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Our Environment — CBSE Class 10 Science Chapter Test

FREE CHAPTER TEST · CLASS X · SCIENCE (086) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	20 (A 10 · B 4 · C 3 · D 1 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 20 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–14 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q15–17 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q18 is a long answer (LA) type question, carrying 5 marks.
7. In Section E, Q19–20 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Science (086) Sample Question Paper 2026-27, at about half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Our Environment · **Topics:** Ecosystem and its components · Food chains and food webs · Trophic levels and the 10 per cent law · Biological magnification · Ozone layer and its depletion · Biodegradable and non-biodegradable substances · Managing waste

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. Which of the following is biodegradable? 1

(A) A plastic bag
(B) A glass bottle
(C) Aluminium foil
(D) Fruit peels

2. In the food chain grass → grasshopper → frog → snake, the grass has 20 000 J of food energy. About how much energy reaches the snake? 1

(A) 2000 J
(B) 200 J
(C) 20 J
(D) 2 J

3. The organisms that break down the complex organic substances of dead plants and animals into simple inorganic substances are 1

(A) bacteria and fungi
(B) green plants
(C) herbivores
(D) carnivores

4. The ozone layer in the upper atmosphere protects the Earth from harmful 1

(A) infrared radiation
(B) ultraviolet radiation
(C) visible light
(D) radio waves

5. At the higher levels of the atmosphere, ozone is formed when ultraviolet radiation acts on 1

(A) nitrogen
(B) carbon dioxide
(C) oxygen
(D) water vapour

6. A non-biodegradable pesticide enters the food chain plants → insects → frogs → snakes → eagles. Its concentration will be the highest in 1

(A) eagles
(B) plants
(C) insects
(D) frogs

7. The depletion of the ozone layer has been linked mainly to 1

(A) carbon dioxide
(B) methane
(C) sulphur dioxide
(D) chlorofluorocarbons (CFCs)

8. Green plants in a terrestrial ecosystem capture about what percentage of the energy of the sunlight that falls on their leaves? 1

(A) 10%
(B) 1%
(C) 50%
(D) 0.1%

9. **Assertion (A):** The flow of energy in a food chain is unidirectional. 1
Reason (R): The energy captured by autotrophs does not revert to the solar input, and the energy that passes to the herbivores does not come back to the autotrophs.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** Food chains generally consist of only three or four trophic levels. 1
Reason (R): About 90% of the energy at each trophic level is passed on to the next level.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 4 very short answer (VSA) type questions of 2 marks each.

11. (a) What are decomposers? What would happen if there were no decomposers in an ecosystem? 2

OR

(b) Distinguish between biodegradable and non-biodegradable substances, with two examples of each.

12. Disposable paper cups are thought to be better for the environment than disposable plastic cups. Why? Why would replacing them with disposable clay cups (kulhads) on a large scale also cause harm? 2

13. In the food chain phytoplankton → zooplankton → small fish → large fish, the large fish obtains 12 J of energy. Using the 10 per cent law, how much food energy did the phytoplankton have? Why is so little passed on? 2

14. What would happen to a forest ecosystem if all the herbivores in it were killed? 2

SECTION C

This section comprises 3 short answer (SA) type questions of 3 marks each.

15. (a) (i) What is biological magnification? (ii) Explain how harmful chemicals reach our bodies even if we do not eat any pesticide directly. (iii) Why is the concentration of such chemicals highest in human beings? 3

OR

(b) (i) What is an ecosystem? (ii) Why does an aquarium need to be cleaned regularly? (iii) Why does a natural pond not need such cleaning?

16. (i) Name the two types of components of an ecosystem, giving two examples of each. (ii) How do producers, consumers and decomposers depend on one another? (iii) Is a garden a natural or an artificial ecosystem? Name one other artificial ecosystem. 3

17. (i) Why are plastic bags a bigger problem for the environment than paper bags? (ii) Give two changes in our habits that would reduce the waste we produce. (iii) Why should kitchen waste be kept separate from plastic waste? 3

SECTION D

This section comprises 1 long answer (LA) type questions of 5 marks each.

18. (a) In a grassland, the food chain grass → deer → lion is observed, and the grass has 100 000 J of food energy. 5

(i) Name the trophic level of each organism.

(ii) Using the 10 per cent law, find the energy available to the deer and to the lion.

(iii) Why does the energy available decrease at each higher level?

(iv) Why are there usually far fewer lions than deer?

(v) What is a food web, and why do food webs exist in nature rather than isolated food chains?

OR

(b) (i) Name four types of consumers, with an example of each.

(ii) Name the trophic levels from producers to large carnivores.

(iii) Explain why the flow of energy in an ecosystem is unidirectional.

(iv) What fraction of the sunlight falling on their leaves do green plants capture?

