

Assignment No = 1

Part-A

Q1) What is environment?

Ans: Everything that surrounds and affect living organisms is called as environment.

It also refers as sum total of water, air and land and the interrelationship that exists among them and with ~~human~~ beings, other living organisms and materials.

Q2) Write names of 5 international days that are celebrated to make awareness for the environment.

Ans: 1) World Environment day = June 5

Led by UNEP (United Nations Env't Programme)

2) Earth Day = April 22

To protest against environmental degradation.

3) International Day for the Biological

Diversity : May 22

To increase understanding and awareness of biodiversity issues.

4) International day of forests = March 21,

Celebrates and raise awareness of the importance of all types of forests.

5.) World Wildlife day = March 3

To protect endangered species, manage their habitats.

Q3 Write names of environmentalists who won noble peace prize for their contribution to save the environment.

Ans: ① Wangari Maathai (2004) - Contribution to sustainable development, peace and specific through her Green Belt Movement in Kenya

② AI Gore (2007) : To build up and disseminate greater knowledge about man made climate change

Q4 What is meant by Ecomark?

Ans It is a certification mark awarded by Bureau of Indian Standards (BIS) to products that meet specific environmental criteria and standards.

Logo is an Earthen Pot (signifying the usage of renewable resources)

Q5 Name four government initiatives for public awareness.

Ans ① Public Env'tl Awareness :

Aims to raise awareness in society to reduce and control pollution

② Mahila Shakti Kendra (MSK)

Aims to help rural women develop skills and find employment.

③ Ujala Yojana :

Aims to promote energy efficient lighting by Eg-LED bulbs

④ Green Good Deeds (GGDs)

encourages green habits like using public transportation, saving water and avoiding single use plastics.

Part-B

Q1) What are the major components of environment? Explain their role.

Ans. The environment consists of various components that interact with each other to sustain life.

1) Atmosphere: Layer of gases surrounding the Earth. Plays roles in:

- * Protecting life by blocking harmful solar radiation.
- * Regulating temperature through the greenhouse effect.
- * Providing essential gases like O₂, CO₂.

2) Biosphere: Includes all living organisms.

- * Supports biodiversity.
- * Facilitates energy flow and nutrient cycle.
- * Maintains food chains balance by.

3) Hydrosphere: All water bodies like oceans, lakes

- * Supports aquatic life.
- * Regulates climate and weather through water cycles.
- * Provides water for drinking, agriculture etc.

4) Lithosphere: Earth's outer shell having crust and the upper mantle.

- * Provides habitats for terrestrial organisms.
- * Contains minerals, resources.

- * Have role in processes erosion, plate tectonics.

Q 3) **Describe Chipko Movement.**

Ans:

It was a non violent social aimed at protecting trees and forests from being felled.

- * **Origins:** Starts in 1973 from village Mankot. Led by activists like Chandi Prasad and Gaura Devi protect against govt. decision to allow cutting of trees for commercial purpose.
- * **Method:** Villagers hugging trees to prevent them from being cut down.
Term 'Chipko' means 'hug'
- * **Role of Women:** Women played a significant role, as they were affected by deforestation. Forests provide firewood, water etc.
- * **Impact:** The chipko movement halted the cutting of trees and led to ban on commercial logging in the region.

~~It highlighted the role of local communities in environmental conservation.~~

Q 3) Who are entitled as the green Judge and the green advocate? discuss their roles for this recognition.

Ans

Justice Kuldip Singh, a former judge of the Supreme Court, is known as "green judge" because he presided over many public interest

litigations (PILs) on environmental issues. Till retirement in 1996, he passed crucial judgements on air pollution, including specifying norms for industries around Taj Mahal.

M.C. Mehta is known as Green Advocate, who single handedly won numerous landmark judgements from India's supreme Court since 1984, introducing lead free gasoline to India and reducing the industrial pollution polluting the changes and eroding the Taj Mahal.

Part -3

(Q1) Write role of an individual to protect and manage the environment. What is the role of community participation in envt- management programme.

Ans:- Role of Individual:

Collective Action:

1) Reduce, Reuse, Recycle?

