

GEOGRAPHY

1. The Earth: Its structure and tectonic movements

The Earth our home land, mother planet, is the important member in the solar system. This is because our Earth is the only planet in the solar system which has organisms in it. Not only that, it provides all basic requirements. We know to observe and learn about various organisms of the Earth but the life containing planet's formation is still in debate.

Do you know?

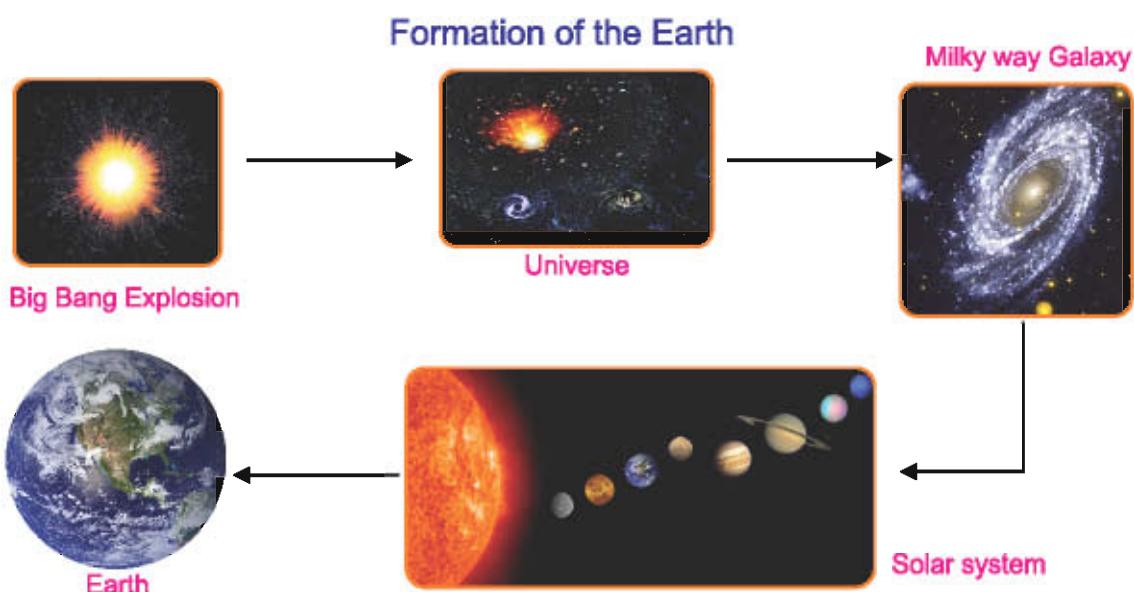
The Egyptians visualized that earth was a floating sphere on the sea.

Many experts had brought out theories on the formation of Earth and other planets. Among them, "Big Bang" theory is the most accepted one. It proposes that the universe was once extremely compact, dense and hot. Around 10 billion to

20 billion years ago there was a cosmic explosion called "Big Bang". From that explosion, the universe including our Earth was formed. An American astronomer Edwin Hubble explained that the existing universe had been expanding. As time passes, galaxies move further and further apart. On the 30th May 2010, the scientists made a Large Hadron Collider (LHC) machine to test the Big Bang theory. It may help us to understand some of the mysteries of the formation of the Earth.

Activity

Take a balloon and mark some points to represent galaxies. Then you blow it up and simultaneously observe the points marked on it. They move away from each other as the balloon expands.



Formation of Continents and Oceans

The land and water bodies were not always distributed on the surface of the earth as they are today. A few million years ago, all the present continents were clustered together around the South Pole. This **Super continent** was called **Pangea**. In Greek, it means "all earth". The Pangea was surrounded by a Mega Ocean called the **Penthalassa** or the **Super Ocean**. In Greek, it means "all water". The Pangea was broken into a number of plates known as the lithosphere Plates. These Plates move around very slowly, from a few Millimeters to a centimeter a year.

Do you know?

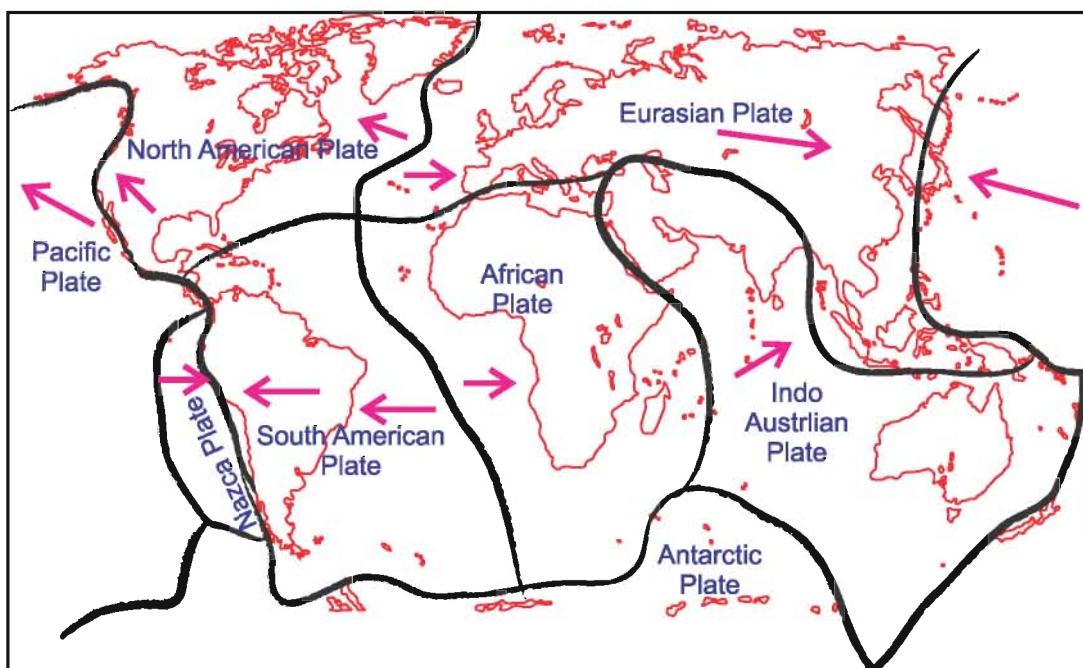
The pacific plate is the largest plate and it covers about $1/5^{\text{th}}$ of entire Earth's surface.

Do you know?

The Himalayas is rising by about 5mm per year, due to the movement of Indo-Australian plate, and the plate is still moving at 67 mm per year. The scientists expect that, in another 10 million years, the plate will travel about 1,500 km into Asia.

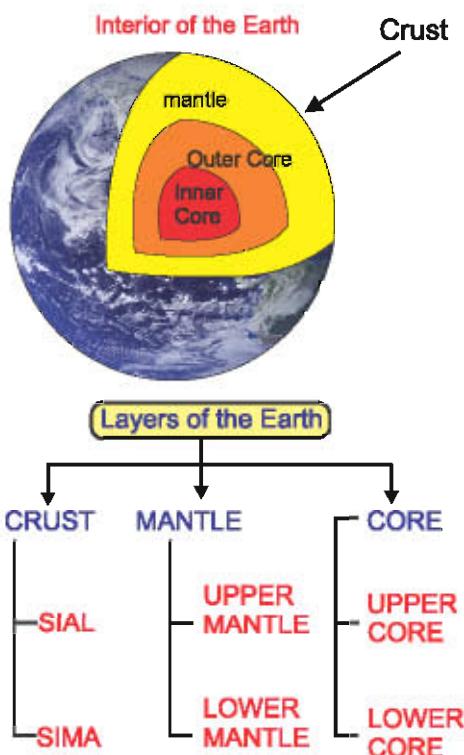
The Pangea was broken into seven major plates and several tiny plates. The major plates were the Eurasia, Antarctica, N.America, S.America, Pacific, Africa and Indo-Australian plates. The smaller plates included the Arabian, Caribbean, Philippine, Cocos, Nazca and so on. These plates are continuously in motion with respect to each other.

PLATE BOUNDARIES OF THE EARTH



Interior of the Earth

By analyzing the seismograms recorded from many earthquakes, scientists have discovered that three main layers or shells exist within the Earth. Isaac Newton was one of the first scientists to theorize about the structure of the earth. Since then many scientists presented theories on the structure of the earth. **The part of the earth we live on is a very thin layer relative to the inner earth.** The interior of the earth can be divided into three major layers based on chemical composition and characteristics. They are the **crust, mantle** and the **core**.



Do you know?

Suess, an Austrian Geologist named the crust, mantle and core as sial, sima and nife respectively.

Crust

The uppermost layer of the earth's surface is called the "crust or lithosphere". The continental crust is composed of a layer called the "**SIAL**" which is made up of Silica and Aluminium. The oceanic crust is composed of basaltic layer called the "**SIMA**" which is made up of Silica and Magnesium. Crust is thicker on the continents and thinner on the ocean floors. The sial layer is floating on the sima layer. The average depth of sial is about 20 km and The average depth of sima is about 25 km. They average density of the crust is about 3.

Mantle

Mantle lies between the crust and core. It comprises about 83 % of the Earth's volume. It is made up of plates that move and create continental drift. Beyond 900 km, this layer is completely homogenous. Upper mantle is known as "**Asthenosphere**". It extends upto a depth of 700 km. Lower mantle is semisolid and is plastic in nature. The average density of the mantle is about 8.

Do you know?

The layers of the Earth can be compared with a mango or boiled egg or cricket ball for better understanding.

Core

The inner most layer of the earth is called the "**Core or Barysphere**". It is otherwise known as **NIFE**,

because of the presence of Nickel and Ferrous(iron). This layer produces earth's magnetic field. There are two main divisions; they are the outer core and the inner core. The particles present here resemble like liquid. It may be in a solid state due to excessive pressure of the surrounding layers. The density of the core is about 12.

Temperature of Interior of the Earth

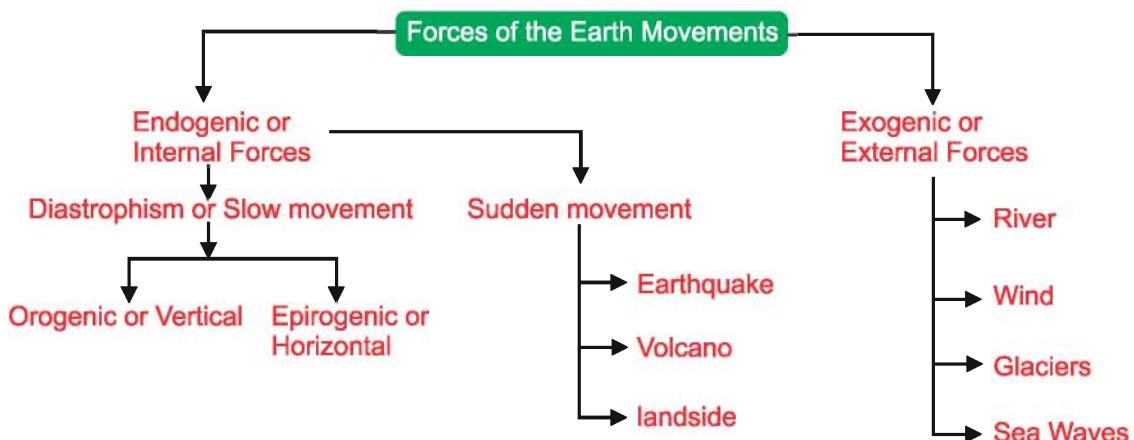
The experience of volcanic eruption, hot springs and mines indicates that heat increases as we move downwards into the earth. The temperature is estimated at the centre of the Earth to be as high as 5000°C. The normal gain rate of temperature is 1°C for every 32 metres of descent.

Do you know?

The Tethys sea was a shallow sea between the Angara and Gondwana land.

Forces of Earth Movements

The crust of the earth is not stable. Several areas of the present land masses were once beneath the sea. Continuous changes are taking place on the surface of the earth. Once upon a time, the Himalayas were the "Tethys" sea. A few of the changes are gradual and slow, some of them are sudden. These changes are brought on by two different forces. They are,



The Endogenic or Internal Forces

It originates and acts from within the earth's crust. It gives rise to deformation and irregularities on the crust of the earth.

The earth movements which bring about vast changes on the crust of the earth are called the Endogenic or Tectonic movements. These movements are of two types:

Slow movements or Diastrophism

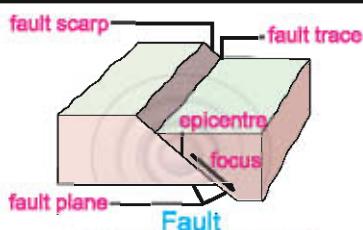
It is the general term applied to slow bending, folding, warping and fracturing. Such movements may be further divided as follows;

Epirogenic or continental movement

The vertical movement leads to either uplift or subsidence of the earth's crust, along lines of weaknesses which are called "**FAULTS**". Displacement of the earth's crust takes place along the fault line. When displacement takes place along two adjoining fault lines, a portion between them may get uplifted to form a block mountain or plateau or subside to form a basin or Rift valley. Large scale vertical movements of the earth's crust are also called Epirogenic movements

Do you know?

The Great Rift Valley of East Africa and the Narmadha valley in India are the best examples of such basins bounded by faults.



Narmadha-India

Orogenic or Mountain Building Movements

Horizontal movements of the earth's crust are responsible for folding and displacement of the layers of rocks. Simple folding consists of alternating upfolds called "**Anticlines**" and down folds called "**Synclines**". Such simple folds rarely occur. More often folds get compressed to such an extent that the layers of rocks get displaced over long distances resulting in complex structure. Large scale horizontal movements are called Orogenic movements. They are responsible for the formation of fold mountains of the world – like the Himalayas.

The Exogenic or External Forces

It originates and acts on the surface. It removes the irregularities to make a leveled land.

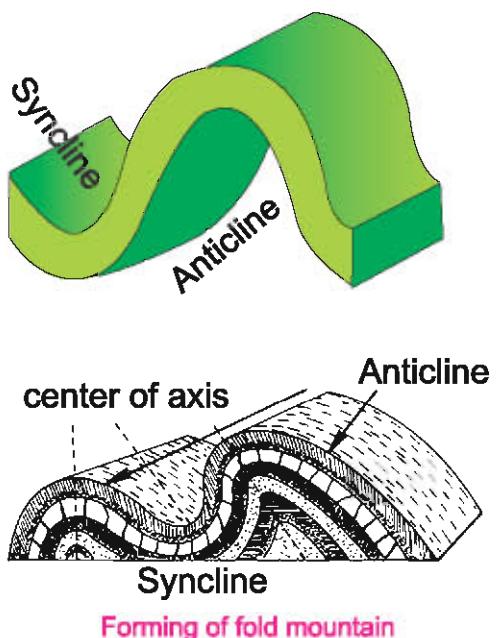
Activity

Making an Anticline and Syncline:

- i) All you require is a pile of paper.
- ii) Put the papers on your table.
- iii) Push the papers from both sides with your hands.

- iv) The sheets become folded and rise into a peak.
- v) you have made an Anticline and a Syncline.

List the important fold mountains of the world.



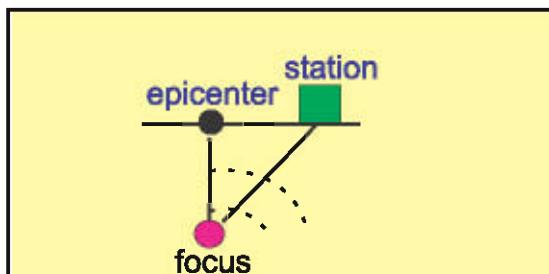
Sudden movements

These movements bring sudden changes on and below the crust. These movements are destructive in nature. The major destructions are happened due to Earthquakes and Volcanic activities.

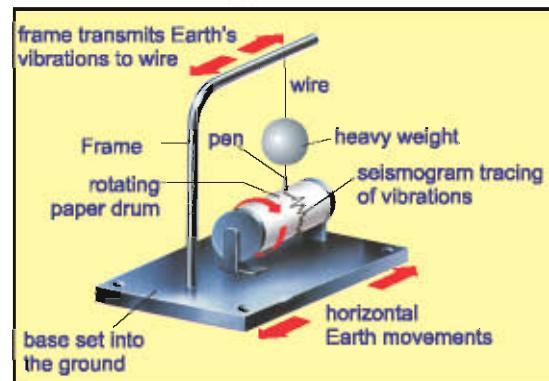
Earthquakes

An earthquake is a sudden shaking or trembling of a part of the earth's crust which results in tremors or vibrations. They are classified as **volcanic earthquakes** and the **tectonic earthquakes**. The volcanic earthquakes occur along with eruption and the tectonic earthquakes are caused by their deformation or displacement in the rocks.

The point of origin of the earthquake is called the "**Focus**". The point directly above the focus on the surface is called the "**Epicenter**". There are annually 8,000-10,000 earthquakes occurring in the world. An earthquake occurs for every one hour. There are many more undetected, because of their low intensity.



Earthquake centre



Sismograph

Do you know?

The earthquake waves are recorded by the instrument known as the Seismograph. The Richter scale is used to measure the intensity of an earthquake. Its scale ranges from 0 to 9.

Types of Earthquake Waves

Basically it is divided into **body waves** and **surface waves**.

Body waves are produced by the

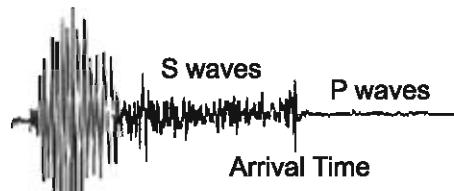
release of energy at the focus and move in all directions through the body of the earth. There are two types of body waves.

Primary waves or P-waves move faster and are the first to be recorded by the seismograph. It is similar to the sound waves and travel through gaseous, liquid and solid materials. The primary waves travel by the compression of earth materials forward and backward in its direction. It travels at a speed of 8 Km/sec.

Secondary waves or S-waves are slower than the P-waves. It can travel through solid materials. During the occurrence of secondary waves, particles oscillate in the direction of wave travel. It is similar to the movement of a rope shaken from side to side. It travels at a speed of 5 Km/sec.

Surface waves are the last to be recorded on the seismograph. These waves cause most of the damages on the surface. They are also known as L-waves. They travel at a speed of 4 Km/sec.

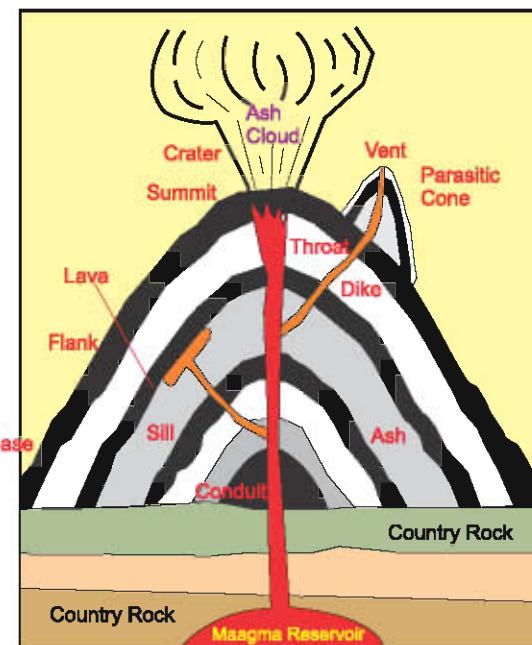
surface waves



Earthquake waves

Volcanoes

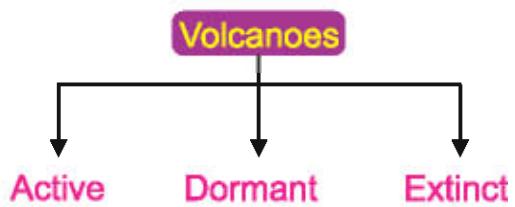
A volcano is a vent or an opening on the earth's crust, through which hot molten materials erupt from the interior. When the magma erupts out of the earth on to the surface, it is called "**Lava**". The eruption of materials from the interior of the earth's crust may occur with huge explosions or quiet in nature.



Cross section of a Volcano

Types of Volcanoes

Volcanoes can be classified into three types based on the frequency of eruption. They are:



Active Volcano

It erupts lava frequently. Most of the active volcanoes are formed along the mid-oceanic ridges. Mauna loa in Hawaii Island is the largest active volcano in the world. The Barren Island is the only active volcano in India.



Barren Island volcano

Do you know?

Northwestern part of the Deccan plateau of India has been made up of volcanic lava.



Volcano in Iceland

Dormant Volcanoes

They are also called **sleeping volcanoes**. These volcanoes have been active in the past, stopped ejecting lava now, but it can erupt at any time in the future. The Vesuvius of Italy and Mauna Kea in Hawaii are the best examples.



Vesuvius in Italy

Extinct Volcanoes

Extinct volcanoes are also called as dead volcanoes. They erupted in the past but they did not do so recently and in future it is expected there will not be any eruptions. Mt.Kilimajaro in Africa and Narcondam Island near the north-east of North Andaman Island of Indian territory are some examples of extinct volcanoes. The famous Tiruvannamalai hills of Tamil Nadu and Panaka hills of Andhra Pradesh are also considered as extinct volcanoes.



Norcondam Island in India

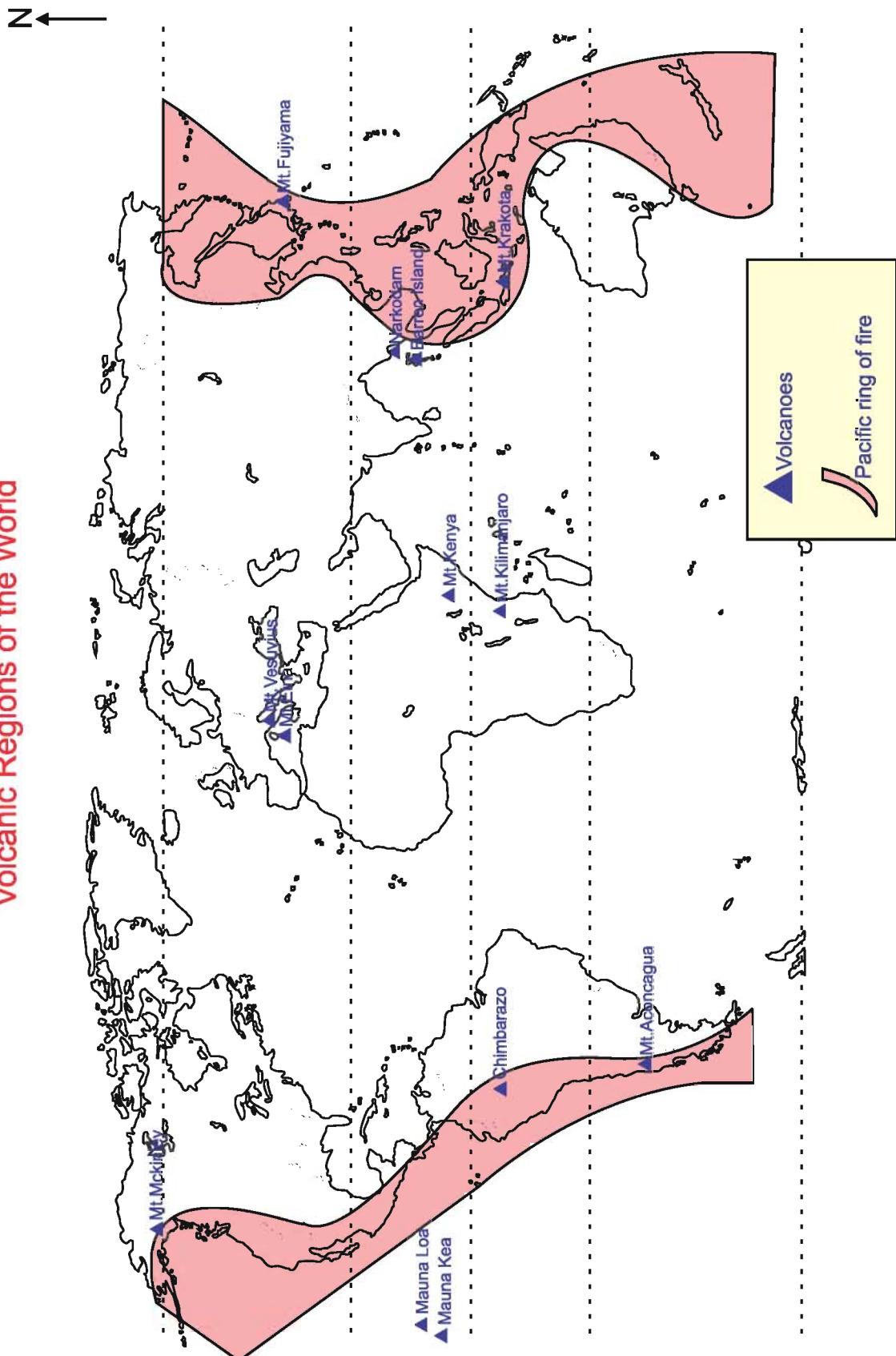
Do you know?

