Mock-6
Environmental Science

Q. No. 3 (A)

Eutrophication

It is an excessive plant and algal growth in the water bodies due to the increasing level of growth factors like nitrogen, carbon and phosphorus.

Types of Eutrophication

Natural Eutrophication

Cultural Eutrophication

Natural Eutrophication

It is naturally occurring gradual process and it takes years. It is less damaging process because takes years. It is not influenced by human activities.

Cultural Eutrophication

It is mainly caused by human activities. It is an accelerated form of natural Eutrophication. It takes weeks or months and is more severe.

Read the question carefully and address exactly what is asked, avoiding unnecessary deviation.

Start with a clear and relevant introduction that shows understanding of the topic.

Structure the answer logically: introduction, explanation/analysis, and a brief conclusion.

Use correct scientific terminology (e.g., biodiversity, sustainability, carbon cycle, eutrophication).

Explain concepts clearly and accurately, avoiding vague or generalized statements.

Support answers with relevant examples, preferably from Pakistan or global case studies where appropriate.

Include data, statistics, or facts (e.g., temperature rise, deforestation rates) when relevant to strengthen arguments.

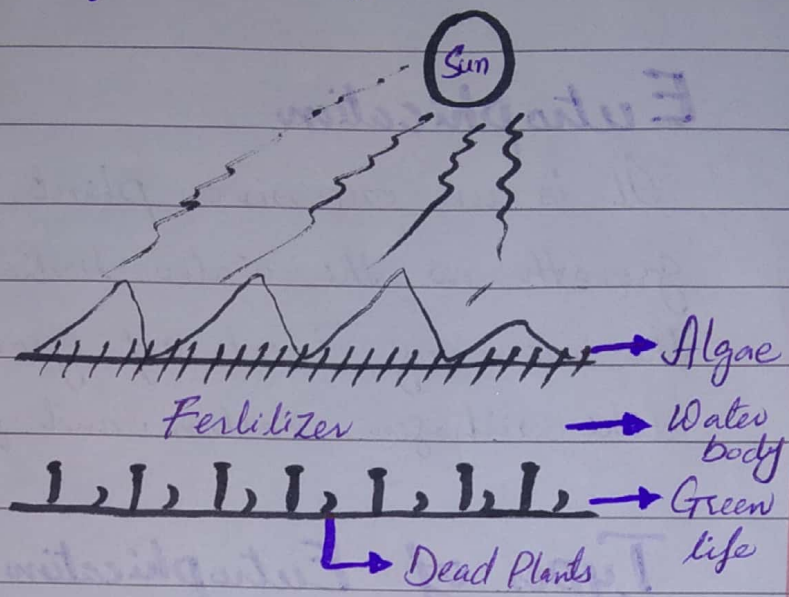
Incorporate environmental laws, agreements, or protocols (e.g., Paris Agreement, Kyoto Protocol, SDGs) where applicable.

Show cause-and-effect relationships in environmental processes.

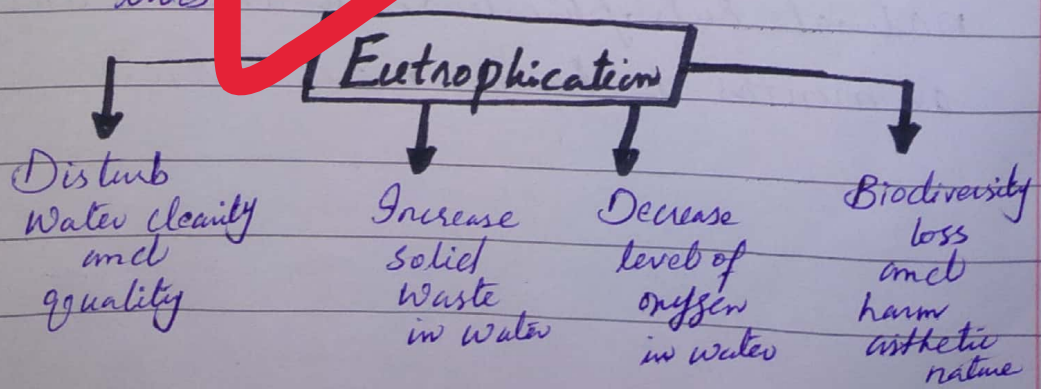
Focus on analysis and application rather than rote definitions.

