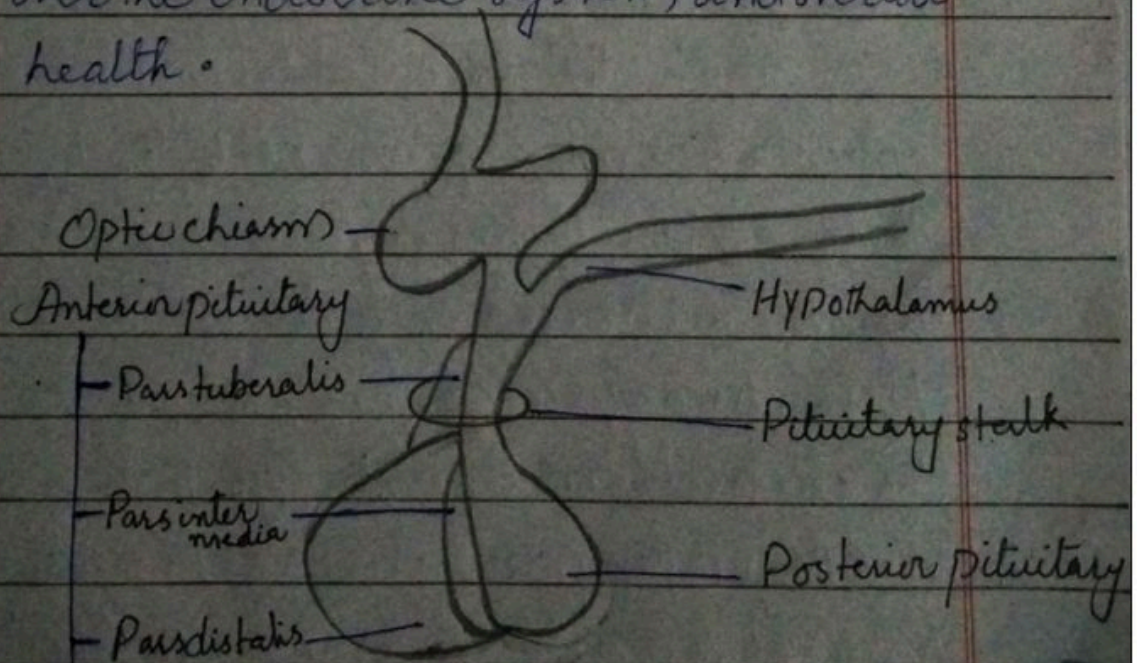


GK I (General Science and Ability)

Q:1

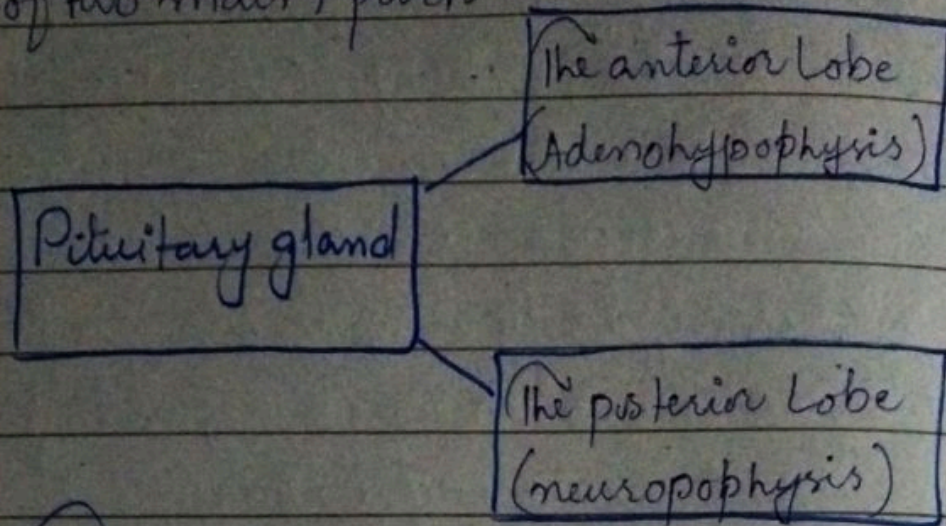
A) Write a short note on Pituitary gland.

