

ZOO401 Mid Term Solve Subjective

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Regards VUWAYS Team

Welcome To **vuways** Study Help

1. Write a short note on ecological service by freshwater?

The goods and **services** provided to humans by **freshwater** benthic **ecosystems** may be classed as provisioning **services**, or products obtained from **ecosystems**, such as plant and animal food and fiber; supporting **services**, or **services** necessary for the production of all other **ecosystem services**, such as waste processing, the ...Oct 22, 2018

2. Enlist five factors influencing thermal stratification?

The process of thermal stratification depends on following factors, ♣ Weather pattern ♣ Lake depth ♣ Wind fetch ♣ Topography ♣ Solutes

3. How thermal stratification and mixing occur in fall?

As the weather becomes warmer, the surface water warms again and sets up summer stratification. Most lakes are considered Dimictic lakes, as their water is mixed twice a year. Once in spring and second time in fall season.

4. Three process of lake formation?

Lakes are formed by the action of following process, o Glaciation o Tectonic activity o Volcanic activity o Biological activity.

5. Difference between stream and spring?

Streams: A shallow fast flowing water body smaller than rivers. **Springs:** A freshwater body in which water flows out of the ground.

6. Thermocline?

Metalimnion- also called thermocline or middle lake has a rapid decline in temperature (1 degree Celsius for every meter you go down)

7. Write the definition of Specific heat capacity, Viscosity, surface tension?

The **specific heat** is the amount of **heat** per unit mass required to raise the temperature by one degree Celsius. The **specific heat** of water is 1 calorie/gram °C = 4.186 joule/gram °C which is higher than any other common substance. As a result, water plays a very important role in temperature regulation.

Viscosity. **Viscosity** is a measure of the resistance of a fluid to deformation under shear stress. It is commonly perceived as "thickness", or resistance to pouring. **Viscosity** describes a fluid's internal resistance to flow and may be thought of as a measure of fluid friction.

The tension of the surface film of a liquid caused by the attraction of the particles in the surface layer by the bulk of the liquid, which tends to minimize surface area.

8. Ions that are dissolved in water?

A measure of total concentration of ions dissolved in water. Fresh water: 0-0.5 ppt Brackish water: 0.5-25 ppt Saltwater: 25-35 ppt. Total dissolved solids A measure of total amount of inorganic (calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates) and organic salts (organic matter) dissolved in water.

9. Laminar & turbulent flow?

Laminar: The more basic type of stream flow is referred to as laminar. A mode of flow in which the fluid moves in layers along continuous, well-defined lines known as streamlines.

Turbulent: Flow The more complex type of stream flow is turbulent. A flow with irregular, unpredictable motion referred to as is called turbulent flow. Turbulent stream flow is when water does not remain within parallel layers and does not move in an orderly manner.

10. Biogenic or endogenic process?

Biogenic or endogenic Meromixis results from an accumulation of salts in the Monimolimnion, which are usually liberated by means of decomposition in the sediments and from sedimenting organic matter. Biogenic Meromixis is caused by the substantial contributions of biological material from internal or external (autochthonous or allochthonous) sources – such as litter from forests surrounding the lake.

11. The importance of H₂O?

Here are some other important roles that H₂O plays within our body are: Transporter: Once a substance is dissolved in **water**, **water** becomes very important for transporting it throughout the body. For example, blood, which is 83 percent **water**, transports oxygen, CO₂, nutrients, and more from cell to cell.

12. How nutrients enter into the lake?

13. Sinuosity of lake?

Sinuosity, **sinuosity** index, or **sinuosity** coefficient of a continuously differentiable curve having at least one inflection point is the ratio of the curvilinear length (along the curve) and the Euclidean distance (straight line) between the end points of the curve.

14. Effect of pH on lake?

Most **lakes** and streams have a **pH** between 6 and 8. However, some **lakes** are naturally acidic even without the **effects** of acid rain. **Lakes** and streams become acidic (**pH** value goes down) when the water itself and its surrounding soil cannot buffer the acid rain enough to neutralize it. ... Little Echo Pond has a **pH** of 4.2.

15. Kind of benthos in stream?

Benthos, include is a key part of the benthic macro-invertebrates, food such web. These as mussels, aquatic insects, and other invertebrates. o Animals at the bottom of the food web depend on the leaves, stems, and animals that may fall into the stream from the land.