Minimize waste by reusing items, recycling materials and reducing consumption of single use plastics.

2) Conserve Energy: Use energy efficient appliances, turn off lights & electronics when not in use, consider using renewable energy sources.

3) Water Conservation: Fix leaks, use water saving fixtures, and practice mindful water usage in daily activities.

4. Sustainable Transportation: Opt for public transportation, biking or walking instead of driving alone to reduce carbon emissions.
5. Support Sustainable Products: Choose products made from sustainable materials and companies that prioritize envt responsibility.
6. Educate & Advocate: Stay informed about Environmental issues & advocate for policies that protect the environment.
7. Plant trees and gardens: Maintains gardens to enhance local biodiversity and reduce carbon dioxide levels.
8. Avoid Pollution: Dispose of hazardous materials, participate in clean up drives.

Role of Community:

1. Collective Action: Community involvement leads to address larger environmental issues more effectively.
2. Local Knowledge: Communities possess local knowledge that can be crucial in identifying & solving environmental problems to their area.
3. Resource Sharing: Community members can pool resources, time, money and materials to support envt projects.
4. Enhanced Monitoring: Local communities can monitor environmental changes & impacts more regularly, providing valuable data for larger initiatives.

5. Social Cohesion: Working together on environmental projects strengthens community bonds.
6. Policy influence: A united community can exert pressure on local govt. and policymakers to implement and enforce environmental regulations.

Q2) What is atmosphere? Discuss different layers of atmosphere and their importance to protect the environment.

Ans: Atmosphere is a layer of gases surrounding Earth, held in place by gravity. It is crucial for life on Earth as it provides oxygen for breathing; protects harmful solar radiations.

Layers of the Atmosphere :

1) **Troposphere :**

- Extends up to 8-15 km above Earth's surface
- Contains about 75% of the atmosphere's mass and nearly all its water vapor.
- Clouds and precipitation occur in this layer.
- Supports life, climate and weather system.

2) **Stratosphere :**

- Ranges from 15 to 50 km above earth's surface
- Contains the ozone layer, which absorbs and scatters ultraviolet solar radiation.

- Protects living organisms from harmful UV rays, reducing the risk of skin cancer & other UV related health issues.

3) Mesosphere :

- Extends from 50 to 80 km
- Temperature decrease with altitude and this layer is where most meteors burn.
- Protects Earth from meteors by burning.

4) Thermosphere :

- Range from 85 to 600 km.
- Temp increases with altitude due to the absorption of high energy X-rays and UV radiation.
- Having ionosphere, which is important for radio communication.
- Absorbs high energy radiation and supports satellite, radio communications by reflecting radio waves back to Earth.

5) Exosphere :

- Extends 600 to 1000 km
- Outermost layer where the atmosphere thins out into space.
- Contains very few particles, which can travel 100's of kms with colliding.
- Gradually transitions into outer space and helps Earth by protecting from solar winds and cosmic rays.

(Q3) Explain multidisciplinary nature of environmental studies. What is the scope of these studies to manage the environment?

Ans. Multidisciplinary Nature:

- 1) Biology & Ecology: Study of living organisms and their interactions with each other and their environments.
2. Chemistry = Analysis of pollutants, chemical processes in nature, and the development of green technologies.
3. Geology = Understanding earth processes, natural resources, and the impacts of human activity on geological systems.
4. Physics = Application of physical principles to study energy flows, climate dynamics and environmental technology.
5. Geography = Examination of spatial relationships and human-environment interactions.
6. Sociology and Anthropology = Study of human societies, culture, and their impacts on the environment
7. Economics: Analysis of environmental costs, resource management, and economic incentives for sustainable practices.
8. Political Science: Understanding environmental policies, governance and international agreements.
9. Law = Environmental legislation, regulations and enforcement mechanisms
10. Engineering : Development of sustainable technologies, waste management, and envt'l engineering solutions.

