Q 1 : (a) What are the main objectives of Clean Development Mechanism? Also explain the reasons for the criticism on Kyoto Protocol by the developed countries?

Answer :

Clean Development Mechanism:
CDM is one of the three mechanisms stated in the Kyoto Protocol. The mechanism allows developed countries to play their part in reducing GHG emissions.

Objectives of CDM:

⇒ Allowed developed countries to reduce global emissions by funding projects in developing countries.

⇒ Supported ~~global~~ economic and environmental progress in developing nations.

⇒ Promoted clean technology transfer to developing countries.

⇒ To reduce the cost of complying with the provisions of the Kyoto Protocol for developed nations.

Kyoto Protocol:
The Kyoto Protocol was an international agreement that aimed to reduce greenhouse gas emissions to combat climate change.

Kyoto Protocol Criticism:

⇒ The Kyoto Protocol was criticized by the U.S for exempting major emitters like China and India.

⇒ Emission targets were based on outdated data and have not been updated.

⇒ GHG emission affect the entire planet, so reducing them should be a shared responsibility.

⇒ Developing countries have limited ability to offset emissions from developed nations.

~~They Protocol overlooked other harmful pollutants~~

⇒ Kyoto Protocol has not much paid attention to other pollutants such as sulfur dioxide and nitrogen oxide.

[Part B] Differentiate b/w Sanitary & Industrial LandFills, also describe the land selection criteria for landfills?

Differences b/w Sanitary & Industrial land Fills:

Sanitary	Industrial LandFills
① Sanitary landFills handle household waste.	① Industrial landfills manage factory waste.
② In sanitary land fills, layers of clay are used to separate the layers of waste.	② In Industrial landfills, no such layers are used.
③ In sanitary landfills, pipelines are constructed to extract landfill gases.	③ No pipelines connections are used in industrial landfills.
④ Sanitary landfills are near cities	④ Industrial landfills are near Factories.
⑤ Sanitary landfills are monitored for environmental impacts.	⑤ Industrial landfills focus on hazardous materials.

Land Selection Criteria for Land Fills:

① Distance from Homes: Far from residential areas to reduce impact.

② Soil Type: Soil should not allow water to pass through easily to prevent leaks.

③ Proximity to Water: Keep landfills away from rivers and lakes to prevent pollution.

④ Distance from Protected Areas: Keep away landfills from parks and wildlife areas.

⑤ Water Table Depth: The water level should be deep to protect ground water.

⑥ Accessibility: The site should be easily accessible by roads to allow for efficient transportation of waste.

Q.No.2: Write a short note on artificial intelligence?

Def: Artifical Intelligence (AI) is the study of machines that can perform tasks similar to human thinking.

Discovery: The term Artificial Intelligence was introduce by John McCarthy in 1956 at the Dartmouth conference at Massachusetts Institute of Technology (MIT).

Example: Tesla's Autopilot, an AI-driven system that introduce by Tesla in October 2015, helping drivers with steering, braking, and lane changes, making driving safer and more automated.

Two Subsets of AI:
① Machine learning: AI where computers learn from data to make decisions.

② Deep learning: A type of machine learning using layered neutral networks to learn from data.

Uses of AI:
AI is used by financial institutions, scientists, doctors, psychologists, engineers, planners, and security services.

Advantages of AI:
⇒ Smart speakers and digital Assistants Like (Siri, Alexa, Google Assistant etc).

⇒ Facial recognition (unlocking phones, making payments etc).

⇒ Improved AI services Like Google Translate.

⇒ Medical assistance (helping doctors diagnose and assess health).

Disadvantages of AI:
⇒ Job losses(machines replacing humans can cause unemployment).

⇒ Lack of creativity (AI cannot ~~generate~~ create original ideas).

⇒ High Cost (developing and maintaining AI is expensive).

⇒ Human error (Although AI reduce human error, mistakes and biasis can still exist in the programming).

Part B) Write short note on: ① Fiber optics ② Global Positioning system.

Fiber Optics:
Fiber optics use thin strands of glass or plastic to send light signals for communication.

Basic Structure of Optical Fiber:
① Core: The middle part made up of glass that carries the light.

② Cladding: The layer that made up of glass or plastic around the core that keeps the light inside.

③ Jacket: The outer layer that protects the fiber.

Primary coating, Core, Cladding, Secondary coating
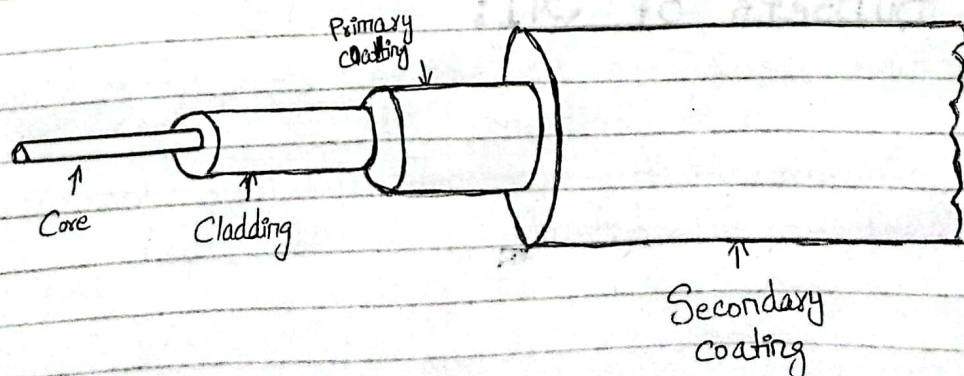
Types of Optical Fiber:

① Single-Mode Fiber: Has a small core and is used for long-distance communication with less signal loss.

