ecosystem? What does this distinction tell us about the role of human beings in shaping ecosystems?

◆ Our Environment

Q3. medium · thorough-understanding · § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[1]**

Which of the following best explains why decomposers are essential for the continuity of any ecosystem?
(A) They produce food from inorganic substances using sunlight.
(B) They return complex organic compounds back to simple inorganic substances that producers can reuse.
(C) They transfer energy from one consumer to the next without any loss.
(D) They regulate the population of herbivores by feeding on them.

A They produce food from inorganic substances using sunlight.
B They return complex organic compounds back to simple inorganic substances that producers can reuse.
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◆ Our Environment

Q4. medium · thorough-understanding · § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[3]**

Only about 10% of the energy available at one trophic level is passed on to the next. Where does the remaining ~90% go, and why does this make a food chain with six or seven trophic levels practically impossible?

◆ Our Environment

Q5. deep thorough-understanding § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[3]**

A farmer uses pesticides on crops over many years. A hawk that hunts small mammals in those fields is found to have pesticide concentrations thousands of times higher than the soil. Explain, step by step, the process responsible for this, and predict whether a human who regularly eats those hawks would have even higher concentrations.

◆ Our Environment

Q6. deep thorough-understanding § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[3]**

In a pond ecosystem, if all the decomposers were suddenly removed, the producers and consumers might initially appear unaffected. Explain why the ecosystem would eventually collapse, referring to the role decomposers play in the cycling of matter.

◆ Our Environment

Q7. medium thorough-understanding § 13.1 ECO-SYSTEM — WHAT ARE ITS COMPONENTS? **[2]**

A field ecologist studying a grassland notices that when a population of rabbits crashes due to disease, foxes switch to eating voles and birds instead of starving. Could this adaptive behaviour be explained using a single food chain? Justify your answer by explaining how a food web more accurately represents real feeding relationships in an ecosystem.

◆ Our Environment

Q8. medium thorough-understanding § 13.1.1 Food Chains and Webs **[2]**

Only about 10% of the energy at one trophic level is available to the next level. Where does the remaining 90% go?

◆ Our Environment

Q9. medium thorough-understanding § 13.1.1 Food Chains and Webs **[3]**

A food chain in a grassland ecosystem is: Grass → Grasshopper → Frog → Snake → Hawk. If the grass captures 10,000 J of energy from sunlight, how much energy (in joules) is available to the snake? Show your reasoning.

◆ Our Environment

Q10. medium thorough-understanding § 13.1.1 Food Chains and Webs **[1]**

Food chains rarely extend beyond four trophic levels. Which of the following best explains this?
(A) Producers can only support four types of consumers.
(B) Energy loss at each level means very little usable energy remains after four levels.
(C) Decomposers break down the food chain after the fourth level.
(D) Carnivores at the fourth level have no natural predators.

A Producers can only support four types of consumers.
B Energy loss at each level means very little usable energy remains after four levels.
C Decomposers break down the food chain after the fourth level.
D Carnivores at the fourth level have no natural predators.

◆ Our Environment

Q11. medium thorough-understanding § 13.1.1 Food Chains and Webs **[3]**

Explain the process of biological magnification. A non-degradable pesticide was detected at a concentration of 0.1 ppm in the water of a pond. Arrange the following organisms in the order of increasing pesticide concentration in their bodies, and justify your answer: large fish, water plants, small fish, fish-eating birds.

◆ Our Environment

Q12. deep | thorough-understanding | § 13.1.1 Food Chains and Webs **[3]**

Energy flow through a food chain is described as unidirectional. What does this mean, and how is it different from the way matter (like minerals) moves through an ecosystem?

◆ Our Environment

Q13. deep | thorough-understanding | § 13.1.1 Food Chains and Webs **[3]**

A farmer sprays a non-degradable pesticide on a paddy field adjacent to a pond. Trace the pathway by which this pesticide could reach humans living in the nearby village. What is this phenomenon called, and why are humans more affected than the paddy plants?

◆ Our Environment

Q14. deep | thorough-understanding | § 13.1.1 Food Chains and Webs **[5]**

Green plants in a terrestrial ecosystem capture only about 1% of the sunlight that falls on their leaves. Considering this, and the 10% energy transfer rule between trophic levels, explain why a large land area is needed to sustainably support a population of top-level carnivores compared to a population of herbivores of the same body mass.

◆ Our Environment

Q15. medium | thorough-understanding | § 13.2 HOW DO OUR ACTIVITIES AFFECT THE ENVIRONMENT? **[3]**

A farmer sprays pesticides on crops near a pond. Trace the path by which these pesticides could reach a human being who lives far from the farm, and explain why the concentration of pesticides in the human body would be far greater than in the pond water or soil where the chemicals were originally found.

◆ Our Environment

Q16. medium | thorough-understanding | § 13.2.1 Ozone Layer and How it is Getting Depleted **[3]**

Trace the step-by-step process by which UV radiation from the Sun leads to the formation of ozone in the upper atmosphere. How does the same UV radiation that is responsible for creating ozone also justify the need for an ozone layer? What would happen to life on Earth if this layer were to be significantly depleted?

