Step-by-Step Solutions & Marking Scheme

CBSE Class 8 Science (Curiosity) — Chapter 12: How Nature Works in Harmony

Quick answer key — Section A: 1-(a) 2-(b) 3-(c) 4-(b) 5-(d) 6-(b) 7-(A) 8-(C)

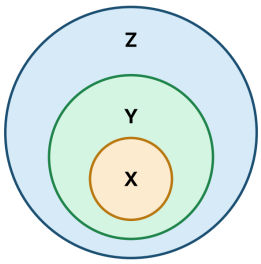
SECTION A — Multiple Choice Questions

1. (a) habitat

A habitat is the place where an organism lives; it provides food, oxygen, shelter and space.

Marking: 1 mark.

2. Fig. 1 → **(b) Community**



A population (X) is part of a community (Y), and a community together with the abiotic components forms an ecosystem (Z). So Y is the **community**.

Marking: 1 mark.

3. Fig. 2 → **(c) third trophic level**



Grass (producer) is the first level, the grasshopper (herbivore) the second, and the frog (small carnivore) the **third**; the snake is the fourth.

Marking: 1 mark.

4. (b) Mushroom

Mushrooms are fungi, which break down dead matter; deer and hare are consumers and grass is a producer.

Marking: 1 mark.

5. (d) omnivore

Herbivores eat only plants, carnivores eat only animals and omnivores (such as crows, foxes and mice) eat both.

Marking: 1 mark.

6. (b) commensalism

The orchid benefits and the tree is not affected, which is commensalism.

Marking: 1 mark.

7. Assertion–Reason → **(A)**

Step 1: A is true: decomposers recycle nutrients.

Step 2: R is true: they break complex substances in dead matter into simpler ones that return to the soil.

Step 3: R explains how recycling happens → (A).

Marking: 1 mark.

8. Assertion–Reason → **(C) A is true but R is false.**

Step 1: A is true: interlinked food chains form a food web.

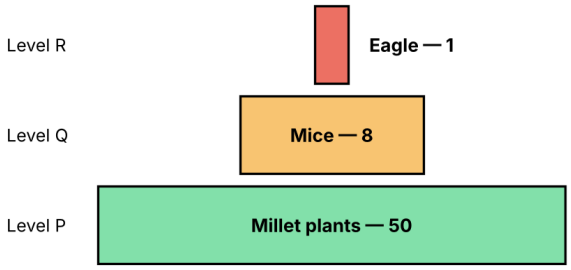
Step 2: R is false: each organism may be eaten by two or more kinds of organisms; that is why the chains are interlinked.

Step 3: A true, R false → (C).

Marking: 1 mark.

SECTION B — Short Answer Questions

9. Pyramid in a crop field (Fig. 3)

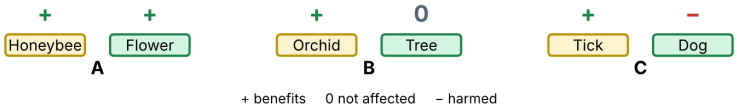


(a) Level P (millet plants): plants make their own food by photosynthesis, so they are producers and form the base with the highest number.

(b) Mice are at the **second trophic level** (Level Q); they feed on plants, so they are herbivores (primary consumers).

Marking: 1 mark for each part.

10. Relationships (Fig. 4)



(a) A (both +): **mutualism**; C (tick +, dog −): **parasitism**.

(b) B (+, 0) is **commensalism**; another example: a bird nesting on a tree, or any suitable example.

Marking: 1 mark for each part.

11. Population and community

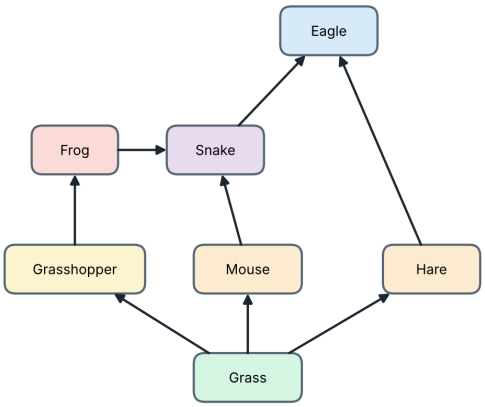
(a) A population is a group of organisms of the same kind living in a habitat at a given time.

