

HOW NATURE WORKS IN HARMONY
Class 08 - Science (Curiosity)

Time Allowed: 1 hour and 30 minutes

Maximum Marks: 150

1. What role do dragonflies play in the community around ponds as observed in the study? [1]
 - a) They are a food source for bees and butterflies.
 - b) They help in pollination of flowers.
 - c) They control the population of flies, bees, and butterflies.
 - d) They provide shelter for fish in the pond.
2. Which of the following organisms is a producer in a grassland ecosystem? [1]
 - a) Frog
 - b) Snake
 - c) Grass
 - d) Eagle
3. Why are abiotic components crucial to the survival of biotic components? [1]
 - a) They offer no real significance.
 - b) They protect biotic components from predators.
 - c) They provide essential resources like sunlight and water.
 - d) They regulate the population of biotic components.
4. What is the primary diet of a herbivore in a grassland ecosystem? [1]
 - a) Meat
 - b) Insects
 - c) Plants
 - d) Fish
5. What is a likely consequence of overfishing in a pond ecosystem? [1]
 - a) Decrease in plant seed production
 - b) Increase in water quality
 - c) Increase in dragonfly population
 - d) Increase in fish population
6. How does a terrestrial ecosystem differ from an aquatic ecosystem? [1]
 - a) Terrestrial ecosystems include areas like forests and grasslands; aquatic ones include rivers and ponds.
 - b) Terrestrial ecosystems have lakes and rivers; aquatic ones have forests.
 - c) Both have the same components but different organisms.
 - d) They do not differ in any aspect.
7. What is the primary role of decomposers in an ecosystem? [1]
 - a) Preying on top carnivores
 - b) Producing food through photosynthesis
 - c) Breaking down dead matter to recycle nutrients
 - d) Consuming only plants

- d) The same kind living

Reason (R): Frogs are natural predators of grasshoppers.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

18. **Assertion (A):** Competition among organisms in an ecosystem helps control population size and maintain ecosystem balance. [1]

Reason (R): Without competition, one species might multiply excessively, leading to ecological imbalance.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

19. **Assertion (A):** The increase in insect population in ponds is a result of decreased fish numbers. [1]

Reason (R): Fish consume insects, and fewer fish lead to an increase in insects.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

20. **Assertion (A):** Mushrooms growing on dead plants help in the decomposition process. [1]

Reason (R): Fungi break down complex substances in dead matter into simpler nutrients, enhancing soil fertility.

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

21. How do living organisms coexist harmoniously in the same habitat? [1]

22. What is parasitism? [1]

23. What needs do ponds fulfill for fish living there? [1]

24. What term is used for living components within a habitat? [1]

25. Where do elephants move to when their natural habitat is unable to provide them with vegetation and water? [1]

26. What type of food resources do fish in ponds rely on? [1]

27. What is mutualism? [1]

28. How does cutting down trees for construction affect wildlife habitats? [1]

29. Why is the ecological pyramid wider at the base? [1]

30. What is the purpose of wildlife corridors in India? [1]

31. What is the role of fungi and bacteria in the process of decomposition? [2]

32. How can human actions disturb ecological balance? [2]

33. Discuss how a habitat consisting of a single organism type might affect resource availability. [2]

34. Identify and describe the role of producers in a grassland ecosystem, and explain why they occupy the first trophic level. [2]

35. If two kinds of birds compete for the same fruit, how might their way of living change over time? [2]

36. How might the loss of forest cover and changes in rainfall patterns lead to elephants entering [2]

human farms and villages?