◆ Our Environment

Q17. deep | thorough-understanding | § 13.2.1 Ozone Layer and How it is Getting Depleted **[3]**

CFCs were widely praised as safe, useful chemicals when they were first introduced. In light of what we now know about their effect on the atmosphere, explain why a chemical being non-reactive and non-toxic at ground level is not sufficient proof that it is environmentally safe.

◆ Our Environment

Q18. medium | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

Why can bacteria and fungi not break down plastics in the environment, even though they can break down food and other organic matter?

◆ Our Environment

Q19. medium | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

A student buries two pits in the school garden — one with vegetable peels and spoilt food, and another with plastic wrappers and empty medicine strips. After several months, which pit would show greater decomposition, and why?

◆ Our Environment

Q20. medium | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[1]**

Which of the following best explains why improvements in lifestyle and changes in packaging together pose a greater environmental challenge than either factor alone?
(A) Lifestyle improvements generate more biodegradable waste, while packaging changes reduce total waste volume.
(B) Lifestyle improvements increase the total quantity of waste, and packaging changes make a larger proportion of that waste non-biodegradable.
(C) Packaging changes reduce waste generation, but lifestyle improvements increase the use of decomposers.
(D) Both factors together cause depletion of the ozone layer through increased CFC emissions.

A Lifestyle improvements generate more biodegradable waste, while packaging changes reduce total waste volume.
B Lifestyle improvements increase the total quantity of waste, and packaging changes make a larger proportion of that waste non-biodegradable.
C Packaging changes reduce waste generation, but lifestyle improvements increase the use of decomposers.
D Both factors together cause depletion of the ozone layer through increased CFC emissions.

◆ Our Environment

Q21. medium | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

Distinguish between biodegradable and non-biodegradable substances with one example each. Describe one specific way in which accumulation of non-biodegradable substances disrupts the balance of an ecosystem.

◆ Our Environment

Q22. deep | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

A town switches entirely to biodegradable packaging and stops using plastics. A student argues that this means the town's waste will have no negative impact on the environment at all. Is this argument valid? Justify your answer.

◆ Our Environment

Q23. deep | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

The introduction of disposable plastic cups in trains was initially welcomed for hygiene reasons, yet it created a serious environmental problem. Explain why, and state what principle this illustrates about assessing the long-term impact of new materials or technologies before adopting them widely.

◆ Our Environment

Q24. deep | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[2]**

A non-biodegradable substance is sometimes described as 'environmentally inert.' Under what conditions might this be partially true? Even if a substance does not react chemically in the environment, explain one way it can still cause harm to living organisms or ecosystems.

◆ Our Environment

Q25. medium | thorough-understanding | § 13.2.2 Managing the Garbage we Produce **[3]**

What is the role of decomposers in managing natural waste, and why does their absence create a problem that human waste-disposal systems must compensate for?

◆ Our Environment

Q26. deep | thorough-understanding | § (whole-chapter synthesis) **[5]**

Trace the journey of a pesticide molecule from a farmer's field all the way to a human body, explaining the role of each trophic level and the ecosystem process that makes the final concentration in humans the highest.

◆ Our Environment

Q27. deep | thorough-understanding | § (whole-chapter synthesis) **[3]**

The energy available at each trophic level decreases, yet harmful chemicals like pesticides increase in concentration at each trophic level. Explain why these two phenomena — energy loss and chemical accumulation — behave oppositely as you move up a food chain.

◆ Our Environment

Q28. medium | thorough-understanding | § (whole-chapter synthesis) **[3]**

Green plants capture only about 1% of the sunlight falling on them, and only about 10% of energy at any trophic level is transferred to the next. Using both these facts, explain why a given area of wheat fields can support a larger human population when humans eat the wheat directly than when the same wheat is first consumed by deer that are then hunted for human food.

◆ Our Environment

Q29. deep | thorough-understanding | § (whole-chapter synthesis) **[3]**

Decomposers play a vital role in sustaining the productivity of green plants in an ecosystem. Separately, the depletion of the ozone layer also threatens life on Earth, including plant life. Explain, for each — decomposers and ozone layer depletion — the specific mechanism by which the absence or reduction of each affects producers (green plants) and, ultimately, all life in the ecosystem.

◆ Our Environment

Q30. deep | thorough-understanding | § (whole-chapter synthesis) **[5]**

Consider a simple food chain: Grass → Grasshopper → Frog → Snake → Hawk.
(i) At which trophic level would biological magnification of a non-biodegradable pesticide be the highest, and why?
(ii) If the frog population is entirely wiped out, predict two consequences for the ecosystem, one for the trophic level below and one for the trophic level above.

◆ Our Environment

Q31. medium | thorough-understanding | § (whole-chapter synthesis) **[3]**

Modern lifestyle changes and new packaging practices have led to a significant rise in non-biodegradable waste. Explain how this increase in non-biodegradable waste creates TWO distinct environmental problems — one concerning the flow of energy and matter through food chains, and one concerning the long-term management of solid waste in the environment.

◆ Our Environment

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