

Environmental Studies PYQ 2022

Q1. 1. In the 1970s, large-scale tree-felling for timber in the Himalayan region prompted local women and many social workers to oppose it which turned into a people's movement. Describe the origin, struggle, and achievements of the movement mentioned above, emphasizing the role of women in such an indigenous movement. Discuss major changes brought into the Indian legislation in order to provide protection to the forests, after such environmental movement.

Ans1. The Chipko movement, also known as the Chipko Andolan, was a non-violent ecological movement that began in the early 1970s in the Indian Himalayan region. The term "chipko" means "to hug" or "to embrace" in Hindi, which reflected the main strategy of the movement - to embrace trees and prevent them from being cut down.

The Chipko movement originated in the village of Mandal in the state of Uttarakhand (then part of Uttar Pradesh), where women became aware of the impact of deforestation on their livelihoods. They observed that the large-scale felling of trees was causing soil erosion, landslides, and a decrease in water availability, which were negatively affecting agriculture and animal husbandry. Moreover, the women were also concerned about the loss of traditional sources of forest-based products that were essential to their daily lives.

The first Chipko action took place in 1973 when a group of women from Mandal village, led by Gaura Devi, prevented loggers from cutting down trees in a nearby forest. The success of this action inspired similar protests in other villages in the region, and the movement quickly spread throughout the Indian Himalayas. The Chipko movement was not limited to women, but their participation was particularly noteworthy. Women played a crucial role in the movement as they were the primary users of forest resources and their knowledge of forest ecosystems was essential to the success of the campaign.

The Chipko movement continued to grow and gained national and international attention. In 1980, the Indian government issued a 15-year ban on tree-felling in the Himalayan region, which was a significant achievement of the movement. In 1987, the ban was extended indefinitely, and the government also enacted the Forest Conservation Act, which imposed restrictions on the diversion of forestland for non-forestry purposes.

The Chipko movement had a significant impact on environmental activism in India and inspired similar movements around the world. It highlighted the importance of involving local communities, particularly women, in conservation efforts and demonstrated that non-violent activism could be an effective tool for social and environmental change.

In conclusion, the Chipko movement was a people's movement that emerged in response to large-scale tree-felling in the Himalayan region. Women played a crucial role in the movement, and their participation highlighted the impact of deforestation on their livelihoods. The movement resulted in significant changes in Indian legislation to protect forests and demonstrated the power of non-violent activism in bringing about social and environmental change.

Q2. You are representing your college in a Debate Competition. The topic of the debate is “Mitigation of Climate Change.” You are expected to present your views on the role of Intergenerational Partnership in Tackling Climate Change and its Effects. The duration of the debate is 5 minutes. Considering that you can speak 100 words per minute, prepare a draft outline of the debate in a maximum of 500 words so that you do not exceed the time limit.

Ans2. Thank you for giving me this opportunity to present my views on the role of intergenerational partnership in tackling climate change and its effects.

Ladies and gentlemen,

Climate change is one of the most significant challenges of our time, and it requires collective action from all generations. The future of our planet is at stake, and we must work together to mitigate its effects.

The intergenerational partnership plays a crucial role in tackling climate change. The current generation has the responsibility to take action now and pass on a healthy planet to future generations. We need to involve younger generations in climate action to ensure their voices are heard and their ideas are considered.

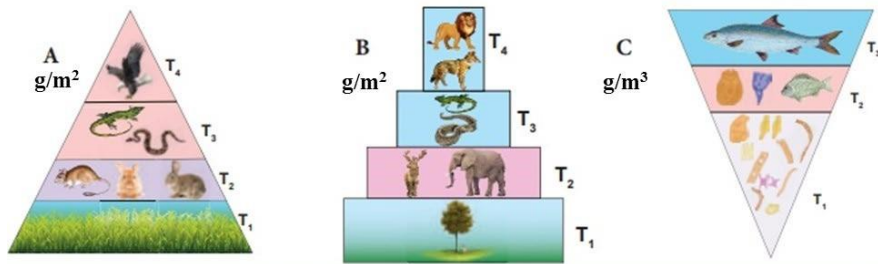
Firstly, education is vital in ensuring intergenerational partnership. Education is the key to creating awareness and mobilizing people towards climate action. It is essential to educate younger generations about the urgency and gravity of climate change so that they can make informed decisions in the future. We need to create educational programs that equip younger generations with the knowledge and skills required to mitigate the effects of climate change.

Secondly, intergenerational partnership is necessary for policy-making. Climate change is a complex issue that requires comprehensive and sustained action at all levels of society. The involvement of younger generations in policy-making processes can bring fresh perspectives and innovative ideas. It is crucial to create opportunities for young people to participate in decision-making processes and have a say in the policies that affect their future.

Thirdly, technology can play a vital role in intergenerational partnership. Technology has the power to connect people across generations and enable them to work together towards a common goal. It is essential to leverage technology to create platforms that facilitate intergenerational partnership and collaboration. These platforms can encourage knowledge-sharing and collaboration between generations, resulting in innovative solutions to mitigate the effects of climate change.