Present balanced views by mentioning impacts,

Process of Eutrophication



1. Fertilizers flow into the water body.
2. Addition of fertilizers causes excessive plant and algal growth.
3. Plant and algal growth causes prevention the penetration of solar heat into the water bodies.
4. Lack of solar heat causes death of smaller green lives.
5. Causes decomposition of dead plants.
6. Oxygen consumed and carbon dioxide increased.
7. Suffocation in water killing of fish lives



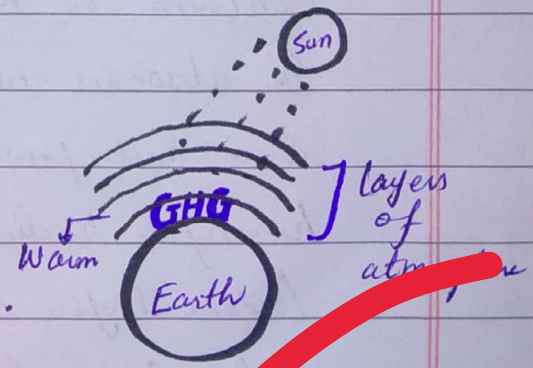
Controlling measures

1. Reducing use of agrochemical and shifts towards bio fertilizers.
2. Managing agricultural water run off.
3. Ensuring solid waste management
4. Ecological Restoration
5. Promoting environmental education.
6. Implementing SDGs.

Q. No. 3 (b)

Greenhouse Effect

It is a natural process by which certain gases in the Earth's atmosphere trap heat and keep the planet warm enough to support life.



How it works

Solar radiations from sun enters the earth's atmosphere.

Greenhouse gases absorb these radiations/heat and re-radiate heat back towards the Earth.

Green house gases are CO_2, CH_4, N_2O and

CFCs.

Enhanced Greenhouse Effect

Concentration of greenhouse gases (CO_2, CH_4, N_2O) increase in the atmosphere due to human activities like burning of fossil fuels, deforestation and industrial emissions, this is called enhanced green house effects.

Enhanced green house effects lead to rise in temperature of earth (Global warming), rise in sea water and melting of glaciers.

Depletion of Ozone layer

The ozone layer, located in the stratosphere contains a high concentration of O_3.

It absorbs ultraviolet radiations from the Sun and protects the earth from these harmful radiations.

Ozone layer deplets due to emission of Chloroflouro Carbons CFCs and other ozone-depleting substances.

Ozone depletion increase UV radiations reaching Earth which damage crops,

marine ecosystem and increase risk of disease in human.

Relation Between GHE, Ozone Depletion and Global Warming

Greenhouse gases directly cause global warming by trapping heat.
Ozone depletion does not directly cause Global Warming but some ozone-depleting substances (like CFCs) are also powerful greenhouse gases.
UV radiations increasement can affect atmospheric circulation and ecosystems.
Both phenomena are caused by human activities and contribute to environmental imbalance.

Q. No. 4

"The statement that "the era of global warming has ended and this is the era of global boiling" highlights the unprecedented rise in Earth's temperature and extreme weather events being experienced today.

Justification of the Statement (Global Boiling)

1. Record-Breaking Temperatures

According to IPCC the average global temperature has already increased by about 1.0°C to 1.3°C compared with pre-industrial period this temperature has further potential to increase 1.5°C till 2040.

Recent years have recorded the highest global average temperatures in history.

2. Extreme Weather Events

Increased frequency and intensity of heat waves, droughts, floods and wild-fires.

3. Melting of ice and rising sea Levels

Rapid melting of glaciers, arctic sea ice and polar ice sheets.