The pituitary gland, often referred to as the "master gland", is a small pea-sized structure located at the base of the brain. It plays a crucial role in regulating various bodily functions through the secretion of hormones. The pituitary gland controls growth, metabolism, stress response, reproduction, and more. Despite its size, the pituitary gland wields immense influence over the endocrine system and overall health.



Parts of Pituitary gland

The pituitary gland consists of two main parts.



i) The anterior lobe

The anterior lobe is responsible for producing and releasing several hormones that regulate various bodily functions, such as growth, metabolism and reproduction.

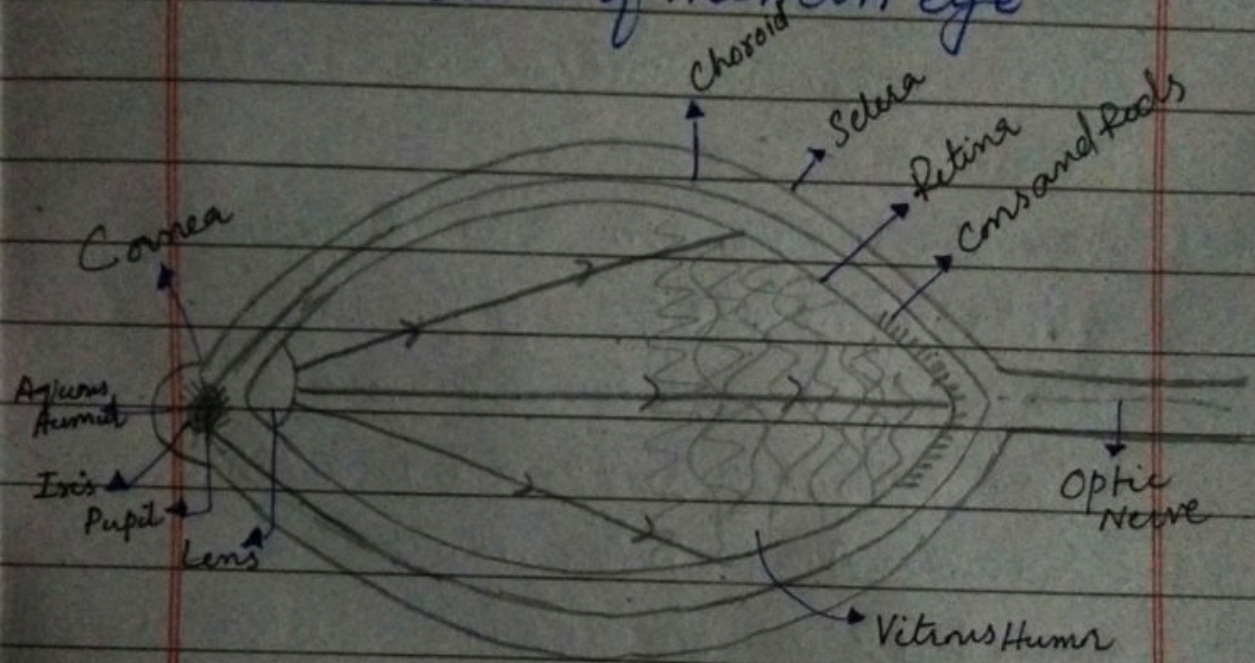
ii) The posterior lobe

The posterior lobe stores and releases hormones produced by the hypothalamus, including oxytocin and vasopressin, which are involved in functions like childbirth, breastfeeding, and water balance. The connection between the hypothalamus and the pituitary gland is crucial for maintaining hormonal balance throughout the body.

B) Describe the structure and function of the Human Eye .

The human eye is the sensory organ of the body . It is a complex organ that is responsible to provide sensory information in the form of visuals . It helps ^{us} to see the things .