The crater of a volcano filled with water is known as Crater Lake.

Activity

On the map of world mark the Earthquake prone zones.

Volcanic Regions of the World



EXERCISE

I) Choose the correct answer for the following.

1. _____ is the only Planet has organisms in it.
a) Earth b) Venus c) Mars d) Jupiter
2. The Pangea is broken into _____ major plates.
a) 6 b) 7 c) 10 d) 12
3. The _____ of the Earth is not stable.
a) Core b) Nife c) Crust d) Mantle
4. Large scale vertical movements of the Earth Crust are called _____ movements.
a) Endogenic b) Exogenic c) Focus d) Denudation
5. The point of origin of the Earthquake is called _____.
a) Epicenter b) Focus c) Centre d) Seismic zone

II) Fill in the blanks.

6. The Continental Crust is composed of _____ layer.
7. The Sial layer is _____ on the Sima layer.
8. Large scale horizontal movements of the Earth Crust are called _____ movements.
9. _____ is also known as 'L'-waves.
10. A volcano is a _____ or an opening in the Earth Crust.

III) Match The Following.

- | | |
|--------------------|--------|
| 11. Mauna loa | Africa |
| 12. Vesuvius | India |
| 13. Mt Kilimanjaro | Hawai |
| 14. Fujiyama | Italy |
| 15. Norcondam | Japan |

IV) Answer the following questions shortly.

16. Name the types of layers of the Earth.
17. Write a short note on Pangea and Panthalasa.
18. Name the major plates of the World.
19. Name the forces which affect the earth movements.
20. What is meant by anticline and syncline?
21. What are the types of volcanoes?

V) Answer the following questions briefly.

22. Examine the layers of the Earth crust.
23. Describe the types of earthquake waves.
24. Draw a cross section of a Volcano and mark their parts.
25. Draw a cross section of layers of the Earth and name the layers.

2. Earth Surface: Changing face of Lithosphere

Look around your place. Do you have any mountains, hills and plateaus near your locality? Can you guess how are they formed? And will they remain the same features in future also? Do you find any changes taking place in them? Yes, there are some changes taking place, slowly.

Sometimes, we notice that some of the rocks are getting cracked or broken into pieces and we notice the steep slopes modified into gentle slopes or low lying areas are dumped with soil, sand and stones.

The climatic elements such as temperature, rainfall and frost and also the natural agents like rivers, winds, glaciers and sea waves are responsible for these changes. Changes happen not only in human life but also the surface of the earth is subjected to change. Let us study the changes taking place on the earth's surface, in detail.

Weathering

Weathering is the process of disintegration or decomposition of rocks. Weathering is a complex interaction of physical, chemical and biological processes that alter the rocks of the crust. Weathering can be classified into **physical** (or mechanical), **chemical** and **biological** weathering.

Physical (or Mechanical) Weathering

Physical or Mechanical weathering is the process that causes the disintegration of rocks into small fragments without chemical change. The primary process in physical weathering is abrasion. Physical weathering is done by the following process.

Thermal Stress

Rocks are made up of a combination of several minerals. The expansion and shrinking of each mineral due to changes in temperature vary from one another. The prolonged expansion and shrinking of rocks cause stress which may develop into breaking of rocks.

This process is called thermal stress weathering. It has two main types, such as, **thermal shock** and **thermal fatigue**. This type of weathering is common in the desert regions.

Frost Weathering

The mountainous areas experience frost conditions and they have this type weathering. Sometimes, the cracks found on the rocks are filled with water due to rain. It may freeze into ice during night due to very low temperature and melts during the day time. Since ice is a solid material, it creates more pressure in the cracks of the rocks and so the cracks develop further.

The continuous freezing and melting of water cause the rocks to break into pieces. This type of weathering is said to be '**Frost Weathering**'.



Frost Weathering

The surface pattern on this pedestal rock is honeycomb weathering, caused by salt crystallisation. This example is from Yehliu, Taiwan.

Salt Crystal Growth

Salt crystallization, otherwise known as **haloclasty**, causes disintegration of rocks when saline solutions seep into cracks and joints in the rocks and evaporate, leaving salt crystals behind.



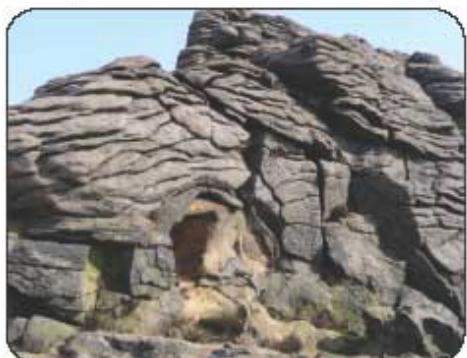
Salt Crystallisation- Taiwan

Activity

Visit nearby mountain areas to observe different weathering processes.

Chemical Weathering

Chemical weathering refers to decomposition of rocks or may be



Weathered Rocks

defined as the breaking of rocks due to the alterations made in the chemicals of the rocks. In this process of chemical weathering, oxidation and hydrolysis are the most common occurrences.

Dissolution

Rainfall becomes acidic if atmospheric carbon dioxide or sulphur dioxide or nitrogen oxide dissolves in the rainwater. When it occurs on a limestone or chalk region, the minerals are dissolved and result in the weathering to the rocks.

Do you know?

The Government of India banned the tanneries around Taj Mahal due to acid rain caused by these industries which affects the marble stones of this wonder of the World.

Mineral Hydration

Hydration is often referred to as absorption of water. In this kind of weathering, water ions attach

themselves to other minerals present in the rock. The attachment leads to an increase in the volume of minerals, thus creating mechanical pressure, which leads to weathering.

Hydrolysis

Hydrolysis is a process affecting silicate minerals. In such reactions, silicates are converted into clay minerals by the hydrogen and hydroxide ions.

Oxidation

This is the process where the metals present in the rock combine with oxygen and water to form oxides. These oxides make the rock weak and it consequently crumbles to form smaller rock particles. This process is better known as **rusting**.



Oxidation

Biological Weathering

The most common form of biological weathering is due to the



growth of plants and trees. development in various mines, quarries, constructions of buildings, on roads. They help in their disintegration. Human beings, plants and animals are also primarily responsible for biological weathering.

Running Water (river)

A river is a natural water course, usually freshwater, originating on highlands and flowing towards an ocean, a lake, a sea or another river. River is one of the most important agents of erosion. Rivers do the work of erosion, transportation and deposition during the development of their courses.

Erosional Process

The rivers do the work of erosion through different processes, namely:

Hydraulic Process

Hydraulic process is the breaking down of rocks under the impact of continuous flow of water.

Abrasion

This is the mechanical grinding of the river's traction load against the banks and bed of the river.

Attrition

This is the wear and tear of the transported materials themselves when they roll and collide into one another.

Solution

This is the chemical or solvent action of water on soluble / partly soluble rock.

Transportation Process

The transportation by the rivers is carried on by the following processes.

Traction

Boulders and gravels are dragged by the river along the bottom and along the sides of the river valley.

Saltation

Some particles having medium size texture jump up and down in the bottom of the valley and is known as saltation.

Suspension

Relatively smaller sizes of particles are transported and are suspended in the running water and this is called as suspension.

Solution

A few rocks, soluble in water like salts and limestone, are dissolved in the water.

Landforms Associated with Rivers

The Mountain Course

This course starts from a mountain range. Due to steep slope and high velocity of the river, the vertical corrosion action is predominant. The Gorges, Canyons and V-shaped valleys are formed.

River Capture

This is also known as the **river piracy or river beheading**. Its development is dependent on the different rates of headward erosion into a divide.



River Capture

Rapids, Cataracts and Waterfalls

Due to unequal resistance of hard and soft rocks traversed by the river,



Rapid

the outcrop of a band of hard rock may cause a jump or fall downstream, leading to the formation of **rapids**. Similar falls of greater dimension are also referred



Waterfalls

to as **cataracts**, when rivers plunge down in a sudden fall of some height, they are called **waterfalls**.

The Valley Course

Here, lateral corrosion tends to replace vertical corrosion. Active

erosion of the banks widens the V-shaped valley.

Meanders

A meander in general is a bend in a sinuous watercourse. A meander is formed when the moving water in a river erodes the outerbanks and widens its valley, over time. As the water flowing under gravity rarely flows straight for any long distance, a winding course quickly develops. The irregularities



Meander

of the ground force the river to swing in loops, forming meanders.

River Cliffs

When the river water enters the bend of the river, it dashes straight and erodes the outerbank into a steep river cliff.

Interlocking Spurs

As the stream flows on, the



Interlocking Spurs

meanders migrate progressively outward with the interlocking spurs alternating with the undercut slopes.

The Plain Course

Here, the work of a river is mainly deposition, building up beds and forming extensive floodplains. The volume of water is greatly swelled by the additional tributaries that join the main stream. Coarse materials are dropped and the finer silt is carried down towards the mouth of the river. Large sheets of materials are deposited on the level plain and may split the river into several complicated channels, so that it can be described as a braided stream. Some of the major features are:

Floodplain

River in its lower course has large quantity of sediments. During annual floods, these materials are spread over lowlying and adjacent areas. A layer of sediment is thus deposited during each flood, gradually building up a fertile floodplain. When the river flows normally, its bed is raised through



Flood Plain

the accumulation of deposits and material is also dropped on the sides forming raised banks called as Levees.

Ox-bow Lake

In the lower course of the river, a meander becomes very much more active. The outside bank or concave



Ox bow lake

bank is so rapidly eroded that the river becomes almost a complete circle. A time will come when the river cuts through the narrow neck of the loop, making an Ox-bow lake.

Delta

When the river reaches the sea, the fine materials it has not yet dropped are deposited at its mouth, forming a fan shaped alluvial



Delta

Do you know?

The Mississippi River is the largest river system in North America. About 3,730 km long, the river originates at Lake Itasca, Minnesota. It is the fourth longest river in the world and the tenth most powerful river in the world.

feature called **deltas**. Different types of delta are: **bird foot delta, arcuate delta, estuarine delta and cuspatate delta**.

Do you know?

The Ganges is the largest river of the Indian subcontinent, flowing east through the Gangetic Plain of Northern India into Bangladesh. The 2,510 km river rises in the western Himalayas in the Uttarakhand. The Ganges Basin drains 1,000,000 Km². and supports one of the world's highest densities of humans. The river has been declared as India's National River.

Waves

The most powerful agents of marine or coastal erosion are the waves. Along the coast, waves are agents of erosion, transport and deposition. Marine erosion operates in the following way.

Corrosion

Waves with rock debris charge against the base of the cliffs and wear them back by corrosion.

Attrition

The constantly moving waves hurl fragments into very small places.

Hydraulic Action

When waves are dashed against the coast, they may enter joints in the rocks. The air imprisoned inside the joints is immediately compressed. When the

waves retreat, the compressed air expands with explosive violence.

Solvent Action

Chemical changes in the rocks cause decomposition of rocks, by solution.

Features Associated with Coastal Erosion Bays

On exposed coasts, the continual action of waves on rocks of varying resistance causes the coastline to be eroded irregularly. This is more pronounced where alternate bands of granite, limestone, sand and clay occur together.

Cliffs

Generally, a very steep rock face adjoining the coast forms a cliff.



Cliff

Cave, Arch, Stack and Stump

Prolonged wave attack, on the base of a cliff, excavates holes called **caves**. When two caves approach one another, an **arch** is formed. Further erosion by waves will ultimately lead to the total collapse of the arch. The rest of the feature will remain as a pillar of rock known as **stack**. If it is further eroded, it then forms **stumps** which are only just visible above the sea level.



Cave and Stack



Arch



Stump

Features Associated with Coastal Deposition Beaches

A beach is sand deposition along the coast. It usually consists of loose particles of sand.

Do you know?

World's longest beach is the Miami in the USA followed by the Marina beach in Chennai.

Spits and Bars

The debris eroded by waves is continually moved by long shore drift and may be deposited where there is some sort of indentation. As more materials are added, they will pile up



Spit

into a ridge or embankment to form a **tongue** or **spit**, with one end attached to the land and the other end projecting into the sea. When a ridge of sand is formed across the mouth of a river or the entrance to a bay, it is called as a **bar**.



Bar

Glaciers

The ice flow is called a glacier. Glaciers are widespread in the area where temperature is below freezing point. Glaciers are found in every continent except Australia. In regions lying above the snowline, the accumulation of snow solidifies under its own pressure, which then moves slowly down the valley due

to gravity. Glacier plays a combined role of erosion, transportation and deposition throughout its course. They may be grouped as: (i) **Valley glaciers**, (ii) **Continental glaciers** and (iii) **Piedmont glaciers**.

Valley Glaciers

These glaciers are formed on the mountains. They are also called as **valley** or **alpine** glaciers.



Alpine Glacier

Continental Glaciers

The Polar Regions are vastly covered with ice. This extensive type of ice mass is called as continental glacier.

Piedmont Glaciers



Piedmont Glaciers

When ice is accumulated along the foothills is known as piedmont glaciers.

Work of Erosion

The following processes are involved in the erosional works of the glaciers.

Frost Wedging

Process of wearing and tearing of the rocks by frost is called **frost wedging**.

Plucking or Quarrying

The uprooting of rocks in the course of the glacier.

Abrasion

The glaciers rub their valleys with the help of plucked materials.



Cirque

Landforms Associated with Glaciers

Cirque

The arm shaped, chair like depression formed by plucking of glacier is known as **cirque**.

Aretes and Pyramidal Peaks

Between two cirques, a knife like elevated ridge is formed and is



Pyramidal Peaks

known as **aretes**. When three or more cirques cut back together, they will form a **pyramidal peak**.

U-Shaped Valley

A U-shaped valley is the shape left after a valley has been over



U-shaped valley

deepened by a glacier. The original V-shaped valley is deepened after the ice has eroded the sides and bottom of the valley.

Hanging Valley

The main valley is eroded much more rapidly than the tributary valley. After the ice has melted it looks like the tributary valley hangs above the main valley. Such tributary valleys are called **hanging valleys**.

The other important landforms formed due to glacial erosion are **Rocke Moutonnee, Crag and Tail, Boulder Clay or Glacial Till** and **Erratics**.



Hanging valley.

Deposition Moraines

Moraines are made up of pieces of rock, debris, boulders and clay at the glacial valleys. Further, they may be divided into **Terminal Moraines**, **Lateral Moraines** and **Medial Moraines**.

Drumlins

They are the deposits of clay and debris and resembles like a half buried egg.

The other depositional features are **Outwash Plains** and **Eskers**.

Activity

Discuss the reasons for the melting of glacial ice and why the sea level rises.

Wind

Wind is a predominant agent of denudation in arid and semi-arid regions, because of scarce rainfall and sparse vegetation.

Processes of Erosion

Erosional processes can be classified into three types, namely:

Deflation

The blowing wind carried away loose materials on the mantle from their original places.

Abrasion

The sand blasting of rock surfaces by winds when they throw sand particles against them is called **abrasion**.

Attrition

The mutual collision of wind borne particles further breaks by itself is described as **attrition**.

Process of Transportation

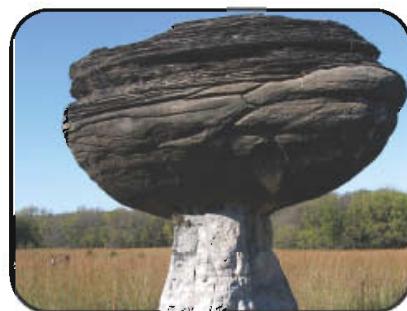
The transportation process is done in the following ways, namely: **Saltation** and **Suspension**.

Erosional Works Done by Winds

Through deflation and abrasion processes the wind forms different kinds of landforms, especially in a desert region. They are:

Pedestal Rock or Mushroom Rock

The sand particles carried by the winds strike rock pillars made up of hard and soft rocks. In cases the soft rocks are found at the bottom, they are eroded faster than the hard rocks found at the top. The prolonged erosion carves the pillar to resemble like a mushroom. They are also called **rock pedestals**.



Mushroom Rock

Zeugen

The sand and rocks are also shaped by the winds. Rocks can be rounded by winds and may also form strange shapes called **zeugen**.

Yardang

A **yardang** is a wind-abraded ridge found in a desert environment. Yardangs are wide, elongate features and, when viewed from above, resemble the hull of a boat.

Inselbergs

These are isolated residual hills rising abruptly from the level ground. They are characterised by their very steep slopes and rounded tops.

The other landforms of wind erosion are the **Masas**, **Buttes**, **Ventifacts**, **Dreikanter** and **Deflation Hallows**.

Landforms Associated with Wind Deposition

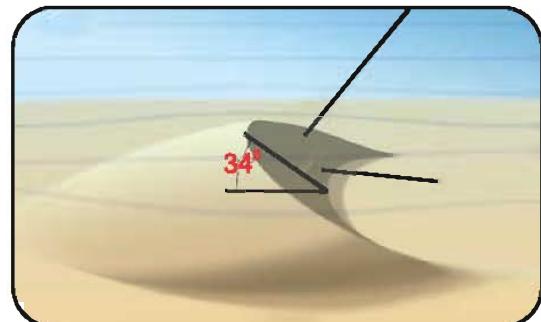
The following are some of the major features of wind deposition.

Barchan

These are crescent moon shaped dunes. They are moving dunes since they move steadily towards the prevailing wind direction. The windward side of the dune has steep slope and the leeward side has gentle slope.

Seif or Longitudinal Dunes

They are long, narrow ridges of sand and cover over a hundred



Barcham

miles, lying parallel to the direction of the prevailing winds.

Loess

The fine dust blown beyond the desert limits is deposited on neighbouring lands as loess. It is yellow, friable material and is usually very fertile.

EXERCISE

I) Choose the correct answer.

4. Pedestal rock is also called as _____.

 - a) Zeugen
 - b) Mushroom rock
 - c) Yardang
 - d) Barchans

5. Barchan is related to _____.

 - a) Depositional feature
 - b) Erosional feature
 - c) Transportational feature
 - d) Natural feature

II) Fill in the blanks.

1. Thermal stress is also known as _____.
 2. Two caves approach one another are called _____.
 3. The fan shaped alluvial feature formed by a river at its lower course is called as _____.
 4. Process of wearing and tearing of the rocks is called _____.
 5. Wind deposits the materials by _____ and _____.

III) Match the following.

- | | |
|-----------------------|-------------------------------|
| 1.Salt crystal growth | Plain course |
| 2.Ox-bow lakes | Glacial Deposition |
| 3.Spits | Wind deposition |
| 4.Moraines | Haloclasty |
| 5.Seifs | Depositional feature by waves |

IV) Answer briefly.

1. Write a brief note on weathering.
 2. Name the erosional landforms produced by a river.
 3. How are cirques formed?
 4. Give a brief note on yardang.
 5. What are longitudinal dunes?

V) Explain in detail.

1. Name the different types of weathering and explain in detail.
 2. Give a detailed account of different landforms associated with river courses.
 3. Write an essay on the erosional process of waves.
 4. Write an essay on the depositional landforms of glaciers.
 5. Describe about wind erosional features.

3. WEATHER AND CLIMATE

Weather and Climate are two terms which everyone uses in day today life. This is because our daily routine is based on the prevailing weather conditions. Human activity of any region is determined by weather and climate. For example, in the tropical regions, paddy is cultivated as a major crop whereas, in the temperate regions, wheat is cultivated as a major crop. We wear cotton clothes in summer and woollen clothes in winter. We all like to have ice-cream, buttermilk or cool drinks in summer and we prefer to have hot coffee or tea during winter and rainy days. Not only these, but also our food habits, customs, traditions and even most of our common celebrations and festivals are associated with weather and climate.

Activity

Find out the celebrations and festivals which are associated with weather and climate.

WEATHER

Weather refers to the physical state of the atmosphere within 24-hours, described by weather elements such as temperature, atmospheric pressure, humidity, rainfall, cloudiness, wind speed and wind direction. Differences in these can occur due to the angle of the sun at any particular spot, which vary by latitude from the tropics.

CLIMATE

The word climate is commonly defined as the weather averaged over a long period of time and over a large area. The standard averaging period is 30 years.

Do you know?

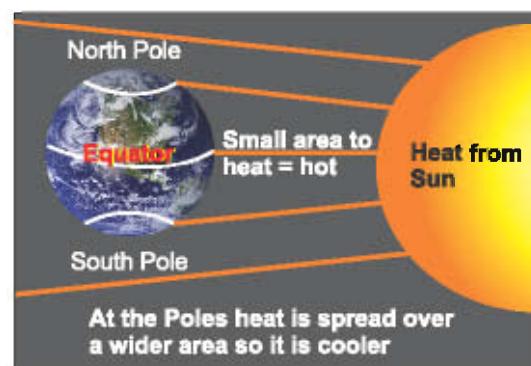
The word Climate is derived from the ancient Greek word "Klima" which means "inclination"

Factors determining Weather and Climate

The weather elements are modified by various factors. The following factors affect the climate of a place.

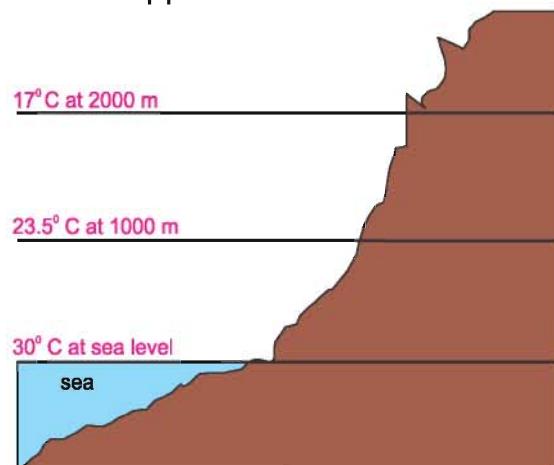
Latitude

The equator receives vertical sunrays which fall over a smaller area. In contrast, the polar regions receive slanting sunrays and they fall over a wider area. As a result of this, the places near the equator are hotter than the poles. For example, Madurai in Tamilnadu is hotter and Moscow in Russia is colder.



Altitude

Did you ever visit hill station? How did you feel the weather conditions? The weather and climate are modified by the mountains and hills. The places located on higher altitudes are always cooler than those on the plains. This is because the air becomes thinner and they absorb only less heat. For example, Ooty and Kodaikanal are cooler than Tiruchirappalli.



Do you know?

Temperature decreases at the rate of 6.5°C for every 1000 metres high on the Earth's surface.

Distance from the Sea

Activity

Ask your mother to keep two vessels, one with water and another empty on the burning stove. Then you observe which one gets heated up faster.

The empty vessel is compared with the land and the other one with the sea. The sea absorbs and retains heat for long duration like the

vessel with water. The coastal areas experience the cool, wet air from the sea throughout the year which modifies the weather along the coast to have uniform weather both in the winter and summer. This condition is said to be an equable climate or maritime climate.

Activity

Find out the weather differences between Mumbai and Delhi.