37. Interpret the importance of observing multiple types of organisms in a habitat. [2]
38. What steps can communities take to protect ecosystems? [2]
39. What role do biotic components play in a community within a habitat? [2]
40. How do decomposers contribute to the ecosystem in relation to the food chain? [2]
41. List the components required for producing food in plants. [3]
42. Discuss the potential impact of human-driven activities such as overfishing on the balance between biotic and abiotic components within ecosystem communities. [3]
43. How do decomposers contribute to the concept of nature's recycling process? [3]
44. How do the interactions between biotic components like fish and insects affect the pollination process and seed production in ecosystems? [3]
45. Describe the relationship between food chains and trophic levels. [3]
46. **Read the following text carefully and answer the questions that follow:** [4]

Elephants often move into farms when forests shrink due to deforestation, scarce rainfall, and rising temperatures. Loss of vegetation and drying waterholes make survival in forests difficult. Wildlife corridors have been created to connect fragmented forests and reduce conflict with humans. Every habitat has biotic and abiotic components. Organisms depend on these resources and adapt differently-like fish in ponds or snakes and rodents in forests-showing interconnections between living beings and their environment.

Questions:

- a. Name an abiotic component of a habitat. (1)
- b. Why do elephants often enter human settlements and farms? (1)
- c. How do fish survive in a pond habitat? (2)

OR

Explain how two organisms in the same habitat may experience different conditions. (2)

47. **Read the following text carefully and answer the questions that follow:** [4]

In nature, organisms live together in groups. A population refers to organisms of the same kind living in a habitat, while multiple populations together form a community. Communities include plants, animals, and microorganisms interacting and depending on each other for survival. If a habitat had only one type of organism, competition for food, water, and space would lead to scarcity of resources. Such interactions ensure balance in ecosystems and continuity of life.

Questions:

- a. What is a community in a habitat? (1)
- b. Why can't a habitat have only one type of living organism? (1)
- c. Differentiate between population and community with examples. (2)

OR

How do organisms in a community depend on each other for survival? (2)

48. **Read the following text carefully and answer the questions that follow:** [4]

In an ecosystem, organisms are linked through feeding relationships that form food chains and food webs. A food chain shows "who eats whom," such as grass → grasshopper → frog → snake → eagle. Each level in the chain is called a trophic level, with producers at the base and

carnivores at higher levels. Multiple food chains often interconnect, forming a food web that illustrates the complex interdependence of organisms within ecosystems.

Questions:

- a. What is the correct order of trophic levels in a simple food chain? **(1)**
- b. What is a food chain, and how does it represent relationships in an ecosystem? **(1)**
- c. Differentiate between a food chain and a food web. **(2)**

OR

Why are producers considered the foundation of all food chains? **(2)**

49. **Read the following text carefully and answer the questions that follow:** **[4]**

In nature, organisms interact with both living (biotic) and non-living (abiotic) components to form ecosystems. Plants, animals, and microorganisms depend on air, water, soil, and sunlight for survival, while abiotic components also rely on biotic ones-for example, plants releasing oxygen and preventing soil erosion. Ecosystems can be terrestrial like forests or aquatic like ponds, and often overlap. These interactions maintain balance in nature, ensuring nutrition, respiration, reproduction, and survival for all organisms.

Questions:

- a. Give an example of an abiotic component in an ecosystem. **(1)**
- b. Why are interactions between biotic and abiotic components important in an ecosystem? **(1)**
- c. How do plants influence abiotic components in an ecosystem? **(2)**

OR

Differentiate between terrestrial and aquatic ecosystems with examples. **(2)**

50. **Read the following text carefully and answer the questions that follow:** **[4]**

A study compared two ponds-one with fish and one without. Pond A (with fish) had fewer dragonflies because fish ate their larvae. As dragonflies decreased, more bees and butterflies thrived, increasing pollination and seed production in nearby plants. This shows the interdependence of organisms, where fish indirectly support plants through pollinators. It highlights how biotic and abiotic factors interact and how human activities like overfishing may disturb ecological balance.