Structure of Human eye



Its structure can be broken down into several key parts .

- i) **Cornea** : The transparent outermost layer that helps focus light onto the retina .
- ii) **Iris** : The colored part that controls the amount of the light entering the eye through the pupil .
- iii) **Pupil** : The opening in the center of the iris

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- that allows light to enter the eye.
 - iv) **Lens:** A flexible, transparent structure that further focuses light onto the retina.
 - v) **Retina:** A layer at the back of the eye containing light-sensitive cells called rods and cones.
 - vi) **Rods:** Cells that function in low-light conditions and are responsible for black and white vision.
 - vii) **Cones:** Cells responsible for color vision and visual acuity, primarily active in well-lit conditions.
 - viii) **Optic Nerve:** Transmits visual information from the retina to the brain for processing.
 - ix) **Sclera:** The tough white outer layer that maintains the eye's shape and provides protection.
 - x) **Choroid:** A layer between the sclera and retina that supplies blood and nutrients to the retina.

Functions of Human Eye.

The eye's function involves a series of steps:

- i) Light enters the eye through the cornea and pupil, and the lens further focuses it onto the retina.
- ii) The retina's rods and cones detect the light and convert it into electrical signals.

iii) These signals are then transmitted to the brain via the optic nerve.

iv) The brain processes the signals to create the visual perception of the surrounding environment.

C) What are the Biofuels? Give its types and advantages.

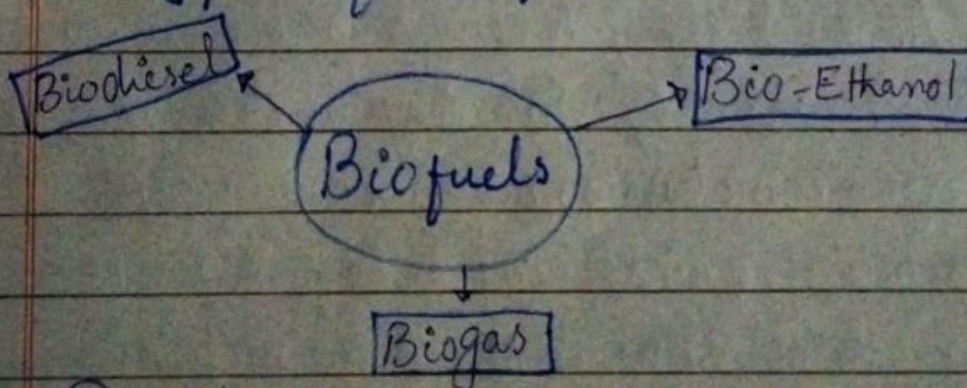
Biofuels are renewable energy sources derived from organic materials.

Plant waste: Carbohydrates rich sources.

Animal waste: dung etc.

Agricultural waste: Oil rich, Oily plants.

Types of Biofuels



There are several types of biofuels, including:

i) Bio-Ethanol: This is made from crops like corn, sugarcane and other agricultural products. It's often mixed with gasoline and used as

an alternative fuel in vehicles. Ethanol reduces greenhouse gas emissions and is relatively easy to produce.

ii) **Biodiesel**: Produced from vegetable oils, animal fats, or used cooking oil, biodiesel can be used as a substitute for diesel fuel. It is less polluting than traditional diesel and provides lubricity for engines.

iii) **Bio-Gas**: Created through the breakdown of organic matter in anaerobic conditions, biogas primarily consists of methane. It can be used for heating, electricity generation and as a vehicle fuel.

Advantages of Biofuels

Advantages of biofuels include:

i) **Renewability**: Since they are derived from organic materials, biofuels can be replenished relatively quickly compared to fossil fuels.

ii) **Reduce Greenhouse Gas Emissions**: Biofuels generally release fewer greenhouse gases during combustion, helping to mitigate climate change.

iii) **Energy Security**: They can reduce

dependency on fossil fuel imports and contribute to energy independence.

iv) **Job Creation**: Biofuel production can stimulate local economies and create jobs in agriculture and related industries.

