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Our Home: Earth, a Unique Life Sustaining Planet

Keep the curiosity alive

1. What is one major reason Mars cannot currently support life like Earth?

- (i) It has too many volcanoes.
- (ii) It is too close to the Sun.
- (iii) It lacks a thick atmosphere and liquid water.
- (iv) Its magnetic field is too strong.

Ans: (iii) It lacks a thick atmosphere and liquid water.

Mars' atmosphere is 100 times thinner than Earth and cannot hold heat or protect from radiation.

2. Which of these is an example of geodiversity?

- (i) Variety of bird chirping in a forest.
- (ii) Different landforms like mountains, valleys, and deserts.
- (iii) Changing weather during monsoons.
- (iv) Number of different types of fish in a pond.

Ans: (ii) Different landforms like mountains, valleys, and deserts.

3. If the Earth were smaller with the same density, what might happen to its atmosphere?

- (i) It would become thicker and hotter.
- (ii) It would escape into space due to weaker gravity.
- (iii) It would become frozen.
- (iv) It would cause stronger winds.

Ans: (ii) escape into space due to weaker gravity.

4. In sexual reproduction, why are offspring different from their parents?

- (i) They grow in different climates.
- (ii) They eat different food.
- (iii) They acquire new instructions after birth.
- (iv) They get mixed instructions (genes) from both parents.

Ans: (iv) They get mixed instructions (genes) from both parents.

5. You notice tiny green plants growing in cracks on your school wall after the monsoon. Where do you think the seeds came from? What conditions helped these plants grow there?

Ans: The seeds likely arrived via wind, birds, or animals. Conditions like moisture after rain, light, and suitable temperature helped seedlings grow.

6. A city has recently cut down a large patch of forest to build new roads and buildings. Discuss the possible effects this could have on the local climate and biodiversity? How might this affect water availability or quality in the area?

Ans: It would reduce rainfall, lower biodiversity (fewer species), degrade soil, and worsen water quality by increasing erosion and pollution runoff.

7. A friend says, “The Earth has always had climate changes in the past, so today’s global warming is nothing new.” How would you respond using what you’ve learnt in this and other chapters of your science book?

Ans: While climate has changed naturally before, current global warming is much faster and mainly caused by human activities like burning fossil fuels, which increases greenhouse gases unnaturally.

- Past climate changes were slow and natural.
- Current warming is rapid and caused by human activity.
- Greenhouse gas levels are highest in human history.
- Effects like heatwaves, sea-level rise are accelerating unnaturally.

8. Imagine Earth’s magnetic field suddenly disappeared. What kinds of problems could arise for life on Earth? Explain.

Ans: Harmful solar and cosmic particles would reach the surface, damaging the atmosphere and life by increasing radiation exposure, possibly depleting the ozone layer.

- Solar wind would strip the atmosphere.
- Ozone layer would be destroyed.
- UV radiation would increase.
- Many life forms would die.
- Technology like GPS, satellites would malfunction.

9. You are tasked with designing a new settlement for humans on Mars. Name three things you would need to recreate from Earth to support human life there. Which of these do you think is the hardest to replicate, and why?

Ans: Essential needs include breathable air (atmosphere), liquid water, and suitable temperatures. The hardest to recreate is a breathable atmosphere, as Mars currently lacks oxygen and a protective ozone layer.

10. In a village, the temperature has been increasing and rainfall has become unpredictable over the past few years. What could be causing this change? Suggest two ways the village could adapt to these new conditions.

Ans: These are effects of climate change, deforestation and urbanisation. Adaptations can include planting trees, drought-resistant crops, drip irrigation and harvesting rainwater for times of shortage.

11. If there were no atmosphere on the Earth, would it affect life, temperature, and water on the planet? Explain.

Ans: There would be no breathable air, extreme temperatures (very hot or cold), and water would rapidly evaporate or freeze, making life impossible.

12. Discuss five examples of vegetative propagation.

Ans: Vegetative propagation is method in which new plants grow from the vegetative parts of a parent plant, such as the roots, stems, or leaves, rather than from seeds. Vegetative propagation is important for rapidly multiplying plants. Examples are

- Potato (eyes)
- Ginger (rhizome)
- Money plant (stem cutting)
- Sugarcane (stem)
- Bryophyllum (leaf buds)

These plants grow new individuals from parts other than seeds.