GEOGRAPHY
LESSON 5: Major Domains of the Earth(Key)

W.B (pp-163)
1. The main components of the environment which meet on the surface of the earth are **lithosphere, hydrosphere and atmosphere collectively together the Biosphere.**

2. Define Lithosphere. **A lithosphere is the rigid, outermost shell of a terrestrial-type planet, or natural satellite, that is defined by its rigid mechanical properties.**

3. What does the Atmosphere consist of? **Earth's atmosphere is 78% nitrogen, 21% oxygen, 0.9% argon, and 0.03% carbon dioxide with very small percentages of other elements. Our atmosphere also contains water vapour. In addition, Earth's atmosphere contains traces of dust particles, pollen, plant grains and other solid particles.**

4. The area covered with water on the earth's surface is called the **hydrosphere**.

5. What are the different forms of water existing in the Hydrosphere?
A planet's hydrosphere can be liquid, vapour, or ice. On Earth, liquid water exists on the surface in the form of oceans, lakes and rivers. ... The frozen part of Earth's hydrosphere is made of ice: glaciers, ice caps and icebergs.
6. The narrow zone where we find land, water and air together is known as the **biosphere.**
7. What do the following Greek words mean?
a) Lithos- **Stone**
b) Atmos- **Vapour**
c) Hudor- **Water**
d) Bios- **Life**
8. What does Lithosphere consist of? **It is the rigid outermost shell of a rocky planet. Here on Earth the lithosphere contains the crust and upper mantle. The Earth has two types of lithosphere: oceanic and continental. The lithosphere is broken up into tectonic plates**.
9. Name the two divisions of the earth's surface. **i) The large landmasses known as continents**
ii) The huge water bodies known as ocean basins.
10. The level of sea water remains the **same** everywhere.

WB (pp-164,165)
1. Elevation of land is measured from the level of the **sea** which is taken as **zero**.
2. Name the higheast mountain peak? What is its height? **Mt. Everest, 8,848 metres above sea level.**
3. What is the greatest depth in the Pacific Ocean? **Mariana Trench, with a depth of 11,022 metres.**
4. Name the largest Continent. **Asia**
5. In which hemisphere does Asia lie? **Eastern Hemisphere**.
6. Which mountains separate Asia from Europe? **Ural Mountains.**
7. The combined landmass of Europe and Asia is called **Eurasia**.
8. Europe is surrounded by waterbodies on **three** sides.

9. **Africa** is the second largest continent.
10. Which 3 lines of latitudes pass through Africa? **The Tropic of Cancer, The Equator and The Tropic Of Capricorn**
11. Which is the world's largest hot desert? In which continent is it situated? **The Sahara Desert.**
12. Name the world's longest river. **The Nile.**
13. Name the third largest continent of the world. **North America.**
14. What connects South America to N. America? **A narrow strip of land called the Isthmus of Panama.**
15. Which oceans lie on the east and the west of South America? **It is bordered on the west by the Pacific Ocean and on the north and east by the Atlantic Ocean; North America and the Caribbean Sea lie to the northwest.**
16. Name the world's longest mountain range. **The Andes**.
17. The world's largest river, the **Amazon**, lies in South America.
18. Name the island continent which lies in the Southern Hemisphere. **Australia**
19. The South Pole lies almost at the centre of the continent of **Antarctica**.
20. In which continent are there no permanent human settlements? **Antarctica**
21. Name the two research stations set up in the continent of Antarctica. **Maitri and Dakshin Gangotri.**

Writing Task: W.B (pp- 165)

1. The earth is called a **blue planet**.
2. Give a reason for each:
   a) Why 97% of the water on the earth cannot be used by human beings? **As it is found in oceans and is too salty for human use.**
   b) Where is the rest of the water found? **Ice sheets and glaciers or under the ground and a very small percentage is available as fresh water for human use.**
3. Name the 5 major Oceans of the world. **Pacific Ocean, Atlantic Ocean, Indian Ocean, Southern Ocean and Arctic Ocean.**
4. The three chief movements of ocean waters are the **waves**, **tides** and the **ocean currents**.
5. The **Pacific** Ocean is the largest Ocean and covers about 1/3rd of the earth.
6. Name the two continents which surround the Pacific Ocean. **Asia, Australia, North and South America.**
7. The **Atlantic** Ocean is the busiest Ocean.
8. The coastline of the Atlantic Ocean is highly **indented.** This is good for the location for **natural harbours** and ports.