In conclusion, intergenerational partnership is crucial in tackling climate change and its effects. We must work together, across generations, to ensure that we pass on a healthy planet to future generations. Education, policy-making, and technology are essential tools in fostering intergenerational partnership, and we must leverage them to create a sustainable future for all. Thank you.

Q3. Analyze the figures A, B, and C given below carefully, identify and describe each in detail. What do T1, T2, T3, & T4 refer to in the given figures? If figure C was redrawn based on the numbers of individuals, what changes would you expect in the figure and why?. With the help of a diagram, explain the phenomenon of energy flow in an ecosystem.



Ans3. Figure A:

Figure A represents a food chain. It shows the flow of energy from one organism to another. In this particular food chain, the grass is eaten by the rabbit, which is in turn eaten by the fox. The arrow represents the direction of energy flow, and the numbers beside the organisms show the amount of energy transferred from one trophic level to another.

Figure B:

Figure B represents a food web. It is a more complex representation of the interactions between organisms in an ecosystem. It shows the interconnection of various food chains in an ecosystem. In this particular food web, the primary producers (plants) are eaten by primary consumers (herbivores), which are then eaten by secondary consumers (carnivores), and so on.

Figure C:

Figure C represents a pyramid of numbers. It shows the number of organisms at each trophic level in an ecosystem. The base of the pyramid represents the primary producers, and the apex represents the top predators. The pyramid shape represents the fact that the number of individuals decreases as we move up the trophic levels.

T1, T2, T3, and T4 refer to trophic levels in the given figures. T1 represents the primary producers, T2 represents the primary consumers, T3 represents the secondary consumers, and T4 represents the top predators.

If figure C was redrawn based on the numbers of individuals, we would expect to see a more rectangular shape instead of a pyramid. This is because the number of individuals does not always decrease as we move up the trophic levels. In some cases, the number of individuals may increase or remain constant at higher trophic levels.

Energy flow in an ecosystem:

Energy flows through an ecosystem in a unidirectional manner. It is transferred from one organism to another through food chains and food webs. The primary producers, such as plants, convert solar energy into chemical energy through photosynthesis. This energy is then consumed by herbivores, which are then consumed by carnivores. As each organism consumes another, energy is transferred from one trophic level to the next.

However, not all of the energy is transferred from one trophic level to the next. Some of the energy is lost as heat, and some is used by the organism for its own metabolism and growth. As a result, the amount of energy available to each successive trophic level decreases. This is known as the 10% rule, which states that only 10% of the energy from one trophic level is transferred to the next trophic level.

The diagram below shows the flow of energy in an ecosystem:

Sun → Primary producers → Herbivores → Carnivores → Top predators

In conclusion, figures A, B, and C represent different aspects of energy flow in an ecosystem. T1, T2, T3, and T4 refer to trophic levels in the given figures. If figure C was redrawn based on the numbers of individuals, we would expect to see a more rectangular shape instead of a pyramid. The flow of energy in an ecosystem is unidirectional and follows the 10% rule.

Q4. “Degradation of natural ecosystems, rising global temperature, climate change, reduction of wilderness areas, and increased rate of species extinction calls for strengthening environmental ethics”. Comment on the statement with relevant examples.

Ans4. The degradation of natural ecosystems, rising global temperature, climate change, reduction of wilderness areas, and increased rate of species extinction are all critical environmental issues that have arisen due to human activities such as deforestation, fossil fuel burning, and industrialization. These issues are not just environmental in nature but also have social, economic, and political implications. Therefore, the need to strengthen environmental ethics is more crucial than ever before.

Environmental ethics is concerned with the moral relationship between humans and the natural environment. It involves understanding and valuing the intrinsic worth of the natural world and its inhabitants. The following examples illustrate how strengthening environmental ethics can help address the aforementioned environmental issues:

Deforestation: Forests are vital ecosystems that provide a wide range of ecological services, including carbon sequestration, watershed protection, and habitat for wildlife. However, human activities such as logging, agricultural expansion, and infrastructure development have led to deforestation on a massive scale. Strengthening environmental ethics can help people understand the value of forests beyond their economic benefits and prioritize their protection.

Climate change: Climate change is a result of human-induced greenhouse gas emissions. It has led to rising global temperatures, sea-level rise, and changes in weather patterns. Strengthening environmental ethics can help people realize the moral responsibility they have towards the environment and take actions to reduce their carbon footprint.

Biodiversity loss: The rate of species extinction has accelerated due to habitat loss, overexploitation, and pollution. Strengthening environmental ethics can help people understand the intrinsic value of biodiversity and work towards its conservation.

Wilderness areas: Wilderness areas are important for biodiversity conservation and ecosystem services. However, they are under threat from human activities such as mining, logging, and infrastructure development. Strengthening environmental ethics can help people realize the importance of protecting these areas and prioritize their conservation.

