

ZOO401

1) What is mangroove swamp?-2 marks

Swamps

A wetland dominated by trees. Swamps are fed primarily by surface water inputs and are dominated by trees and shrubs.

Swamps differ from marshes in that, typically, they are dominated by woody plants (rather than soft-stemmed plants).

Mangrove swamps

Mangrove swamps are coastal wetlands characterized by salt-tolerant trees, shrubs, and other plants growing in brackish to saline tidal waters.

2) Diff.b/w lotic erisionsl habitat and lotic depositional habitat?-2marks

There are two lotic habitats,

- **Lotic erosional habitat**
- **Lotic depositional habitat**

Lotic erosional, characterized by fast-running water, and **Lotic depositional**, characterized by areas of slow-moving water.

The type of stream habitat, sediment, and substrate depends largely on the area of the state. Rivers and streams flow downhill seeking a path of least resistance.

Changing terrain alters the course of a river or stream creating bends called **meanders**. These meanders move over time through the processes of **erosion** and **deposition**.

3) Diff. Between ammonification and denitrification? 3

Ammonification:

When a plant or animal dies, specialized decomposer bacteria convert this detritus into simpler nitrogen-containing inorganic compounds such as Ammonia (NH_3) and watersoluble salts containing Ammonium ions (NH_4^+).

Denitrification:

Specialized bacteria convert (NH_3) and (NH_4^+) back into nitrite and nitrate ions, and then into nitrogen gas (N_2) and nitrous oxide gas (N_2O). These gases are released to the atmosphere to begin the nitrogen cycle again.

4) Define cyanobacteria with at least three examples? 3

Blue Green Algae: Cyanobacteria

The cyanobacteria (blue-green algae), classified in the division Cyanophyta or Myxophyceae, are true bacteria with a simple prokaryotic cell structure. Prokaryotic cells lack certain membranous structures, including a nuclear membrane, mitochondria and chloroplasts.

Blue-green algae are related to bacteria (lacking a membrane-bound nucleus); however, because they are photosynthetic and aquatic, cyanobacteria are often called “**Blue-green algae.**”

Cyanobacteria are differentiated from other bacteria by the presence of **chlorophyll - a**, which is common to chloroplasts of eukaryotic algae and higher plants.

Examples:

- *Anabaena*
- *Oscillatoria*
- *Microcystis*
- *Nodularia*

- *Tychonema*

They have a role in forming of the early earth's atmosphere because blue-greens can fix nitrogen (use atmospheric nitrogen), as well as use carbon dioxide (photosynthesis) to create carbohydrates and produce oxygen.

5) Write a short note on harmful algal blooms? 5

6) Write a short note on swamp and its types? 5

Swamps

A wetland dominated by trees. Swamps are fed primarily by surface water inputs and are dominated by trees and shrubs.

Swamps differ from marshes in that, typically, they are dominated by woody plants (rather than soft-stemmed plants).

They are characterized by very wet soils during the growing season and standing water during certain times of the year. Well-known swamps include

Georgia's Okefenokee Swamp

Virginia's Great Dismal Swamp

Swamps are classified as

- Forested swamps
- Shrub swamps
- Mangrove swamps

Forested swamps

Forested swamps are found in broad floodplains of the northeast, southeast, and south-central United States and receive floodwater from nearby rivers and streams.

7) Write comprehensive on non tidal marshes? 10

Non tidal (inland) marshes

Non tidal (inland) marshes are dominated by herbaceous plants and frequently occur in poorly drained depressions, floodplains, and shallow water areas along the edges of lakes and rivers.

Examples of Non tidal (inland) marshes are,

- **Freshwater marshes**
- **Wet meadows**
- **Wet prairies**
- **Prairie potholes**
- **Playas**
- **Vernal pools**
- **Freshwater marshes**
- **Wet meadows**
- **Wet prairies**
- **Prairie potholes**
- **Playas**
- **Vernal pools**

Freshwater marshes

They are characterized by periodic or permanent shallow water, little or no peat (decaying matter) deposition, and mineral soils. They typically derive most of their water from surface waters, including floodwater and runoff, but do receive ground water inputs.

Wet meadows

Commonly occur in poorly drained areas such as shallow lake basins, low-lying depressions, and the land between shallow marshes and upland areas. Precipitation serves as their primary water supply, so they are often dry in the summer.