W.B (pp-165)

1. The Indian Ocean is **triangular** in shape.
2. Antarctica is surrounded by the **Southern** Ocean.
3. The **North** Pole is surrounded by the Arctic Ocean.
4. The **Berring** Strait joins the Arctic Ocean to the Pacific Ocean.

Writing Task: W.B (pp 166)

1. Define Atmosphere**. The earth is surrounded by a layer of gas called the atmosphere.**
2. What is the importance of atmosphere to our lives? **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.**
3. On what basis is the atmosphere divided? **Based on composition, temperature and other properties.**
4. Name the different layers of the atmosphere. **Troposphere, stratosphere, mesosphere, thermosphere and the exosphere.**
5. Describe the composition of the atmosphere. **By volume, dry air contains 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.04% carbon dioxide, and small amounts of other gases. Air also contains a variable amount of water vapor, on average around 1% at sea level, and 0.4% over the entire atmosphere.**
6. Why do climbers experience problems in breathing? **Due to decrease in the density of air.**
7. Air moves from **high** pressure to **low** pressure.
8. Define wind. **Wind is the flow of gases on a large scale. On the surface of the Earth, wind consists of the bulk ... In coastal areas the sea breeze/land breeze cycle can define local winds; in areas that have variable terrain, mountain and valley breezes ..... If an offshore wind of 8 knots (15 km/h) exists, the sea breeze is not likely to develop.**

Writing Task (W.B pp-166,167)

1. Life exists in the zone of the **biosphere.**
2. What is the importance of the biosphere? **It is in this zone that life, that is unique to this planet, exists.**
3. Name the two kingdoms into which the organisms in the biosphere are divided. **Plant kingdom and the animal kingdom.**
4. How do the three domains of the earth interact and affect each other? Explain by giving examples. **The three domains of the earth interact with each other and affect each other in some way or the other. For example, cutting of forests for fulfilling our needs of wood, or clearing land for agriculture may lead to fast removal of soil from slopes. Similarly, earth's surface may be changed due to natural calamities like earthquakes. For example, there could be submergence of land, as happened in the case of Tsunami recently. Parts of Andaman and Nicobar Islands were submerged under water.**
5. What are the causes of global warming**? Loss of forest cover and pollution are believed to be the cause for global warming which is a serious – issue today. Excessive carbon emissions have have led to the rise in carbon dioxide in the atmosphere, resulting in a increase in global temperatures. It is causing climate-changes, which in turn are causing large scale devastation**.

Multiple choice questions:

a) Asia lies completely in the _____ Hemisphere.
   i) Northern ii) Southern iii) Western **iv) Eastern**
b) The first woman to climb Mount Everest was a/an
   i) American ii) African iii) Indian **iv) Japanese**
c) The world's longest river is the
   i) **Amazon** ii) Nile iii) Mississipi iv) Mekong

d) The Maitri is a _____ station.
   i) **Research** ii) railway iii) police iv) bus
e) The amount of fresh water on earth is only
   i) **0.03%** ii) 0.6% iii) 1.0% iv) 6.0%

Writing Task: (W.B pp- 168)

Tick the correct answers:

a) The mountain range that separates Europe from Asia is the **Ural Mountains.**.
b) The continent of North America is linked to South America by **Isthmus of Panama**.
c) The major constituent of the atmosphere by percent is **Nitrogen**.
d) The domain of the earth consisting of solid rocks is **Lithosphere.**
e) Which is the largest continent? **Asia**.