Questions:

- a. Which factor led to fewer dragonflies in Pond A? **(1)**
- b. How does the presence of fish in a pond indirectly affect seed production in nearby plants? **(1)**
- c. Explain how the study of ponds shows the interdependence of organisms in a community. **(2)**

OR

How might human activities like overfishing disturb the balance between living and non-living components of an ecosystem? **(2)**

51. **State whether the given statement is True or False:** **[5]**

- (a) A food web is a single linear sequence of who eats whom. **[1]**
- (b) Frog populations remain unaffected by environmental changes. **[1]**
- (c) Food chains can include more than one type of organism at each level. **[1]**
- (d) In an ecosystem, food chains are separate and do not interlink. **[1]**
- (e) The grasshopper is part of the food chain involving grass, frogs, snakes, and eagles. **[1]**

52. **Identify and describe how changes in vegetation and construction activities impact wildlife and** **[5]**

- their natural habitats.
53. Explain the significance of mutualistic relationships in an ecosystem and their role in maintaining ecological balance. [5]
 54. What role does pollination play in the ecosystem, and how does it affect plant reproduction? [5]
 55. Identify and briefly explain the role of abiotic components in an ecosystem. How do these components interact with biotic elements to support life processes? [5]
 56. Define the term "population" in the context of ecological studies and provide an example to illustrate your explanation. [5]
 57. Identify the role of fish and pollinators in the plant seed production near the ponds and describe how they contribute to the ecosystem's functioning. [5]
 58. Identify and explain two ways in which human activities threaten the Sundarbans ecosystem. [5]
 59. List the primary biotic components described in the case study and explain their interdependencies within the ecosystem. [5]
 60. List two benefits that ecosystems provide to humans and explain how each contributes to our well-being. [5]
 61. Explain the process of decomposition and its significance in maintaining the ecological balance. Highlight the role of decomposers. [5]
 62. **Fill in the blanks:** [10]
 - (a) Forests and grasslands are examples of _____ ecosystems. [1]
 - (b) The interaction and dependence among organisms in a habitat form a _____. [1]
 - (c) A population consists of organisms of the same type living in the same _____. [1]
 - (d) Many of the nutrients in soil that plants use come from the _____ process. [1]
 - (e) In an ecosystem, organisms that consume other organisms are known as _____. [1]
 - (f) The position of an organism in a food chain is its _____ level. [1]
 - (g) Fungi and bacteria are microorganisms that break down complex substances into simpler ones through a process called _____. [1]
 - (h) Organisms like fungi and bacteria that break down dead matter are called _____. [1]
 - (i) The organisms that carry out the decomposition process are called _____ or saprotrophs. [1]
 - (j) The process of transferring pollen from the stamen to the carpel is called _____. [1]

Solution
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1.
(c) They control the population of flies, bees, and butterflies.
Explanation:
Dragonflies eat these insects, contributing to population control.
2.
(c) Grass
Explanation:
Producers like grass are at the first trophic level and create their own food through photosynthesis.
3.
(c) They provide essential resources like sunlight and water.
Explanation:
Abiotic components like sunlight, water, and temperature are essential resources needed for the survival of living organisms.
4.
(c) Plants
Explanation:
Herbivores primarily consume plant material in an ecosystem.
5.
(c) Increase in dragonfly population
Explanation:
Overfishing reduces the fish population in a pond. Since fish often feed on organisms like insect larvae, their reduction allows these prey populations (like dragonfly larvae) to increase. This creates a chain reaction in the food web, showing how one change can affect multiple components of an ecosystem.
6. **(a)** Terrestrial ecosystems include areas like forests and grasslands; aquatic ones include rivers and ponds.
Explanation:
Terrestrial and aquatic ecosystems differ in the environments they encompass.
7.
(c) Breaking down dead matter to recycle nutrients
Explanation:
Decomposers like bacteria and fungi break down dead plants, animals, and organic waste into simpler substances. This process releases nutrients back into the soil, which are reused by plants. This helps in recycling matter and maintaining balance in the ecosystem.
8.
(b) Food like bananas and sugarcane
Explanation:
Elephants enter farms searching for food such as bananas and sugarcane when their natural habitat lacks resources.
9.
(d) Water

Explanation:

Abiotic components are non-living parts of a habitat such as water, air, soil, sunlight, and temperature. They are essential for the survival of living organisms and help maintain environmental conditions in an ecosystem.