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

19. In a pond, algae are eaten by water fleas, water fleas by small fish and small fish by a kingfisher. A pesticide sprayed on nearby fields is washed into the pond after heavy rain.

(i) Name the producers in this food chain. [1]

(ii) At which trophic level is the kingfisher? [1]

(iii) If the algae have 50 000 J of food energy, how much energy is available to the kingfisher? Show your steps. [2]

OR

(iii) In which organism will the pesticide be most concentrated? Explain why. [2]

20. A newspaper report said that scientists are carefully watching the thickness of the ozone layer, because a thinner layer lets more harmful radiation reach the ground.

(i) Where in the atmosphere is the protective ozone layer found? [1]

(ii) Name one harmful effect on human beings of the radiation that the ozone layer blocks. [1]

(iii) Name the chemicals mainly responsible for the depletion of the ozone layer, give one use of them, and state the agreement made in 1987. [2]

OR

(iii) Write the two steps in which ozone is formed in the upper atmosphere, and say why ozone is harmful at ground level. [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(D)	(C)	(A)	(B)	(C)	(A)	(D)	(B)	(A)	(C)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (D). Fruit peels are broken down by bacteria and other saprophytes; plastic, glass and aluminium are not broken down by biological processes.

Q2. Answer (C). About 10% passes to each next level: grasshoppers 2000 J, frogs 200 J, snake 20 J.

Q3. Answer (A). Micro-organisms such as bacteria and fungi are the decomposers; the simple substances go back into the soil and are used again by plants.

Q4. Answer (B). Ozone at the higher levels of the atmosphere shields the Earth's surface from the Sun's ultraviolet (UV) radiation, which is highly damaging to organisms.

Q5. Answer (C). UV radiation splits O_2 molecules into free oxygen atoms, which combine with O_2 molecules to form ozone, O_3.

Q6. Answer (A). The chemical is not broken down and accumulates progressively at each trophic level (biological magnification), so it is most concentrated at the top, in the eagles.

Q7. Answer (D). CFCs, used as refrigerants and in fire extinguishers, have been linked to the decrease in the amount of ozone in the atmosphere.

Q8. Answer (B). The green plants capture about 1% of the energy of sunlight falling on their leaves and convert it into food energy.

Q9. Answer (A). Both true, and R explains A: energy moves progressively through the trophic levels and is no longer available to the previous level. Answer (A).

Q10. Answer (C). A is true. R is false: only about 10% passes on; so little energy is left after four levels that longer chains cannot be supported. Answer (C).

Q11. (2 marks) Answer: (a) bacteria and fungi; wastes would pile up and nutrients would not be recycled; (b) definitions with two examples each.
(a) Decomposers are micro-organisms, such as bacteria and fungi, that break down the dead remains and waste of organisms into simple inorganic substances. [1]
Without them dead bodies and wastes would pile up, and the nutrients locked in them would not go back to the soil for plants to use again. [1]
OR (b) Biodegradable substances are broken down by biological processes (bacteria and other saprophytes): e.g. vegetable peels, paper, cotton cloth. [1]
Non-biodegradable substances are not broken down by biological processes and stay in the environment for a long time, harming it: e.g. plastics, glass, DDT. [1]

Q12. (2 marks) Answer: Paper is biodegradable, plastic is not; kulhads would waste fertile top soil.
Paper is biodegradable and is broken down by micro-organisms; plastic is not, and stays in the environment for a long time. [1]
Making kulhads on a large scale would use up a great deal of fertile top soil. [1]

Q13. (2 marks) Answer: 12 000 J; most energy is used for life processes and lost as heat.
Each level passes on about 10%, so going back up multiplies by 10 each time: small fish 120 J, zooplankton 1200 J, phytoplankton 12 000 J. [1]
At each level a large part of the food energy is used for the organism's own life processes (maintenance) and lost as heat; only about 10% becomes organic matter available to the next level. [1]

Q14. (2 marks) Answer: Plants unchecked; carnivores starve; ecosystem disturbed.
With no herbivores to eat them, the plants would grow and spread unchecked (and the balance of the vegetation would be upset). [1]
The carnivores, which feed on the herbivores, would have no food and would die out or move away; the whole ecosystem would be disturbed. [1]