On the other hand, the land absorbs and loses heat quickly like the empty vessel. The interior land areas experience warm dry air. They are very hot in summer and very cold in winter. This condition is said to be extremes of climate or continental climate.

Ocean Currents

Activity

Look at a map of the world and locate the hot deserts. The ocean currents are one of the reasons for the origin and occurrence of hot deserts. Discuss, why is it so among your class.

Based on temperature the ocean currents are classified as **Warm Ocean Currents** and **Cold Ocean Currents**. Warm currents make coastal areas warm, wet and free from ice and cold currents make them cool, dry and to have icebergs.

Do you know?

The meeting places of warm and cold ocean currents are the areas of major fishing grounds because the conditions are suitable for the growth of the fish food, plankton. At that same time, these areas are dangerous for shipping as they are suitable for the formation of dense fog and low clouds.

Direction of prevailing winds

The winds that blow from the sea contain more moisture so they are cool and wet. Example-Southwest Monsoon. On the other hand, the winds that blow from the land areas are warm and dry. Example-Northeast Monsoon. Guess and which one can cause rainfall and why.

El Nino Effect

In our country, we hear the term "Monsoon Failure" very often. What does it mean? Why does it happen? In spite of the various reasons for the failures, we need to analyse El Nino as one of the reasons for the same. El Nino means "The Christ Child," in Spanish. It is formed around Christmas time and continues for a few months. During this period, once in five or six years, the temperature rises rapidly and a low pressure system is formed along the coast of Peru and Ecuador. It attracts winds from all directions. So, the trade winds become very weak over the Pacific Ocean and Indian Ocean and these winds are deflected

causing a prolonged dry period in India. The other effects of El Nino are experienced in other areas too. They are, Bush fire and drought in Australia, famine in Indonesia and forest fires in Brazil and Southeast Asia.

Human influence

Industrial revolution brought changes in our lifestyle. As a result of this, forest areas were cleared and now we have many types of transport facilities, concrete buildings and many industries. All these developments made our life easy and comfortable. On the other hand, their effects are felt in the name of Global warming, Green house effect and pollution, which have increased the amount of CO₂. Creation of an urban heat island is also the result of human influence. The urban heat island occurs in metropolitan areas which are significantly warmer than their surrounding areas.

TEMPERATURE

Do you know?

Terrestrial radiation is referred to as the heat energy emitted from the Earth

The sun is the source of light and heat to the earth. Earth receives only a small amount of solar radiation which takes eight minutes to reach the earth's surface. Incoming solar radiation is called insolation.

Do you know?

The differences between the maximum and minimum temperatures of a day is called the diurnal range of temperature.

Heat energy from solar radiation is received by Earth through three mechanisms. They are: i) **radiation in the atmosphere** ii) **Conduction over land** and iii) **Convection** in the water bodies. The Earth's atmosphere is heated more by terrestrial radiation than by the insolation.

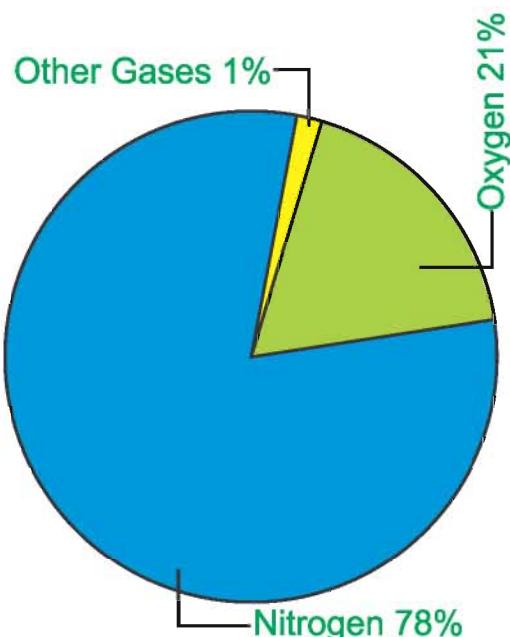
Do you know?

The difference between the hottest and coldest months of the year is known as the annual range of temperature.

Earth's atmosphere

The atmosphere of the Earth is surrounded by gases which are retained by Earth's gravity. Earth's atmosphere is made up of a combination of gases. The major components of air are nitrogen and oxygen. The Argon, Neon, Helium, Krypton, Carbon di-oxide, Ozone and so on are the other gases found in little quantities. Apart from these gases the water vapour and dust particles present in the atmosphere are responsible for weather changes.

The presence of all these gases varies with quantity in the atmosphere according to heights. The air is dense near the surface and becomes thinner and thinner with increasing height. Based on the



Components of Air

characteristics of the atmosphere, it is divided into four major layers, as troposphere, stratosphere, ionosphere and exosphere.

Troposphere

Troposphere begins at the surface of the earth and extends up to 8 km at the poles and 18 km at the equator. This layer is known for all kinds of weather changes such as temperature, pressure, winds, clouds formation and rainfall. In this layer alone, the temperature decreases with increasing altitude. The **tropopause** is a thin layer lies between the troposphere and the stratosphere.

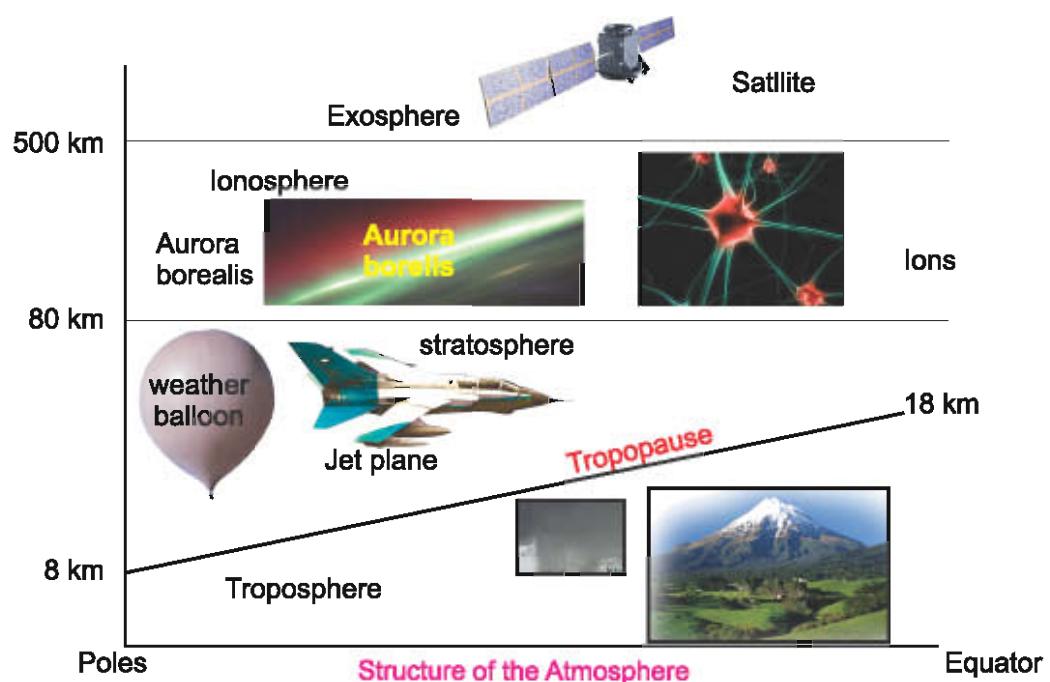
Do you know?

Meteorology is the scientific study of the atmosphere, focusing on weather processes and short term and it is the study of lower layer of the atmosphere.

Stratosphere

Stratosphere extends approximately for about 80 km. Temperature increases with height. This is the layer where most jet planes fly. The top edge of the stratosphere is rich in ozone. They captures the ultraviolet rays of the sun and takes the harmful effects out. Since unfiltered radiation from

the sun can destroy all animal tissue, Ozone is very important to all living things on earth. This zone is also called **isothermal layer** and **ozonosphere**. After the stratosphere, there is again a buffer layer called the **stratopause**.



Ionosphere

Ionosphere stretches from 80km to 500km. It is called ionosphere because, in this part of the atmosphere, the sun's radiation is ionized. It reflects the radio waves back to the earth's surface which are useful for modern communications. The colorful displays of auroras are called the **northern lights** or **aurora borealis** in the Northern Hemisphere, the **southern lights** or **Aurora Australis** in the Southern Hemisphere.

Do you know?

Aerology is a branch of meteorology involves observation and research of the atmosphere using air balloons, radiosondes and airplanes. Aerology concerns the observation and research of ozone, radioactivity and some components of long wave radiation. Hence, it is the study of the upper layer of the atmosphere.

Exosphere

The exosphere is the uppermost layer of the atmosphere. The main

gases within the Earth's exosphere are the lightest gases, mainly hydrogen and helium. The exosphere is sometimes considered a part of outer space.

You have already learnt that the temperature reduces with increasing latitude. Based on this, the Earth is divided into TORRID, TEMPERATE and FRIGID zones.

Do you know?

The instrument used to measure the temperature is called the thermometer. The imaginary lines join different places with same temperature on the map is called Isotherms.

TORRID ZONE

The places between the Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) and the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) receive vertical sunrays all round the year so they are hotter than the other zones.

Activity

Do you know of Summer Solstice and Winter Solstice? Find out when they occur and their features.

Temperate Zone

The places between the Tropic of cancer ($23\frac{1}{2}^{\circ}$ N) and the Arctic Circle ($66\frac{1}{2}^{\circ}$ N) are known as the Northern Temperate Zone. Similarly, the places between the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) and the Antarctic Circle ($66\frac{1}{2}^{\circ}$ S) are known as the Southern Temperate Zone. These places always receive slanting sunrays so that

temperature is lower than that in the Torrid Zone.

FRIGID ZONE

The places between the Arctic Circle ($66\frac{1}{2}^{\circ}$ N) and the North Pole (90°N), similarly the Antarctic Circle ($66\frac{1}{2}^{\circ}$ S) and the South Pole (90°S) are called the Frigid Zones. They always receive the slanting sunrays so this zone is cooler than other two zones.

Do you know?

There are three scales to measure temperature. They are :
1) Celsius 2) Fahrenheit and
3) Kelvin

Air pressure is defined as the pressure thrust by the weight of the air on the earth's surface. The average air pressure at the sea level is 1,013 millibars. The horizontal distribution of the air pressure is highly influenced by the temperature of a given place.

Do you know?

Barometer is the instrument used to measure the atmospheric pressure.

The atmospheric pressure is always inversely related to the atmospheric temperature. The high pressure belts are formed in the areas of low temperature.

Equatorial Low Pressure Belt

This belt lies between 5°N and 5°S. The sunrays are vertical over here throughout the year. Since temperature is high, the air becomes lighter and ascending. It causes low

Heat Zones of the World

N

$66\frac{1}{2}^{\circ}\text{N}$

North Frigid Zone

Arctic Circle

North Temperate Zone

Tropic of Cancer

$23\frac{1}{2}^{\circ}\text{N}$

Torrid Zone

Equator

0°

Tropic of Capricorn

$23\frac{1}{2}^{\circ}\text{S}$

South Temperate Zone

Antarctic Circle

$66\frac{1}{2}^{\circ}\text{S}$

South Frigid Zone

pressure conditions. This zone is otherwise called as “a belt of Calm” or “Doldrums”.

Subtropical High Pressure Belt

This zone lies between 25° and 35° latitudes in both the hemispheres. The ascended air from the tropics is getting cooled due to low temperature so the air descends at about 30° - 35° latitudes.

In ancient times, the merchants carrying horses in their ships had to throw some of them out while passing through this zone of the calm in order to lighten the ship. Hence, this zone is called “horse latitudes”.

Do you know?

The imaginary lines joining different places with the same pressure on a map are known as isobars.

Subpolar Low Pressure Belt

This belt lies between 60° - 65° latitudes in both the hemispheres and the air spreads outward from this zone due to the rotation of the earth so the low pressure is produced.

Polar High Pressure Belt

This pressure belt persists at the poles. The sunrays fall very slanting at the poles and as a result the temperature is low and heavy air accumulates and produces high pressure.

WINDS

Do you know?

Anemometer is an instrument used to measure the velocity and direction of wind. Wind vane is used to indicate the direction of the wind.

The air in horizontal motion is called wind. The air generally moves from high pressure area to the low pressure area. The speed of the wind is generally mentioned in kilometers or miles at land and in knots at sea.

Do you know?

All moving objects including winds and ocean currents tend to get deflected towards right in the Northern hemisphere and left in the Southern hemisphere due to the rotation of the earth. This changeless principle is called the Ferial's Law or Coriolis force.

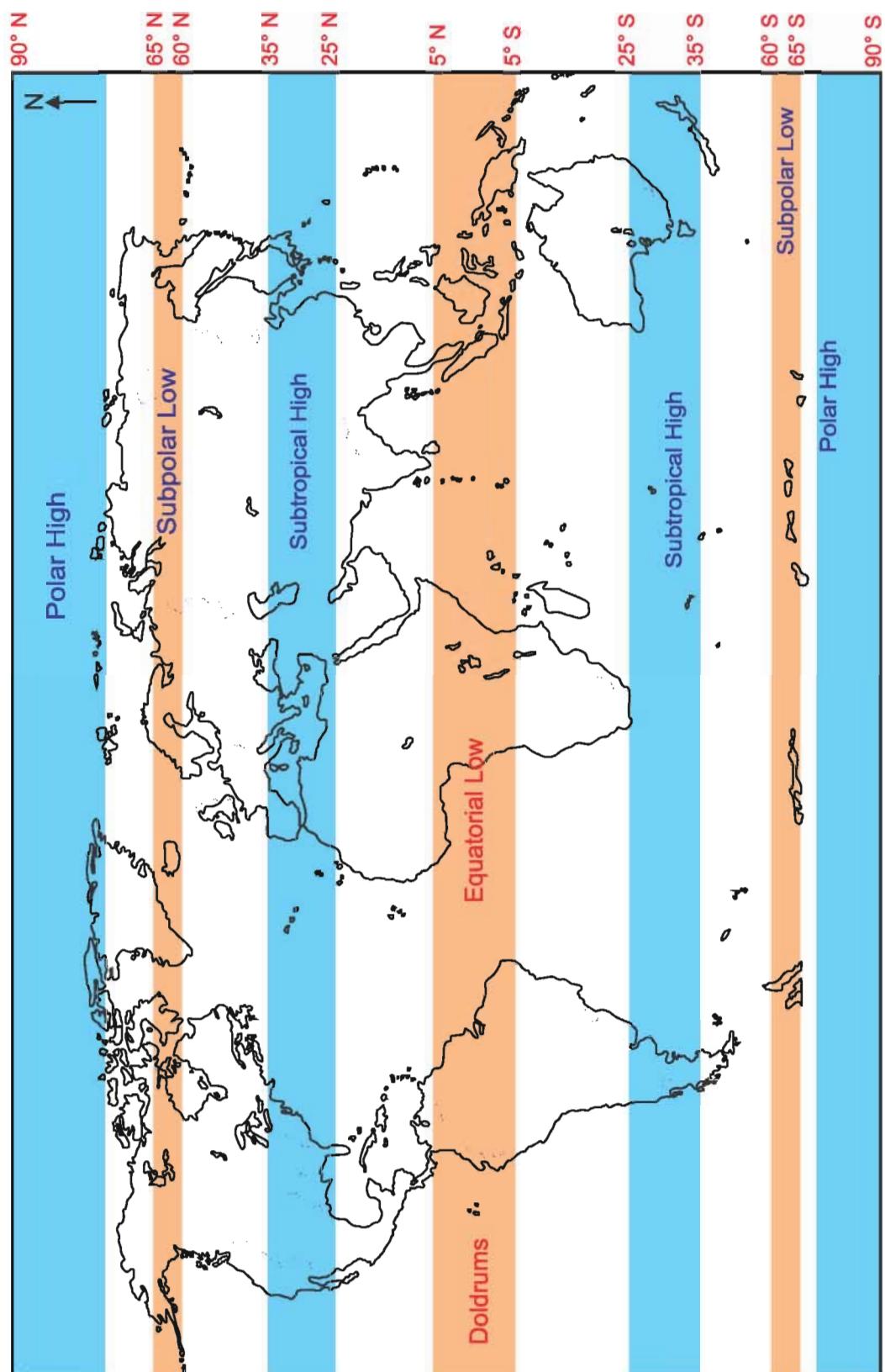
The Classification of Winds

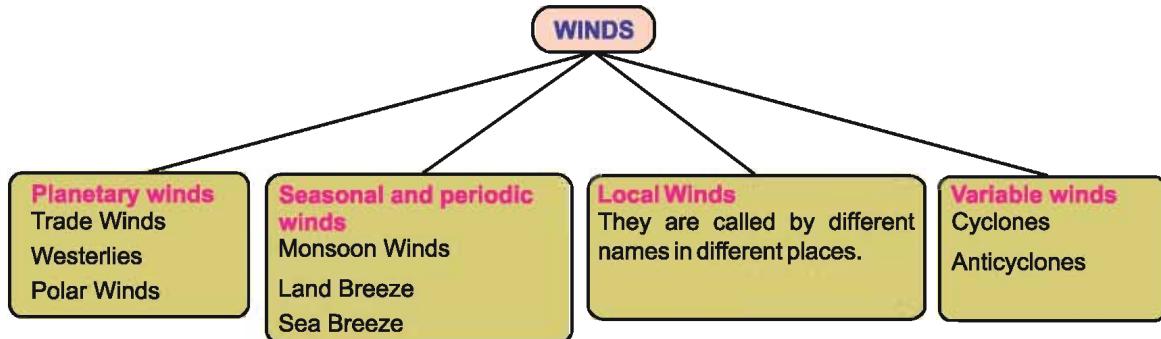
The winds are classified on the basis of the duration of winds and place of origin. They are classified into the following:

Planetary Winds

The winds that blow from a particular direction throughout the year are known as the **Planetary winds**. The major trade winds are given below.

Major Pressure belts of the World





The trade winds blow within the tropics, as *Southeast trades and Northeast trades*. They are called so because once it was favourable for sailors. They are regular and constant especially over the sea. These winds are getting deflected due to Ferial's law.

The Westerlies blow from the subtropical high pressure to the sub polar low pressure in both the hemispheres. In the northern hemisphere, they blow as south westerlies and in the south it blows as the north westerlies. These winds blow along the Earth's rotation from west to east.

The Polar winds blow as easterlies from polar high pressure to the subpolar low pressure. They are bitterly cold winds and they penetrate into many parts of the interior areas. Example, USA but in India they are blocked by the Himalayas.

Seasonal and periodic winds

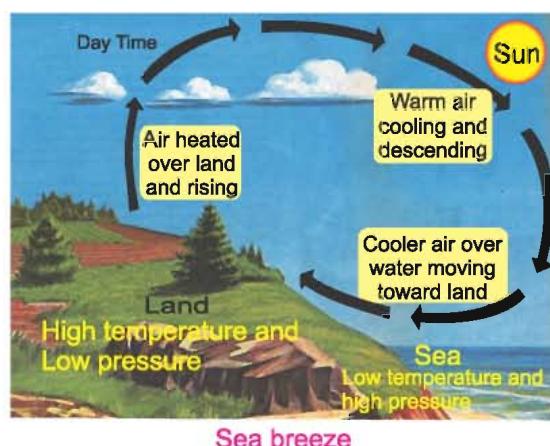
These winds are mainly caused due to the differences in heating and cooling of the surface of the earth. These winds blow only at specific time.

Monsoon winds

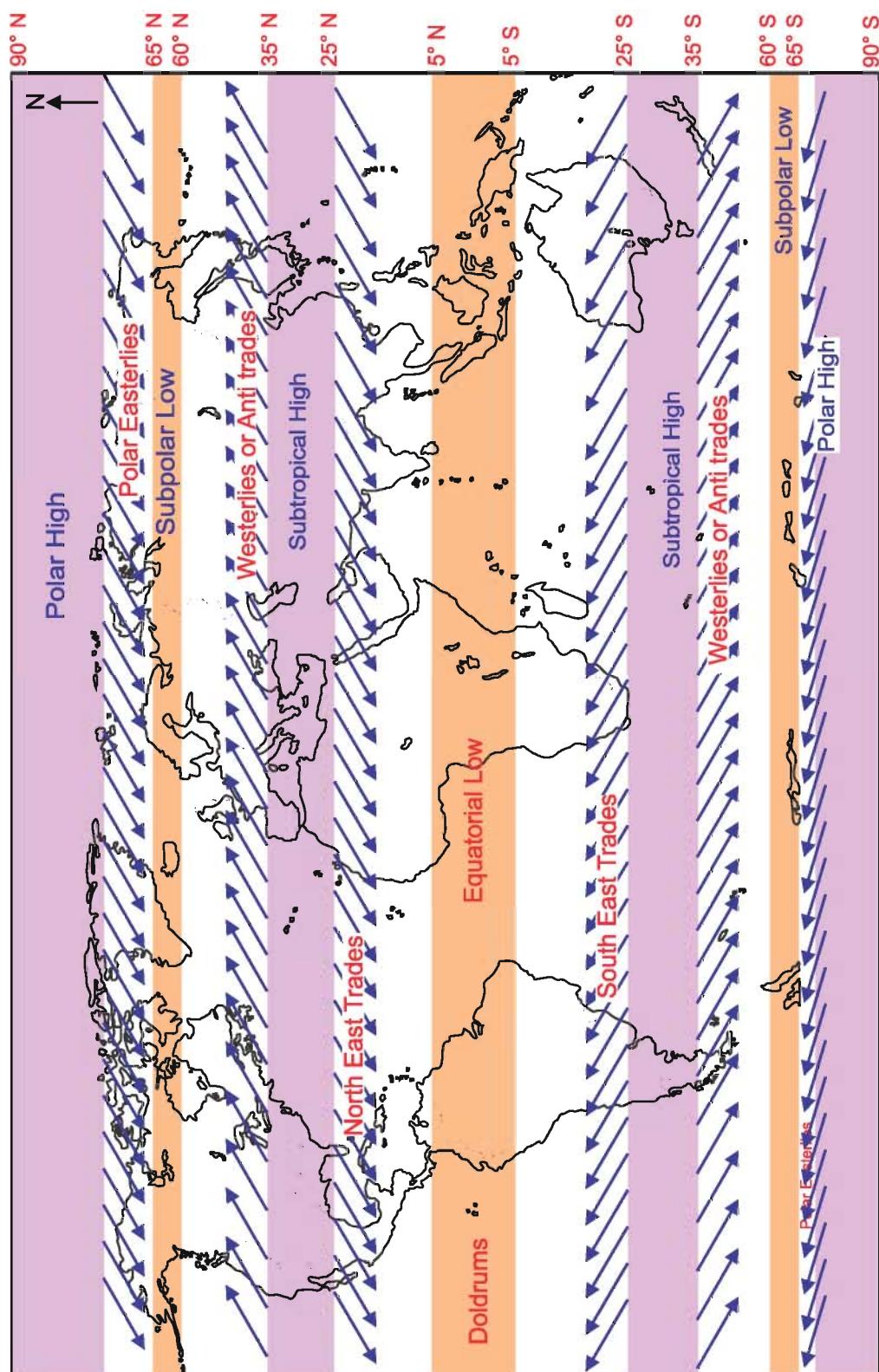
The monsoon is derived from Arabic word "**Mausim**", which means Seasons. The monsoon winds are further divided into Southwest Monsoon and Northeast Monsoon. The Southwest Monsoon winds blow from the south Indian Ocean and South Pacific Ocean towards Asia whereas the Northeast Monsoon winds blow from the Asian high pressure areas to the Indian Ocean and Pacific Ocean. The details of these winds will be given in the following classes.

