

6th – MAJOR DOMAINS OF EARTH



The Earth is the only planet which has life. Human beings can live here because the life sustaining elements of land, water and air are present on the earth.

Lithosphere:

The solid portion of the earth is called the lithosphere. It comprises the rocks of the earth's crust and the thin layers of soil that contain nutrient elements which sustain organism. There are two main divisions of the earth's surface. The large landmasses are known as the continents and the huge water bodies are called the ocean basins. Elevation of land is measured from the level of the sea, which is taken as zero. The highest mountain peak Mt. Everest is 8,848 meters above the level. The greatest depth of 11,022 meters is recorded at Mariana Trench in the Pacific Ocean.

Continents:

There are seven major continents. These are separated by large water bodies. These continents are- Asia, Europe, Africa, North America, South America, Australia and Antarctica.

Asia: is the largest continent. It covers about one-third of the total land area of the earth. The tropic of cancer passes through this continent. Asia is separated from Europe by the Ural Mountains on the west. The combined landmass of Europe and Asia is called the Eurasia (Europe+ Asia)

Europe: is much smaller than Asia. The continent lies to the west of Asia. The Arctic Circle passes through it. It is bound by water bodies on three sides.

Africa: is the second largest continent after Asia. The equator or 0^o latitude runs almost through the middle of the continent. It is the only continent through which the tropic of cancer, the equator and the tropic of Capricorn pass. The sahara desert, the world's largest hot desert, is located in Africa. The continent is bound on all sides by oceans and seas. The world's longest river the Nile flows through Africa.

North America: is the third largest continent of the world. It is linked to South America by a very narrow strip of land called the Isthmus of Panama.

South America: the Andes, world's longest mountain range. Runs through its length from north to south. South America has the world's largest river, the Amazon.

Australia: is the smallest continent. It is surrounded on all sides by the oceans and seas. It is called an island continent.

Antarctica: completely in the southern hemisphere, is a huge continent? The South Pole lies almost at the centre of this continent. It is permanently covered with thick ice sheets. India also has research stations there. These are named as maïtre and Dakshin Gangotri.

Antarctica

Antarctica is a huge continent around the south pole. Antarctica is covered with ice caps throughout the year. The inhospitable climatic conditions do not permit permanent settlement here.

Hydrosphere:

The earth is called the blue planet. More than 71 percent of the earth is covered with water and 29 percent is with land. Hydrosphere consists of water in all its forms. As running water in oceans and rivers and in lakes. Ice in glaciers,



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underground water and the water vapour in atmosphere, all comprise the hydrosphere. More the 97% of the earth's water is found in the oceans and is too salty for human use. A large proportion of the rest of the water is in the form of ice sheets and glaciers or under the ground and a very small percentage is available as fresh water for human use. Hence, despite being a 'blue planet' we face a shortage of water!!

The water cycle

The water cycle refer to the interchange of the forms of water on this planer. It involves three different processes- evaporation, condensation and precipitation. Water is transferred from the Earth surface to the atmosphere through evaporation. It is the process by which water, when heated, change into a gas. Condensation is the process by which the water vapour in the atmosphere, When cooled, changes to its original liquid state. Condensed water may appear as clouds, mists, fog, dew, etc., depending on the physical conditions of the atmosphere. When water droplets get too heavy to remain suspended in the air they fall to the earth as precipitation. Precipitation occurs in a variety of forms- hail, rain, freezing rain, sleet or snow. This water gets evaporated once more. Thus the water cycle is a continuous process.

Oceans: oceans are the major part of hydrosphere. They are all interconnected. The ocean waters are always moving. The three chief movements of ocean waters are the waves, the tides and the ocean currents. The five major oceans are the pacific oceans, the Arctic Ocean.

The Pacific Ocean: is the largest ocean. It is spread over one-third of the earth. Mariana trench, the deepest part of the earth, lies in the Pacific Ocean.

The Atlantic Ocean: is the second largest ocean in the world. It is 'S' shaped. The coastline of Atlantic Ocean is highly indented. This irregular and indented coastline provides ideal location for natural harbors and ports. From the point of view of commerce, it is the busiest ocean.

The Indian Ocean: is the only ocean named after a country, that is, India. The shape of ocean is almost triangular.

The southern ocean: encircles the continent of Antarctica and extends northward to 60 degree south latitude.

The Arctic Ocean: is located within the Arctic Circle and surrounds the North Pole. It is connected with the Pacific Ocean by a narrow stretch of shallow water known as Berring strait.

ATMOSPHERE:

The earth is surrounded by a layer of gas called the atmosphere. This thin blanket of air is an integral and important aspect of the planet. It provides us with the air we breathe and protects us from the harmful effects of sun's rays.

The atmosphere extends up to a height of about 1,600 kilometers. The atmosphere is divided into five layers based on composition, temperature and other properties. These layers starting from earth's surface are called the troposphere, the stratosphere, the mesosphere, the thermosphere and the exosphere.

The troposphere is the layer that is closet to the Earth, and the place where all weather changes occur. Ninety percent of all air is found in this layer, and it contains most of the water vapour and dust particles present in the atmosphere.



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The troposphere extends from the surface of the Earth to an altitude varying from 8 to 17 km.

The stratosphere stretches beyond the troposphere, and is the zone where aeroplanes fly. The atmosphere is composed mainly of nitrogen 78 per cent, oxygen 21 per cent and others comprise 1 per cent by volume. Oxygen is the breath of life while nitrogen helps in the growth of living organisms, carbon dioxide, though present in minute amount, is important as it absorbs heat radiated by the earth, thereby keeping the planet warm. It is also essential for the growth of plants. The density of the atmosphere varies with height. It is maximum at the sea level and decreases rapidly as we go up. The temperature also decreases as we go upwards. The atmosphere exerts pressure on the earth. Air moves from high pressure to low pressure. Moving air is known as wind.

Biosphere- The Domain Of Life:

The biosphere is the important zone of contact between the land, water and air. It is in this zone that life, that is unique to this planet, exists. There are several species of organisms that vary in size microbes and bacteria to huge mammals. All the living organisms including humans are linked to each other and to the biosphere for survival. The organisms in the biosphere may broadly be divided into the:

- The planet kingdom
- The animal kingdom

There is thus, a need to optimize the use of resources of the earth to maintain the balance of nature between the domains of the lithosphere, the atmosphere and the hydrosphere.