Q15. (3 marks) Answer: (a) accumulation at each level; via soil and water into plants; humans are at the top; (b) organisms with their surroundings; aquarium lacks decomposers; pond recycles its wastes.
(a) (i) The progressive accumulation of harmful, non-biodegradable chemicals at each trophic level of a food chain. [1]
(ii) Pesticides and other chemicals used to protect crops are washed into the soil or water bodies; plants absorb them with water and minerals, and they enter the food chain. [1]
(iii) The chemicals are not broken down, so they accumulate at each level; human beings occupy the top level in many food chains, so the maximum concentration accumulates in our bodies. [1]
OR (b) (i) An ecosystem is all the living organisms of an area together with the non-living components of their surroundings, interacting with one another. [1]
(ii) An aquarium is an artificial ecosystem with too few decomposers and no natural food chains to break down the wastes and dead matter, so they collect and it must be cleaned. [1]
(iii) In a pond, decomposers and the natural food chains break down and recycle the wastes, so it keeps itself clean. [1]

Q16. (3 marks) Answer: (i) biotic and abiotic, two examples each; (ii) food made by producers, eaten by consumers, recycled by decomposers; (iii) artificial; crop field.
(i) Biotic components (living): plants, animals, micro-organisms; abiotic components (physical factors): temperature, rainfall, wind, soil, minerals (two of each). [1]
(ii) Producers (green plants) make food from simple substances using sunlight; consumers depend on them directly or indirectly for food; decomposers break down the dead remains and return nutrients to the soil for the producers. [1]
(iii) An artificial (human-made) ecosystem; crop fields are another (an aquarium also). [1]

Q17. (3 marks) Answer: (i) paper biodegradable, plastic not; (ii) two habits; (iii) biodegradable waste can be decomposed separately.
(i) Paper is biodegradable and is broken down by micro-organisms; plastic is non-biodegradable and stays in the environment for a long time, harming various members of the ecosystem. [1]
(ii) Any two: carry a cloth bag for shopping; avoid disposable plastic cups and plates; reuse containers; repair rather than throw away. [1]
(iii) Kitchen waste is biodegradable and can be decomposed (for example into compost), while plastic must be disposed of separately; mixing them makes both harder to manage. [1]

Q18. (5 marks) Answer: (a) producer, herbivore, carnivore; 10 000 J and 1000 J; energy used for life processes; little energy supports few lions; interconnected food chains; (b) consumer types with examples; levels; one-way flow; about 1%.
(a) (i) Grass: producer (first trophic level); deer: herbivore, primary consumer (second); lion: carnivore, secondary consumer (third). [1]
(ii) Deer: 10% of 100 000 J = 10 000 J; lion: 10% of 10 000 J = 1000 J. [1]
(iii) At each level most of the food energy is used for the organism's own life processes and lost as heat; only about 10% becomes body mass available to the next level. [1]
(iv) Since the energy at the lion's level is so small, it can support only a small number of lions. [1]
(v) A food web is a network of interconnected food chains; each organism is generally eaten by two or more kinds of organisms, which are eaten by several others, so the chains are linked rather than straight. [1]
OR (b) (i) Herbivores eat only plants (cow, deer); carnivores eat other animals (lion, tiger); omnivores eat both (human beings, crows); parasites live on or in other organisms and get food from them (cuscuta, lice). [2]
(ii) Producers are the first trophic level, herbivores the second, small carnivores the third and large carnivores the fourth. [1]
(iii) The energy captured by autotrophs never goes back to the Sun, and energy that passes to herbivores does not come back to the autotrophs. [1]
(iv) Only about 1% of the sunlight falling on leaves is captured by green plants. [1]

Q19. (4 marks) Answer: (i) algae; (ii) fourth; (iii)(a) 50 J; (b) kingfisher, biological magnification.
(i) The algae. [1]
(ii) The fourth trophic level (a tertiary consumer). [1]
(iii)(a) 10% at each step: water fleas 5000 J, small fish 500 J. [1]
Kingfisher: 50 J. [1]
OR (iii)(b) In the kingfisher, at the top of the chain. [1]
The pesticide is non-biodegradable, so it is not broken down; it accumulates progressively at each level (biological magnification). [1]

Q20. (4 marks) Answer: (i) higher levels of the atmosphere; (ii) skin cancer; (iii)(a) CFCs, refrigerants; UNEP 1987 freeze at 1986 levels; (b) $O_2 \rightarrow 2O$, $O + O_2 \rightarrow O_3$; poisonous.
(i) At the higher levels of the atmosphere. [1]
(ii) UV radiation can cause skin cancer. [1]
(iii)(a) Chlorofluorocarbons (CFCs), used as refrigerants and in fire extinguishers. [1]
In 1987 UNEP forged an agreement to freeze CFC production at 1986 levels. [1]
OR (iii)(b) $O_2 \xrightarrow{UV} 2O$; $O + O_2 \rightarrow O_3$ [1]
Ozone is a deadly poison. [1]

All questions are original and © Master Testing Agency. Free to download and use for personal practice; not for resale. Every answer in this paper was checked against the NCERT Class 10 Science textbook, and by computer where possible: energy at every level of each food chain by the 10 per cent law, and the ozone equations balanced by counting atoms.