18. Public Health: Impact of environmental factors on human health and strategies for mitigation

Scope of Environmental Studies:

1. Sustainable Development: Promoting practices that meet present needs without compromising future generations.
2. Conservation and Biodiversity: Protecting species, habitats and ecosystems.
3. Pollution Control: Developing methods to reduce air, water and soil pollution.
4. Climate Change Mitigation and Adaptation: Understanding, addressing the causes and impacts of climate change.
5. Resource Management: Efficient and sustainable use of natural resources like water, mineral.
6. Waste Management: Developing strategies for waste reduction, recycling and disposal.
7. Urban Planning: Designing cities and infrastructure that are environmentally friendly.

Ques
17/8/22

Assignment - 2

Part A) Q1) What do you mean by Super Pests:

Ans Super pests refer to insect pests that have developed resistance to multiple types of pesticides or other forms of pest control, making them difficult to manage.

These pests can cause significant damage to crops and pose a serious threat to agriculture and food production.

Q2) Define Nuclear fusion and Nuclear fission.

Ans Nuclear fusion - It is the process in which two light atomic nuclei combine heavier nucleus.

- * Releases a large amount of energy in the process
- Example - fusion of H nuclei in the core of Sun to form He.

Nuclear fission -

It is the process in which a heavy atomic nuclei splits into two smaller nuclei.

- * Release of neutrons and a significant amount of energy.

Example - Fission of Uranium (235), Plutonium (239) in nuclear reactors.

Q3) What do you mean by Water loggings.

Ans Refers to the condition in which soil or land becomes saturated with water, to the extent that the normal supply of air to plant roots is disrupted.

Caused by heavy rainfall, poor drainage. This can cause lead to a reduction in the oxygen available to plants, affecting their growth and potentially leading to plant death.

Q4) Define Eutrophication.

Ans It is the process by which a body of water becomes overly enriched with nutrients, particularly Nitrogen and phosphorous, leading to excessive growth of algae and other aquatic plants.

This nutrients overload can disrupt the natural balance of aquatic ecosystems and cause several negative environmental effects.

Q5) Define soil erosion and its types.

Ans It is the process by which the top layer of soil is removed or displaced by natural forces such as water, wind or human activities.

This process can lead to loss of fertile soil, reduced agricultural productivity.

Types - (i) Water erosion

(ii) Wind erosion

(iii) Gravity Erosion

(iv) Human-Induced erosion

Part B) Q1) What are the major causes and consequences of deforestation.

Ans Major Causes -

* Agricultural Expansion:

Forests are cleared to create space for

plantation and cattle ranching.

- * Logging = demand for timber and wood products drives deforestation as forests are cut down for wood, paper etc.
- * Infrastructure development = As cities expand, forests are often cleared to make way for housing, roads.
- * Mining = Mining for resources such as coal, oil, gold often leads to large scale deforestation, as vast areas are cleared to access underground deposits.
- * Climate Change = Rising temp and prolonged droughts, often linked to climate change, can increase the frequency and intensity of forest fires, leading to deforestation.
- * Overpopulation - Population growth increases demand for land.

Major Consequences -

- * Loss of biodiversity - Deforestation destroys habitats, leading to extinction of many plant and animal species.
- * Ecosystem imbalance - Loss of key species can disrupt entire ecosystem.
- * Climate change - Forests act as carbon sinks, when forests are cleared, carbon stored in trees is released as CO₂ contributing to global warming.
- * Soil degradation - Without tree roots to anchor the soil, deforestation often leads to inc. soil erosion.

Q2) What are the effects of excess usage of ground water.

Ans 1) Aquifer depletion -

- Over extraction of groundwater lowers the water table, making it more difficult and expensive to access groundwater.
- Excessive pumping permanently reduces the aquifer's ability to store water.

2) Land Subsidence -

When large amounts of groundwater are withdrawn, the ground above the aquifer may start to sink or collapse, this land subsidence which can cause damage to buildings, roads.

3) Reduced Water Quality - In coastal areas, excessive groundwater extraction can cause saltwater to infiltrate freshwater aquifers, leading to the salinization of drinking water supplies, making it unsuitable for agriculture.

4) Impact on surface water -

Excessive groundwater withdrawal can reduce the flow of rivers, lakes, during dry periods. This can harm aquatic ecosystems.

5) Ecosystem Disruption -

Lower groundwater levels can impact vegetation and wildlife that depend on consistent water supply.