10. **(c)** The hare is prey for the fox
Explanation:
In a food chain, the hare serves as prey for the fox, which is a predator.
11. **(b)** The energy flow between organisms
Explanation:
A food chain represents the feeding relationships and energy flow between organisms in an ecosystem.
12. **(a)** They seek out farms in search of food.
Explanation:
Elephants often move into farmlands when forests can no longer provide their necessary resources.
13. **(b)** Population
Explanation:
A group of fish of the same kind living together in a pond habitat is called a population.
14. **(d)** Oxygen
Explanation:
Plants release oxygen during photosynthesis, which becomes part of the atmosphere.
15. **(a)** To share resources for survival
Explanation:
Different groups of organisms living together help in resource sharing and survival.
16. **(a)** Both A and R are true, and R is the correct explanation of A.
Explanation:
Both A and R are true, and R is the correct explanation of A.
17. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
Frogs are predators of grasshoppers in a food chain. When frogs are removed, the predation pressure on grasshoppers decreases, allowing their population to increase. This shows how predator-prey relationships help regulate population balance in an ecosystem.
18. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
Competition controls species multiplication and maintains balance.
19. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
Both A and R are true and R is the correct explanation of A.
20. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
Fungi, like mushrooms, are decomposers that break down dead matter, thus supporting the assertion.

21. They use resources in different ways, allowing them to coexist in a shared environment.
22. Parasitism is a relationship where one organism benefits while the other is harmed.
23. Ponds provide food, oxygen, shelter, and space, essential for fish survival.
24. Living components are termed as biotic components.
25. They often move to nearby farms or plantations in search of food like bananas and sugarcane.
26. Fish rely on food resources like small plants and animals.
27. Mutualism is a relationship where both organisms benefit, like bees getting nectar while helping flowers pollinate.
28. It causes the shrinking and drying of forests, leading wildlife to move into human habitats.
29. The pyramid is wider at the base because producers are most numerous and energy decreases at higher levels.
30. They allow safe movement of animals between large forest areas, minimizing conflict with human settlements.
31. Fungi and bacteria break down complex substances found in dead organic matter, such as plants and animals, into simpler forms. This decomposition process releases essential nutrients back into the soil, ensuring the nutrient cycle continues in nature.
32. Activities like overfishing, pollution, and cutting forests remove key species and damage habitats. This can cause population explosions or crashes and harm people's livelihoods.
33. If a habitat consists solely of a single organism type, there would be high competition for identical resources such as food, water, and space. This may lead to resource scarcity, increased competition, and potential challenges for survival due to the limited availability of necessary resources.
34. Producers, such as green plants or grass in a grassland ecosystem, are organisms that use sunlight to make their own food through photosynthesis. They form the base of the food chain, providing energy for herbivores, and hence occupy the first trophic level. They are crucial for energy flow in ecosystems.
35. Over time, one bird might adapt by eating different fruits or at different times to avoid fights. The other could evolve stronger beaks or move to new areas. This competition helps balance populations and encourages changes for survival.
36. When forests shrink due to cutting trees or less rain, elephants lose their food and water. They wander into farms for crops like bananas or sugarcane, causing damage. This happens because their natural habitat can't support them anymore, leading to conflicts with humans.
37. Observing multiple organism types within a habitat is important for understanding ecosystem complexity and interactions. It reveals the diversity and interdependence among species, which are crucial for ecological balance. This diversity allows for more stable and resilient ecosystems capable of withstanding environmental changes.
38. Communities can reduce pollution, save water, and protect local green areas and wetlands. They can also support protected areas and use resources wisely to keep nature balanced.
39. Biotic components, including plants, animals, and microorganisms, form the community within a habitat. They interact and depend on each other for survival, sharing resources such as food and space, and contribute to the overall balance and functioning of the ecosystem.
40. Decomposers, like fungi and bacteria, play a vital role in breaking down dead matter and waste, returning nutrients to the soil. This process enriches the soil and supports plant growth, thereby sustaining the primary producers at the base of the food chain, ensuring long-term ecosystem productivity and nutrient cycling.
41. Plants require sunlight, carbon dioxide, water, and essential nutrients from the soil to produce food through photosynthesis. Sunlight captures energy, driving the conversion of carbon dioxide and water into glucose, providing energy for the plant's growth and development. Nutrients from the soil, like nitrogen, potassium, and phosphorus, facilitate various physiological functions. This autotrophic process is fundamental, not only for plant survival but also for providing food and oxygen to almost all terrestrial life forms.
42. Overfishing can significantly disrupt the balance of biotic components, resulting in increased dragonfly populations due to reduced fish numbers. Consequently, this may lead to a decline in pollinator insects, negatively impacting pollination and seed production. Moreover, changes in biotic interactions can alter