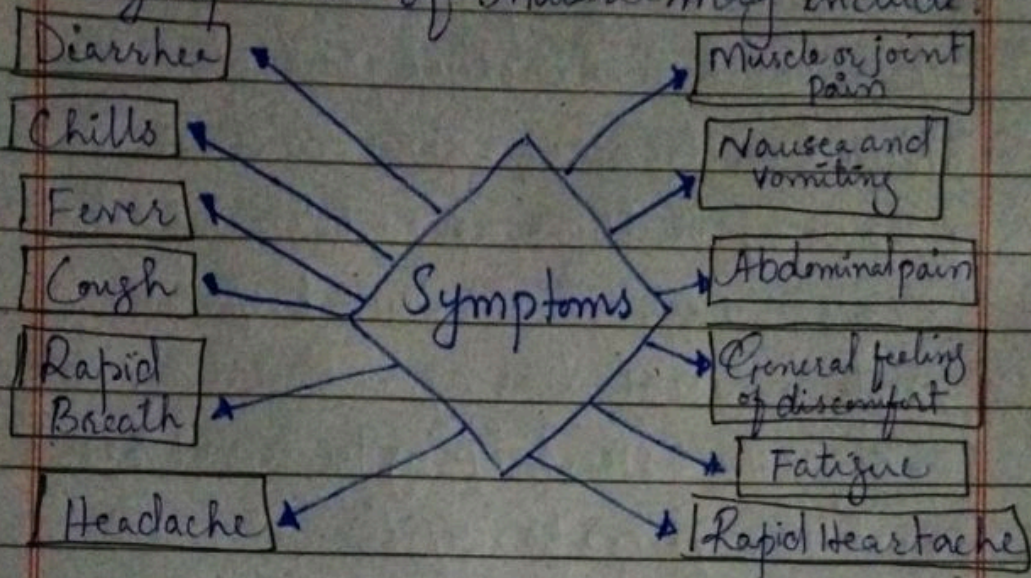
v) **Waste Reduction**: Some biofuels use waste materials like agricultural residues and food waste, helping to divert these materials from landfills.

D) **What is Malaria? Give its symptoms and preventive measures.**

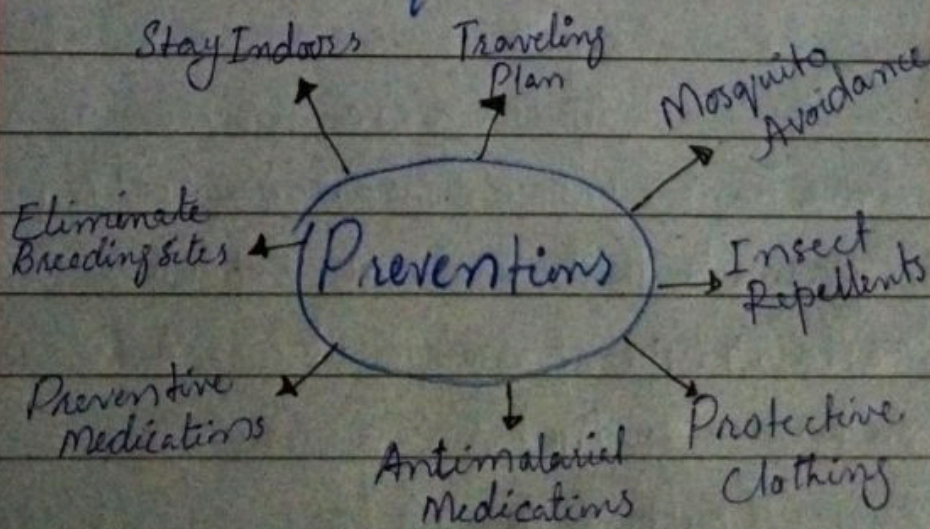
Malaria is a serious and some times fatal disease caused by a parasite that commonly infects a certain type of mosquito which feeds on humans. Malaria in humans is caused by five related Protozoan (single celled parasites). Parasites are spread by the bite of infected female Anopheles mosquitoes.