Sea breeze

During the day time, the land becomes warmer than the adjoining water bodies. As a result, a low pressure on the land and a high



Planetary Winds of the World



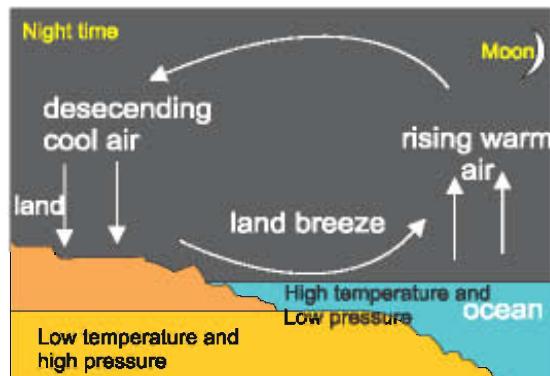
pressure on the water body is formed; this leads to the cool wet breeze from the sea blow towards land in the late evening.

Activity

Find out why the people along the coastal area go to the beaches in the evening during summer.

LAND BREEZE

During the night time the land becomes cooler than the adjoining water bodies. So that there is a high



pressure on the land and the low pressure on the water body is formed followed by that the cool dry breeze from the land blow towards the sea in the early morning.

Activity

How does land breeze help fishermen to go for fishing?

Variable winds

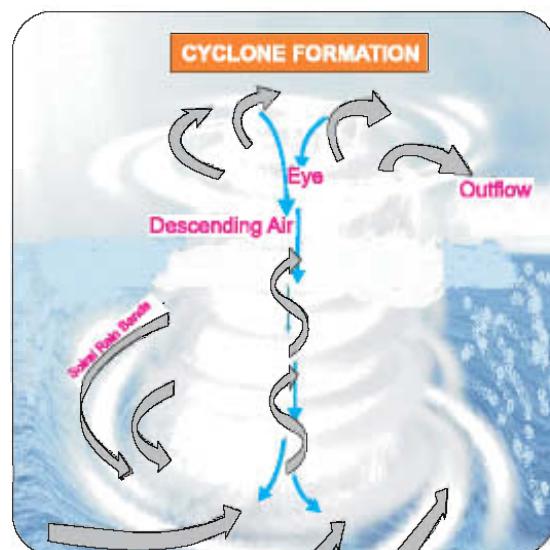
The variable winds have no definite location or direction. These winds are getting fluctuated by means of its direction and speed.

Cyclones

The cyclones are the centres of

a low pressure system. They attract winds from all directions.

Moreover, they are associated with heavy rain and high speed winds.



Cyclone formation

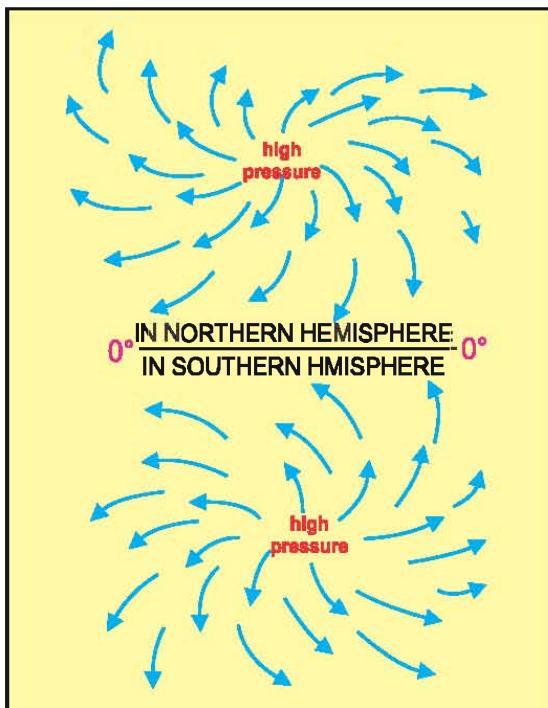


Eye of the cyclone

The centre of the cyclone is the vacuum area which is termed as "the eye of the cyclone". According to its origin and its location it is called by different names such as cyclones, typhoons and hurricanes. They move anti-clock wise in the northern hemisphere and clock wise in the southern hemisphere. When a low pressure system is formed over water bodies, it is violent and causes rainfall.

Anticyclones

The anticyclones are the centres of the high pressure systems from which the wind



movement takes place outward. These winds are associated with clear weather and no rainfall. The anti-cyclones move clockwise in the northern hemisphere and anticlockwise in the southern hemisphere. They are mostly formed over the land so they are dry.

Local winds

These winds blow with some special characteristics over a small area and last for a short period. All these winds are mostly seasonal and given local names. Some local names and the areas related to that are given below.

WARM LOCAL LOCATION

WINDS

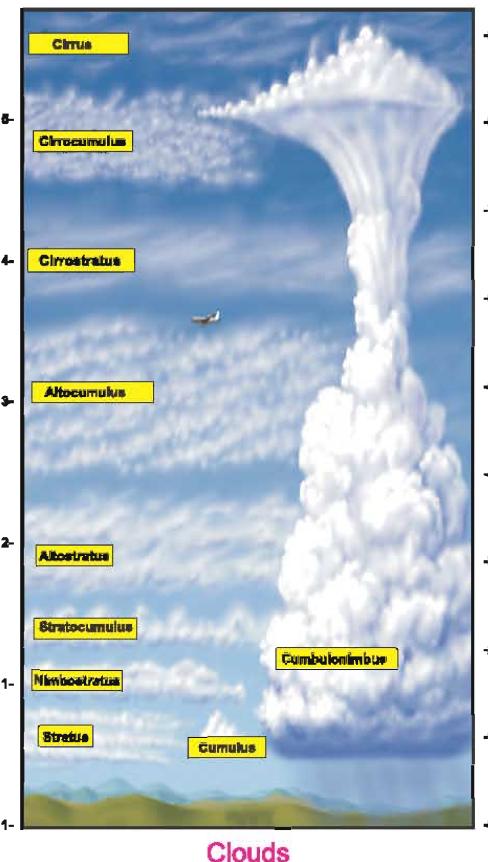
Briskfielder	Australia
Chinook	USA
Fohn	Northern Italy
Sirocco	Sahara desert
Loo	Thar desert in India

COOL LOCAL LOCATION

WIND

Harmattan	Central Africa
Mistral	Alps region
Purga	Russia
Norte	Gulf of Mexico
Pampero	Argentina

CLOUDS





Cirrus clouds



Stratus clouds



Cumulus clouds



Nimbus clouds

A cloud can be defined as a mass of small water dropslets or ice crystals formed by the condensation of water vapour in the atmosphere. Clouds are formed by very minute suspended water particles present in the atmosphere. According to the shape and altitude, the clouds are classified as Cirrus, Stratus, Cumulus and Nimbus.

Cirrus clouds are high clouds because they are formed above 5,000 metres above sea level. They are naturally dry, consists of ice crystals and never bring rainfall. These clouds are long, fibrous, and curved, with no tufts or curls at the ends.

Stratus clouds are low clouds because they are formed within 2,000 metres above the sea level.

They have uniform base and look like a dark gray sheet. They may cause snow and drizzle.

Cumulus clouds are often described as "puffy" or "cotton-like" in appearance which are medium clouds. Cumulus clouds may appear alone, in lines or in clusters. These clouds are associated with rainfall, lightning and thunder. They are otherwise called as thunder clouds. They extend up to 12,000 metres high above the sea level.

Nimbus clouds are vertical clouds. They are thick dark or gray or black clouds. They cause continuous rainfall so they are known as storm or rain clouds.

Rainfall

Rainfall may be defined as the water drops that fall from the clouds to the earth. The mechanism of rainfall begins from evaporation then it continues as condensation at considerable heights. Later on, the clouds are formed which may cause rainfall. The rainfall types are classified into three as: Convectional, Relief or Orographical and cyclonic.

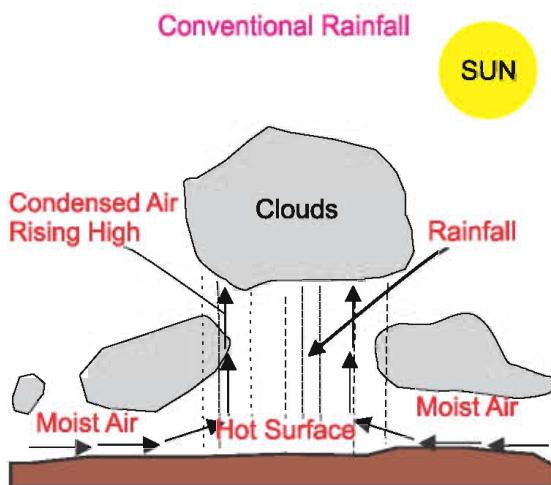
Do you know?

Hygrometer is an instrument used to measure rainfall. The imaginary lines join different places having same amount of rainfall on a map are known as isohyets.

Convectional rainfall

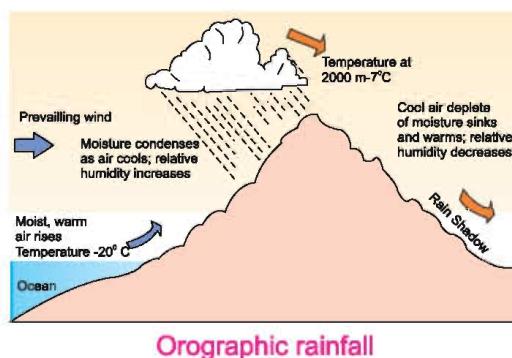
Since the equatorial regions receive vertical sunrays they become hot, so that the hot air

expands and rises vertically upwards. As the temperature reduces gradually, the air gets cooled and forms clouds. When the clouds reach the dew point, they cause rainfall. This is known as the convectional rainfall. This type of rainfall is accompanied with thunder and lightning. Usually, it occurs around 4'O clock, hence, it is called 4'O clock rainfall.



Relief or Orographic rainfall

The winds that blow from the sea contain a lot of moisture. When the moisture ladden winds from sea climbs the hills across the paths, the winds become cool causing heavy rainfall on the windward side. Then these winds descend on the leeward side of the mountains and cause low to no rainfall.

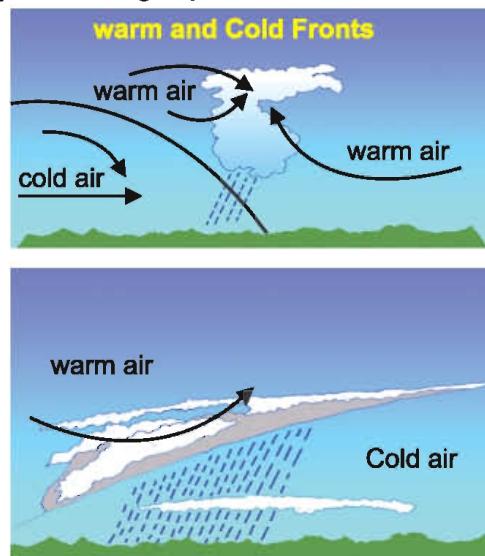


Do you know?

Though Kerala and Tamil Nadu lie on the same latitudes Kerala receives more rainfall because the state of Kerala lies on the windward side but Tamil Nadu lies on the leeward side of the Western Ghats.

Cyclonic rainfall

The warm air from the hot area is further heated and moves upward. Hence, a low pressure area is developed and attracts air from the adjacent high pressure areas.



Cyclonic rainfall

Due to Earth's rotation, the wind gets deflected and a circular motion of winds develop. The air rises upward in the form of a funnel. The rising air gets cooled and condensation takes place. This brings heavy rainfall in the low pressure centres. Example during October, November and December, the Northeast Monsoon season period, there are a number of cyclones caused along the coast of Tamil Nadu, Andhra Pradesh and Orissa.

Lightning

Lightning can be defined as the atmospheric discharge of electricity. It is accompanied by thunder. It travels at a speed of 96,560 miles per second.



Lightning

Do you know?

The study or the science of lightning is called Fulminology. The person who studies lightning is referred to as a Fulminologist.

There are 16 million lightnings every year. Generally, lightning is associated with convectional rainfall, cyclonic rainfall and also clouds formed from volcanic eruption. Lightning is formed by the meeting of the positive and negative charges in the clouds containing ice. Researchers are hoping to generate electricity from lightning.

Do you know?

Find the reason for the cancellation of 23,000 aircrafts at the time of Icelandic volcanic eruption on April 2010.

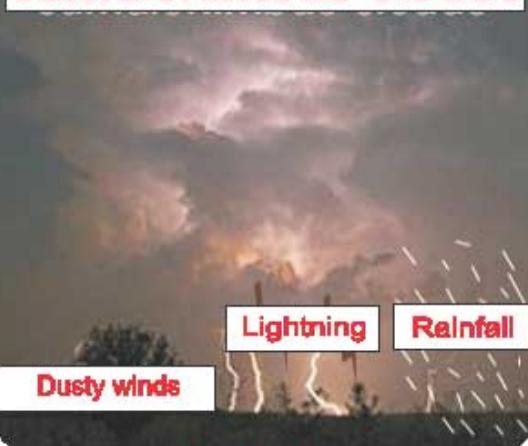
Thunderstorm

Thunderstorms are produced by cumulonimbus clouds. They are usually of short duration. They are accompanied by lightning, thunder, strong wind gusts, heavy rain and sometimes hail. The presence of warm and humid air in the lower layers of the atmosphere, atmospheric instability and intense convective activity are the requirements for its origin.

Since the thunderstorms are accompanied by many weather elements Meteorologists referred to these as weather factories. The formation of the thunderstorms ranges from 4 to 20 km.

In the tropical regions, they occur on the land in the rainy season usually in the afternoon or evening. But in the oceans, they occur during night. In the regions with a monsoon type of climate, they occur in the beginning and at the end of the summer monsoon.

cumulonimbus clouds



Thunderstorm

EXERCISE

I) Fill in the Blanks.

1. The Greek word 'Kilma' refers to _____.
2. The temperature on the earth's surface decrease at the rate of _____ for every 1000 metres.
3. El Nino means _____ in Spanish.
4. The _____ is a metropolitan area which is significantly warmer than its surrounding areas.
5. The _____ is the boundary between the troposphere and stratosphere.
6. The Equatorial low-pressure belt is called as _____.
7. The air in horizontal motion is called _____.
8. The name of the local wind which blows over Thar desert in India is _____.
9. The study on the science of lightning is called _____.
10. Thunderstorms are produced by _____ clouds.

II) Choose the correct Answer.

1. In the tropical regions, _____ is a major crop.
a) Paddy b) Wheat c) Tea d) Barley
2. During El Nino period the temperature rises rapidly once in three to eight years along the coast of _____.
a) Peru and Ecuador b) Spain and France c) India and Pakistan
d) China and Japan
3. The difference between maximum and minimum temperature of the day is called _____.
a) Terrestrial radiation b) Diurnal range of temperature
c) Annual range of temperature d) Isolation
4. _____ is an instrument used to measure the atmospheric pressure.
a) Thermometer b) Hygrometer c) Barometer d) Wind vane
5. Sub tropical high-pressure belt is called _____.
a) Doldrums b) Horse latitudes c) Coriolis forced) Belt of calm
6. In _____ layer, the sun's rays are ionized.
a) Troposphere b) Stratosphere c) Ionosphere
d) Exosphere

7. _____ clouds are associated with rainfall, thunder and lightning.
a) Cirrus b) Stratus c) Cumulus d) Nimbus
8. _____ type of rainfall is also called 4'o clock rainfall.
a) Convectional b) Orographic c) Cyclonic d) Monsoon
9. The average air pressure at the sea level is _____ millibars.
a) 1008 b) 1020 c) 1033 d) 1013
10. The _____ clouds are vertical clouds.
a) Cirrus b) Stratus c) Cumulus d) Nimbus

III) Match the following.

- | | |
|-----------------------|---|
| 1) Global Warming | - Vacuum |
| 2) Thermometer | - Human influence |
| 3) Anemometer | - Weather factory |
| 4) Eye of the Cyclone | - Instrument showing velocity and direction of wind |
| 5) Thunder storms | - Instrument measuring temperature |

IV) Write short answer for the following.

1. Differentiate weather and climate.
2. What are the advantages and disadvantages of meeting warm and cold ocean currents. ?
3. List the mechanisms of heat energy from the solar radiation received by the earth.
4. What are the scales to measure temperature?
5. Differentiate Isobars and Isohyets.
6. Define Ferra's law.
7. What are planetary winds?
8. What is lightning? How are they formed?
9. What is weather factory?
10. Differentiate equable and extremes of climate.

V) Brief Answers.

1. What are the factors determining weather and climate? Explain El Nino effect and Human influences.
2. Explain the heat zones of the earth with neat diagrams.
3. What are land and sea breeze? Explain with diagrams.
4. What are the types of rainfall? Explain with diagrams.
5. Write a note on thunderstorms.
6. What are clouds? Describes the types of clouds?
7. What are the layers of atmosphere? Discuss with a neat diagram.

4. DISASTER AND DISASTER MANAGEMENT

In recent times, the available modern communication facilities helps us to know and understand the happenings in and around us, within a short time. Some impacts make us feel for worry about suffer and sympathize with such impacts. Such events may be due to loss of life and property on a large scale. Any impact that negatively affects society or community or environment is known as the disaster.

The definition of the United Nations is: "A serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources"

Of course, there is no creation without any destruction but overexploitation of resources are unbearable. Ultimately, it may lead us to face the consequences such as floods, droughts, landslides, soil erosion, global warming, cyclones and also earthquakes.

When these events cause heavy damage to life and property, it may be called as '**Disaster**'. Since, we are also responsible for the occurrence of disaster, it is our duty

to learn the sustainable use of resources to overcome the adverse effects of the various disasters.

Hazard is an exposure to risk whereas disaster is a threat to life and properties of community. Cyclone is a hazard when the same cause's loss of life and property it becomes a disaster.

The disasters are broadly classified into Natural and Man-made. The natural disasters occur due to the natural forces whereas the man-made disasters occur due to human negligence, carelessness and ignorance.

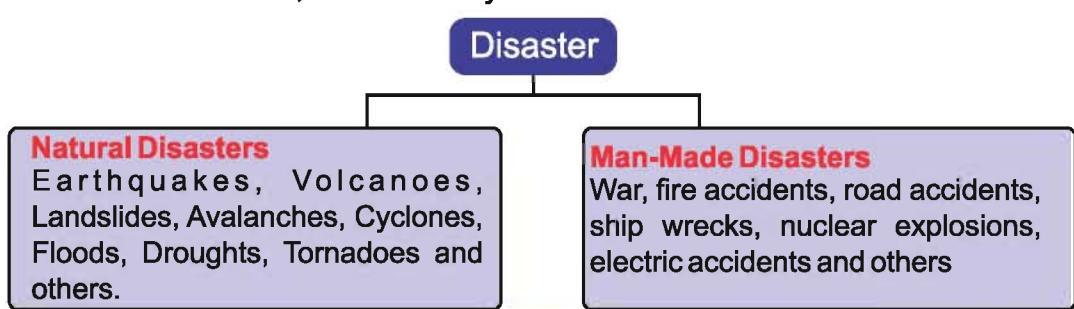
Mitigation

It means 'to make less severe'. Therefore, it can be defined as 'taking action to reduce the effects of a hazard'.

Earthquake

As we know, the trembling of the earth's crust is known as earthquake.

The movements of the tectonic plates, volcanic eruptions, mass wasting, landslides, and surface fault line are the reasons for earthquake's occurrence.



Earthquakes may cause multiple fires, trigger floods through failure of dams and landslides. It can change the river course.

The vibration causes damage and collapses structures. Tidal waves and tsunamis are also caused. It may cause breakdown in sanitary conditions, water supply, electricity, failure of all transport system. Apart from all these earthquake results in loss of life.

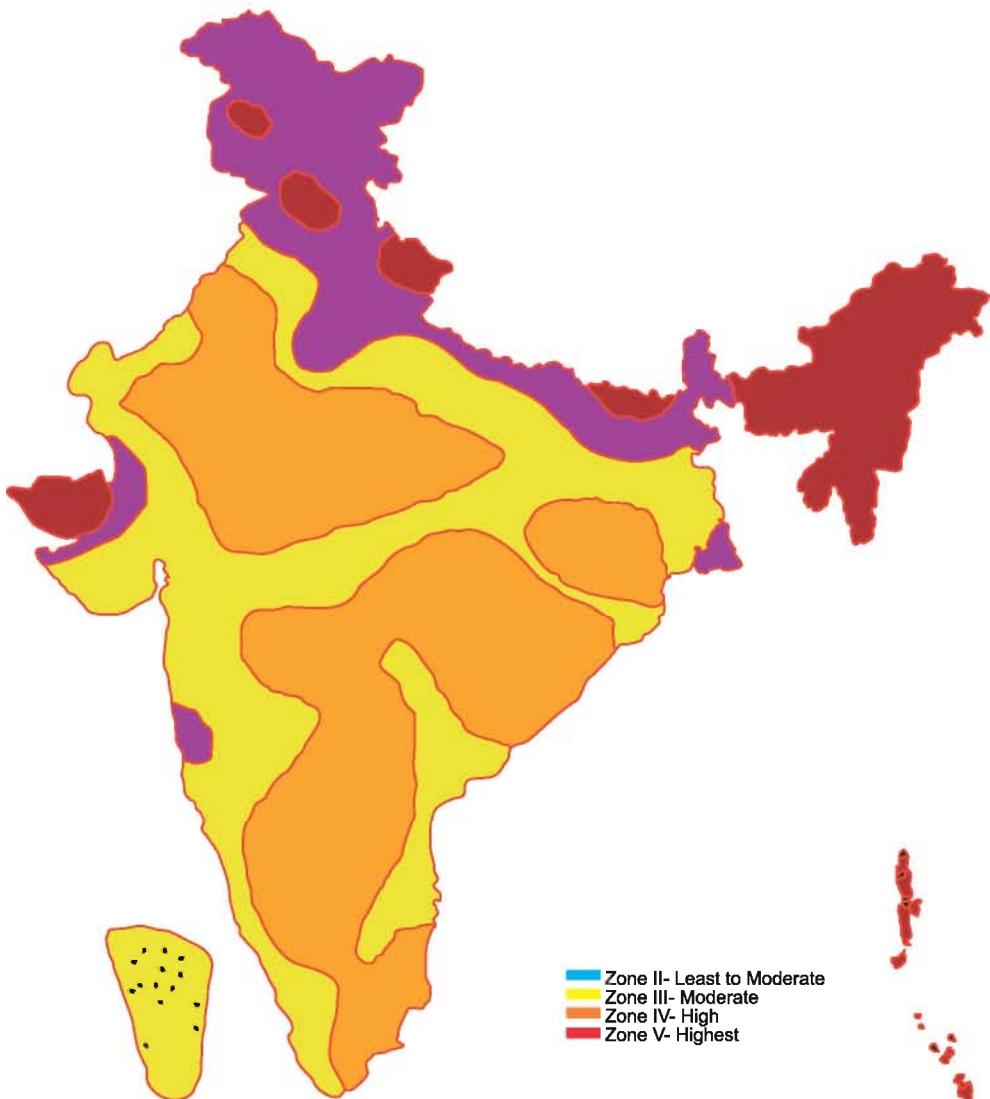
India is divided into four seismic zones. They are listed in the following table:

Sesmic Zones	Regions	Types
V	Kashmir, Punjab, Western and Central Himalayas, Northeast Indian Region and Rann of Kutch.	Very High Damage Risk Zone.
IV	Indo-Gangetic basin, Delhi, Jammu and Bihar.	High Damage Risk Zone.
III	Andaman and Nicobar Islands, Western Himalayas.	Moderate Damage Risk Zone.
II	Deccan Plateau, Tamilnadu.	Low Damage Risk Zone.



Fig-1 Multi storey Building Damaged by Earthquake

Seismic Zone of India



Mitigation

The most important thing to do during an earthquake is to be calm. If you are inside a building, stand at the door way or crouch under a desk or table, away from windows or glass fixtures.

If you are outdoor, stay away from objects such us electrical poles, buildings, trees, telephone and electric wires. If you are an automobile drive away from under passes or over passes and stop at a safest places possible.

Encouraging the people to build earthquake prone houses.

People living in the multistoried buildings should never use the lift to come out of the building; instead, they should use the staircase.