abiotic factors like water quality and nutrient cycling, underscoring the interconnected nature of ecosystem components.

43. Decomposers, such as fungi and bacteria, are vital to nature's recycling process as they break down dead organisms into simpler substances. This decomposition returns nutrients to the soil, promoting new plant growth. Their role ensures that organic matter is reused in nature, highlighting that no waste is left unrecycled.
44. Fish in a pond consume dragonfly larvae, decreasing the dragonfly population. As dragonflies predate on pollinators, such as bees and butterflies, fewer dragonflies result in more of these pollinators. This leads to enhanced pollination and increased seed production in plants, demonstrating a complex web of interactions between biotic components and their ecological implications.
45. Food chains consist of different trophic levels, each representing a step in energy flow. Producers form the first level, herbivores the second, followed by various carnivores occupying higher levels. These levels help structure ecological relationships.
46.
 - a. Oxygen
 - b. Elephants enter farms when forests fail to provide food and water due to deforestation, climate change, and drying vegetation. Searching for crops like bananas and sugarcane, they stray into human habitats, often causing conflict.
 - c. Fish survive in a pond because it provides both biotic and abiotic needs. They obtain food from algae, plants, and small organisms, and oxygen from water. The pond also offers shelter and space to grow, making it a complete habitat. Other organisms like frogs, snails, and lotus coexist with fish in the same ecosystem.

OR

In a forest, conditions change with time. For example, during the day, it may be warm, while at night it becomes cooler. A rodent active in daytime faces heat and light, while a nocturnal snake faces cooler conditions. Though sharing the same habitat, both experience different surroundings, showing how organisms adapt to coexist.

47.
 - a. Different populations sharing the same habitat
 - b. A habitat cannot have only one type of organism because they would compete for the same resources like food, water, and space. This would cause scarcity, imbalance, and make survival of that population difficult.
 - c. A population is a group of organisms of the same kind in a habitat, such as fish in a pond. A community consists of different populations living together, such as fish, aquatic plants, insects, and microorganisms in the same pond, interacting and depending on each other.

OR

Organisms in a community interact through food chains, pollination, and mutual support. For example, plants provide food and oxygen, animals depend on plants and prey, while decomposers recycle nutrients. These interactions ensure balance, survival, and stability of the ecosystem.

48.
 - a. Producers → Herbivores → Carnivores
 - b. A food chain is a linear sequence that shows the feeding relationships among organisms in an ecosystem. It represents "who eats whom," beginning with producers and moving through herbivores to carnivores.
 - c. A food chain is a simple, linear sequence showing how energy flows from producers to herbivores and then to carnivores. In contrast, a food web is a network of interconnected food chains, showing how multiple organisms may feed on or be eaten by different species, reflecting the complexity of real ecosystems.

OR

Producers, like green plants, form the base of food chains because they use sunlight to make food through photosynthesis. They provide energy directly to herbivores and indirectly to carnivores. Without producers, no energy would enter the ecosystem, and all higher trophic levels would collapse. Thus, they sustain the entire ecosystem.