Symptoms of Malaria

Symptoms of Malaria may include:



Prevents of Malaria

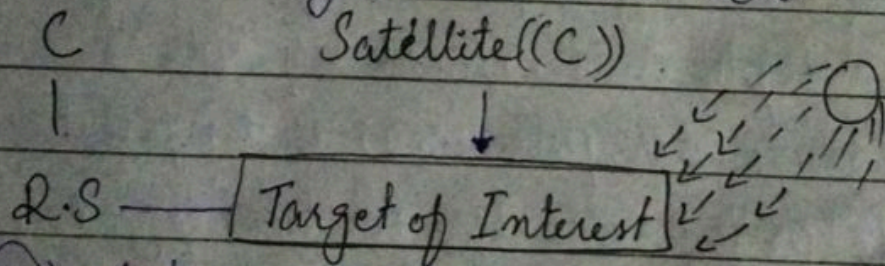


Remember that the effectiveness of prevention measures can vary and a combination of strategies is often the best approach.

Q:2

A) What is Remote Sensing? Give its role in the Environmental Science.

Remote sensing is a technology that involves collecting information and data about objects, areas, or phenomena from a distance, without direct physical contact. This is typically done using sensors on satellites, aircrafts, drones, or other platforms. These sensors capture various forms of electro magnetic radiation such as visible light, infrared, and microwave, which can then be processed to create images and data sets.



The data collected through remote sensing can be used for a wide range of applications including environmental monitoring, land use analysis, weather forecasting, disaster management, agricultural planning and scientific research.

Role of Remote Sensing in Environmental Science

Remote sensing plays a vital role in environmental science by providing valuable data and insights for various purposes:

- i) **Monitoring Land Use and Land Cover:**
Remote sensing helps track changes in urban development, agriculture, forests and other land uses, aiding in sustainable land management.
- ii) Remote sensing helps in recognition of macro patterns, forest, and mountain etc.
- iii) Remote sensing helps identification of sources of multiple environmental problems
Example: air pollution, water pollution
- iv) It helps to provide data for tracking changes in sea levels, ice cover and atmospheric parameters.

Overall, remote sensing enhance our understanding of Earth's complex systems, enable evidence-based decision-making, and contributes to sustainable management.

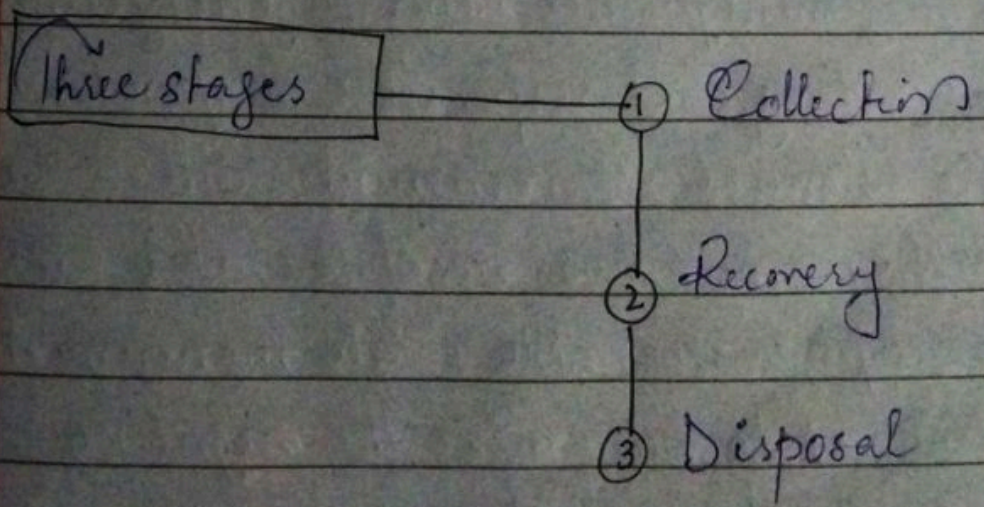
to natural resources and the environment.

