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| **Environment and Sustainable Engineering**  **Question Bank** | |
| **Q. No.** | **Question** |
| **Module- 2** | |
| 1 | Define the term 'environment' and discuss its components and significance |
| 2 | Discuss the objectives and provisions of the Environment Protection Act. |
| 3 | Enlist various air pollutants and explain significance of Air Protection act. |
| 4 | Discuss the effectiveness of the Central Pollution Control Board (CPCB ) and State Pollution Control Boards (SPCB) in controlling air pollution with their objectives |
| 5 | Discuss the various penalties implied under the Air Protection Act. |
| 6 | Illustrate how the Water (Prevention and Control of Pollution) Act helps to maintain water quality. |
| 7 | Explain the need and objectives of Water (Prevention and Control of Pollution) Act |
| 8 | Discuss various penalties imposed under the Water (Prevention and Control of Pollution) Act |
| 9 | Explain the objectives of Wildlife Protection Act |
| 10 | Discuss the penalties imposed under the Wildlife Protection Act |
| 11 | Explain the need and objectives of Forest Conservation Act |
| 12 | Discuss the penalties imposed under the Wildlife Protection Act |
| 13 | Analyze the impacts of deforestation based on the Forest Conservation Act |
| 14 | Compare the Montreal Protocol and the Kyoto Protocol in addressing global environmental issues. |
| 15 | Explain Montreal Protocol with its significance. |
| 16 | Explain Kyoto Protocol with its significance. |
| 17 | Explain the purpose and outcomes of the Conference of the Parties (COP) under the UNFCCC. |
| 18 | Describe the objectives and significance of the Chemical Weapons Convention (CWC) |
| 19 | Define E-waste and various steps involved in its effective management |
| 20 | Discuss the various health and environmental impacts of improper e-waste disposal |
| 21 | Enlist various sources of e-waste, and explain the importance of e-waste management |
| 22 | Explain various disposal methods of E-waste |
| 23 | Analyze the Kyoto Protocol and discuss its significance in addressing global climate change |
| 24 | Consider a city facing a growing problem of E-waste accumulation due to rapid technological advancements. Analyze the current practices for managing E-waste in the city, and evaluate the steps that could be taken to improve its effective management, minimizing environmental and health risks |
| 25 | Use the Forest Conservation Act's objectives to evaluate its effectiveness in mitigating the loss of forest cover and preserving biodiversity in a particular region. |
| **Module- 3** | |
| 26 | Describe the consequences of over-exploiting groundwater for various purposes. |
| 27 | Describe how would you apply different water conservation techniques to reduce the over-exploitation of groundwater in a region? |
| 28 | Evaluate the effectiveness of existing water conservation policies in addressing the over-exploitation of groundwater. |
| 29 | Enlist at least four Inter-state water conflicts in India and describe any one in details. |
| 30 | Enlist at least four Inter-national water conflicts in the world and describe any one in details. |
| 31 | Analyze the historical context of the Indus Water Treaty and how it helped mitigate the India-Pakistan water conflict. |
| 32 | Explain the concept of land degradation |
| 33 | Enlist at least three types of land resources with its use. |
| 34 | Analyze how the expansion of urban areas leads to the loss of agricultural and forest land. |
| 35 | Describe the environmental impacts of land use change on biodiversity. |
| 36 | Describe impact of land use change on environment. |
| 37 | Explain the concept of land degradation and different solutions to minimize it. |
| 38 | Describe meaning of soil erosion, its effect on environment and how to reduce it. |
| 39 | Explain the concept of Environmental Impact assessment and why it is necessary. |
| 40 | Analyze Environmental Impact assessment due to construction of Dam. |
| 41 | Describe the three phases of disaster management in details. |
| 42 | Identify and analyze the social, economic, and environmental impacts of a major disaster like an earthquake. |
| 43 | Identify and analyze the social, economic, and environmental impacts of a major disaster like a Flood or Tsunami |
| 44 | Explain in details reasons of droughts and different solutions to minimize it. |
| 45 | Enlist different types of disasters and explain any one disaster with its proper management. |
| 46 | Given a region experiencing severe land degradation due to deforestation and overgrazing, apply the appropriate solutions to mitigate land degradation. Demonstrate how these solutions can be implemented to restore soil health and improve land productivity. |
| 47 | Relate various water conservation techniques to the issue of groundwater over-exploitation in a region and explain how their application can help mitigate this problem. |
| 48 | Discuss the concept of land degradation and identify its causes and impacts on the environment. |
| 49 | Apply the concept of over-exploiting groundwater to various purposes and interpret the long-term environmental, social consequences of this practice. |
| 50 | Estimate the causes of droughts and apply various solutions to reduce their occurrence and mitigate their effects on ecosystems and communities. |
| **Module- 4** | |
| 51 | Define Life Cycle Assessment (LCA) and explain the four phases of LCA methodology. |
| 52 | What is meant by a carbon footprint? Provide examples of products and their footprints. |
| 53 | Mention and describe the steps involved in ethanol production from sugarcane. |
| 54 | Explain how carbon credits work in reducing greenhouse gas emissions. |
| 55 | Describe the significance of carbon neutrality in combating climate change. |
| 56 | Discuss the importance of Life Cycle Assessment (LCA) in environmental sustainability. |
| 57 | Explain the concept of microbial fuel cells (MFCs) and their application. |
| 58 | Describe the environmental benefits of transitioning from conventional vehicles to electric vehicles (EVs). |
| 59 | Illustrate, with the help of schematic diagram, how anaerobic digestion produces biogas from sewage. |
| 60 | Describe how ethanol production contributes to reducing greenhouse gas emissions. |
| 61 | Analyse the environmental impacts of using electric vehicles (EVs) versus conventional vehicles. |
| 62 | Explain how photovoltaic systems and concentrated solar power systems can be applied in generating renewable energy. |
| 63 | Differentiate between renewable and non-renewable energy sources, focusing on their long-term environmental impacts. |
| 64 | Analyse the environmental impacts of using electric vehicles (EVs) versus conventional vehicles. |
| 65 | Identify the challenges and benefits of implementing CNG as a transportation fuel. |
| 66 | Evaluate the role of government policies in promoting renewable energy adoption in India. |
| 67 | Assess the potential of solar energy as a solution to India’s energy needs. |
| 68 | Critically analyze the limitations of LCA methodology in evaluating environmental impacts. |
| 69 | Evaluate the environmental and economic feasibility of harnessing energy from sewage. |
| 70 | Justify the need for alternative energy sources to meet India’s increasing energy demand. |
| 71 | Analyze the environmental benefits of transitioning from conventional vehicles to electric vehicles (EVs) and explain how this shift can reduce environmental impacts over time. |
| 72 | Explain the methodology of Life Cycle Assessment (LCA) in evaluating environmental impacts. |
| 73 | Relate the need for alternative energy sources to India's growing energy demand, using the case study of Maharashtra's solar energy initiative, and explain how this shift can reduce reliance on fossil fuels and support sustainable energy growth. |