49.
 - a. Soil
 - b. Interactions between biotic and abiotic components are vital because they ensure processes like nutrition, respiration, and reproduction. For example, plants need sunlight, water, and carbon

dioxide for photosynthesis, while animals need oxygen from plants for survival.

- c. Plants impact abiotic components by releasing oxygen during photosynthesis, maintaining soil fertility, and preventing erosion through roots. They also retain soil moisture and regulate temperature by providing shade. These actions create a stable environment, showing how biotic factors support abiotic ones, making ecosystems sustainable for all organisms.

OR

Terrestrial ecosystems exist on land and include forests, grasslands, and farms, such as a mango orchard. Aquatic ecosystems occur in water and include ponds, rivers, and lakes. Both interact and sometimes overlap—for example, a river running through a forest. These ecosystems together sustain biodiversity by supporting varied populations and communities.

50. a. Fish eating dragonfly larvae
b. Fish reduce dragonfly populations by eating their larvae. With fewer dragonflies, more bees and butterflies survive, leading to better pollination and increased seed production in nearby plants.
c. The study shows that fish reduce dragonfly numbers, which allows pollinators like bees and butterflies to thrive. These pollinators increase seed production in plants nearby. Thus, even though fish don't interact directly with plants, they influence them indirectly. This demonstrates interdependence among different organisms in an ecosystem.

OR

Overfishing can reduce fish populations, leading to an increase in dragonflies. More dragonflies reduce pollinators, decreasing seed production and plant growth. This affects oxygen levels, food chains, and nutrient cycles, disturbing both biotic and abiotic components. It shows how human actions disrupt natural ecological balance.

51. State whether the given statement is True or False:

- (a) **(b)** False

Explanation:

A food web is not a single linear sequence. It is a network of interconnected food chains showing multiple feeding relationships among organisms in an ecosystem. It shows how energy flows through different pathways, not just one straight line.

- (b) **(b)** False

Explanation:

Large-scale harvesting led to a decline in frogs.

- (c) **(a)** True

Explanation:

Food chains can have multiple organisms at the same trophic level.

- (d) **(b)** False

Explanation:

Food chains are interlinked to form a food web.

- (e) **(a)** True

Explanation:

The food chain is Grass → Grasshopper → Frog → Snake → Eagle.

52. Changes in vegetation, often caused by alterations in climate and human activities, greatly impact wildlife. Increased temperatures and erratic rainfall can lead to scarcity in vegetation, forcing animals like elephants to migrate in search of food and water. Meanwhile, significant construction activities such as road building and urban development result in deforestation, which shrinks and dehydrates forests. These developments disrupt the natural habitat, leaving animals without adequate food, shelter, and protection. Consequently, animals may encroach upon human territories, leading to conflicts. Wildlife ecologists have responded by marking wildlife corridors to facilitate safe animal movement between forests, minimizing human-animal clashes. Thus, understanding and managing these interconnections is crucial to balancing human advancement with wildlife conservation.
53. Mutualistic relationships are crucial for ecosystem stability as they involve cooperation between species, where both parties benefit. A common example is the relationship between honeybees and flowers. Honeybees collect nectar from flowers as a food source and, in return, facilitate pollination, which is

essential for the reproduction of flowering plants. This symbiotic interaction supports plant populations and, consequently, sustains herbivores and higher trophic levels. By promoting biodiversity, mutualism helps ecosystems remain resilient against disturbances, contributing to a dynamic but stable ecological balance.