6) Economic Consequences -

As groundwater becomes harder to access, costs of drilling deeper wells and pumping water increases.

Q3) Explain environmental impacts of minerals extraction and its remedial measures.

Ans 1) ^{Impacts} Habitat destruction -

Mineral extraction requires clearing of larger areas leading to the destruction of habitats for wildlife.

2) Water pollution -

When minerals containing sulfur are exposed to air and water during mining, they can produce sulfuric acid, which leaches into nearby water bodies.

3) Air pollution - extraction and processing of minerals can generate larger amounts of dust and particulate matter, which degrade air quality.

4) Soil erosion & degradation -

Removal of vegetation and soil during mining operations can lead to increased soil erosion.

5) Landscape Alteration -

Underground mining causes damage to infrastructure.

Remedial Measures -

1) Environmental Impact Assessments [EIA's] -

This includes identifying sensitive ecosystems, water sources and potential pollution pathways.

2) Sustainable Mining Practices -

Implement technique that reduce footprints of mining.

3) Water management -

Install and maintain systems to treat mine wastewater.

4. Rehabilitation & Reclamation -

After mining activities are completed, restore the land by planting native vegetation and trees.

Part C) Q1) What are the benefits and environmental impacts of big dams? Explain with flow chart.

Ans Benefits -

- Dams provide a reliable source of water for agricultural irrigation, improving crop yields and enabling farming in arid regions.
- Dams harness energy of flowing water to regenerate electricity, providing a renewable source of energy that reduces reliance on fossil fuels.
- By controlling rivers flow, dams reduce the risk of downstream flooding during heavy rainfall.
- Reservoirs created by dams often recreational areas, provides opportunities for fishing, boating.
- Dams can stimulate local economies through creation of jobs.