Wet prairies

They are similar to wet meadows but remain saturated longer. Wet prairies may receive water from intermittent streams as well as ground water and precipitation.

Prairie potholes

Prairie potholes develop when snowmelt and rain

fill the pockmarks left on the landscape by glaciers. Ground water input is also important.

Playas

Playas are small basins that collect rainfall and runoff from the surrounding land. These lowlying areas are found in the Southern High Plains of the United States.

Vernal pools

Vernal pools have either bedrock or a hard clay layer in the soil that helps keep water in the pool. They are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall.

8) What is nitrogen cycle? Explain it in detail? 10

Nitrogen cycle

The major reservoir for nitrogen is the atmosphere.

Chemically unreactive nitrogen gas (N_2) makes up 78% of the volume of the atmosphere.

Nitrogen is a crucial component of proteins, many vitamins, and nucleic acids such as DNA. However, N_2 cannot be absorbed and used directly as a nutrient by multicellular plants or animals.

Steps in nitrogen cycle

- Fixation
- Nitrification
- Assimilation
- Ammonification
- Denitrification

Fixation:

Two natural processes convert or fix N_2 into compounds useful as nutrients for plants and animals.

1. Electrical discharges, or lightning, taking place in the atmosphere.
2. Nitrogen fixation by nitrogen-fixing bacteria.

Nitrification:

Specialized soil bacteria convert most of the Ammonia (NH_3) and Ammonium ions (NH_4^+) in soil to nitrate ions (NO_3^-) which are easily taken up by the roots of plants.

Assimilation:

The plants then absorb nitrates from the soil into their roots to produce various amino acids, proteins, nucleic acids, and vitamins.

Ammonification:

When a plant or animal dies, specialized decomposer bacteria convert this detritus into simpler nitrogen-containing inorganic compounds such as Ammonia (NH_3) and watersoluble salts containing Ammonium ions (NH_4^+).

Denitrification:

Specialized bacteria convert (NH_3) and (NH_4^+) back into nitrite and nitrate ions, and then into nitrogen gas (N_2) and nitrous oxide gas (N_2O). These gases are released to the atmosphere to begin the nitrogen cycle again.

Harms of algal bloom

Algal blooms

Elevated plant nutrients can cause uncontrolled plant growth or algal blooms. An increase in nutrients can cause algae growth and reproduction to increase dramatically into a bloom, just as fertilizing a lawn makes the grass

grow faster.

During blooms, DO levels during daylight hours can be very high, often greater than 10 milligrams per liter (mg/L) or parts per million (ppm). However, during the night, when oxygen production ceases and respiration begins, the DO can drop to lethal levels.

Algal blooms can cause stress and in severe cases, death for fish and other aquatic organisms. The effect of an algae bloom can be compounded on overcast days. Decreased sunlight causes a reduction in oxygen production, which results in a net loss of DO.

Warm summer temperatures compound the effects of a bloom.

Dense mats of filamentous algae or floating aquatic plants can also prevent sunlight from reaching submerged plants and can interfere with oxygen production.

As plants and algal blooms die they sink to the bottom of a water body and decompose, creating another source of oxygen depletion.

Harmful Algal Blooms

A harmful algal bloom (HAB) is a specific type of bloom that produces toxins which are detrimental to plants and animals. While any algae bloom can kill fish by depriving them of oxygen, the toxins produced during a HAB are often lethal to aquatic organisms

Prymnesium parvum is found worldwide in estuaries (estuaries are mixing zones between freshwater from rivers and seawater) and in some freshwater bodies that have relatively high salt content.

Fish kills caused by *Prymnesium parvum* can be significant. Though there are no dangers to human health from the toxins that produce these fish kills, there are effects on the environment and economy of the area.

Today's paper zoo401

Point source of pollution 2.

Point sources

Point source refers to a specific location where pollutants are discharged, like a wastewater treatment plant, outfall, a ship, or a pipe.

Nonpoint sources

Nonpoint source refers to pollutants that do not have a single point of origin or a specific outfall. These pollutants are generally carried by storm water runoff.

The major categories pollution are,

- Agriculture
- Forestry
- Urban
- Mining
- Construction
- Land disposal