B) What is Solid Waste? Describe its effects.

Solid waste refers to any discarded or abandoned materials that are not in liquid or gaseous form. It includes a wide range of materials such as household trash, industrial waste, construction debris, and more. Proper management and disposal of solid waste are important to prevent environmental pollution and health hazards.

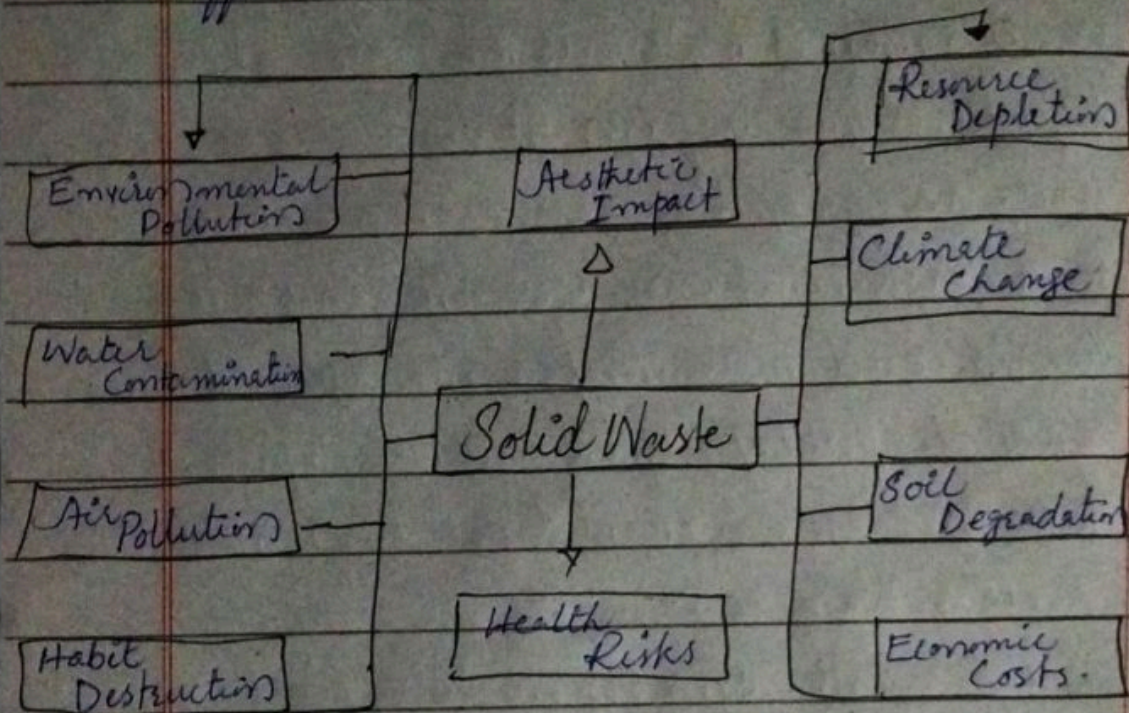
→ Solid wastes consists on Solid and semi solid waste.

Solid Waste Management



Effects of Solid Waste

Improper management and disposal of solid waste can have several negative effects on the environment and human health.



To mitigate these effects, proper waste management practices, including recycling, composting and responsible disposal, are essential. Governments, industries and communities need to work together to adopt sustainable waste management strategies to minimize the negative impact of solid waste.

Q) Give structure and functions of the atmosphere.