(b) A community is made up of the different populations (plants, animals and microorganisms) sharing the same habitat.

Marking: (a) 1; (b) 1.

SECTION C — Long Answer Questions

12. Food web (Fig. 5)



(i) 3: Grass → Hare → Eagle; Grass → Mouse → Snake → Eagle; Grass → Grasshopper → Frog → Snake → Eagle.

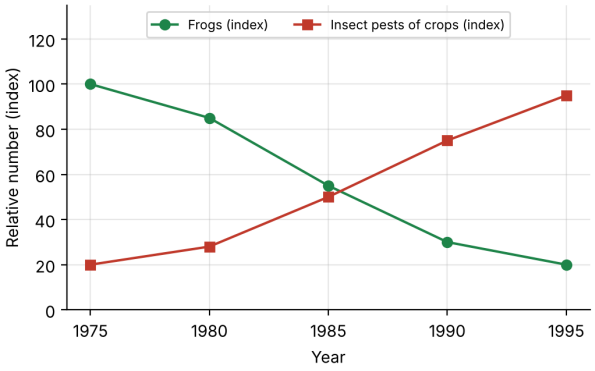
(ii) The producer is **Grass**; the **snake** (eats frog and mouse) and the **eagle** (eats snake and hare) feed on more than one kind of organism.

(iii) The grasshoppers will **increase**, because their predator, the frog, is gone.

(iv) Grass → Grasshopper → Frog → Snake → Eagle.

Marking: 1 mark for each part.

13. Frogs and pests (Fig. 6)



(i) The number of frogs **decreased steadily** (100 to 20).

(ii) The number of insect pests **increased steadily** (20 to 95).

(iii) Frogs eat insects; with fewer frogs, fewer insects were eaten, so the pests multiplied.

(iv) Farmers used more **synthetic pesticides**, which harm the environment, soil and water quality and human health.

Marking: 1 mark for each part.

14. Ecosystem

(i) The interaction of the biotic and abiotic components of an area forms an ecosystem.

(ii) Any two: water, air, sunlight, temperature, soil.

(iii) Plant roots hold the soil in place and prevent erosion (also: plants retain soil moisture).

(iv) Aquatic (pond, river, lake) and **terrestrial** (forest, farm, grassland).

Marking: 1 mark for each part.

15. Reasons

(i) When forests shrink and waterholes dry up, food is scarce in their habitat, so elephants enter farms in search of food such as bananas and sugarcane.

(ii) They break down dead matter and waste into simpler substances and return nutrients to the soil, where plants use them again.

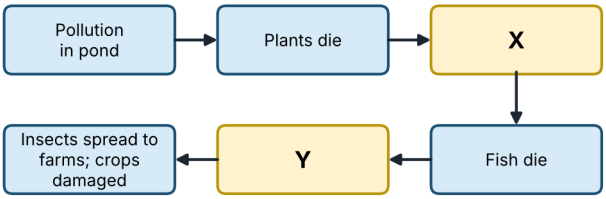
(iii) Mangroves slow down strong winds and waves during storms.

(iv) Producers alone cannot recycle dead matter and there would be no consumers to use them; living organisms depend on one another for food and nutrient cycling.

Marking: 1 mark for each part.

SECTION D — Case-Based / Practical Questions

16. Pond pollution (Fig. 7)



(i) X = **Less oxygen in the water**.

(ii) Y = **More insects** (fewer fish to eat them).

(iii) Plants release oxygen during photosynthesis; fewer plants means less oxygen.

(iv) Pesticides; they can adversely affect the environment (soil, water) and health.

(v) The components are closely linked: one change leads to another (a cascading effect).

Marking: 1 mark for each part.

17. Sugarcane farm

(i) Monoculture.

(ii) It reduces the friendly microorganisms in the soil and lowers organic matter (humus), so the soil loses fertility and is prone to erosion.

(iii) Beetles are natural predators of pests; with fewer predators the pest population rises, and some pests also develop resistance to pesticides.

(iv) It was created and is managed by humans to meet their needs; it needs human care.

(v) Any two: organic or natural farming, composted manure (e.g. Kunapa Jala), growing different crops, less synthetic chemicals.

Marking: 1 mark for each part.

Section	A	B	C	D	Total
Marks	8	6	16	10	40

Note: any other correct and relevant answer should be accepted and awarded full marks.