

**Unit-I**

**Chapter 1 : Ecosystem 1-1 to 1-28**

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- 1.1 Structure and components of ecosystem
- 1.2 Types of Ecosystem, changes in ecosystem
- 1.3 Various natural cycles like carbon, Nitrogen, Sulphur, Phosphorus
- 1.4 Ecosystem conservation, carrying capacity of earth, Biomes in India, (ESA) Ecologically Sensitive Areas
- 1.5 Bio diversity, its need and importance, International Union for Conservation of Nature (IUCN) red list
- 1.6 Concept of Ecological foot print, virtual water, global ecological overshoot.

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- 2.2. Air pollution, classification and its sources.
- 2.3. Air pollution control Equipments.
- 2.4. Water pollution, pollution parameters like BOD,COD, pH, Total suspended solids, Turbidity, Total Solids.
- 2.5. Waste water treatment like primary, secondary and tertiary.
- 2.6. Solid waste generation, sources and characteristics of Muncipal solid waste.
- 2.7. Collection and disposal of Muncipal waste and Hazardous waste.
- 2.8. Noise pollution- its effects, sources and measurement.
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**Unit-III**

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- 3.1 Need of Renewable energy and energy policy
- 3.2 Solar energy : National solar mission
- 3.3 Features of solar thermal and PV systems. Advanced collector, Solar Pond, Solar water heater, Solar dryer, polycrystalline, monocrystalline and thin film PV systems
- 3.4 Wind Energy : Growth of wind power in India
- 3.5 Types of wind turbines : Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT)
- 3.6 Types of HAWTs : drag and lift types
- 3.7 Biomass : Overview of biomass as energy source. Thermal characteristics of biomass as fuel
- 3.8 Anaerobic digestion, Biogas production mechanism, utilization and storage.
- 3.9 New energy sources : Geothermal energy, Ocean energy sources, Tidal energy conversion, Hydrogen energy.

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- 5.3 Environmental management system: ISO 14000, definition and benefits
- 5.4 Rain water harvesting
- 5.5 Green building and rating system in India
- 5.6 Cradle to cradle concept and Life cycle analysis
- 5.7 Green label
- 5.8 Carbon credit system its advantages and disadvantages
- 5.9 Concept of 5R(Refuse, Reduce, Reuse, Repurpose, Recycle)
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