Fill in the blanks:

a) The solid portion of the earth on which we live is called the **lithosphere.**
b) Africa is surrounded by water bodies on **all** sides.
c) Climbers have breathing problems in mountains due to **decrease** in the density of air.
d) The Arctic Ocean is connected to the Pacific Ocean by the **Berring** strait.
e) The gaseous layer that surrounds the earth is known as the **atmosphere**.
f) The deepest point on the earth is **Mariana Trench** in the Pacific Ocean .
g) The **Indian** Ocean is named after a country.
h) The **biosphere** is a narrow contact zone of land, water and air that supports life.
i) The continents of Europe and Asia together are known as **Eurasia**.
j) The highest mountain peak on the earth is **Mt. Everest.**

Match the following:

A	B
a) Largest Ocean iii	i) "S" shaped
b) Atlantic Ocean i	ii) Rivers of Ice
c) Mountain Climbers iv	iii) Pacific Ocean
d) Island continent v	iv) Need Oxygen
e) Glaciers ii	v) Australia

Writing Task: **W.B** (pp 169,170)

True/False

a) The greater part of the land mass lies in the Southern Hemisphere. **F**
b) Europe is much larger than Asia. **F**
c) Carbon Dioxide is an unimportant constituent of air. **F**
d) Rising air is known as wind. **F**
e) Discharge of water material into lakes and rivers pollutes the water. **F**
f) North America lies completely in the Northern and Western Hemisphere. **T**

Give reasons:

a) Why is the air in the Troposphere being polluted**? Ozone in the troposphere, particularly near the surface, is harmful to humans and all of the Earth's ecosystems. Ozone in the troposphere is produced by photochemical oxidation of carbon monoxide and organic compounds in the presence of nitrogen oxides** .
b) Why is a large amount of soil being removed from the mountains? **Soil erosion is the displacement of the upper layer of soil, one form of soil degradation.**

Salty soils tend to be the most affected by wind erosion; The removal of vegetation increases the rate of surface erosion.

c) Why is there an increase in global temperature?

i) **With the approach of Industrial revolutions, the use of chemicals in the factories has increased to a dangerous amount.**

ii) **Along with it, deforestation due to industrial or economic purposes**

iii) **and the excess burning of fossil fuels like natural gas, oil, and coal, has increased the concentration of atmospheric carbon dioxide.**

iv) **These are some of the primary reasons for which the heat gets trapped in the atmosphere thus causing global warming**.

d) Why are there no permanent human settlements in Antarctica? **Antarctica, on average, is the coldest, driest, and windiest continent, and has the highest average elevation of all the continents and this is why it is not suitable for human settlement. Only cold-adapted organisms survive, including many types of algae, bacteria, fungi, plants etc.**

e) Why were the Andaman and Nicobar islands submerged under water in December,2004? **On 26th December 2004, the coasts of the Andaman and Nicobar Islands were devastated by a 10 m (33 ft) massive tsunami following the undersea earthquake off Indian Ocean. The worst affected Nicobar islands were Katchal and Indira Point; The lighthouse at Indira Point was damaged but has been repaired since then. The territory lost a large amount of area which is now submerged.**

While locals and tourist of the islands suffered the greatest casualties from the tsunami, most of the aboriginal people survived because oral traditions passed down from generations ago warned them to evacuate from large waves that follow large earthquakes.

Difference between:

a) Troposphere and Stratosphere **The troposphere is the lowest level of the atmosphere, so it is in contact with the Earth's surface. In contrast, the stratosphere is located above the troposphere, so it is not in contact with the Earth's surface. ... On average, the troposphere is warmer than the stratosphere.**

b) A harbour and a port **First basic difference is here-All ports are harbours but all harbours are not ports.**
A harbour is a place where ships may shelter from the weather or are stored. Harbours can be man-made or natural. A man-made harbour will have sea walls or breakwaters and may require dredging. A natural harbour is surrounded on most sides by land.

Harbours and ports are often confused. A port is a man-made coastal or riverine facility where boats and ships can load and unload. It may consist of quays, wharfs, jetties, piers and slipways with cranes or ramps. A port may have magazine buildings or warehouses for storage of goods and a transport system, such as railway, road transport or pipeline transport facilities for relaying goods inland.

In short a port is used mainly for marine trading and a harbour is used as a parking space or a storage space for ships.

c) Hydrosphere and Lithosphere

Hydrosphere: The hydrosphere, or water sphere, mostly covers the depressions of the lithosphere. Some amount of water is also found in the rocks and much exists in the form of water vapour in the atmosphere. The oceans represent about 71 per cent of the globe and therefore contain the great bulk of the water.

Sea or ocean water is a solution of salt. In addition to their importance in the chemical environment of marine life, these salts make up a vast store-house of mineral matter.