Structure of Atmosphere

The Earth's atmosphere

consists of several layers, Exosphere

each with distinct

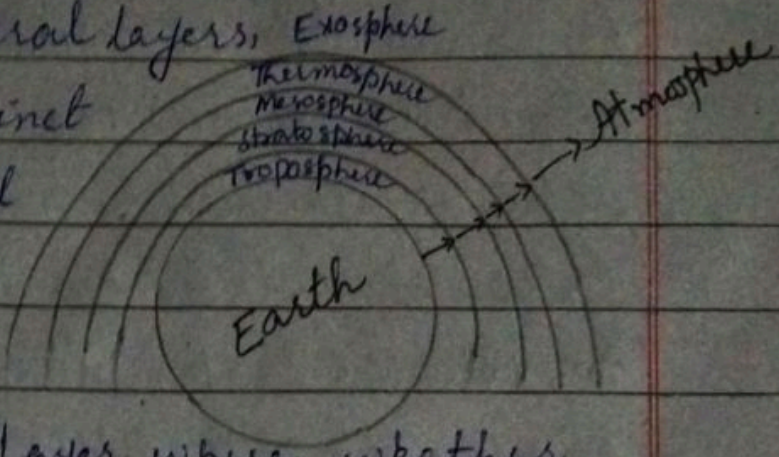
functions and characteristics

i) Troposphere:

This is the lowest layer where weather occurs. It contains about 75% of the total atmospheric mass and is where we live and breathe. Temperature generally decrease with altitude.

ii) Stratosphere: Above the troposphere, the stratosphere contains the ozone layer, which absorbs and scatters ultraviolet (UV) radiation from the sun. As a result, it helps protect life on Earth harmful UV rays.

iii) Mesosphere: The mesosphere is where meteors burn up upon entry creating the phenomenon of "shooting stars". Temperatures here decrease with height, making it



the coldest atmospheric layer -

iv) Thermosphere: This layer has very high temperatures but does not feel warm due to its extremely low density. It's where the International Space Station orbits. It's also where auroras occur due to interactions with solar radiation.

v) Exosphere: The outer most layer gradually transitions into space. It contains a thin mix of gases and is where satellites orbit Earth.

Functions of Atmosphere

The functions of the atmosphere are as follows:

- i) It protects living organisms from solar radiations and high-energy radiations.
- ii) It helps to regulate the Earth's temperature by trapping heat through Greenhouse effect.
- iii) It is responsible for various atmospheric phenomena like precipitation, wind and storms.
- iv) It also allows for the exchange of carbon dioxide, a byproduct of respiration, with

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plants during photosynthesis.

These are just a few of the many functions and complex interactions that the Earth's atmosphere contributes to.

1) What is Green House Effect? Give its significance.

The greenhouse effect refers to the process by which certain gases in the Earth's atmosphere trap heat from the sun, creating a warming effect. These gases such as carbon dioxide and methane act like a "blanket" around the planet, allowing sunlight in but preventing some of the heat from escaping into space. This natural phenomenon is essential for maintaining a liveable temperature on Earth. However, human activities, such as burning fossil fuels, have increased the concentration of these gases, intensifying the greenhouse effect and leading to global warming and climate change.

Significance of Green House Effect.

The green house effect is significant for several reasons.

- i) **Temperature Regulation**: The greenhouse effect maintains the Earth's average temperature at around 15°C (59°F), making it suitable for life as we know it. Without this effect, the planet would be too cold to support most forms of life.
- ii) **Ecosystem Support**: The warmth provided by the greenhouse effect is crucial for supporting diverse ecosystems and enabling various species to thrive in different environments.
- iii) **Water Cycle**: The greenhouse effect helps drive the water cycle by influencing evaporation from oceans, lakes and other bodies of water. This cycle is essential for providing fresh water to plants, animals and human populations.
- iv) **Agriculture**: The warmth from the greenhouse effect is necessary for agriculture, allowing crops to grow in various regions and supporting food production.

v) Balancing Heat: The greenhouse effect helps distribute heat around the planet, preventing extreme temperature differences between day and night or between different regions.

vi) Climate Regulation: It plays a role in regulating the Earth's climate patterns, influencing factors such as wind patterns and ocean currents.

However, it is important to note that while the natural greenhouse effect is beneficial, the enhanced greenhouse effect resulting from human activities is causing significant environmental challenges, including global warming, sea-level rise, more frequent and intense heat waves, disruptions to ecosystems, and potential long-term impacts on weather patterns.