Switch off the cooking gas stove, electrical lights, candles, and other lamps to avoid fire accidents.

Check the soil type before construction and do not build structures on low quality, soft soils.

Awareness on earthquake has to be created among school children and the public.

Proper first aid need to be given to the people who are injured.

Volcanic Eruptions

Unlike earthquakes, volcanic eruptions can be predicted well in advance, because, earlier to eruptions, smoke, outflow of gas and slight tremors are caused.

Due to volcanic eruptions, the forests are cleared, snow melts and leads to floods, affect human settlements. Dust and hot gases released from a volcano disturb air transport and nearby agricultural and other economic activities.

Though volcano is a destructive force, it also produces benefits. The volcanic materials are useful for industrial and chemical purposes. Rocks formed by lava are used for building roads; weathered volcanic ash greatly improves soil fertility. Steam and hot springs from a volcano is used to generate geothermal energy.



Fig-2 Iceland Volcanic explosions emits ash plume

The eruption of Nevado del Ruiz of Columbia in November 13, 1985 killed 40,000 people. It wiped out the entire city of Armero. Likewise, the most recent volcanic eruption in Iceland occurred on April 14, 2010, which erupted with a large ash plume (due to magma coming out under ice) More than 20 European countries have shut down airports because of the event.

Mitigation

Volcanoes rarely kill people, still people should stay away from volcanoes.

All transport facilities are to be avoided, especially air transport near volcanic regions.

Volcanic eruptions may cause earthquakes. So people should take precautionary measures.

From the snow covered mountains, the volcanic eruptions may cause melting and flooding and therefore embankments must be build.

People should be aware of the results of tilt meter which measures the expansion of a volcano.

Tsunamis

They are killer waves or Giant waves generated by earthquakes, volcanic eruptions or underwater landslides. It can reach 15metres or more in height. When earthquakes occur in the sea or ocean, the sea waves rise to several meters and may reach the coast within a few minutes. The danger period of Tsunami can continue for many hours, after a major earthquake.

Do you know?

The term "Tsunami" has been coined from the Japanese word. "Tsu" means harbour and "nami" means waves.

Tsunami waves travel at a speed of 320 kilometer per hour and speed increases when it approaches the continents.



Tsunami

A killer Tsunami hit South East Asian Countries on the 26th of December of 2004, killing more than 1,50,000 lives.

Do you know?

In India Tsunami warning centres has been set up at Hyderabad.

The emotional, economic and ecological toll of the disaster cannot be calculated. Many villages have lost an entire generation. This was the biggest earthquake to hit the world in 40 years. Further, no one could have thought that its effects would ripple worldwide overnight.

Mitigation

People should be aware of the information given by the Tsunami Warning Centre located at Hyderabad in India.

People should vacate the coastal area as soon as the tsunami warning is released.

Seriously injured persons should be given immediately First Aid.

Fisherman should not go for fishing.

We should not assume that the first wave is dangerous whereas the successive waves would be more dangerous.

Landslide

Landslide may be defined as the mass of rocks and debris move down a slope. Debris flow is also known as mudslide.



Landslide

Landslides are caused due to instability of the slope, heavy rainfall, earthquake, volcanic eruption, deforestation and also indiscriminate construction activity.



Landslides

Landslides affect agricultural production, destroy settlements, damage roads and railways and change the direction of surface run off.

Mitigation

If houses are built on soft soils and slide prone areas, should be prepared alternative path for sliding soil to deviate.

The warning signals of landslides are; the doors and windows become tightened.

When chances are there for the closure of roads by mudslide, two or three alternative planned routes may be planned for escaping quickly.

If at home when a landslide occurs, do not come out of the house.

When there is no escape and you are trapped in a landslide, kneel or sit close to the floor and place your hands at the back of the neck.

Look out for people trapped inside and give them first aid for serious injuries and evacuate them to safer places.

Avalanche

An avalanche can be defined as a large mass of snow or ice, descending down the mountain slope. It occurs in the high latitudes and at the high altitudes.

Avalanches are provoked by earthquakes, extreme precipitation, man-made disturbances such as loud noise, heavy movement of the skiers and use of explosives. The Avalanches become severe when more accumulation of snow takes place at the time of avalanches.

The effects of Avalanches are destruction and blockage of the roads, destroying a small hamlet, vegetation and wild life.



Avalanches



Avalanches

Mitigation

It is difficult to check or stop the avalanches but the power of avalanches can be reduced to minimize its effects.

Hill resorts, mountain towns, roads and railways are to be avoided in the areas of avalanches.

People should be instructed to not to use explosives.

People who live on hill slopes should be encouraged to plant trees around their houses.

In areas of avalanches, traveling in any mode of transport should be avoided.

Cyclones

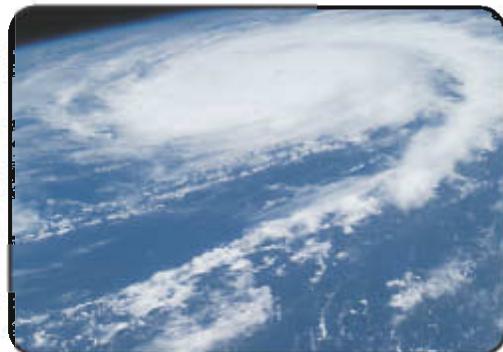
South Indian coastal areas are affected more by cyclones than by any other disaster. Every year, the cyclones cause a few deaths along the coromandel coast, especially in Andhra Pradesh and Orissa.

The Indian Coastal regions are among the six major cyclone prone regions of the world.

The cyclones are the strongest winds generated by the meeting of the cold and warm fronts in the centre of low-pressure systems. When they are all formed over the sea and oceans they become violent due to the fact that there are no barriers to check these winds.

The cyclones are always associated with strong winds, torrential rains, may lead to floods, uprooting of trees, affecting the drainage systems, breaking down of electricity, transport, water logging,

spreading of diseases, destruction to the crops, soil erosion, collapse of old buildings along with these loss of life.



Super cyclone 1999

Do you know?

On October 29, 1999, Super-cyclone with winds of 260-300 km/hour hit the 144 km coast of Orissa with a storm surge. It created the Bay of Bengal water level rise 8 metre higher than normal. The super storm travelled more than 250 km inland and within 36 hrs ravaged more than 20 million hectares of land, devouring trees and vegetation, leaving behind a huge trail of destruction. The violent cyclone was giant and merciless and broke the backbone of Orissa state and killed thousands and devastated millions of hectares of land.

Mitigation

People are to be instructed to shift from low lying areas to nearby, elevated areas.

In the areas of water logging, temporary channels are to be built to drain the water.

People, who are living in old buildings have to change their places, at least temporarily.

People have to safeguard their belongings such as important documents and jewels.

We need to secure drinking water pipelines.

People have to watch out while going out to see into whether any breakages, leakages in electricity from the nearby post.

Fishermen must be advised not to go for fishing.

All have to listen to the local Radio and TV for instructions. All have to drink boiled water to avoid spread of diseases.

Floods

Floods are a temporary inundation of overflow of water. They are caused due to very heavy rainfall, cyclones, melting of snow, tsunami or a dam burst. Floods are the common features in Tamilnadu, Andhra Pradesh, and Orissa due to very heavy rainfall during the Northeast Monsoon season and in Mumbai during the Southwest Monsoon season.

Floods destroy sewage system, pollute water, cause soil erosion, silt deposition, water logging, destruction to agricultural fields, livestock, damage to the fishing equipments, building structures and to the loss of life.

Why do floods occur every year in the north Indian rivers, when compared to the south Indian rivers? Think!



Floods

Floods and droughts are the two problems caused due to the vagaries of monsoon.

Mitigation

To avoid overflow of water, many channels are required, to drain, especially near the agricultural fields and low lying areas.

River embankment, desilting are needed especially in the ponds and lakes.

Sand bags are to be kept in front of houses in the low-lying to block the water reaching inside.

Afforestation is to be encouraged to follow any one of the rain water harvesting methods.

People from the low-lying areas are to be shifted to elevated areas.

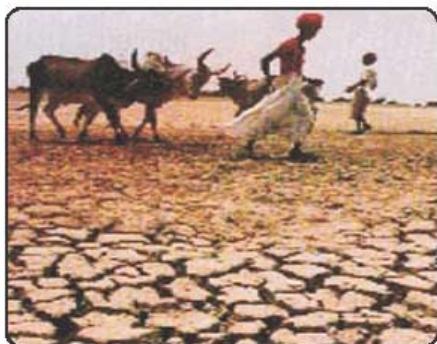
Students are to be trained to take part in the social activities at the time of floods.

Drought

Drought refers to the prolonged dryness of weather due to lack of rainfall. It is difficult to indicate the time of its onset and end. According to the Indian Meteorological Department, the country is declared as drought affected when overall rainfall deficiency is more than 10 % over a long period.

The major reason for the drought is the scarcity of rainfall. Scarcity of rain can be listed due to failure of monsoons, vagaries of monsoons, deforestation, environmental degradation, high rate of evaporation, poor land management, overgrazing and soil erosion.

The rainfed crops are mostly affected due to droughts. Other effects are: (i) scarce drinking water supply, (ii) shortage of food, (iii) lack of water to the livestock, (iv) nutrition deficiency diseases and (v) soil erosion.



Drought

Mitigation

Planned land use development through alternate cropping and drip irrigation.

Proper storage and usage of rainwater.

Arrangement for cattle fodder

and drinking water in drought regions.

Drought relief planning is needed at the village level.

Importing and transporting required food to the needy areas is important.

Tornadoes

Tornadoes refer to the violently rotating columns of air. They extend from a funnel shaped cumulonimbus cloud to the earth.

Their width varies from a few metres to more than a kilometre and it rotates at a speed between 64 km and 509 km per hour.

They are caused due to extreme low pressure. They originate inland, generating a rapid whirl wind. They are formed when hot air and cold air are mixed. They cause heavy destruction to both life and property like a cyclone.

On March 24, 1998: Violent tornado or tornadoes killed 160 people and injured 2,000 when they streaked through 20 coastal villages on the eastern states of West Bengal and Orissa. Ten people were killed when the boat they were travelling in about.

Thirty-five children were crushed to death when a school building being used as a shelter collapsed at Goborghata in the Balasore district in Orissa. The tornadoes flattened 15,000 homes and left more than 10,000 people homeless.

Do you know?

In USA, it is known as a twister, because of the twisting motion of funnel shaped cloud.



Tornadoes

Mitigation

As soon as tornadoes are observed, people need to get inside their houses (or) storm cellar if not lie in the low-lying area.

Stay out of damaged buildings.

If you are outside your home, stay there itself and return home only when authorities say it is safe.

Help injured or trapped persons, and give first aid immediately.

Common Mitigation

First, every individual should know how to safeguard themselves from disaster.

People should be given the demonstration program on "keeping safe" at and after disaster.

Listen to a battery operated radio for emergency information and relief measures.

EXERCISE

I) Choose the correct answer

1. The major reason for the drought is the _____.
(a) Scarcity of rainfall (b) environmental degradation
(c) Afforestation (d) Industry
2. Tornadoes are common in
(a) India (b) Bangladesh (c) China (d) U.S.A
3. Landslides often occur in
(a) Desert region (b) Forest region
(c) Tundra region (d) Hilly region
4. The word Tsunami has been derived from
(a) Tamil (b) French (c) Japanese (d) Latin
5. Of the following which is not a natural disaster
(a) Nuclear explosion (b) Deforestation (c) Forest fire (d) Lightning

II) Match the following

- | | |
|-----------------|----------------------|
| 6. Tornadoes | Heavy rainfall |
| 7. Molten rocks | Rotating air |
| 8. Landslide | Volcanic eruption |
| 9. Drought | Tsunami |
| 10. Earthquake | Scarcity of rainfall |

III) Answer the following questions briefly

11. What is disaster?
12. Define Mitigation.
13. What is Landslide?
14. Differentiate floods and droughts.
15. Differentiate Tornadoes and Cyclones.

IV) Answer the following questions in detail

16. Explain the natural and man-made disasters.
17. What is disaster management?
18. Write about tsunami and its effects on environment.
19. Give a detailed account of drought and floods.
20. Write an essay on the seismic zones of India.

V) Fill in the blanks

1. A hazard is an_____.
2. India is divided in to_____ seismic zones.
3. In India Tsunami warning centre has been set up at_____.
4. Debris flow is also known as_____.
5. Avalanches occur on the high_____ and high_____.

5. AN INTRODUCTION TO OCEANOGRAPHY

The ocean plays a crucial role in sustaining life on Earth and is a key element in climate change. The ocean is a store house of mineral resources. Various problems are already witnessed along the coastal areas and small islands for example pollution, exhausted fishing stocks, disappearing coastlines, rising sea level, increasing surface temperatures that threaten life on the earth. Better knowledge on ocean system will help us predict some of the changes expected in the future and hopefully we can overcome all the above problems. The systematic observations of the oceans will enable us to forecast imminent disasters from storms, floods and droughts and to mitigate their effects, by warning the populations at risk.

Do you know?

An ocean (from Greek Ωκεανός, "okeanos" Oceanus) is a major body of saline water and a principal component of the hydrosphere.

What is Oceanography?

Oceanography is a branch of science which deals with the physical-chemical characteristics of ocean water and its depth, temperature, salinity, ocean currents, waves, tides, flora and fauna found at the bottom of the oceans.

Oceans cover about 70 % of the Earth's surface and they contain

roughly 97 % of the Earth's water. A large stretch of water covering a vast area is called an ocean.

The earth is nick named "**Watery Planet**". The oceans of the Earth are unique in our Solar System. No other planet in our Solar System has liquid water (although recent finds on Mars indicate that Mars may have had some liquid water in the recent past). It is believed that the life on the Earth first originated in the seas.

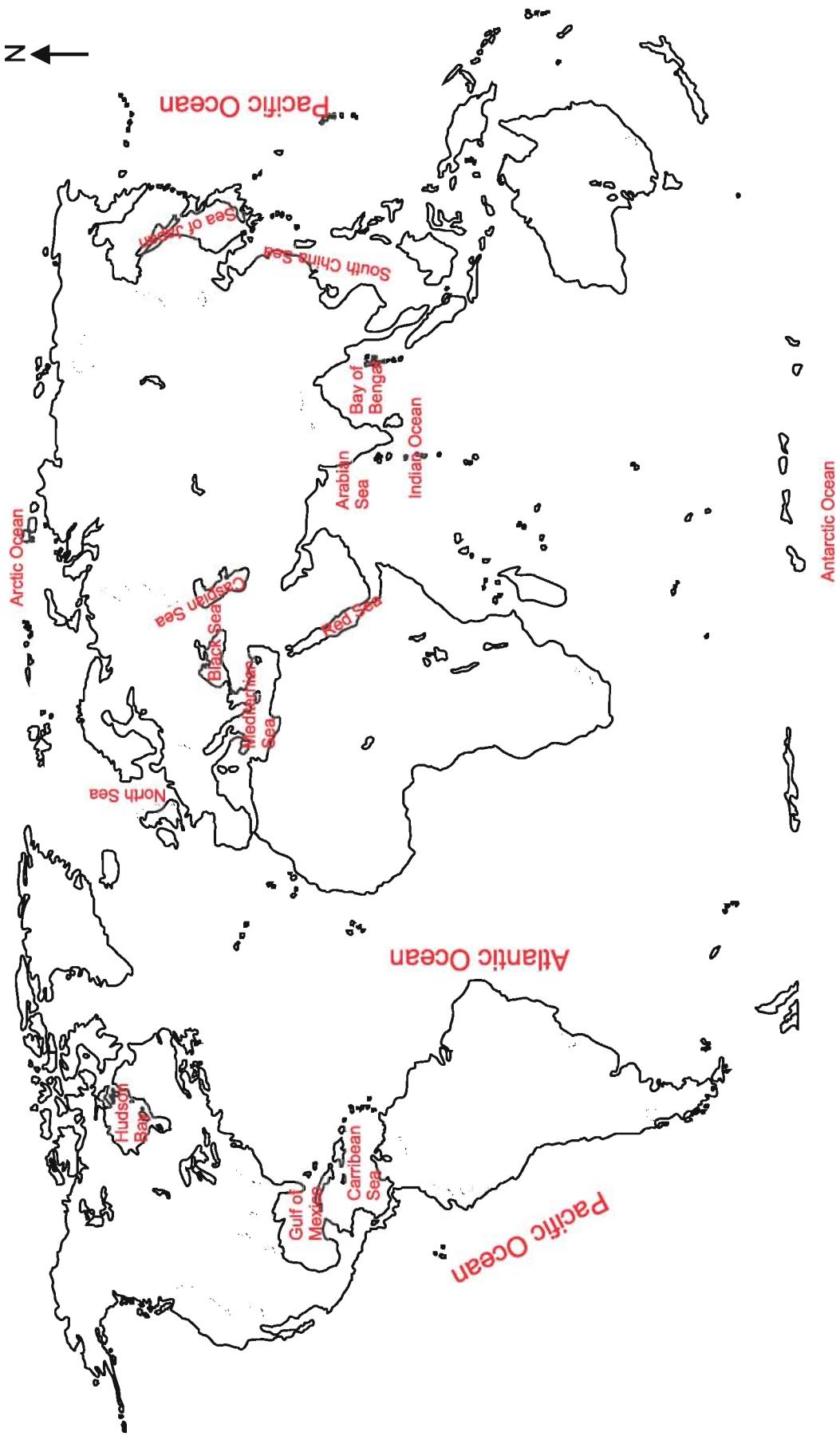
The oceans of Earth serve many functions, especially affecting the weather and temperature. They modify Earth's temperature by absorbing incoming solar radiation. The ocean currents distribute the absorbed heat energy around the globe.

The Pacific, Atlantic, Indian, Arctic and Antarctic are the five well known oceans and these are connected to one another by means of seas, gulfs, bays, straits and canals.

The Pacific Ocean

The Pacific is the largest and the deepest ocean. It is triangular in shape and covers 33 % of the total area of the earth's surface. Its average depth is 5,000 metres. It is bounded by Asia and Australia on the west, North America and South America to the east and Antarctica to the south.

Oceans and Seas of the World



The Challenger Deep (Mariana's Trench) in the South Pacific is the deepest in the world with 11,033 metres. There are 20,000 islands in the Pacific Ocean. New Zealand, Indonesia, Japan and Hawaii are the well known islands.

The Atlantic Ocean

The Atlantic Ocean is elongated 'S' in shape and it extends over 16.5% of the total area of the earth. The area of this ocean is about 50% of the Pacific Ocean. It is bounded on the west by North and South Americas, east by Europe and Africa. The important islands found in the Atlantic Ocean are Greenland, British Isles, Newfoundland, West Indies, Cape Verde and Canaries. The Atlantic trade route is considered as the world's busiest trade route.

The Indian Ocean

The Indian Ocean covers 20% of the total area of all oceans of the world. On the north, it is bounded by India, Pakistan and Iran; on the east by Australia, Sunda Islands and Malaysia; and on the west by the Arabian Peninsula and Africa. On the southwest, it joins with the Atlantic Ocean near the southern tip of Africa. On the east and southeast, it meets the Pacific Ocean. The average depth of the ocean is 4,000 metres. Andaman, Nicobar, Maldives, Madagascar, Sri Lanka, Sumatra and Java are the well known islands of the Indian Ocean. This is the only ocean named after a country since the sea route was familiar for the traders from time

immemorial.

Antarctic Ocean

This is the fourth largest, coldest and southern most ocean found around the continent of Antarctica. This ocean is often referred to as the "Southern Ocean". Alexander Islands, Balleny islands and Ross islands are some of the islands found in the ocean. The average depth of this ocean is about 4,500 metres and its temperature varies from -2 to 10°C. In winter, more than half of its surface is covered with ice.

The Arctic Ocean

The Arctic Ocean is almost circular in shape and it surrounds the North Pole of the earth. Its total area is about 14 million square Kilometres. It has an average depth of 4,000 metres. The main islands are Victoria islands, Elizabeth islands, Iceland, Spitsbergen and Novaga Somlya.

The Seas of the World

There are many inlets known as seas; seas are often partly enclosed by land. The South China Sea, the Caribbean Sea, and the Mediterranean Sea are some of the major seas of the world.

Topography of the Ocean Floor

The ocean floor profile begins where the water meets the land at the shoreline. The shoreline is very unstable in that it changes with each coming wave and changes with the tides. The topography of the ocean floor consists of i) Continental shelf ii) Continental slope and iii) Ocean

floor (abyssal plain).

The **continental shelf** is the shallow area found along the coast with a depth of 100 metres. The continental shelf is a suitable place for coastal fishing since it has rich fish food known as plankton example Grand banks (Newfoundland), Dogger Bank (U.K). This is an area known for many off shore oil fields. Example Mumbai High.

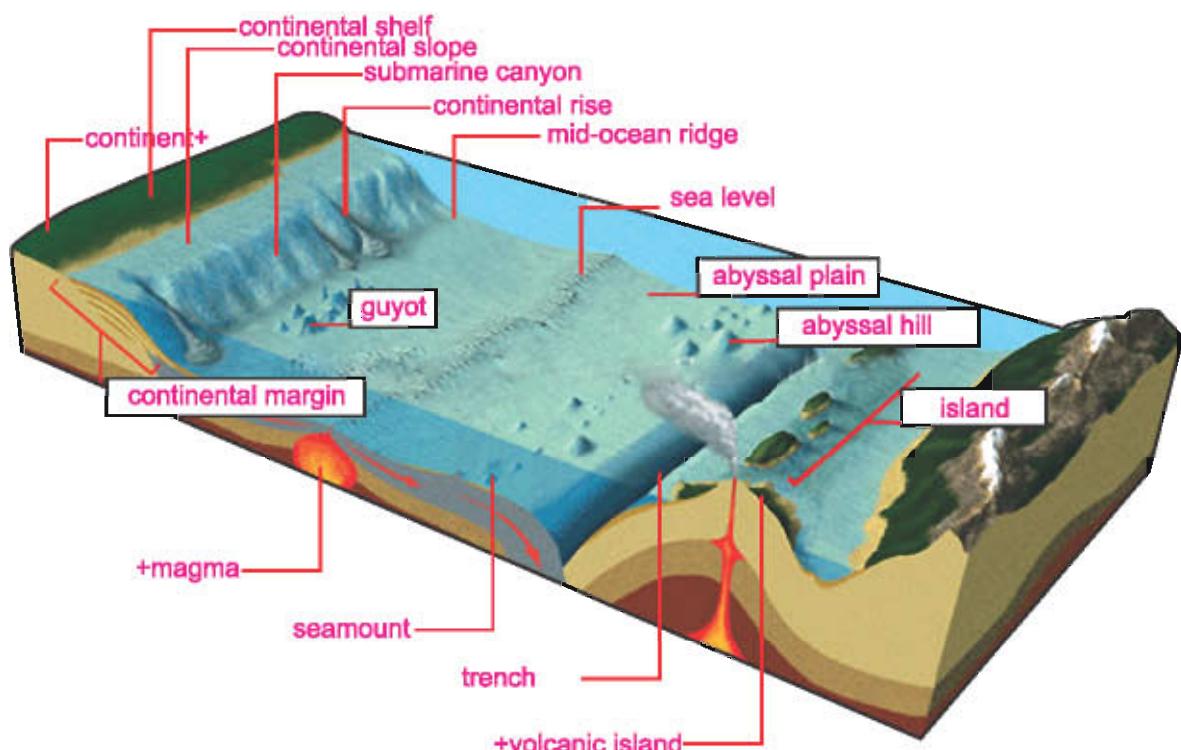
Continental slope is a rapid steep slope which connects the continental shelf and the ocean floor. The continental slope and continental shelf are together referred to as the "**continental margin**".

The average depth of the continental slope is about 155 metres.

The irregular coasts and the deep continental slopes are essential for the formation of natural harbours. Example: Kochi and Mumbai. The continental slope is often marked with underwater canyons, cliffs and underwater mud-slides.