The earth's water moves through an interesting cycle known as hydrological cycle. By evaporation, water enters the air as water vapour from the oceans and other water-bodies as also from plants and animals by transpiration. As the water vapour moves up the air it condenses and ultimately returns to the surface as precipitation.

From the land it returns back to the oceans or adds directly to the air through evaporation and transpiration. This functional interrelation of hydrosphere, atmosphere and lithosphere makes possible the continued existence of plant and animal life.

Lithosphere: The lithosphere is the upper rigid shell of the earth and is distinctly sub-divided into three layers. They are: the central one, or the core; the intermediate layer called the mantle; and the outer layer known as the earth's crust. Seismic studies have made it possible to distinguish the solid part of the earth into such distinctive layers or zones.

Core:

The core is the inner and the densest layer of the earth. The temperature here, presumably, reaches a maximum of about 2,500 – 3,000°C.

It is evident from the seismic studies that the constituting substance of the core remains apparently in a solid state.

Mantle:

The mantle is the largest intermediate layer of the earth and is confined between the crust and the core. The mantle comprises of nearly of the earth's mass. The temperature reaches about 1,000°C on the border between the crust and mantle.

Crust:

The earth's crust is the upper solid part of the earth consisting of magmatic, metamorphic and sedimentary rocks The crust of the continental type consists of three layers: they are the sedimentary, granitic and basaltic ones.

d) The eastern hemisphere and the western hemisphere

Generally the Eastern Hemisphere includes most of Africa, about half of Antarctica, all of Asia and Australia/Oceania, and most of Europe. The Western Hemisphere includes about half of Antarctica and all of North and South America which includes the Caribbean and Central America as well as Greenland.

e) Strait and Isthmus

While a strait lies between two land masses and connects two larger bodies of water, an isthmus lies between two bodies of water and connects two larger land masses.

Long Answers (To Be written in N.B) **P-171,172**

a) Account for the presence of numerous natural harbours along the Atlantic coastline.
The Atlantic coast seaports facilitate freight flow and international trade for both the long-established and populous Northeast, and the growing areas along the Southeast Atlantic coast. This fact sheet highlights the major Atlantic container ports of New York/New Jersey, Virginia, Savannah, and Charleston.

b) Why is the Biosphere important for living organisms?

c) What is global warming? How can it be reduced?

i) **With the approach of Industrial revolutions, the use of chemicals in the factories has increased to a dangerous amount.**

v) **Along with it, deforestation due to industrial or economic purposes**

vi) **and the excess burning of fossil fuels like natural gas, oil, and coal, has increased the concentration of atmospheric carbon dioxide.**

vii) **These are some of the primary reasons for which the heat gets trapped in the atmosphere thus causing global warming**.

The following methods can help us to reduce global warming:

1. Replace Regular Incandescent Light bulb: Replace regular incandescent light bulb with compact fluorescent light (CFL) bulbs. They consume 70% less energy then ordinary bulbs and have longer lifetime.

2. Drive Less or Carpool: By driving less you are not only saving fuel but also helping in reducing global warming. Also, look out for other possibilities, for e.g.: car pooling. If you have colleagues who live in the same area then you can combine trips. If you need to go to a local market then either walk or go by cycle. Both of them are great form of exercise. The biggest pollution emitting fumes are caused by <u>oil</u> and gasoline. Cutting down consumption, is a huge step to reducing energy wastes.

3. Reduce, Reuse, Recycle: Reduce your need to buy new products or use less, resulting in a smaller amount of waste. Even if you need to buy, consider buying <u>eco-friendly products</u>. It is most effective of the three R's. It simply says cut back from where are you now.

Reuse bottles, plastic containers, and other items bought at the grocery store. Reusing water bottles, yogurt cups, bread ties, and other items is being conscious about what is already out there. It will lessen having to purchase other items that would fulfill the

same function. Try to use the disposable products into some other form. Just don't throw them away.

Recycling unwanted paper, bottles, etc…is a great earth saving tip. If possible, upcycle tables, furniture, and other outdated items to keep landfills clean. You can recycle almost anything for e.g.: paper, aluminum foils, cans, newspapers. By recycling you can help in reducing landfills .

