UNIT 22
ENVIRONMENTAL MANAGEMENT
BOOK INSIDE OBJECTIVES

Acts, Important Events, etc.	Dates, Years, Area, etc.
National Forest Policy	**1952 and 1988**
Forest Conservation Act	**1980**
Wildlife Protection Act	**1972**
Establishing of Jim Corbett National Park	**1936, Uttarakhand, India.**
No. of Biosphere Reserves in India	**15 Biosphere Reserves**
India's Reserved Forests	**752.3 lakh hectares**
India's Protected Forests	**215.1 lakh hectares**

Abbreviations	
Indian board for Wildlife	**IBWL**
World Wildlife Fund for Nature	**WWF**
World Conservation Union	**WCN**
International Union for Conservation of Nature and Natural resorces	**IUCN**
Convention of International Trade in Endangered Species	**CITES**
Bombay Natural History Society	**BNHS**
Compact Fluorescent Lamps	**CFL**
Light Emitting Diode	**LED**
Polyvinyl Chloride	**PVC**
Reduce, Reuse, Recovery, Recycle.	**4R**

Wildlife Conservation Initiatives in India

Projects	Years
Project Tiger	**1973**
Project Elephant	**1992**
Crocodile Conservation Project	**1976**
Sea Turtle Conservation Project	**1999**
Indian Rhino Vision	**2020**

Book Inside Important 1 Mark Questions

Exploitation of wildlife resources has decreased global wildlife population by **52%** between **1970** and **2014**.
The **Nilgiris** is a biosphere reserve in **Tamil Nadu**.
Rathika Ramasamy, the first Indian woman to strike an international reputation as **wildlife photographer** is a native of **Venkatachalapuram** village, **Theni District** in **Tamil Nadu**. Her passion is towards **bird photography**. A photobook on wildlife titled "**The best of Wildlife Moments**" was published in **November 2014**.
Non-renewable energy resources which are otherwise called as **exhaustible energy resources** or **conventional energy resources**, account for **90% of the world's production of commercial energy** and **nuclear power** accounts for **10%**.
The other names of **Renewable energy resources** are **Inexhaustible energy resources** and **Conventional energy resources.**
India is the **third largest consumer of Crude oil in the world**, after the **United states** being the first and **China** being the second.
Photovoltaic devices, otherwise called as **Solar cells** are made up of **silicon** that converts **sunlight** directly into **electricity**.
Arrangement of many solar cells side by side connected to each other is called a **Solar Pannel.**
A capacity of **100 litres of solar heater** can save upto **1500 units of electricity per year**.

Biogas is a mixture of **Methane** (nearly **75%**), **Hydrogen sulphide (H_2S), Carbon dioxide (CO_2)** and **Hydrogen (H_2).** It is produced by the **decomposition of animal wastes** like **cow dung**,etc., and **plant wastes** in the **absence of oxygen**. It is also commonly called as "**Gobar gas"** since the starting material used is **cow dung** which **means gobar in Hindi**.

India has identified six basins as areas for **shale gas exploration**.
They are, **Cambay (Gujarat)**, **Assam-Arakan (North East)**, **Gondwana (Central India)**, **Krishna Godavari onshore (East Coast)**, **Cauvery onshore and Indo-Gangetic basins**.

The world's largest and tallest **wind turbine** is situated in **Hawaii**.
There, one wind turbine can produce **electricity for 300 houses**.

Earth's surface is covered with nearly **71% of flowing water**. The technique to harness the **water energy to produce electricity is called Hydropower. Hydropower plants** convert the **kinetic energy of flowing water into electricity.** This is called **Hydroelectricity.**

The energy obtained from the **movement of water** due to **ocean tides** is called **Tidal energy**. Tides are the **rise and fall of the sea levels** caused by the **combined effects of the gravitational forces** exerted on the oceans of the earth. A **Tidal stream** is a **fast flowing body of water created by tides**. **Turbines** are placed in tidal streams. When the tides hit the turbine, the turbine **rotates** and converts the **tidal energy into electric energy.**

Rainwater harvesting is a technique of **collecting and storing rainwater for future use.**