54. Pollination is a crucial process in the ecosystem that involves the transfer of pollen grains from the male part (stamen) of a flower to the female part (carpel) of the same or another flower. This process is essential for the fertilization needed to form fruits and seeds. Without pollination, many plants would fail to reproduce, leading to a decrease in plant populations. It also affects food webs as many organisms depend on plants for food. Thus, pollination not only supports plant reproduction but also ensures biodiversity and ecological balance by enabling the continuation of plant species and providing food resources for various animals.
55. Abiotic components in an ecosystem include non-living elements such as air, water, soil, sunlight, and temperature. These elements play a vital role in supporting life forms. For instance, sunlight provides the energy necessary for photosynthesis in plants, which is the basis for the food chain. Water is essential for metabolic processes and as a habitat for aquatic life. Air is crucial as it contains oxygen needed for respiration. Temperature influences metabolic rates and the distribution of organisms across different habitats. Abiotic elements interact with biotic elements, like plants using sunlight and carbon dioxide to produce food or roots preventing soil erosion. Such interactions form the foundation of an ecosystem, ensuring that life processes function and sustain the ecological community.
56. Population in ecology refers to a group of organisms of the same species that live in a specific geographical area at the same time. An example of this would be a group of deer living within a particular forest area. These deer would share resources such as food, water, and shelter within that area, and this specific collection of deer would be studied as a population. Researchers might record the number of deer, observe their health, reproduction rates, and interactions with each other to understand more about the ecological dynamics within that forest environment.
57. Fish play an indirect yet crucial role in plant seed production by controlling the dragonfly population, which subsequently influences the number of pollinators like bees and butterflies. Pollinators transfer pollen between flowers, enabling seed production. In Pond A, fish reduce dragonfly numbers, allowing for more pollinators and consequently, greater seed production. By promoting more flowers, the ecosystem supports various life forms depending on these flowers for sustenance, thereby enhancing biodiversity and ecosystem health. This relationship demonstrates the interconnectedness of aquatic and terrestrial life forms and the importance of each organism's presence in the ecosystem's overall functioning.
58. Human activities pose a significant threat to the Sundarbans ecosystem. Firstly, deforestation is rampant as mangrove trees are being cut down for fuelwood and farming purposes. This practice destroys the natural habitat and disrupts the ecosystem, leading to the loss of biodiversity. Secondly, there is illegal hunting and overuse of forest resources, threatening the wildlife native to this region. Such exploitation of resources results in a dangerous imbalance in the ecological harmony of the Sundarbans. Consequently, these actions endanger both flora and fauna, weakening the natural barriers that protect against storms and floods, further exacerbating the environmental degradation.
59. The primary biotic components described in the case study include fish, dragonflies, bees, butterflies, and flowering plants. Each plays a vital role in maintaining ecological balance. Fish prey on dragonfly larvae, reducing the dragonfly population. Dragonflies consume bees and butterflies, indicating that fewer dragonflies lead to an increase in pollinators like bees and butterflies. These pollinators are essential for plants as they facilitate the transfer of pollen, aiding in seed production. This interdependence implies that each organism has specific functions that support and sustain their ecosystem, showcasing their interconnected roles in nature.
60. Ecosystems offer various vital benefits to humans that are essential for our well-being. Firstly, forests provide indispensable resources such as fresh air, fertile soil, food, fibers, timber, and medicines. These elements are foundational to human survival, providing oxygen, nourishment, materials, and health benefits. Secondly, aquatic ecosystems supply water and food, which are crucial for daily sustenance and agricultural purposes. They are also invaluable for maintaining hydration, supporting marine biodiversity, and supplying fish, a staple food source. Both terrestrial and aquatic ecosystems are

interconnected and support life processes, emphasizing the need to preserve these natural environments.

61. Decomposition is the natural process where dead tissues break down into simpler compounds, conducted mainly by decomposers such as fungi, bacteria, and certain insects. This process is essential for ecological balance as it recycles nutrients, making them available for plant growth and sustaining the food web. Decomposers convert complex organic matter into simpler elements like water, carbon dioxide, and minerals, returning these nutrients to the soil. This cycle supports plant life, provides habitats for soil organisms, and aids in atmospheric carbon regulation. Without decomposition, ecosystems would face nutrient shortages, leading to restricted plant growth and ecological imbalances.

62. Fill in the blanks:

- (a) terrestrial
- (b) community
- (c) habitat
- (d) decomposition
- (e) consumers
- (f) trophic
- (g) decomposition
- (h) decomposers (saprotrophs)
- (i) decomposers
- (j) pollination

USP