Thermal expansion of oceans leading to sea-level rise.

4. Impact on Ecosystems

Coral bleaching due to higher ocean temperatures.

Loss of biodiversity.

5. Human Health and Economy

Heat stress, dehydration, and spread of vector-borne diseases.

Damage to agriculture, food security and infrastructure.

These changes indicate that earth is experiencing dangerously high temperatures.

Measures to Combat Global ~~W~~ Boiling

1. Reduce greenhouse gas emission

Transition from fossil fuels to

Wild fires also affect farmland.

renewable energy like solar, wind, and hydropower.

2. Afforestation and Reforestation
Increase green ~~house~~ cover by planting trees, which absorb CO_2.

3. Sustainable Transportation
Promote electric vehicles, public transport and, non-motorized Transport.

4. Industrial Regulation
Enforce strict emission standards and carbon pricing.

5. Energy Efficiency
Use energy-efficient appliances and sustainable building designs.

Q. No. 7 (A)

Food Insecurity

Food insecurity is a condition in which people lack reliable access to sufficient, safe, and nutritious food need for a healthy and active life.

Threats to Agriculture Posed by Global Warming

Global warming directly affects food systems and agricultural productivity in the following ways:

1. Rising Temperature

Heat stress reduces crop yields like wheat, rice, and maze.

2. Change in Rainfall Patterns

Increased droughts reduce soil moisture and crop growth.

Floods destroy standing crops and stored grains.

3. Increased frequency of Extreme Events

Heat waves, floods, and cyclones destroy crops and farm infrastructure.

Wild fires also affect farmland.

4. Decline in Soil and Water Resources

Increased evaporation reduces water availability.

Salinization of soil due to sea-level rise in coastal areas.

5. Impact on Fisheries

Ocean warming and acidification reduce fish stocks.

Measures to Address Threats to agriculture

1. Reduce greenhouse gas emission from agriculture.
2. Promote organic farming and low-carbon practices.
3. Reduce deforestation and encourage agroforestry.
4. Improved water management (drip-irrigation, rainwater harvesting).
5. Strengthen food storage and distribution
6. Farmer education and extension services.
7. Investment in agricultural research and rural infrastructure.

(B)

Environmental Impact Assessment (EIA)

EIA is a formal process to identify, evaluate, predict, avoid or reduce damages caused by any project or activity.

Projects including public and private like motorway, bridges, dams, housing, and factory.

Objectives of EIA are ensuring the effective use of natural resources, environmental protection and promotion of sustainable development.

Process of EIA

The process of EIA consists of multiple steps:

1. Project Screening

To screen the location, type, cost, and duration of project.

2. Project Scoping

To check the scope of project socio-economic scope.

3. Base-line data Collection

Collecting data about the project-site, what type of sources are these like forest

cover, aquatic life, crop lands and population.

4. **Identification of Environmental Effects on the basis of collected data**

To identify the environmental effects which caused by the project building like deforestation, water pollution, noise pollution, biodiversity loss and migration.

5. **Impact Prediction**

To predict the severity of problem.

6. **Mitigation Measures**

To find or work on mitigation measures like reforestation, technology installment, and compel stakeholders.

7. **Public Consultation**

To consult with public about the problems and mitigation.

8. **Environmental Monitoring**

During the project conducting inspection. EPA Environmental Protection Agency has the authority to seal the project.

9. **Environmental Audit**

After the completation of project, financial audit and to check list. Complete.

Benefits of EIA

1. It helps in identifying the possible environmental effects of proposed projects.
2. It helps in impact prediction
3. It offers an opportunity to find out the reliable mitigation measures to address the environmental effects.
4. It helps in avoiding the violation of national and international environmental standards.
5. It helps in promoting environmental awareness
6. It promotes responsible development practices
7. Strengthens environmental governance and accountability
8. It helps in addressing the environmental problems like environmental pollution, global warming, deforestation and biodiversity loss.
9. It improves long-term economic viability of projects
10. It enhances public participation and transparency, building trust with stakeholders.