② Multi-Mode Fiber: Has a larger core and is used for shorter distances with more signal loss.

Working of Optical Fiber: Light travels through the core by bouncing off the cladding, allowing data to be sent over long distances.
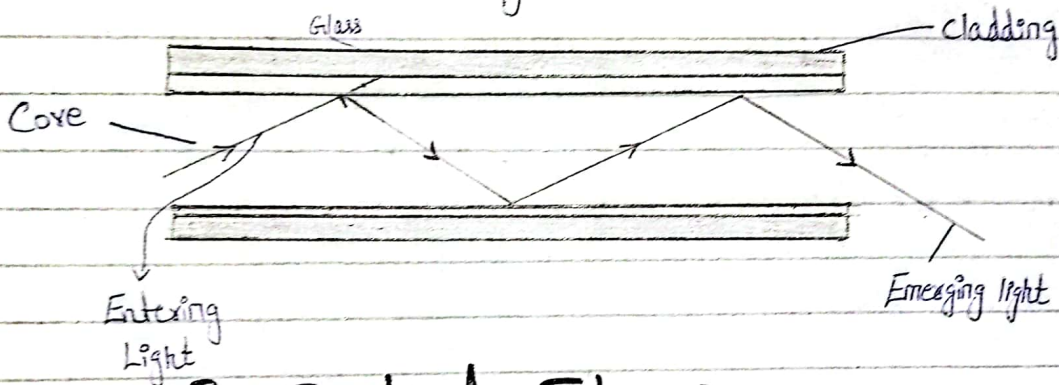
Uses of Optical Fiber:
⇒ For internet and phone connections.
⇒ In tools for looking inside the body like (Medical).
⇒ For TV and radio signals.
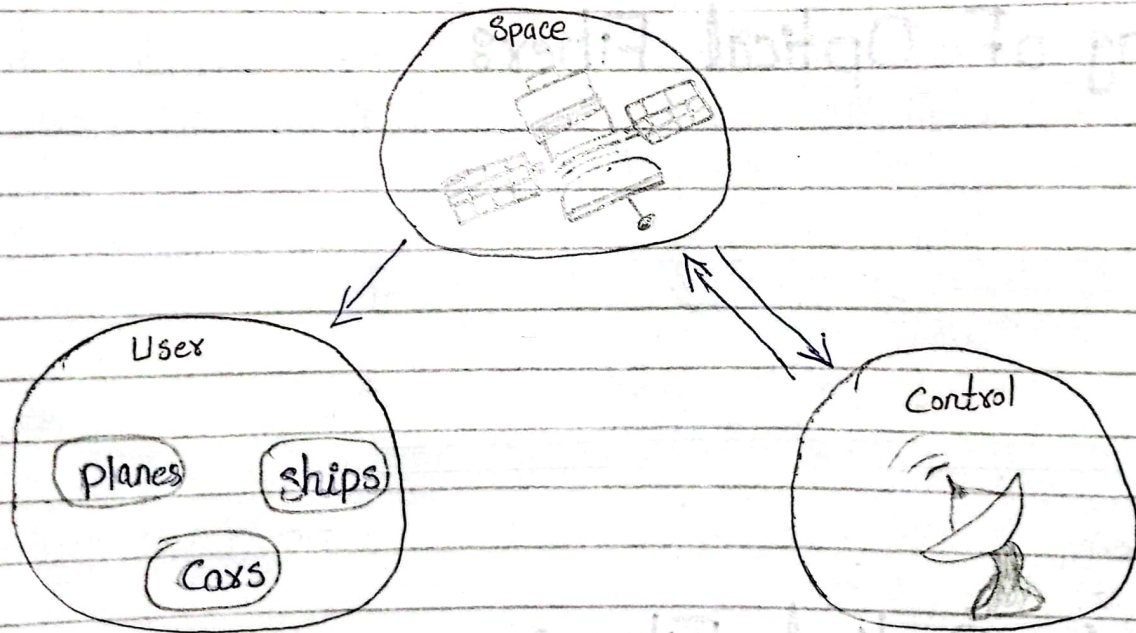⇒ Connecting computers and services.

ⓑ Global Positioning System (GPS):
Def: GPS is a system that uses satellites to provide location and time information anywhere on Earth.

The Invention of GPS: GPS was created by the U.S Department of Defence and started working in 1995.

Components of GPS:

GPS ~~are~~ is made up of three different components that are called segments, which work together and provide location information.

① Satellites: Orbit Earth and send signals to receivers.
② Ground Stations: Track and manage the satellites signals.
③ Receivers: Devices that receive signals from satellites to find location and time.

GPS Components.