The **abyssal plain** is flat to low rolling hills of the ocean floor. The abyssal plain is covered with ooze which is rotten organic materials of dead marine organisms. The **Mid-ocean ridge** is the underwater mountain range formed by the plate tectonic forces.

Seamounts are underwater volcanoes that grow with each eruption. If a seamount breaks the surface, it is called an **island**. Once the island is eroded and it slips underwater, it is called a **guyot**.



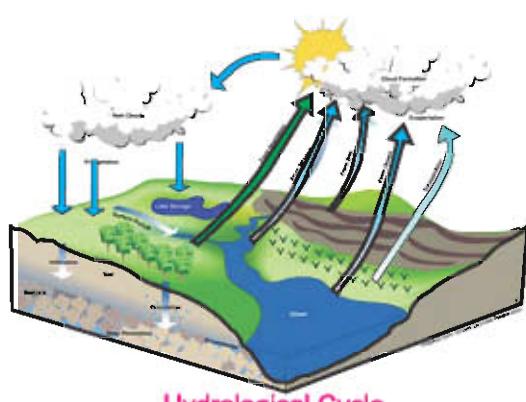
Topography of the Ocean Floor

Oceanic trenches are the deepest features in the ocean. Ocean trenches are created when two tectonic plates collide and the denser plate is pushed under the lighter plate.

Hydrological Cycle

Hydrological Cycle (also known as the water cycle) is the journey water takes as it circulates from land to the sky and back again. The Sun's heat provides energy to evaporate water from oceans and lakes. Plants also lose water through photosynthesis to the air and it is called evapotranspiration. The water vapor eventually condenses into tiny droplets and form clouds. When the clouds reach saturation point, precipitation (rain, sleet, or snow) is triggered, and water returns to the land (or sea). Some of the precipitation soaks into the ground and this water is trapped between rocks or clay layers; this is called groundwater. But most of the water flows downhill as runoff (above ground or underground), eventually returning to the seas as slightly salty water.

The most common salts in the sea water are sodium chloride,



Hydrological Cycle

magnesium chloride, magnesium sulphate, calcium sulphate, potassium sulphate, calcium carbonate and magnesium bromide.

Why is the Oceans Salty?

As water flows in rivers, pick up small amount of mineral salts from the rocks and soils of the river beds. This very-slightly salty water flows into the oceans and seas. The water in the oceans only leaves by evaporating (and the freezing of polar ice), but the salt remains dissolved in the ocean - it does not evaporate. So the remaining water gets saltier and saltier as time passes.

Activity

Did you ever taste the sea water? why is it salty?

Salinity

Salinity is the saltiness or the dissolved salt content in water. The technical term for saltiness in the ocean is salinity. Salinity is generally reported in terms of parts per thousand (abbreviated ‰), the average ocean salinity is 35 grams per kilogram.

Activity

Why does salinity differ from ocean to ocean?

The saltiest water is in the Dead Sea, Red Sea and in the Persian Gulf, which have a salinity of about 40 grams per kilogram (due to very high evaporation rates and low fresh

water entry). Dead sea is the most saline of seas. The least salty seas are in the Polar Regions, where both melting polar ice and a lot of rain dilute the salinity.

Activity

The salinity in the land locked tropical seas is higher. Why?

Temperature of the Ocean

Temperature of the ocean water plays the most significant role in controlling its biological characteristics. The role of the sea water temperature is in causing the ocean currents and other movements of water. Since oceans have greater capacity for the storage of the solar energy, they play a major role in maintaining the equilibrium in the heat budget of the earth. Land surface gets heated and cooled quickly but water tends to heat up and cool down slowly. This differential heating of the land and water make distinct types of marine and continental types of climates found on the surface of the earth.

The surface temperature of the oceans is controlled by various factors such as the latitudes, ocean currents, prevailing winds and local weather.

Waves

The water in the oceans is always moving up and down. This movement of water is called waves. Wind is the most important cause of wave generation. Most natural waves are initiated by winds.

The waves travel in some

definite direction, but water does not travel with the waves.

Ocean currents

Ocean currents are the general movement of a mass of surface water in a fairly defined direction.

In other words, an ocean current may be defined as any persistent, dominantly horizontal flow of the ocean water. The ocean currents, like rivers, flow with certain velocity along a certain path. There are two types of ocean currents: **warm** and **cold currents**. Warm currents originate from low latitude drifts towards poles; whereas cold currents originate from high latitudes and move towards equator.

There are many factors that influence the generation of ocean currents are:

Differences in temperature;
Density of ocean water (salinity);
Winds and Atmospheric pressure;
Coriolis force;
Gravitational force;
Precipitation and evaporation; and
Melting of snow and ice.

Tides

The rise and fall of sea water is known as tides which occur twice a day due to the gravitational pull of the moon and sun on the earth at an interval of 6 hours. When the sea water rises ,it is called high tide and the fall of sea water is called the **ebb** or **low tide**.

Spring tide occurs during the full

moon days and new moon days. During these days, Sun, Moon and Earth are in a straight line. On such days, the gravitational pull of the moon and sun are combined. At these times, high tides are very high and low tides are very low.

Neap tides occur during first and third quarter phases of the moon. During the phases of the moon, sun, moon and earth are at right angles. As a result, the gravitational pull of the moon are perpendicular to one another. During this time, the high tides are very low and low tides are very high.

Activity

Listout the marine resources.

Oceans influences on human life

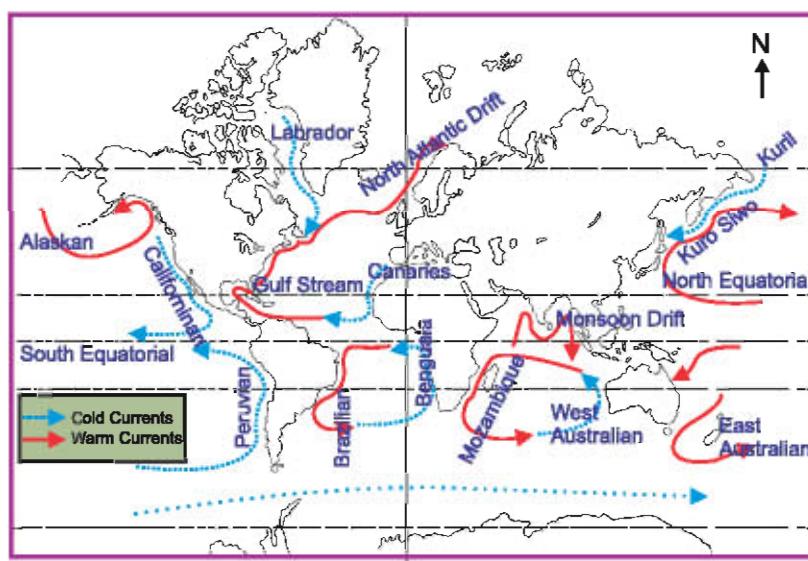
Oceans are a most important part of man's physical environment. Oceans influence man in various ways, from the climate he experiences, the oxygen he breathes and the food he eats to the economic, social, political and

military conditions under which he operates.

Oceans are being looked to as a major source of protein rich fish food. Several valuable minerals are known to be abundant in the sea including gold, silver, manganese, petroleum and pearl. Apart from the other minerals found in seawater (magnesium, bromine, and sodium chloride, or common salt). The ocean floor yields sand, gravel, and oyster shells for construction purposes and small quantities of diamonds are found in some submarine gravel bars.

Offshore oil and gas wells supply about 17 per cent of the world's petroleum production. Oceans also hold potential as an important alternate source of energy. Thermal energy of the oceans resulting from absorption of solar heat and from ocean currents can be converted into electricity—a process known as ocean thermal energy conversion (OTEC).

WORLD-MAJOR OCEAN CURRENTS



EXERCISE

I) Choose the correct answer.

1. A large stretch of water covering a vast area is called an _____.
a) Ocean b) Sea c) Gulf d) Bay
2. The Atlantic Ocean is elongated _____ in shape.
a) Triangular b) 'S' c) Circular d) 'C'
3. The rise and fall of sea water due to gravitation is known as _____.
a) Tides b) Ocean currents c) Tsunami d) waves
4. A _____ is a table top underwater mountain.
a) Guyot b) Abyssal plain c) Sea mount d) Ocean ridge
5. The hydrological cycle is also known as _____.
a) Hydrogen cycle b) Oxygen cycle c) Water cycle d) carbon cycle

II) Fill in the blanks.

1. The Earth is nick named as _____.
2. _____ is the deepest trench in the south Pacific.
3. The inlets are known as _____.
4. The abyssal plain is covered with _____.
5. _____ is the most important cause of wave generation.

III) Answer the following questions.

1. Define salinity.
2. What are ocean currents?
3. How are waves caused?
4. What is oceanography?
5. Name marine resources.

IV) Answer the following questions in detail.

1. Discuss about Indian Ocean.
2. Examine the ocean floor with a neat diagram.
3. Illustrate hydrological cycle .
4. How do oceans influence human life?
5. Write an essay on the oceans of the world.

CIVICS

1. OUR NATION

Our Nation, India has the greatest civilizations of the world with a rich cultural heritage. Since its independence, our nation has achieved all round praiseworthy Socio-economic progress. It has become self sufficient in agricultural production and reached the tenth position in industrial development in the world. It is the sixth nation to have explored outer space.

India is described as an "Epitome of the world"-a perfect example of the world, as it has varied geographical features, climate, flora and fauna, heterogeneous cultures, customs, various languages and faiths. Yet it has achieved unity in diversity.

India is the seventh largest country in the world with an area of 32,87,263 sq. kms. and it is the second most populous country in the world, next only to China.

Location

India is bounded by the Himalayan ranges in the north, the Indian Ocean in the south, the Bay of Bengal in the east and the Arabian Sea in the west and It has a land frontier of about 15,200 kms. The length of its coastline is 7516.6 kms.

India is entirely situated in the Northern hemisphere. From south to north, the mainland extends between latitudes 8°4' and 37°6'

North longitudes. From west to east, it extends between 68°7' and 97°25' East longitudes. It measures about 3214 Kms. from north to south and about 2,933 Kms. from east to west.

Population and Literacy Rate

The population density of India was 324 Sq. Km in 2001. The population density is the number of people living per square kilometer.

According to 2001 census, literacy rate has increased to 64.8%, while the male and the female literacy rates are 75.26% and 53.67% respectively.

Population

The population of India is 1028 millions as per 2001 census, in which male population is 532.1 million and the female population is 496.4 million.

The Polity or the Political Administration

India is the largest democracy in the world. India is a **Sovereign Socialistic Secular Democratic Republic** with a Parliamentary form of Government.

The Republic is governed in terms of the **Constitution**, which came into force on **26th January 1950**. Indian Constitution is the lengthiest written Constitution in the world.

The Indian Union comprises of twenty eight State and seven Union Territories.

The twenty eight States

Andhra Pradesh	Haryana	Maharashtra	Rajasthan
Arunachal Pradesh	Himachal Pradesh	Manipur	Sikkim
Assam (Assam)	Jammu and Kashmir	Meghalaya	TamilNadu
Bihar	Jharkhand	Mizoram	Tripura
Chhattisgarh	Karnataka	Nagaland	Uttarakhand
Goa	Kerala	Odisha (Orissa)	UttarPradesh
Gujarat	Madhya Pradesh	Punjab	West Bengal

The seven Union Territories

Andaman and Nicobar Islands
Chandigarh
Dadra and Nagar Haveli
Daman and Diu
National Capital territory of Delhi
Lakshadweep
Puducherry (Pondicherry)



The Parliament

The Union Executive

The Union Executive consists of the President, the Vice-President, the Prime Minister, the Council of Ministers and the Attorney General of India.



Smt. Pratibha Devi Singh Patil

The President is the head of the Indian union. He is the first citizen of India. He acts as the symbol of unity, integrity and solidarity of the nation. He is elected indirectly. A person who is the citizen of India and not less than 35 years of age can contest the Presidential elections. Almost all the higher authorities in the country especially at the centre are appointed by the President. The Vice-President acts as the President when the President post is vacant or when the President is unable to discharge his duties. In a Parliamentary form of government,

the President is the only nominal head of the nation, while the Prime Minister is the real head of the government. The leader of the majority party, who has the confidence of the Lok Sabha is appointed as the Prime Minister by the President. The Council of Ministers are appointed by the President on the advice of the Prime Minister.

The Union Legislature

The Union Legislature is called the Parliament. It consists of the President and the two Houses namely the **Lok Sabha** (House of the People) and the **Rajya Sabha** (Council of States).

Lok Sabha is also called as the Lower House of the Parliament. It consists of members who are mostly directly elected by the people on the basis of Universal Adult Suffrage. For election purpose the States and



Dr. Manmohan Singh

the Union Territories are divided into constituencies. The candidate who secures the maximum votes represents his/her constituency in the Lok Sabha. At present, there are

545 members in the Lok Sabha which includes two nominated members from the Anglo-Indian community.

Rajya Sabha is also called as the Upper House of the Parliament. The members of Rajya Sabha are elected indirectly.

At present, there are 245 members in the Rajya Sabha, out of which 233 members are elected indirectly and 12 members who are distinguished in the field of Art, Literature, Science and Social Service are nominated by the President.

THE STATE GOVERNMENT

The State Executive

The State Executive consists of the Governor, the Chief Minister, the Council of Ministers and the Advocate-General. The Governor is appointed by the President for a term of 5 years. He is the Constitutional head of the State. An Indian citizen above the age of 35 is eligible to be appointed as the Governor. The leader of the majority party, who enjoys the confidence of the State Assembly is appointed as the Chief Minister by the Governor. The other Ministers are appointed by the Governor on the advice of the Chief Minister. The real powers are vested in the hands of the Chief Minister and the Council of Ministers.

The State Legislature

The State Legislature is not uniform in all the States.

Andhra Pradesh, Bihar, Jammu and Kashmir, Karnataka, Maharashtra and Uttar Pradesh have a bi-cameral Legislature and all the other states of India have a uni-cameral Legislature. A bi-cameral Legislature consists of two Houses—Legislative Council (Upper House) and Legislative Assembly (Lower House). A uni-cameral Legislature consists of only one House namely the Legislative Assembly (Lower House).

The Judiciary

The Judiciary is an independent organ. The Supreme Court of India is the Highest Court in our country. It is the guardian of our Constitution.



Supreme Court

It is at New Delhi. At present there are 31 Judges in the Supreme Court including the Chief Justice of India.

The High Court is the highest court in the state. There are 21 High Courts in India, out of which 3 of them are common to two or more states.

National Symbols

All the independent Nations of the world have their own unique identifications, which are popularly called the National Symbols.

The National Flag, the National Emblem, the National Anthem, the National Song, the National Animal, the National Bird, the National Flower and the National Tree are the National symbols.

They give us a feeling of oneness and inspire us to pay homage to our patriots.

The National Flag

Our National Flag is a horizontal tricolor of deep saffron (kesari) at the top, white in the middle and dark green at the bottom in equal proportion. Its ratio of the length to its breadth is 3:2. Saffron colour at the top denotes courage and sacrifice. It also reminds us about



the sacrifice made by the freedom fighters. The White colour in the middle denotes truth and Navy Blue Chakra in the middle induces us to move forward along the path of dharma, to bring peace and prosperity to the Nation. The design of chakra is taken from the lower part of the capital of the Saranath pillar of Asoka. The Chakra's diameter is proportionate to the width of the white band and it has 24 spokes. The Green colour band at the bottom signifies prosperity, greenery of our fertile land and faith. We must respect our national flag.

National Flag

The Constituent Assembly approved the National Flag on July 22nd 1947, three weeks before the Indian Independence. It was hoisted on 15th August -1947 for the first time.

The rules concerning the Flag

The National Flag should be raised and lowered carefully.

No other Flag should be placed higher than it nor should any flag be placed to its right.

It should be raised to the top of the mast.

We must lower it before the sunset.

The Flag is flown at half mast either to mourn the death of our National leader or when the Head of a friendly Nation passes away.

We must stand in attention when the flag is hoisted.

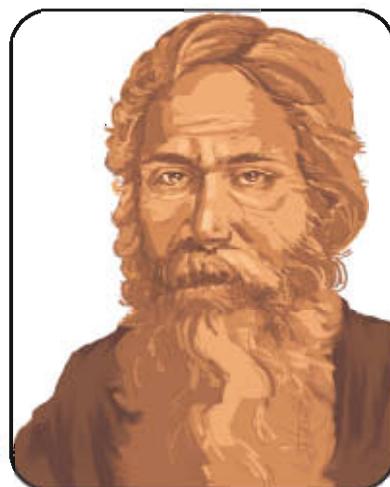
The National Anthem

All Nations have a patriotic song known as the National Anthem. We should stand in attention as a mark of respect, when the National Anthem is sung or its tune is played on a band. The National Anthem is sung on all National, State and other important functions.

The Indian National Anthem was composed by the great poet **Rabindranath Tagore**. The original song in Bengali has got five stanzas. Only the first stanza has been selected as our National Anthem.

The Constituent Assembly

adopted the National Anthem on 24th January 1950. It was first sung on 27th December 1911, at the Calcutta session of the Indian National Congress. The time duration for singing or playing our National Anthem is approximately 52 Seconds.



Rabindranath Tagore

The National Anthem reflect the glory and the greatness of our mother land. It gives the message of tolerance, unity, integrity and patriotism.

English version of the Anthem

Thou art the ruler of the minds of all people,
dispenser of India's destiny.
Thy name rouses the hearts of Punjab, Sind, Gujarat and Maratha,
Of the Dravida and Orissa and Bengal;
It echoes in the hills of the Vindhya and the Himalayas, mingles in the music of Jamuna and Ganges and
is
chanted by waves of the Indian Sea.
They pray for thy blessings and sing
thy praise.
The saving of all people waits in thy hand,
thou dispenser of India's destiny.
Victory, victory, victory, to thee.

The National Emblem

The National Emblem is taken from the Saranath Pillar of Asoka. It was adopted by the Government of India on 26th January 1950. Our National Emblem consists of four lions sitting back to back on a circular pedestal. Only three lions are visible, the fourth being hidden



National Emblem

from view. The lions represent power and majesty. The base has a horse on the left, a wheel in the centre and a bull on the right. The horse signifies energy and speed. The bull denotes hard work and steadfastness. The Chakra signifies dharma and righteousness. The words "Satyameva Jayate" in Devanagari Script, which means "Truth alone Triumphs", is inscribed below the abacus.

The National Song

The Song—"Vande Mataram" was composed in Sankrit by Bankimchandra Chatterjee. It was a source of inspiration to the people

who fought for our freedom. This song was published in his book "**Anand Matt**" in 1882. It was first sung during the 1896 session of the Indian National Congress. Interestingly the first person to sing the song in the Calcutta session was Rabindranath Tagore.

The National Animal

Indian Government initially adopted the **lion** as our National animal. Later **tiger** was adopted as the National animal. The combination of grace, strength, ability and enormous power of the tiger has earned its place of pride as the National animal of India.



National Animal

National Bird

The **peacock** is our National bird. Its beautiful, rich feathers indicate the natural beauty of our country. Indian Literature speaks high of the peacock.



National Bird

The National Flower

Lotus is our National flower. It is noted for its majesty, grandeur, beauty and fragrance. It denotes unity. It occupies a unique position in ancient Indian mythology.



National Flower

National Fruit : **Mango**

National Sports : **Hockey**

National River : **Ganga**

The National calendar is based on the **Saka Era**.

The National Tree

Banyan tree is our National tree. It is a huge tree having the widest reaching roots of all known trees.



National Tree

The strong political structure and the national symbols of our land, instills the feeling and thought that all are Indians, which help in the growth of national integration.

EXERCISE

I) Choose the correct answer.

1. India is the _____ largest country in the world.
a) Second b) Fifth c) Seventh
2. The Constitution of India came into force on _____.
a) 26th January 1950 b) 15th August 1947 c) 30th January 1930
3. The Supreme Court of India is at _____.
a) Mumbai b. Kolkatta c) New Delhi
4. The National Song Vande Mataram was composed by _____.
a) Bankim Chandra Chatterjee b) Rabindranath Tagore
c) Jawaharlal Nehru

5. Our National tree is the _____.

- a) Neem tree b) Banyan tree c) Apple tree

II) Fill in the blanks.

1. The Republic of India is governed in terms of the _____.

2. The head of the Indian Union is the _____.

3. The Lok Sabha is also called as _____.

4. "Satyameva Jayate" is inscribed in our National _____.

5. The National Bird of India is _____.

III) Match the following.

- | | |
|-----------------------|------------------------------|
| 1. The President | Rabindranath Tagore |
| 2. The Chief Minister | First Citizen of India |
| 3. Supreme Court | Appointed by the Governor |
| 4. National Symbol | Guardian of our Constitution |
| 5. National Anthem | Unique identification |

IV) Answer the following questions briefly.

1. Write about the location of India.
2. What are the qualifications needed for a person to be elected as the President of India?
3. Name some of our National Symbols.
4. What is the message given by our National Anthem?
5. What is our National flower noted for?

V) Answer the following questions in detail.

1. Write in detail about the Lok Sabha
2. Mention the significance of our Tricolour flag.
3. Describe the National Emblem of India.

Things to do.

1. Find out more about the flags that were used by the Indian National Congress before the National flag of India was accepted by the Constituent Assembly on 22nd July 1947. (Nivedhita flag, Madam Gama flag Calcutta flag and Home rule flag)
2. Discuss in the class why river Ganga has been chosen as our National River.

2.INDIAN CONSTITUTION

August 15, 1947 is a great day in the long and eventful history of our motherland, for it was on that day, the two hundred years old British rule over India was terminated and political authority was transferred to the representatives of the Indian people.

In the process of Constitutional development of India, the **Cabinet Mission of 1946** had recommended for setting up of a Constituent Assembly to draft a new constitution for India.

It had its first session on December - 9, 1946. **Dr.Sachidananda Sinha**, the then President of the Constituent Assembly presided over the first meeting. After Dr. Sinha, **Dr.Rajendra Prasad** became the President of the Constituent Assembly. After Independence he also became the first President of the Indian Republic.

The work of drafting the Constitution was given to the **Drafting Committee** by the Constituent Assembly. The Drafting Committee was constituted on 29th August 1947 under the Chairmanship of **Dr. B.R. Ambedkar**. He was a brilliant Constitutional expert and the chief architect of Indian Constitution. The Drafting Committee studied the Constitution of more than 60 countries such as U.K, USA, Ireland, erstwhile U.S.S.R, France, Switzerland, etc.

and adopted some of its meritorious features. The final session of the Constituent Assembly was held on 24th January 1950, The Constitution was inaugurated on 26th January 1950. Hence we celebrate the Republic day on 26th January of every year.

The Legal experts of the Drafting Committee

Dr. B.R. Ambedkar (Chairman)
N. Gopalaswami Ayyangar
Alladi Krishnaswamy Ayyar
Dr.K.M. Munshi
Syed Mohammad Sadullah
B.L.Mitter
N. Madhava Rao
T.T.Krishnamachari
D.P. Khaitan

The Constitution

The Constitution comprises of the basic principles of the political system by which the people of the Nation are to be governed.



Dr. Rajendra Prasad

Making of the Constitution

The Constituent Assembly took 2 years 11 months and 18 days to accomplish the task of making the Constitution. It held 11 plenary sessions. Discussion were held for 114 days.



Dr. B.R Ambedkar

26th January

On 26th January 1950 the "Purna Swaraj" day was celebrated, following the resolution of the Lahore session of Indian National Congress in 1929. So, the date 26th Jan 1950 was chosen to implement the Constitution.

The Indian Constitution contains XXII Parts, 449 Articles and 12 Schedules.

Some of the Salient Features of the Indian Constitution are

- 1) Preamble
- 2) The Popular Sovereignty
- 3) Secularism
- 4) Parliamentary Democratic Government.

- 5) Fundamental Rights and Duties.
- 6) Directive Principles of State Policy.
- 7) Universal Adult Franchise etc.