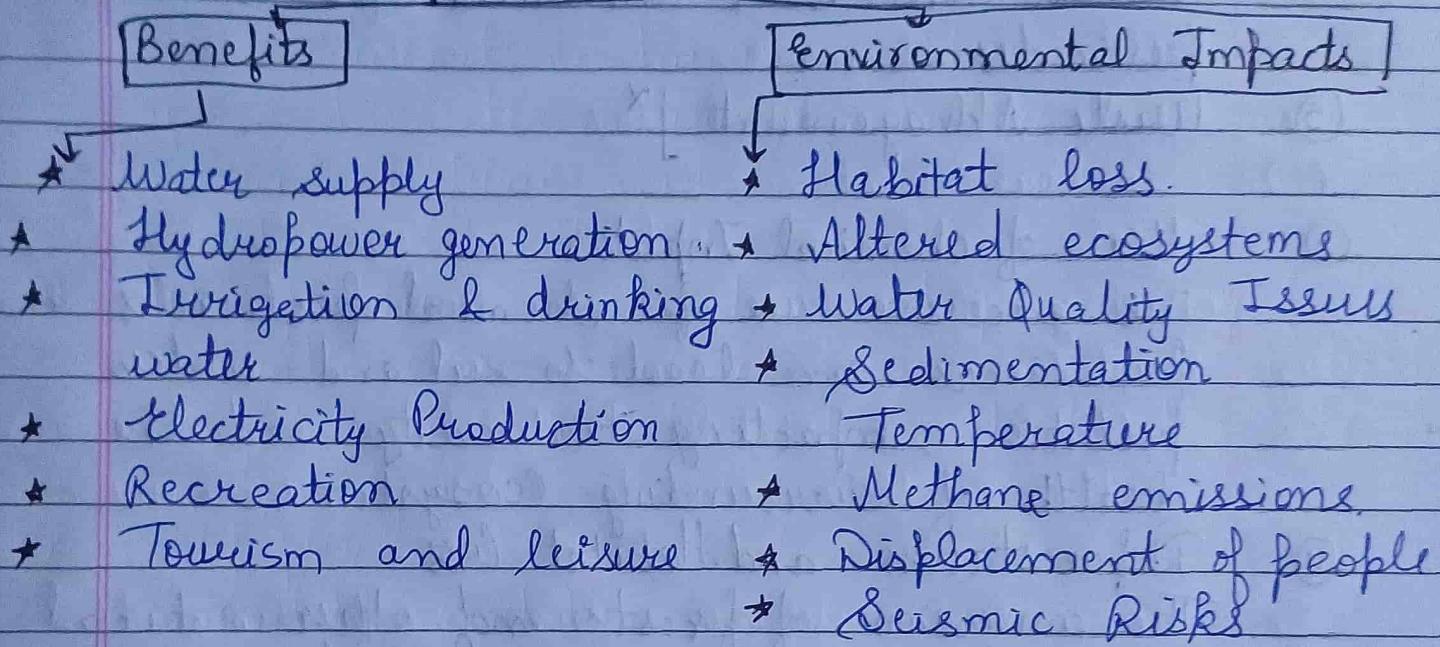
Environmental Impacts -

- Dams flood large areas of land, destroying natural habitats & displacing wildlife,
- Sediment that would naturally flow downstream is trapped by dams, which can reduce reservoir capacity and impact water quality.
- Large dams requires relocation of communities living in the floodplains.

Dams obstruct fish migration routes,

- Organic matter in flooded areas decomposes anaerobically, producing methane, a potent greenhouse gas that contributes to climate change.

Big dams.



Q2) Explain environmental impacts related to food resources in India.

Ans ① Water Usage and Depletion-

Intensive irrigation, in regions like Punjab and Haryana, has led to the over extraction of groundwater, causing a decline in water tables and reducing water availability for other uses.

② Soil degradation =

Practices such as deforestation and improper land management can lead to soil erosion, reducing soil fertility and affecting crop yields.

③ Use of Chemical Inputs -

Integrating trees and shrubs into agricultural systems can help prevent soil erosion, improve soil fertility, and enhance biodiversity.

④ Integrated Pest Management (IPM) -

Utilizing natural predators and biological controls can reduce the need for chemical pesticides.

⑤ Waste Management]*

① Use of chemical Inputs-

The excessive use of chemical pesticides and fertilizers can lead to soil and water pollution, impacting biodiversity and the health of surrounding ecosystems.

② Deforestation and Habitat loss -

The conversion of forests and other natural landscapes into agricultural land leads to habitat loss and reduced biodiversity.

③ Climate Change & Greenhouse Gas Emissions -

Livestock production, particularly cattle, contributes to methane emission, a potent greenhouse gas.

④ Land degradation -

In arid and semiarid regions, unsustainable agricultural practices can lead to desertification where fertile land becomes barren, unproductive.

⑤ Waste Generation -

High levels of food waste at various stages of the food supply chain, from production to consumption, contribute to environmental degradation.

(Q3) Explain Renewable and Non Renewable Resources.

Ans Renewable Resources -

Are natural resources that can be replenished naturally over a relatively short period of time.

Types -

① Solar Energy - Energy from Sun that can be captured using solar panels.

Benefits - • Abundant, reduces greenhouse gas emissions, can be used for electricity, heating and lighting.

② Wind Energy - Energy generated from wind using wind turbines.

• Clean, reduces reliance on fossil fuels, and has minimal environmental impact.

③ Hydropower - Energy derived from the flow of water, typically through dams in rivers.

• Provides a reliable energy source and can be adjusted to meet energy demands.

④ Biomass - Organic materials, such as plant and animal waste, used to produce energy.

• Reduces waste & can be used for heat, biofuels

⑤ Geothermal Energy - Energy from the heat stored beneath the Earth's Surface.

Consistent Energy source and has a low environmental footprint.

⑥ Tidal and Wave Energy - Energy generated from the movement of tides, waves in the ocean.

• Predictable can provide a steady supply of energy.

Non-Renewable Resources -

Are natural resources that cannot be replenished on a human timescale once they are depleted.

Types =

① Fossil fuels - Energy sources formed from the remains of ancient plants and animals over millions of years.

Eg: Coal, Oil, Natural Gas

② Nuclear fuels =

Fuels used in nuclear reactors to produce energy through nuclear fission.

Eg: Uranium, Plutonium.

③ Minerals and Metals = Natural substances found in the Earth's crust, used in various applications.

Eg: Iron Ore, copper, Rare Earth Elements