16. Application of limnology?

In addition to scientific interest and basic knowledge, limnology can provide some important applications, Planktonic successions→ Study of evolution of lakes and reservoirs→ Geomorphology→ Hydrodynamic and its effects. The ration of allochthonous (externally derived) to autochthonous (internally derived) to material. Comparison between lakes and reservoirs.

17. Explain zone of lake?

Benthic zone- sediment on bottom of lakes and ponds »Photic zone- where light penetrates to the bottom »Aphotic zone- under water area where light does not reach »Eutrophic- nutrient rich »Oligotrophic- nutrient poor »Hypertrophic- excessive nutrients.

1. Littoral
2. Limnetic
3. Profundal
4. Benthic

18. Alluvial dam?

Alluvial Dam When two rivers meet, the one that is flowing faster will dump sediments into other slower stream/river forming an alluvial dam. Sediments carried by river/Stream currents are known as Alluvium.

19. Write a note major ions in lake?

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water ions precipitation sodium. Freshwater is chemically **defined** as containing a concentration of less than two parts per thousand (<0.2%) of dissolved salts. ... The waters that fit into useable criteria constitute less than 0.5% of all of the water on Earth.

20. Ectogenic?

Ectogenic Meromixis The condition that results when some external event brings salt water into a freshwater lake or fresh water into a saline lake is called Ectogenic Meromixis.

21. Stream gets nutrients from?

Nutrients are chemical elements critical to the development of plant and animal life. In healthy lakes and streams, nutrients are needed for the growth of algae that form the base of a complex food web supporting the entire aquatic ecosystem . The most common nutrients in lakes and streams are **nitrogen** and phosphorus.

22. Tectonic plates activity?

The lake is formed by movements of the Earth's crust, such as faults that result in depressions. They are often formed in rift valleys (Graben). The basin created by broken earth crust is known as Graben and it can host a lake. Tectonic movements can occur through the emergence or subsiding (lifting or sinking) of areas with shifts in sea level. The formation of lakes then begins with isolation from the ocean. Some lakes, which were ancient fjords, formed when their connection with the sea was closed. Well-known examples are ♣ Lake Baikal (Russia) ♣ Lake Tanganyika and Lake Victoria (Africa).

23. Define Lake District?

Lakes that were formed from specific geomorphological events in certain geographical areas have similar characteristics and are therefore grouped into lake districts.

24. Define meromictic and holomictic?

Meromictic: mix only partially, the deeper layers never mix either because of high water density caused by dissolved substances or because the lake is protected from wind effects.

Holomictic: Mix completely.

25. Define Secchi disk. It's use?

A Secchi disk is an 8-inch (20 cm) black and white colored wooden disk used for measuring light penetration in water.

It is lowered into the water of a lake until it can no longer be seen by the observer. This depth of disappearance, called the Secchi depth, is a measure of the transparency of the water.

26. Name three zone of still water body?

Lentic: slow moving water, including pools, ponds, and lakes.

Lotic: faster moving water, for example streams and rivers.

Wetlands: areas where the soil is saturated or inundated for at least part of the time.

27. Five economic importance of Freshwater?

The most obvious use of **freshwater** has **economic** considerations, particularly as a water supply for agriculture, the industry, cities and towns. Because these **economic uses** are essential for the **economic** well-being of human populations, large volumes of water typically are needed for such purposes.

28. Explain zones of Fresh water bodies?

Lotic water bodies Those water bodies that hold running water are termed as lotic water bodies. High dissolved oxygen due to continuous flow of water. Examples of lotic water bodies are 1. Rivers 2. Streams

3. Springs.

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The **lentic systems** are self contained and can undergo extinction of all the organisms it supports. ...**Lentic** ecosystem refers to the static **water** habitats like ponds, lakes swamps and marshes. And **lotic ecosystem** refers to the dynamic **water** habitats like river, brook, etc.

29. What is the difference between swamp and mangrove swamp?

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 Softstemmed plants).

Mangrove swamps

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

30. Diff between lotic erosional habitat and lotic depositional habitat?

There are two lotic habitats,

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**.

31. Difference Between ammonification and denitrification?

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.

32. Define cyanobacteria with at least three examples?

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:

- o *Anabaena*
- o *Oscillatoria*
- o *Microcystis*
- o *Nodularia*
- o *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.

33. 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

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(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

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