The Preamble

The Preamble is a preface or an introduction to the Constitution. The Preamble says that the Constitution derives its authority from the people of India. It declared India as a Sovereign, Socialist, Secular, Democratic Republic. According to the Preamble, Justice, Liberty, Equality and Fraternity are the objectives of the Constitution.

The Popular Sovereignty

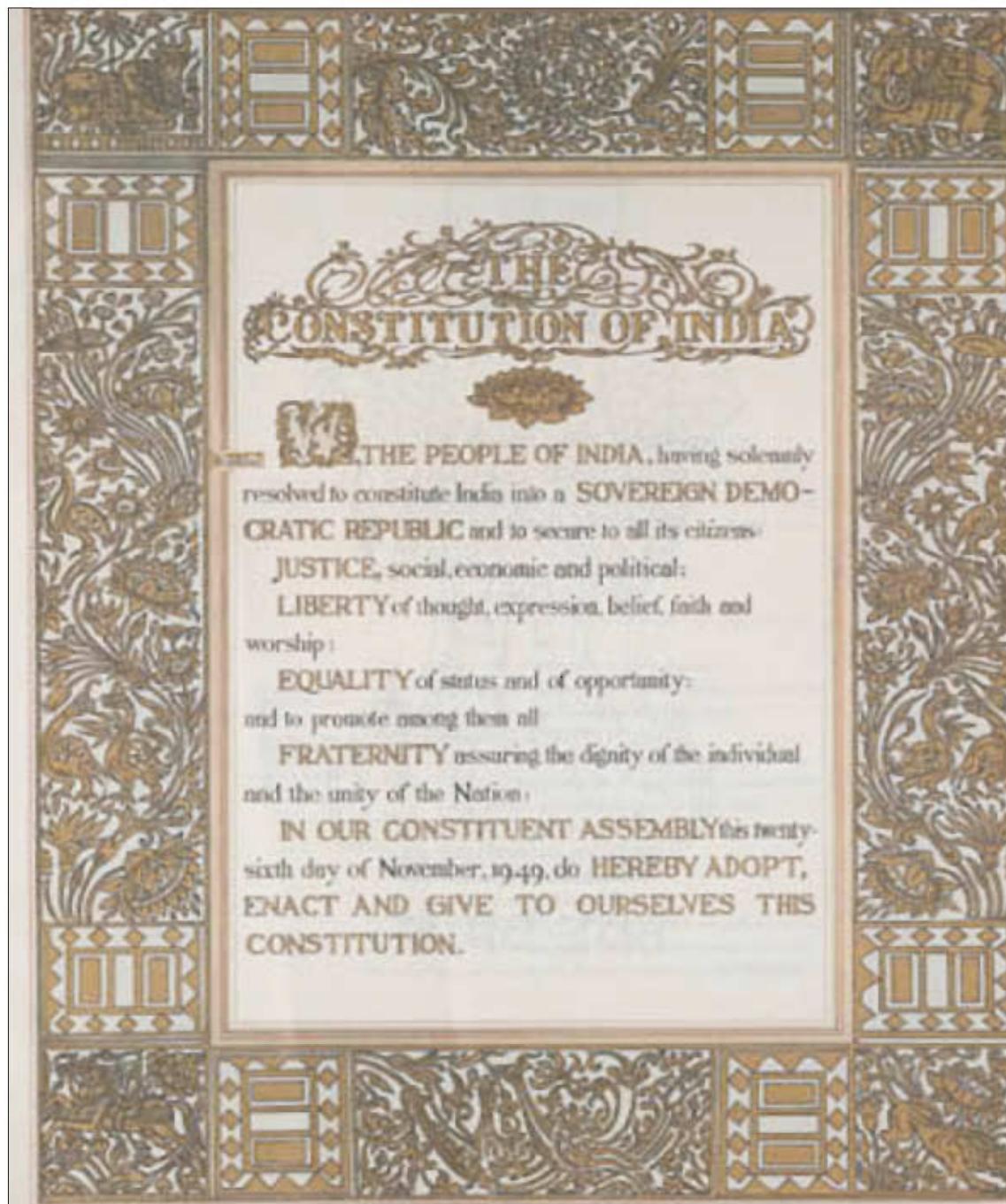
The Constitution gives complete authority to the people of India. The Popular sovereignty or complete authority of the people is reaffirmed in several places in the Constitution, particularly in the chapter "Election". The Central and State Governments derive their authority from the people. The people elect their representatives to the Parliament and the State Legislature at regular intervals. Those who hold the executive powers of the government are responsible to the Legislature. They are ultimately responsible to the people through the Legislature. Hence, people are sovereign. This is the principle of popular sovereignty.

Secularism

Secularism is one of the important national goals. In a Secular state, the people are not discriminated on the basis of religion. All citizens enjoy freedom of

worship and possess equal civil and political Rights irrespective of their religious beliefs. The State does not have a religion of its own.

All religions in our country have the same status and support from the State.



Parliamentary form of Government

The Constitution of India provides a Parliamentary form of Government. In a parliamentary system, the Executive is collectively responsible to the legislature. The Parliamentary form of Government is also known as Responsible Government or Cabinet Government.

Fundamental Rights

Fundamental Rights are Natural Rights. These are essential rights which help in realizing true democracy and ensure equality of all citizens. These Rights are guaranteed and protected by the Constitution. These Rights are also essential for the all-round development of the individual. If the rights are violated, the person can approach the Supreme Court or the High Court to claim his/her rights.

The Fundamental Rights are classified into six groups.

1)Right to equality

All are equal before Law.

2)Right to Freedom

Freedom of speech and expression, Right to life, personal liberty etc.,

3)Right against exploitation

It prohibits all forms of forced Labour, child labour and trafficking in human beings.

4)Right to freedom of Religion

It guarantees the citizens freedom to follow any religion.

5)Cultural and educational Rights

It gives rights to all citizens to preserve their language, script and Culture. It gives rights to minorities to establish Educational Institutions.

6)Right to Constitutional Remedies

This enables the citizen to approach the Supreme Court directly when there is violation of Fundamental Rights.

Directive Principles of State Policy

Directive Principles of State Policy is in the form of directions or instruction given to the State by the Constitution while formulating policies or making any law. It is the duty of the State to apply these directions while making any law. It aims at the establishment of a welfare state in our country. The Directive Principles may be grouped into the following categories such as (1) Socialist Principles, (2) Gandhian Principles, (3) International Principles and (4) Miscellaneous Principles.

1) Socialist Principles reflect the ideology of socialism such as adequate means of livelihood for all citizens, equal pay for work for men and women, to minimize inequalities in income, etc.

2) Gandhian Principles are based on Gandhian ideology. Such as, organisation of Village Panchayats, promotion of cottage industries, promotion of Educational and Economic Status of Scheduled Caste, Scheduled

Tribes and other weaker sections of the society, etc.

3) International Principles

Promotes International Peace and security.

4) Miscellaneous Principles

Such as, equal justice and free legal aid, to make uniform civil code for the citizens throughout the country, etc.

Universal Adult Franchise

The Constitution of India has introduced Universal Adult Franchise. All the citizens above the age of 18 years irrespective of their caste, colour, religion, sex, literacy, wealth, etc are entitled to participate in elections.

Fundamental Duties

The Indian Constitution contains certain duties to be performed by all the citizens of India. These duties are called as Fundamental Duties.

The Fundamental Duties

1. To abide by the Constitution and its ideals, respect the National flag, the National Anthem etc.,

2. To cherish and follow the noble ideals which inspired our national struggle for freedom.

3. To uphold and protect the sovereignty, unity and integrity of India.

4. To defend the country and render national services when called upon to do so.

5. To promote harmony and the spirit of common brotherhood.

6. To value and preserve the rich heritage of our culture.

7. To protect and improve the natural resources such as forests, lakes, rivers, wildlife etc.

8. To develop the scientific temper, humanism and spirit of inquiry.

9. To safeguard the public property and to avoid violence.

10. To strive towards excellence in all spheres.

11. To provide opportunities for the education to his/her child or ward between the age of six and fourteen.

The meticulously prepared Indian Constitution serves as an instrument of social change. It aims at making everyone equal and empowers every citizen to rise up to their optimum level.

EXERCISE

I) Choose the best answer.

1. The first session of the Constituent Assembly was presided over by
 - a) Dr. Rajendra Prasad
 - b) Dr. S.P. Sinha
 - c) Dr.B.R.Ambedkar
2. Our Constitution came into existence on _____.
 - a) 26th March 1950
 - b) 26th January 1950
 - c) 15th August 1947

3. The Preamble declares India as a _____ country.
a) Democratic b) Autocratic c) Monarchy
4. The people of India are given complete authority by the Indian _____.
a) Parliament b) Government c) Constitution
5. In a parliamentary system, the Executive is collectively responsible to the _____.
a) People b) Judiciary c) Legislature

II) Fill in the blanks.

1. The first President of India was _____.
2. The chief architect of the Indian Constitution was _____.
3. An introduction to our Constitution is found in the _____.
4. A Secular State does not have a _____ of its own.
5. Directive Principles aims at the establishment of the _____ state.

III) Match the following.

- | | |
|-------------------------------|--------------------------------|
| 1. Constituent Assembly | 26th January 1950 |
| 2. Drafting Committee | Chairman of Drafting Committee |
| 3. Dr. B.R. Ambedkar | Prohibition of forced labour |
| 4. Republic Day | 9th December 1946 |
| 5. Right against exploitation | 29th August 1947 |

IV) Answer the following questions briefly.

1. Write a note on Dr. B. R. Ambedkar
2. What does the Preamble declare our country to be?
3. Why do we say India is a Secular State?
4. What is meant by the Right to Constitutional Remedies?
5. What does Universal Adult Franchise mean?

V) Answer the following questions in detail.

1. What does Popular Sovereignty mean?
2. Write in detail on the Fundamental Rights guaranteed to a citizen.

Things to do.

1. Discuss how the Fundamental Rights are denied to the citizens in their day to day life and how can they be ensured.
2. Prepare and enact a skit emphasizing the need to perform the Fundamental Duties.

3. POLITICAL PARTIES

The present age is an Age of Democracy. According to Abraham Lincoln, "Democracy is the government of the people, for the people and by the people". In a democracy a citizen is both the ruler and the ruled. Citizens should always be conscious of their rights and duties. They should be aware of what is happening in the country. Political awareness is created by the Political parties. They help in forming public opinion. Hence the political parties are essential for the success of democracy.

Political Parties are the most visible institutions in a democracy. They serve as a link between the people and the government and provides a forum for the discussion of various issues.

Meaning

A political party is a group of people who come together to contest elections and hold powers in the government. They agree on some policies and programmes to uplift the society. A political party has three components-a **leader**, **active members** and the **followers**.

Characteristics of a Political Party

- 1.A political party agrees on important matters of public policy.
- 2.It aims to take part in the struggle for power.
- 3.It implements its policies and programmes by constitutional

(democratic) means.

- 4.It should have some degree of permanence.
- 5.It must have definite aims and objectives.

FUNCTIONS OF THE POLITICAL PARTIES

Basically a political party fills political offices and exercises their powers. They perform the following functions:

- 1.Parties contest elections.
2. Parties put forward their policies and programmes before the voters.
- 3.Parties play a decisive role in making laws.
- 4.The party which wins majority seats becomes the ruling party and runs the government.
- 5.Those parties that lose the majority in the elections form the opposition. They voice their different views and criticize the government for its failures and wrong policies.
- 6.Parties shape public opinion. They raise and highlight issues.

Structure and Working of a Political Party

A political party has a hierarchical structure. At the top, there is a periodically elected **President**. He is assisted by **Secretaries** and a **Treasurer**. A **working committee** may be set up to meet from time to time for holding

discussion and taking decisions. Conferences may be convened once in six months or a year to discuss their deliberations and working of their party. These conferences show their strength and solidarity to create a great impact on the public.

Types of Party System

There are three types of party system in the world namely,

1. Single party system in which one ruling party exists and no opposition is permitted. The former communist country USSR(United Soviet Socialist Republic) is an example for the single party system.

2. Bi-Party system or two party systems in which two major parties exist. Example-U.S.A. and Britain.

3. Multi party system in which there are more than two political parties. Example-India, Sri Lanka, France and Italy.

Multi Party System In India

The vastness of India and its diversified character has given rise to a large number of political parties in India. India has the largest number of political parties in the world. In India, there are a large number of State and National Parties.

The emergence of a large number of State parties is due to various reasons like regional issues, caste and communal divisions, cultural diversity, language etc.,

Regional parties have come to play a significant role in the National politics whenever a need arises at the Center while forming a coalition Government.

State Party

A party is recognised as a State party by the Election Commission of India based on certain percentage of votes secured or certain number of seats won in the Assembly or Lok Sabha Elections.

National Party

A party which is recognised as a State party in at least four states is, recognised as National party.

Every party in the country has to register with the Election Commission. While the Commission treats all parties equally it offers some special facilities to State and National parties. These parties are given a unique symbol. Only the official candidates of the party can use that election symbol.

Thus the political parties help the representatives of the government to work successfully and they form the backbone of Democracy.

EXERCISE

I) Choose the correct answer.

1. A Political party creates _____ awareness.
a) social b) economic c) political
2. Bi-party system exists in _____
a) India b) U.S.A c) France
3. A Party which is recognised as a State Party in _____ States is a National Party.
a) Four b) Eight c) Seven
4. _____ forms the backbone of democracy.
a) Election b) Political parties c) Votes

II) Fill in the blanks.

1. In a democracy the citizen is both the ruler and the _____
2. Political parties help in forming _____ opinion.
3. Political Parties serve as a link between the _____ and the government.
4. The country having the largest number of political parties in the world is _____.
5. Large and established parties have unique _____.

III) Answer the following questions briefly.

1. Give Abraham Lincoln's definition for democracy.
2. What is a Political party?
3. What are the components of a Political party?
4. Mention a few characteristics of a Political party?
5. When is a Political party recognized as a National Party?

IV) Answer in detail.

1. Give an account of the functions of Political parties in a Democratic country.
2. What are the three types of party system in the world? Explain with examples.

Things to do.

Collect details on the Regional parties in your state- its leaders, party symbol, aims and election manifesto.

4. UNITED NATIONS ORGANIZATION

The Second World War which lasted from 1939-1945 proved to be more destructive than the First World War as more than fifty million people had lost their lives. The League of Nations, a World Organization, formed after the First World war, to maintain peace and security failed to prevent the Second World War.

The USA, the USSR and the UK realized the immediate and urgent need for a world forum to establish an everlasting peace in the world. This realization led to the formation of the UNO.

Preliminary Plans

The concrete plan for a new world organization began under the support of the US State Department in 1939. Franklin D. Roosevelt, the former President of USA first coined the term United Nations to describe the Allied countries which stood for peace. The term was first officially used on January 1st 1942, when 26 countries signed the "Atlantic Charter" in Washington DC.

Atlantic Charter

It is a set of principles formulated for maintaining peace and security. It was signed on 14th August 1941 by President Franklin D. Roosevelt of the USA and Prime Minister Winston Churchill of UK on the Ship HMS Prince of Wales in the Atlantic Ocean. So, it came to be called the Atlantic Charter.

UN Charter

After a series of conferences held at various places the UNO was created. The UN Conference began in San Francisco on 25th April 1945 to draft the Charter of UNO. UN charter contains the aims, objectives, rules and regulations for the working of the UNO. It was signed on 26th June 1945 by the representatives of 50 countries, Poland signed the Charter later. The UNO came into existence on 24th October 1945. Hence the UNO Day is celebrated on 24th October every year.

CONFERENCES PRIOR TO UNOs FORMATION

- 30th Oct 1943 -Moscow
- 1st Dec 1943-Teheran
- 21st Sep 1943-Dumbarton Oaks
- 7th Oct 1943- Dumbarton Oaks
- 11th Feb 1945-Yalta

MEMBERSHIP

Peace loving nations that accept the UN charter are the members of UNO. At present 192 countries are members of the UN. The headquarters of the UNO is situated in the International territory in Manhattan, New York.

The Emblem, Flag and Languages of UNO

The emblem is a map of the World as seen from the North Pole with five concentric circles surrounded by a wreath of olive

branches which symbolizes peace and the World map depicts the United Nations area of concern in achieving its main purpose namely peace and security.



UNO Emblem

UNOs functions

peace-keeping,
conflict-prevention
Refugees protection,
Counter terrorisms, disarmament
and Non-Proliferation.
Promoting Democracy
Sustainable development
maintaining climate friendly energy
future
Promoting international health,
Childcare
Reducing Measles Mortality
Eradicating Polio-etc.
Prevention of Malaria Deaths-
Expanding Food production etc.

The UN Flag consists of the UN emblem in white on a medium light blue back ground. The official languages of the UN are English, French, Spanish, Russian, Chinese and Arabic.

Objectives of UNO

The objectives of the UNO are

To solve the disputes among the member countries through peaceful means.

To maintain international peace

and security.

To develop friendly relations among nations.

To co-operate in solving International Economic, Social, Cultural or Humanitarian Problems.

To promote social progress, better living standards and human rights.

UNO Millennium Development Goals

The UNO formulated the following goals for the present millennium.

1. To eradicate extreme poverty and hunger.
2. To achieve universal primary education.
3. To promote gender equality and empower women.
4. To reduce child mortality
5. To improve maternal health.
6. To fight against HIV/AIDS, malaria and other diseases.
7. To ensure environment sustainability.
8. To develop a global partnership for development.

Organs of UNO

The six principle organs are the General Assembly, the Security Council, the Economic and Social Council, the International Court of Justice, the Trusteeship Council and the Secretariat.

The General Assembly

The General Assembly is the main deliberative organ of the United Nations. It is called the "Parliament of Mankind".

Mrs. Vijayalakshmi Pandit of India was elected as the President of the General Assembly in 1954.

The decision process

The decision on important issues, such as peace and security, admission of new members and budgetary matters, require a 2/3 majority. Decision on other questions is by simple majority.

It is composed of representatives of all member countries, each of which has one vote. Each member state can send five members to the General Assembly. The General Assembly holds its session once a year. The session is generally held in the month of September. A special session of the Assembly can also be called for at the request of the Security Council.

The main functions of the General Assembly are as follows:

1. To elect the President and 21 Vice-Presidents and the non-permanent members of the Security Council and the members of other organs of the UN.
2. To approve the UN budget.
3. With the recommendation of the Security Council, it appoint the Secretary-General and Judges of the International Court.

The Security Council

The Security Council is the second important organ of the UNO. It acts as the executive branch of

the UNO. The Security Council is composed of fifteen members - five permanent members and ten Non Permanent members. The permanent members are Russia, France, USA, UK and China. The non-permanent members are elected by the General Assembly for a term of 2 years. The Security Council meets every month and a new President is elected. The Council needs a 2/3 majority to take decisions. The permanent members have the **veto power**. (Power to say **No** to a decision.)

Main functions of the Security Council are as follows

1. To maintain international peace and security.
2. To find peaceful ways to settle disputes of member states.
3. To recommend the admission of new members and
4. To participate in the election of the Secretary-General.

The Economic and Social Council

The Economic and Social council co-ordinates the economic and social work of the UNO and its specialized agencies. It has 54 members elected by the General Assembly for a three year term. Every three years, 1/3 of its members are set aside and new members are elected in their place. It meets throughout the year as and when needed. At its session in July the major Economic, Social and Humanitarian issues such as social development, the status of women, crime prevention, narcotic drugs

and sustainable development are discussed.

The Trusteeship Council

The Trusteeship Council was established to provide international supervision for 11 Trust Territories administered by 7 member states to ensure that adequate steps were taken to prepare the territories for self-government or independence. By 1994 all the Trust Territories had attained self-government or independence, either as separate states or by joining neighbouring independent countries. On the completion of its work, the Trusteeship council has amended its rules and procedures to allow it to meet as and when the occasion may arise.

The International Court of Justice

The International Court of Justice is also known as the **World Court**. It is the main judicial organ of the UNO. Its 15 judges are elected by the General Assembly and the Security Council. The Court solves the disputes between the countries concerned.

The Court also gives advisory opinions to the United Nations and its specialized agencies. It is situated in the city of Hague in Holland.

The Secretariat

The Secretariat carries out the administrative work of the United Nations as directed by the General Assembly, the Security Council and the other organs. It is headed by the Secretary General, who provides

overall administrative guidance. The present Secretary-General is Ban ki-moon of South Korea was elected in 2007.

The Secretariat consists of departments and offices with a total staff of about 7500. The staff are chosen on the basis of their high standard of efficiency, competence and integrity.

The UNO also carries on its work through thirty specialised agencies which help in achieving its various goals.

Some of the Specialized Agencies are:
FAO-Food and Agricultural Organisation
ILO-International Labour Organisation
IMF- International Monetary Fund.
UNICEF-United Nations Children's Fund
UNESCO-UN Educational Scientific and Cultural Organisation
WHO- World Health Organisation
WTO- World Trade Organisation. Etc.

UN Achievements

The UNO has succeeded in maintaining international peace and security and averted global war through peaceful negotiations. It has also helped in solving many of the social, cultural, economic and humanitarian problems among the member countries.

Major achievements of the UNO

1946-made Russia withdraw its troops from Iran and Britain and France to withdraw their troops from Syria and Lebanon.

1947-freed Indonesia from the Dutch.

1956-intervened in the Suez Canal crisis and finally internationalized the canal.

1962 and 1973-diffused the Cuban missile crisis and the Middle East Crisis.

1988-the Iran-Iraq war was ended

1989-sponsored negotiations for the withdrawal of Soviet troops from Afghanistan.

1990-restored sovereignty to Kuwait and ended civil wars in Cambodia, El Salvador, Guatemala and Mozambique

Its specialized agency WHO (World Health Organisation) has successfully eradicated small pox and is working towards the elimination of polio, malaria and tuberculosis. The UNHCR (The United Nations High Commission for Refugees) has taken a lot of effort to resettle refugees. The UNO and its specialized agencies work for a safer world for the future generation.

EXERCISE

I) Choose the correct answer.

1. The Headquarters of the UNO is at _____.
a) Washington b) Hague c) New York
2. The _____ is called the Parliament of mankind.
a) Trusteeship Council b) General Assembly
c) Economic and Social Council
3. One of the official languages of the UNO is _____.
a) Hindi b) German c) French
4. There are _____ permanent members in the Security Council.
a) 4 b) 5 c) 10
5. The programme launched by the _____ has successfully eradicated small pox.
a) WHO b) ILO c) UNESCO

II) Fill in the blanks.

1. The term United Nations was coined by _____.
2. The UN Charter was signed by _____ countries on 26th June 1945.
3. The executive branch of the UNO is _____.
4. All the Trust Territories have attained self-government by the year _____.
5. The International Court of Justice is located at _____ in Holland.

III) Match the following.

1.UN conference	Resettles Refugees
2.U N O	San Francisco
3.Ban Ki-moon	New York
4.U N Headquarters	24th October 1945
5.UNHCR	UN Secretary-General.

IV) Answer the following questions briefly.

1. Describe the emblem of the UNO.
2. Which are the official languages of the UNO?
3. Mention any two objectives of the UNO
4. Who are the permanent members of the Security Council?
5. What is the role of the International Court of Justice?

V) Answer in detail.

1. Write a note on the millennium development goals of the UNO.
2. What are the main organs of the UNO? Explain the functions of the Security Council.

Things to do.

Collect information on how the UNO helps women and children in India

5. LEGISLATIONS AND WELFARE SCHEMES FOR CHILDREN AND WOMEN

India is a welfare state committed to ensure the well-being of all its citizens especially the children and women. No country can make progress until women are educated because a mother is the teacher of the child. The children are the future pillars of our nation. So, much importance is given to the development of children and women in India.

Legislations for Children

Article 39(f) and **45** of the Directive Principles of our Constitution directs the State to enact laws for the protection and development of children.

Article 24 is a Fundamental Right. It deals with the Right against Exploitation and Prohibition of Child Labour.