In conclusion, the degradation of natural ecosystems, rising global temperature, climate change, reduction of wilderness areas, and increased rate of species extinction are all critical environmental issues that require urgent attention. Strengthening environmental ethics can help address these

issues by promoting a moral responsibility towards the environment and its inhabitants. This can lead to more sustainable practices and policies that prioritize the conservation of the natural world

Q5. There are three types of dustbins installed in most environment-sensitive institutions, i.e., red, blue, and green dustbin. Explain the significance of this practice in waste disposal. Discuss the major types of solid waste generated in your city? Illustrate in detail the different ways to manage urban solid waste?

Ans5. The installation of three types of dustbins in environment-sensitive institutions, i.e., red, blue, and green dustbin, is a significant practice in waste disposal. The significance lies in the proper segregation of waste at the source, which is the first step in the waste management process. The different colors of the dustbins signify the types of waste that should be disposed of in them.

The red dustbin is used for the disposal of biomedical waste such as syringes, needles, and other items that are contaminated with bodily fluids. The blue dustbin is used for the disposal of recyclable waste such as paper, plastic, glass, and metal. The green dustbin is used for the disposal of organic waste such as food waste, garden waste, and other biodegradable waste.

Major types of solid waste generated in a city can be categorized as follows:

Household waste: This includes food waste, paper, plastic, glass, and metal waste generated from households.

Industrial waste: This includes hazardous waste generated from industries, such as chemicals, heavy metals, and electronic waste.

Construction waste: This includes waste generated from the construction and demolition of buildings, such as concrete, bricks, and wood.

Electronic waste: This includes discarded electronic devices such as mobile phones, computers, and televisions.

There are different ways to manage urban solid waste. Some of the common methods are as follows:

Landfills: Landfills are the most commonly used method of solid waste disposal. In this method, waste is collected and buried in landfills. However, this method can lead to soil and water contamination.

Incineration: Incineration is a process of burning waste at high temperatures. This method can reduce the volume of waste but can lead to air pollution.

Composting: Composting is a process of converting organic waste into a nutrient-rich soil conditioner. This method is eco-friendly and can be used for the disposal of organic waste.

Recycling: Recycling is a process of converting waste into new products. This method can reduce the amount of waste sent to landfills and conserve natural resources.

Waste-to-energy: Waste-to-energy is a process of converting waste into energy. This method can generate electricity from waste and reduce the amount of waste sent to landfills.

In conclusion, proper waste management is crucial for the sustainability of our environment. The installation of different-colored dustbins in institutions is a significant practice in waste disposal as it promotes the proper segregation of waste at the source. There are various types of solid waste generated in a city, and it is important to manage them properly to reduce their impact on the environment. The different ways to manage urban solid waste include landfills, incineration, composting, recycling, and waste-to-energy.

Q6. Seventeen countries worldwide are designated as “megadiverse countries,” India is one of them. Explain in detail why India is referred to as so with a special focus on species endemism and ecological diversity, citing suitable examples.

Ans6. India is designated as a "megadiverse country" due to its exceptional biodiversity, which is among the highest in the world. It is home to a vast array of plants, animals, and microorganisms, many of which are found only in India. This biodiversity is driven by India's unique topography, climate, and geology, which create diverse ecosystems that support a wide variety of life.

India's biodiversity is characterized by high levels of endemism, which means that many of the species found in India are not found anywhere else in the world. India has approximately 8% of the world's total species, including about 50,000 plant species, 4000 species of mammals, birds, and fish, and over 100,000 species of invertebrates. Of these, approximately 33% of plant species and 12% of animal species are endemic to India.

India's ecological diversity is also exceptional, with a wide variety of ecosystems ranging from tropical rainforests, to temperate forests, to alpine meadows and deserts. The country is home to some of the most iconic and charismatic species in the world, including tigers, elephants, rhinoceroses, and various primates. The Indian subcontinent is also known for its vast array of bird species, including the Indian peafowl, hornbills, and mynahs.

One of the most prominent examples of species endemism in India is the Western Ghats, a mountain range that runs parallel to the west coast of the country. The Western Ghats are recognized as one of the world's biodiversity hotspots, and over 5000 species of plants and animals are endemic to this region. Some of the notable endemic species of the Western Ghats include the Lion-tailed Macaque, the Nilgiri Langur, and the Nilgiri Tahr.

Another notable example of India's biodiversity is the Great Himalayan National Park, located in the northern Indian state of Himachal Pradesh. The park is home to a wide variety of plant and animal species, including the snow leopard, the Himalayan tahr, and the Himalayan monal.

India has taken several measures to protect its biodiversity, including the establishment of protected areas such as national parks, wildlife sanctuaries, and biosphere reserves. The country has also implemented several laws and regulations to conserve its biodiversity, including the Wildlife Protection Act of 1972, the Forest Conservation Act of 1980, and the Biological Diversity Act of 2002.

In conclusion, India's exceptional biodiversity, high levels of endemism, and ecological diversity have earned it the designation of a "megadiverse country." India's unique topography, climate, and geology create diverse ecosystems that support a wide variety of life, including many species that are found only in India. India's efforts to protect its biodiversity through the establishment of

protected areas and the implementation of laws and regulations demonstrate the country's commitment to conservation and sustainable development.

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