Kallanai Dam, also known as the **Grand Anicut** is the **fourth oldest dam** in the world, constructed by the **King Karikala Chola** of the Chola Dynasty in the **2nd century AD.(CE.)** This dam still works and serves the people of Tamilnadu. It is located on the **River Kaveri**, approx. **20 km** from the city of **Tiruchirapalli**

1 Gallon = 3.78 litres

The **kinetic energy** possessed by the **wind** is due to its **high speed**, that can be converted into **mechanical power** by **wind turbines**. **Windmill** is a machine that converts the **wind energy into rotational energy** by broad blade attached to the rotating axis.
The **rotatory motion** of windmill produces **wind energy**.

The **Shale gas** is extracted by a technique called **hydraulic fracturing** which is done by **drilling** or **well boring** of **sedimentary rocks layers** to reach **productive reservoir layers.**

Electricity or **electric power** is produced by **generators**. The generators are operated by the **turbines** attached to it. The turbines are **rotated by steam**, **moving water** or **wind power** to produce electricity.

E-wastes are generally called as **electronic wastes**, which include the **spoiled**, **outdated, non-repairable electrical and electronic devices**. These wastes contain **toxic metals** like **lead, cadmium, chromium and mercury, iron, copper, silicon, aluminum and gold** which **can be recovered**. Neverthless, only **5% of e-wastes** produced are **recycled.**
The **sources of E-wastes** are **Electronic devices** (computers, DVD players, mobile phones,etc.), **Household electrical appliances** (refrigerators, mixer, water heater, etc.), **Accesories** (batteries, chargers, printing catridges,etc.).
Disposal of any kind of **electrical and electronic devices** without knowledge can become the **landfill** and **water pollutants**. Electronic equipments contain many **hazardous heavy metals** such as **lead**, **cadmium** that can cause severe **soil and groundwater pollution.**
Untreated sewage or wastewater generated from **domestic and industrial process** is the leading **polluter of water sources** in India. Sewage water results in **agricultural contamination** and **environmental degradation**.
Sources of Sewage/wastewater are, **Domestic purpose or household activities, Dye and textile industries, Leather industries, Sugar and breweries industries, Paper and pulp industries.**
The **conventional wastewater treatment methods** involve the steps of **Pre-screening, Aeration, Sludge Management and Water Reuse.**
Solid wastes mainly include **municipal wastes, hospital wastes, industrial wastes, e-wastes,** etc. The solid wastes are **dumped** in the soil which results in **landscape pollution**.
Methods of **solid wastes disposal** include **Segregation, Sanitary landfill, Incineration** and **Composting**
The **4R approach** such as **Reduce, Reuse, Recovery** and **Recycle** may be followed for **effective waste management.**
The **Chipko movement** was a **non-violent agitation** in **1973** that was aimed at **protection and conservation of trees.** The name of the movement "**Chipko"** comes from the word "**embrace"**, as the villagers **hugged the trees** and encircled them to prevent them from being cut. The movement originated in the **Chamoli district of Uttar Pradesh** (**now Uttarakhand**). The protest of Chipko movement achieved a major **victory in 1980** with a **15 year ban on cutting trees in the Himalayan forests.**

Components of e-wastes and it's Percentages	
Computer Components	**66%**
Telecommunication Components	**12%**
Electronic Components	**5%**
Biomedical Components	**7%**
Other Components	**6%**

Health effects of E-Wastes	
Lead	Damages central and peripheral nervous system; Affects brain development in children.
Chromium	Asthmatic bronchitis
Cadmium	Accumulates in kidney and liver; Neural damage
Mercury	Chronic damage to brain and respiratory system
Plastics including PVC	Burning produces "dioxin" which can cause developmental and reproductive problems, damages the immune system.

Organisations Involved in Conservation of Wildlife
Indian Board for Wildlife **(IBWL)**
World Wildlife Fund **(WWF)** for Nature
World Conservation Union **(WCN)**
International Union for Conservation of Nature and Natural resources **(IUCN)**
Convention of International Trade in Endangered Species **(CITES)**
Bombay Natural History Society **(BNHS)**
Wildlife Preservation Society of India, Dehradun