Article 39(f) provides facilities for the children to develop in a healthy manner; provides for proper care for children and youth; and provides protection against exploitation.

Article 45 provides for free and compulsory education for all children up to the age of 14 years.

No child below the age of 14 years shall be allowed to work in any factory or mine or engage in any hazardous employment.

The Ministry of women and children

The Ministry's vision is ensuring overall survival,

development and protection of women and children of the country to enable them to lead productive and wholesome lives as citizens.

Right to Education

A hundred years ago, Gopala Krishna Gokhale a great leader of the freedom struggle demanded the right to education for Indian children from the then Imperial Legislative Assembly. His dream for the Right to Education came true when the Government of India introduced the **Right to Education Act (REA)** on 1st April 2010. The right to education is now a fundamental right for all children in the age group of 6 to 14 years. Thus the Government of India has paved the way for building up a strong literate and empowered youth of this country.

Acts passed by the Government

Several Acts have been passed for the welfare of the children. A few of them are:

1. The Juvenile Injustice Act was passed in 1986 and amended in 2000.
2. Infant Milk Substitute, Feeding Bottles and Infant Food Act-1992.
3. Commission for Protection of Child Rights Act -2005.

Schemes and programmes for Children

Many schemes and programmes have been implemented for the upliftment and benefit of children.

1. Integrated Child Development Services (ICDS) Scheme-(1975) has the following objectives.

a) To improve the health of children (under the age of 6 years), pregnant women and feeding mothers.

b) To reduce the rate of mortality, malnutrition and school drop-outs.

2) Rajiv Gandhi National Creche Scheme for the Children of Working Mothers-(2006) provides services to children (of the age group 0-6 years) of working mothers by opening creches.

3) An integrated Programme for Street children provides facilities like shelter, nutrition, health care education and leisure facilities. It protects them from abuse and exploitation.

4) Child Line Services aims at helping children during times of difficulties and emergency. They also concentrate on childcare and protection.

5) Integrated Child Protection Scheme provides for institutional as well as non-institutional support for children.

6) Scheme for Welfare of Working children in need of Care and Protection-(2005) aims to

provide non-formal education and vocational training to working children to continue their education.

Observance of Children's Day

The Children's Day is celebrated on 14th November of every year. It gives the Government and Social organisations yet another opportunity to focus on the children so as to review the steps taken for their improvement and to work out ways for their enhancement in various fields.

Government's Recognition Of Outstanding Children

Our Government gives due recognition to children with exceptional abilities and outstanding achievements in various fields like academics, arts, culture and sports.

The National Child Award for Exceptional Achievements was instituted in 1996 to honour such children. Children between the age group of 4 and 15 years are honoured with meritorious awards on the Republic Day every year.

Inspite of all the legislations passed by the Government, it is very essential to create awareness among children about the dangers around them. They should be educated to approach the concerned authorities or the proper channels to report their problems and to get guidance and counselling.

The parents, the schools and the public should take the moral responsibility to co-operate with the

Government and Welfare Agencies to protect the children from various abuses and exploitation.

Women Empowerment and Legislations

The position of women from time immemorial is of a varied nature. Sometimes women hold a position of honour and high esteem while at other times they have to face untold miseries and hardships. To improve their status in society the Government of India has assured several rights to women and has enacted a number of legislations.

Rights and Legislations for Women

Article 23 and 24 of the Constitution are of great significance to the emancipation of women.

Articles 23 prohibits trade of woman like commodities.

Forced labour is made as an offence.

Human Trafficking is made illegal.

Women are assured the Right against exploitation.

Law allows the daughter along with the sons to claim the property of their families. Child Marriage Restraint Amendment Act of 1978 has increased the age of marriage of girls from 15 to 18 years and for boys from 18 to 21 years.

The Dowry Prohibition Act of 1961 bans the custom of giving and receiving dowry. The Dowry

Prohibition Amendment Act of 1986 provides drastic punishments for those ill-treating women in connection with dowry.

In addition to the Constitutional Provisions, the State Government and Union Territories have enacted a number of legislations to protect women against social injustice and exploitation. For example- The Tamil Nadu Legislature has passed the Prohibition of Eve Teasing Law in 1997. It was amended in 2002 as the Prevention of Harassment of Women Act.

Amendments have been made in the Constitution from time to time for the benefit of the citizens. The 73rd and 74th Amendment Acts have provided 33% reservations of seats for women in the Panchayatraj and Urban Local bodies.

Economic Empowerment Schemes

Many schemes and programmes have been formulated to protect, educate and uplift women in India. Some of them are:

1. Support to Training and Employment Programme(STEP)

This programme was started in the year 1996 to provide employment for women in handloom, handicrafts, khadi and village industries.

2. Swayamsidha

It deals with the socio-economic development and empowerment of women through Self Help Groups, etc.

3. Short Stay Home-(1996)

These homes help to rehabilitate girls and women facing social, economic and emotional problems.

4. Family Counselling Centres

These centres give counselling to the victims facing social atrocities and family mal-adjustment.

5. Condensed Courses of Education of Women

Girls in the age group 15 years and above who fail to complete their schooling due to various reasons are given education and training in relevant skills. These courses create job opportunities for them and facilitates their empowerment.

6. Awareness Generation Programmes for Rural and Poor women

Women face many problems as they are unaware of their rights and privileges. This program creates awareness among women on issues like status and rights and helps them to solve their problems.

The Legislation passed by the Government and the efforts taken by many social welfare institutions has definitely enhanced the status of children and women in India. We can boldly say that the position of women and children has improved a lot and will rise higher in the years to come.

EXERCISE

I) Choose the correct answers.

1. The _____ are the future pillars of our nation
a) Elderly person's b) Middle aged person's c) Children
2. The _____ in the Constitution provides facilities for the children to develop in a healthy manner
a) Article 39(f) b) Article 45 c) Article 25
3. The Government of India introduced the Right to Education on
a) 15th August 1947 b) 26th January 1950
c) 1st April 2010
4. The 72nd and 73rd Amendment Acts have provided 33 % reservations of seats for _____ in the local bodies
a) teachers b) women c) graduates

5. _____ deals with the socio-economic development and empowerment of women through self-help groups.
- Short Stay Home
 - Swayamsidha
 - Family counseling centres

II) Fill in the blanks.

- The Juvenile Injustice Act was amended in the year _____
- The Child Line Services aims at helping _____ during times of difficulties and emergency.
- The Child Marriage Restraint Act of 1978 has increased the age of marriage of girls from 15yrs to _____ years.
- TamilNadu Legislature passed the Prohibition of Eve-Teasing Law in _____.
- The Family Counselling Centres were started to give _____ for the victims facing social problems.

III) Match the following.

- | | |
|--------------------------|-------------------------------|
| 1. Article 45 | to reduce rate of mortality |
| 2. ICDS Scheme | 1961 |
| 3. Children's Day | rehabilitation of girls |
| 4. Dowry Prohibition Act | 14th November |
| 5. Short Stay Home | free and compulsory education |

IV) Answer the following briefly.

- What does Article 24 provide for the children?
- Name a few Acts passed for the welfare of children.
- Which group of children are given due recognition by our Government on the Republic day?
- How do Articles 23 and 24 help women?
- Bring out the importance of Dowry Prohibition Act of 1961 and 1986.

V) Answer in detail.

- What are the schemes and programmes undertaken for the upliftment and benefit of children?
- Give a detailed account on the economic empowerment schemes for women.

Things to do.

Collect information on any Welfare Scheme undertaken to uplift women and children in your neighbourhood.

ECONOMICS

1. FACTORS OF PRODUCTION

Economics is a social science which deals with human wants and their satisfaction. Economics deals with the society's problems such as unemployment, poverty, medical care, productivity and government policies.



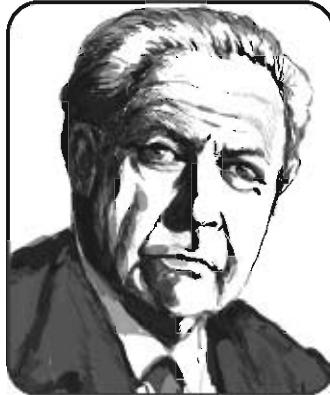
Adam smith

Adam Smith is called as the father of Economics. He defined Economics as follows: 'Economics is the science of wealth'. The publication of Adam Smith's book "An Enquiry into the Nature and Causes of Wealth of Nations" laid the foundation of Economics as a systematic study.

Lionel Robbins has defined economics as follows: "Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses".

Society and scarce resources

A society allocates its scarce resources among different uses. Economics seeks to formulate the



Lionel Robbins

criteria which would achieve the best possible allocation of resources.

In the modern world, people want to consume large number of goods and services in their day to day life. Goods and services have to be produced and offered to the public. Production means the process by which man converts the resources of nature to satisfy human wants. The level of production of goods and services in a country determines the quantum of its national income. Advanced countries produce large amount of goods and services thereby their national incomes are at higher level.

Let's Learn

Production means creation of utility. Utility means wants satisfying power.

Land, Labour, Capital and Organisation used by society to produce consumer satisfying goods

and services are called factors of production. The production of any good or service inevitably requires all four factor inputs. Each factor plays a unique role in the production process. Even if one factor is not used, production is impossible. Therefore the producer combines the factors of production in the right proportion and produces goods. The aim of every producer is to get maximum profit at a minimum cost. Thus, production includes not only material goods, but also various services such as the services of doctors, teachers and others.

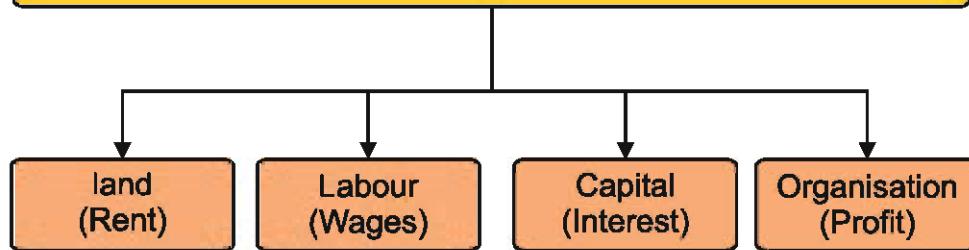
Activity

Do you know how are the different goods produced in the society?

Land and labour are often referred to as original factors or primary factors. Capital and Organization are derived factors. Even a small piece of chalk cannot be produced without active participation of factors of production.



FACTORS OF PRODUCTION AND FACTOR REWARDS



LAND

In the ordinary language land means earth, but in Economics Land is defined as everything in the Universe that is not created by human beings. All the free gifts of nature are termed as land. Air, sunlight, earth, forest, rivers and minerals are all classified as land. The reward to the land as a factor of production is called rent. Land possesses certain peculiarities which are not found in other factors of production.

LETS LEARN

Land and labour are original factors. Capital and Organization are derived factors.

You can find below the free gifts of nature.



EARTH



FOREST



RIVER



Mineral

Characteristics of land

1. Land is a free gift of nature

Land was not made by man. It was already in existence.

2. Land is fixed in supply

The total area of land cannot be increased or decreased. Man can only change the uses of land.

3. Land is permanent

It is permanent in the sense; it cannot be destroyed by man.

4. Land differs in fertility

Some lands are highly fertile. Some are less fertile. No Two lands are exactly the same in quality.

5. Land is a passive factor of production

It cannot produce anything by

itself. Men have to work on land to produce goods and services.

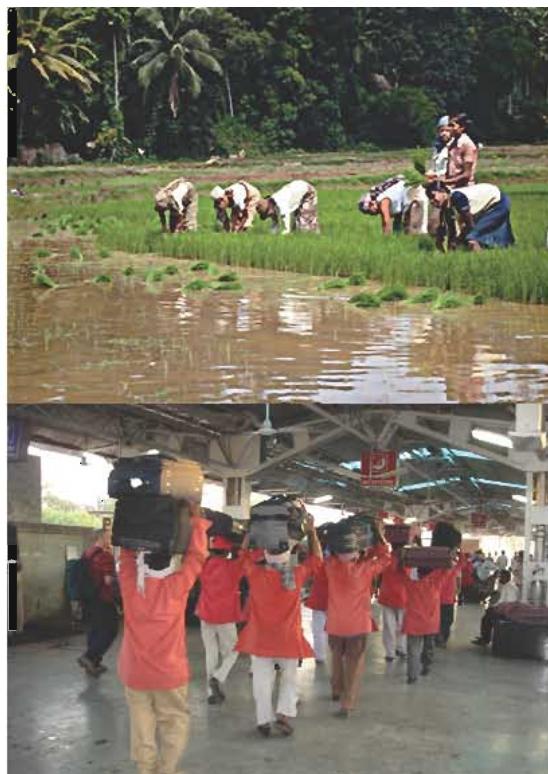
Labour

Labour refers to any work undertaken for securing an income or reward. Such work may be physical or mental. The work done by a cook is physical labour. The work of a teacher is mental labour. Any work undertaken only for pleasure is not regarded as labour. The reward paid to labour as a factor of production is called wages.

ACTIVITY

Where are most of the people in your locality employed?

"Labour is the active and initial force and labour is therefore the employer of capital"



Physical Labour



Mental Labour

Labour is different from other factors of production because it involves human elements. Labour is an active factor of production. As a result it possesses certain peculiar characteristics.

Characteristics of Labour

1. Labour is perishable

It cannot be stored like commodities. Labour power once lost cannot be regained.

2. Labour is Inseparable

Labour cannot be separated from the labourer. For example dance cannot be separated from the dancer.

3. Labour power differs from person to person

Even those who have the same qualification and training may be different in their efficiency. This

accounts for differences in wages.

4.Labour is mobile

Man moves from one place to another from low paid occupation to a high paid of occupation.

5.Individual Labour has weak bargaining power

In developing countries like India, labourers are forced to accept low wages rather than to remain unemployed. The emergence of trade unions has improved the bargaining power.

Efficiency of Labour

Efficiency of labour means the productive capacity of labour to do more work or better. More efficient labour can increase production and thus promote economic growth. Efficiency of labour depends upon several factors.

- a. Climatic conditions.
- b. Racial and hereditary factors.
- c. Better working condition in the place of work.
- d. Duration of work.
- f. Availability of social security against risk, accident, Provident fund etc.

Division of labour

Adam smith, the father of Economics introduced the concept of Division of labour in his book "Wealth of Nations". His example was the making of pins.

Meaning

Division of labour means dividing the process of production

into several component processes and assigning each component in the hands of a labour or a set of labourers, who are specialists in that particular process.

Adam smith described the pin making process which could be divided into 18 distinct operations such as fixing the head, sharpening the point etc. With division of labour 10 men can produce 48,000 pins a day. A worker can produce 4800 pins a day. In the absence of division of labour and machinery a worker could hardly make one pin a day.

Merits of division of labour

- 1. Increase in productivity.
- 2. Improvement in skills and efficiency of labour.
- 3. Enables large scale production.
- 4. There is a lot of saving in time and tools.
- 5. Division of labour helps to employ right man for the right job.

Demerits of division of labour

- 1. Repetition of the same work makes labour to feel that the work is monotonous.
- 2. Division of labour kills the humanity.
- 3. Destructs the growth of handicrafts.
- 4. The worker loses the satisfaction of having made a commodity in full.
- 5. Narrow specialization reduces the possibility of labour to find alternative avenues of employment.

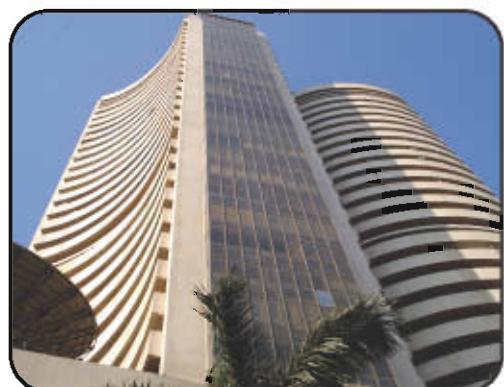
Capital

In general capital means money. In Economics, capital refers to that part of man made wealth which is used for the further production of wealth. The term capital includes buildings, equipments and other intermediate products. Building used for industry becomes capital but if it is used for domestic use, it cannot be regarded as capital. All wealth is not capital but all capital is wealth. The reward paid to capital as a factor of production is called interest.

ACTIVITY

Can you guess what is the money capital required to start a Garment firm?

Think about your own human capital. What skills do you have?



Forms of Capital

1. Physical capital

Investment on all man made physical assets like buildings and machines are called physical capital.

2. Money Capital

Investment made in the form of money or monetary instruments is called money capital.

3. Human Capital

Investment in education, training, healthcare etc. is called human capital.

Characteristics of Capital

1. Capital is a passive factor of production

Like land, capital becomes inactive without labour.

2. Capital is man made

Land and labour are original factors. Capital is produced out of savings.

3. Capital is productive

It is productive because it yields an income.

4. Capital lasts overtime

It lasts over a period of time. It does not disappear. Capital stock kept idle can be used again.

5. Capital has the highest mobility

Land is totally immobile. Labour has a low mobility. Capital has both place and occupational mobility.



An **organizer/entrepreneur** is a person who combines the different factors of production, in the right proportion and initiates the process of production and also bears the risk and uncertainties involved in it. An entrepreneur is called as “the changing agent of the society”.



An Organizer in a meeting

Functions

1. To find the profitable investment opportunities.
2. Deciding the location of production.
3. Making innovations.
4. Taking risks.
5. Facing uncertainties.

DIFFERENT SECTORS OF THE ECONOMY

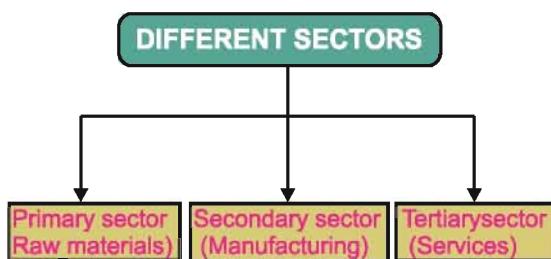
The different occupations of man can broadly be classified into three sectors namely Primary sector, Secondary sector and Tertiary sector. The farm labourers are working in the Fields, the factory workers are manufacturing goods and Doctors, Teachers, Bank staff and Transport workers are performing their work. The wheels of economic activity are whirling around.

ACTIVITY

List out the qualities required to become an effective entrepreneur.

Interact with an entrepreneur and analyze the success of his business.

The movement of goods and services through the primary, secondary and tertiary sectors is referred to as the "chain of production".



PRIMARY SECTOR

The primary sector of the economy involves changing natural resources into primary products. This sector is concerned with the production of food and raw materials and is described as primary production. Most products from this sector are considered as raw materials for other industries. Major businesses in this sector include agriculture, fishing, forestry, mining, quarrying etc. In India a large portion of the population remains engaged in this sector. In more developed countries additional capital is invested in primary means of production. Agriculture is the largest and most significant sector in the Indian economy.

SECONDARY SECTOR

The secondary sector uses the raw materials of the primary

producers and turns them into usable finished products.

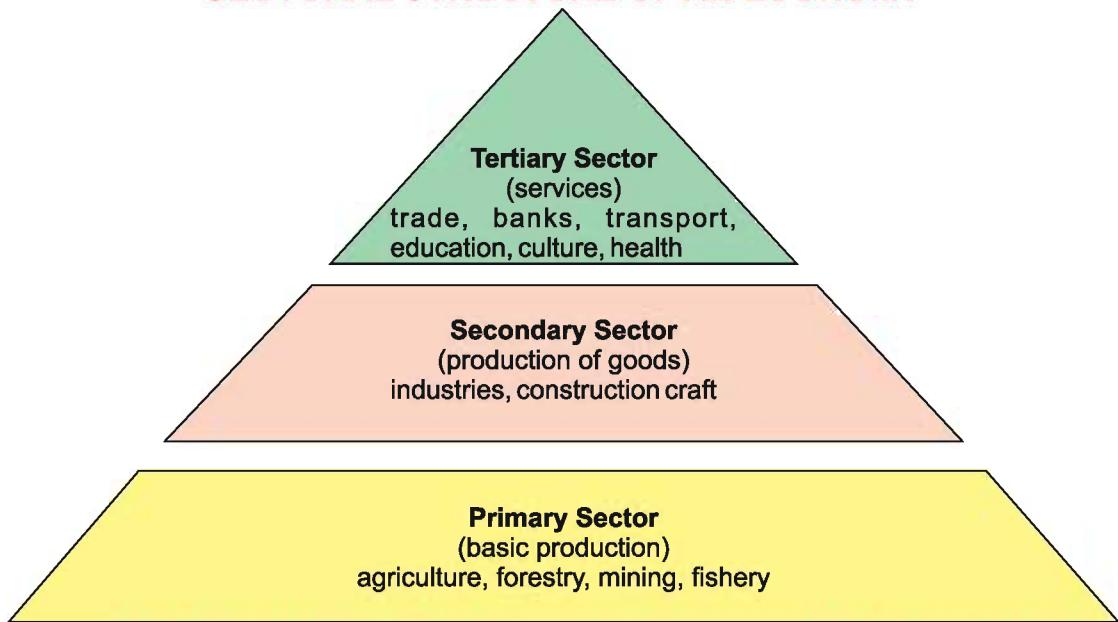
It is also called as manufacturing sector. Raw materials are converted into finished or semi finished products. This sector is made up of large scale manufacturing industries, small scale industries and cottage industries. Activities associated with secondary sector include metal working and smelting, textile production, chemical and engineering industries, ship building industries etc.

TERTIARY SECTOR

The tertiary sector of the economy is the service industry. This sector provides services to the general population and to businesses. Activities associated with this sector include Insurance and Banking services, Health care, Transportation, Communication, Retail and wholesale, Entertainment etc.

There is an impressive expansion of job opportunities in the service sector in our country. In most developed countries, a growing proportion of workers are devoted to the tertiary sector. In United States more than 80% of the labour force is tertiary workers. Tertiary sector is becoming increasingly important in the world economy.

SECTORAL STRUCTURE OF AN ECONOMY



Thus the three sectors of the economy are dependent on each other.

Exercise

I) Choose the correct answer

1. Economics is a _____ science.
a) Social b) Political c) Moral
2. There are _____ factors of production.
a) Two b) four c) five
3. Labour cannot be separated from _____.
a) Labourer b) profit c) Capital.
4. In general Capital means _____.
a) Buildings b) Machinery c) Money
5. An organizer will always make _____.
a) Innovations b) Traditions c) Risks
6. The reward paid to capital is _____.
a) Rent b) Wages c) Interest
7. Investment in education is called _____ capital.
a) Physical b) Human c) Money
8. The reward paid to labour as a factor of production is _____.
a) Rent b) Wages c) Profit

9. In United States more than _____ of labour force is tertiary workers.
a) 60% b) 40% c) 80%
10. Agriculture is classified under _____ sector.
a) Primary b) Secondary c) Tertiary

ii) Fill in the blanks

1. Production means creation of _____.
2. _____ means wants satisfying power.
3. _____ and _____ are called original factors.
4. Capital and Organization are called _____ factors
5. _____ is a free gift of nature.
6. The concept of Division of labour was introduced by _____.
7. _____ is the changing agent of the society.
8. Secondary sector is also called _____ sector.
9. Tertiary sector of the economy is the _____ industry.
10. An enquiry into the nature and causes of wealth of nations was written by _____.

iii) Match The Following

- | | |
|---------------------|-----------------|
| 1. Land | Bears risk |
| 2. Banking service | Rent |
| 3. Organizer | Buildings |
| 4. Labour | Tertiary sector |
| 5. Physical capital | Perishable |

iv) Answer in brief

1. State Lionel Robbins' Definition of Economics.
2. What are the three sectors of the economy?
3. What is meant by Division of Labour.
4. What are the forms of Capital?
5. List out the Factors of production and their respective rewards.

v) Answer in a paragraph

1. Explain the characteristic features of land.
2. What are the functions of an entrepreneur?

vi) Answer in detail

1. What are the merits and demerits of Division of labour?
2. Write about tertiary sector.