4. Go Solar: Many people have caught the energy efficient band wagon of solar energy. Having solar panels installed is something readily possible and available. Incentives and discounts given by government agencies and energy companies make solar energy something to look into.

5. Buy Energy-Efficient Appliances: Always buy products that are energy efficient as they can help you save good amount of money on your energy bill. Energy-efficient products can help you to save energy, save money and reduce your carbon footprint.

6. Reduce Waste: Landfills are the major contributor of methane and other greenhouse gases. When the waste is burnt, it release toxic gases in the atmosphere which result in global warming. Reusing and recycling old items can significantly reduce your carbon footprint as it takes far less energy to recycle old items than to produce items from scratch.

7. Use Less Hot Water: Buy energy saving geysers and dishwasher for your home. Avoid washing clothes in hot water. Just wash them in cold or warm water. Avoid taking frequent showers and use less hot water. It will help in saving energy require to produce that energy.

8. Avoid Products With Lot of Packaging: Just don't buy products with lot of packaging. When you buy such products you will end up in throwing the waste material

in the garbage, which then will help in filling landfill sites and pollute the environment. Also, discourage others from buying such products.

9. Turn Off the Lights: Duh! If you're not using a room, there's no need for the light to be on.

10. Turn off Electronic Devices: Turn off electronic devices when you are moving out for a couple of days or more. Unnecessary usage of electronic appliances will not only save fuel i.e. coal by which we get electricity but also increase the lifetime of your gadgets.

11. Plant a Tree: Planting trees can help much in reducing global warming then any other method. They not only give oxygen but also take in carbon dioxide, during the process of photosynthesis, which is the main source of global warming.

12. Use Clean Fuel: Electric, smart cars, cars run on vegetable oil, etc…are great examples for using renewable energy. Supporting companies that provide these products will help the rest of the mainstream manufacturing companies convert over.

13. Look for Renewable Fuel Options: If you can't afford an electric car, buy the cleanest gasoline as possible. When car shopping, look at the benefits of options that provide renewable fuel. Although it may be a pretty penny now, you're on the ground level of forward thinking.

14. Save Energy: When you consume less, the less carbon dioxide is released into the atmosphere. Setting your thermostat using your smart phone or changing the type of light bulb you use is a great start.

15. Replace Filters on Air Conditioner and Furnace: If you haven't, not only are you wasting energy, but breathing in dirty air. Cleaning a dirty air filter can save several pounds of carbon dioxide a year.

16. Go Green: Using energy star appliances will not only save money, but also the amount of energy wasted in your home. Have a look at <u>various ways to go green</u>.

17. Tune Your Car Regularly: Regular maintenance will help your car function properly and emit less carbon dioxide.

18. Conserve Water: Save as much water as you can.

W.B (P-170,171)

Very short Questions:

a) How is the elevation of land measured? **From the level of the sea which is taken as zero.**
b) Which line of latitude passes through the Sahara Desert? **Tropic of Cancer**
c) Name the World's longest mountain range? **Andes**
d) Name the four continents surrounding the Pacific Ocean. **North America, South America, Australia, and Asia.**
e) Who were the first men to climb the Mount Everest? **Edmund Hillary and Tenzing Norgay.**
f) Who was the first Indian Woman to climb Mount Everest? **Junko Tabei.**

Short Questions:

a) Why is the earth called a "blue planet"? **The three-fourth of the earth's surface is covered with water bodies. And when looked from the space it appears blue due to those water bodies. That is why it is also known as the Blue planet.**

b) Why is the Northern Hemisphere called the Land Hemisphere? **The Northern Hemisphere is called the Land Hemisphere because the greater part of Earth's landmass lies in the Northern Hemisphere.**
c) What is the biosphere? **The biosphere is a narrow zone of the earth where land, water and air interact with each other to support life. It is in this zone that life exists. There are several species of organisms that vary in size from microbes and bacteria to large mammals. All living organisms including humans are linked to each other and to the biosphere for survival.**
d) Why is a tsunami caused? **A tsunami is a large ocean wave that is caused by sudden motion on the ocean floor. This sudden motion could be an earthquake, a powerful volcanic eruption, or an underwater landslide. The impact of a large meteorite could also cause a tsunami.**

CONCLUDED