

Chapter – 5: Major Domains of the Earth

- Earth – only planet – has life – elements – land, water and air present
- Surface of earth – complex zone – 3 main elements – meet, overlap and interact
- Solid portion – we live – **lithosphere**
- Gaseous layers around earth – oxygen, nitrogen, carbon dioxide, other gases – **atmosphere**
- Water covers – very big area – different forms – ice, water and water vapours – **hydrosphere**
- **Biosphere** – narrow zone – land, water and air – together

Lithosphere

- Solid portion of earth
- Rocks – earth's crust – thin layer – soil – nutrient elements – sustain organism
- Earth surface – 2 divisions – **continents** and **ocean basins**
- All oceans – connected to each other – seawater level – same everywhere
- Elevation of land – measured from sea level – taken as 0
- Highest mountain – Mt. Everest – 8,848 m above sea level
- Greatest depth – 11,022 m – Mariana Trench – Pacific Ocean



Continents

- Seven major continents
- More land mass – northern hemisphere
- Asia
 - Largest continent
 - 1/3rd land area
 - Eastern hemisphere
 - Tropic of Cancer passes here
 - Separated from Europe by Ural Mountains
 - Europe + Asia = Eurasia
- Europe
 - Much smaller than Asia
 - West of Asia
 - Arctic Circle passes here

- Surrounded by water – 3 sides
- Africa
 - 2nd largest continent
 - Equator passes here – almost middle
 - Large part – Northern hemisphere
 - Only continent – Tropic of Cancer, Equator and Tropic of Capricorn – passes here
 - Sahara – world's largest hot dessert – located here
 - All sides – oceans and seas
 - Longest river – **Nile** – flows here
- North America
 - 3rd largest continent
 - Linked to South America – narrow strip of land – Isthmus of Panama
 - Northern and Western Hemisphere
 - 3 oceans surround it – Atlantic, Pacific, Arctic
- South America
 - Mostly – Southern hemisphere
 - 2 oceans surround it – east and west – Atlantic, Pacific
 - Andes – world's longest mountain ranges – located here
 - World's largest river – Amazon – flows here
- Australia
 - Smallest continent
 - Southern hemisphere
 - All sides – oceans and seas – island continent
- Antarctica
 - Southern hemisphere
 - Huge continent
 - South pole – almost centre of continent
 - Covered with thick ice sheets
 - No permanent human settlement
 - Many countries – research station – India – Bharati, Dakshin Gangotri and Maitri

Hydrosphere

- Earth – blue planet
- More than 71 % – covered with water
- Water – all forms
 - Flowing water – rivers, oceans, lakes
 - Ice – glaciers
 - Underground water
 - Water vapours - atmosphere
- More than 97 % – earth's water – oceans – too salty
- Large portion of rest – ice sheets and glaciers – small percentage – fresh water – human use
- Blue planet – YET – shortage of water

Oceans

- All – interconnected

- Ocean waters – always moving – waves, tides and ocean currents
- Five major oceans
- Pacific ocean
 - Largest ocean
 - 1/3rd of earth
 - Mariana Trench – deepest part – located here
 - Almost circular – Asia, Australia, North and South Americas – surround it
- Atlantic ocean
 - 2nd largest
 - S-shaped – North and South Americas – West side – Europe and Africa – East side
 - Coastline – irregular and *indented* – natural harbours and ports
 - Busiest ocean – point of view of commerce
- Indian ocean
 - Only ocean – named after a country
 - Almost triangular
 - North – Asia – West – Africa – East – Australia
- Southern ocean
 - Circle around Antarctica – upto 60° S latitude
- Arctic ocean
 - Within Arctic Circle – surrounds North pole
 - Connected to Pacific ocean – narrow stretch – shallow water – Berring strait
 - Bound by – Northern coasts – North America and Eurasia

Atmosphere

- Layer of gas – around earth
- Imp. part of planet – provides air – we breathe – protects from harmful effects of sunrays
- Atmosphere – extend upto 1600 km
- 5 layers – troposphere, stratosphere, mesosphere, thermosphere, exosphere – vary – composition, temperature and other properties
- Composition –
 - Nitrogen – 78 %
 - Oxygen – 21 %
 - Other gases – carbon dioxide, argon and others – 1 %
- Oxygen – imp. for breathing – Nitrogen – helps in growth of living organism – Carbon Dioxide – less amounts – imp. – absorbs heat and essential for growth of plants
- Density – vary with height – maximum at sea level – decreases as we go up
- Climbers, mountaineers – carry oxygen cylinder – breathe at high altitudes (heights)
- Temperature – decreases as we go up
- Atmosphere – puts pressure on earth – vary – place to place – some place – high pressure – other place – low pressure
- Air – moves – high pressure to low pressure – moving air – wind

Biosphere – The Domain of Life

- Narrow zone of contact between land, water and air
- This zone – life exists
- Many species – organisms – vary in size – microbes and bacteria to huge mammals
- All living organisms – including humans – linked to each other and biosphere
- Organisms – broadly classified – plant kingdom and animal kingdom
- 3 domains – interact and affect – each other
 - Cutting of trees – need for wood or agriculture land – lead to removal of top soil
- Earth's surface – change – natural calamities
 - Tsunami – parts of Andaman and Nicobar Islands – submerged
- Discharge of waste – pollute water – unsafe for human use – damage other forms of life
- Emission – industries, thermal power plant, vehicles – pollute air
- CO₂ – imp. – BUT – increase in CO₂ levels – increase in global temperatures – Global Warming
- Limit – use of resources – maintain balance – 3 domains