

SOCIAL SCIENCE

(HISTORY - CIVICS - GEOGRAPHY)

STANDARD VII

Untouchability is a sin

Untouchability is a crime

Untouchability is inhuman

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UNIT – I

I. CHOLA PERIOD – SOURCES – RULERS

Learning Objectives:

- 1 To enable pupil to know the sources for the study of the Cholas.
2. To enable pupil to know the life and achievements of the Chola rulers.

The Cholas and their contributions find significant place in the history of South India. The early Cholas ruled during the Sangam period. Karikala was the greatest king among the early Chola kings. After a long period, when the Pallava dynasty declined, the Chola kingdom began to shine once again. The greatness of the later Chola rule was revived by the Chola king Vijayalaya. The later Chola kings ruled from 850 A.D to 1279 A.D for nearly 430 years.

AD – Anno Domini
BC – Before Christ

Sources: History of any society or kingdom can be written only with the help of available relevant source materials. Lot of inscriptions, archaeological and literary sources are available for the study of the history of the Cholas. Great literature like Mahavamsam talk about the early Cholas. Foreign visitors like Megasthenes, give useful informations about the early Cholas. The inscriptions of Ashoka and many contemporary sources talk about the early Chola kings and also about the early Chola rule.

Inscriptions: Inscriptions are the main sources of information for the history of the Chola period. Inscriptions talk about the life of the rulers,

administration, political, economic, religious, social and cultural conditions during the Chola period. Inscriptions were placed on the walls of the temples and pillars. This is amply illustrated in the Brahadeeswarar temple at Tanjore known as “Big temple”. Many important inscriptions are found in Cuddalore, Villupuram,



Karandhai Plate

Trichy, Tanjore, Chidambaram, Kumbakonam and Nagapattinam.

The stone inscriptions give us useful informations about the administration of the Chola rulers. Thiruvandhipuram inscriptions speak about the reign of Rajendra III. The Uttaramerur inscriptions give informations about the kudavolai system, village administration, taxation and land revenue. Meikirthis are also found in inscriptions. Anbil plates, the Kanyakumari stone inscription, Karanthai plates and Thiruvallangadu copper plates give useful informations about the Cholas. The Tanjore Peruvudaiyar temple inscriptions talk about the existence of saivism. The inscriptions of contemporary rulers like Cheras, Pandyas, Rashtrakutas and Gangas speak about the Cholas.

Monuments: Monuments are important sources for the history of the Cholas. Monuments are part of the temples. The Brahadeeswarar temple of Tanjore, the Gangaikonda Cholapuram temple, Airavateswarar temple of Dharasuram and the Kambageswarar temple in Thirupuvanam are some of the important monuments of the Cholas.

Numismatic Sources:

The Chola kings issued gold, silver and copper coins. Specimen of gold coins are extremely rare. Silver and copper coins are found in plenty.

Chola Coins



Figure of tiger was engraved as the Chola emblem on every Chola coin issued during that period. Names of the Chola Kings were also engraved on chola coins. King Rajaraja issued a new Ceylon type of coins Chola coins are useful to fix the chronology of the Chola rulers. Coins are also useful to study the social and economic condition of the Chola period.

Numismatics means a study of coins.

Literature: Literary sources are very useful for the study of both Sangam Cholas and later Cholas. Sekkilar’s Periyapuramam deals with the life of Saiva devotees. Sekkilar was a contemporary of Kulothunga – II. Kalingathuparani of Jayamkondan, three Ulas and the Kulothungan pillai tamil of Ottakoothar give useful informations about the Cholas. Other literary works like Veerasoliam, Sthalapuramam, Navachola charitham and Cholavamsa charitham speak about the early Cholas.

Foreign sources: Mahavamsam the Ceylon literature talks about the relationship between the early Chola country and Ceylon kingdom. It also speaks about the Chola rule in Ceylon. European traveller Marco Polo and foreign writer Megasthenese give interesting informations about the Cholas. Al-beruni a muslim historian writes about the Cholas.

Later Chola Dynasty: King Vijayalaya was the founder of the later Chola dynasty. He captured Tanjore from the Muttaraiyas and made it his capital in 850 A.D. He defeated the Pallava King Aparajitha and conquered his Kingdom. He also annexed the Kongu country. He was a worshipper of Siva. He built Siva temples in many places.

Parantaka-I:- 907AD–953 AD: Uttaramerur inscriptions speak about Parantaka – I. He was son of Aditya. He conquered many parts of Southern India and extended his boundary. He captured Madurai. He took up the title Maduraikondan to commemorate his victory over the Pandya king. After defeating the combined armies of the Pandyas and Ceylon kings, he assumed the title “Maduraiyum Ezhamum Kondan”. He extended his empire upto Nellore in north.

Parantaka improved village administration. He was a devotee of Lord Siva. He provided golden roof to the Nataraja temple at Chidambaram and came to be called as “Pon Veintha Cholan”. Parantaka was succeeded by Kandaraditya, Arinjaya, SundaraChola alias Parantaka II and UttamaChola.

**Meikirthis are life history or Biographies of Kings
with details of their achievements**

Rajaraja the Great:

985AD–1014 AD: Rajaraja – I was son of Parantaka – II and Vanavan Mahadevi. Thiruvallangadu plates speak about Rajaraja-I. He was the most powerful king of the Chola dynasty. The greatness of Rajaraja brought glory not only to the Chola kingdom, but also to the Tamil country. He issued several inscriptions. Rajaraja had a strong army. He defeated the Chera army at Thiruvannamalai. He also defeated Baskara Ravi the Raja of Kollam. He assumed a title “Kandalur salai Kalamarutharuliya”. He defeated the Pandya king Amarabhujangan.



Raja Raja Cholan

Rajaraja defeated Mahinda V the king of Ceylon and occupied Anuradhapuram and the northern part of Ceylon. He made Polonnaruva city a new capital. Rajaraja got the title “Mummudi Cholan” after the conquest of three southern kingdoms of Cheras, Pandyas and Ceylon. He captured Gangapadi, Tadigaipadi and Nolambapadi in the Mysore region. He successfully completed digvijayam with the conquest of vilignam. He conquered Kalinga and Maldives island. He also had titles ‘Arunmozhi’, ‘Rajakesari’. Rajaraja was ably assisted by his efficient son Rajendra.

Rajaraja was an able administrator. He introduced land survey system. He encouraged local self government through out his empire. He built the big temple namely Brahadeeswarar temple in Tanjore and Siva temple in Quilon and Polonnaruva. He was a devotee of Lord Siva. He encouraged Buddhism and supported Saivism. He gave permission for the construction of Buddha Shrine at Nagapattinam and donated Anaimangalam village to the Buddhist monastery.

Rajendra-I:- 1012AD–1044 AD : Rajaraja the great was succeeded by his able son Rajendra – I. Sources like Thiruvalluvar copper plates Karandhai plates give information about Rajendra. He was a great administrator and warrior. He was also associated with his father in the military adventures and administration. Rajendra captured the whole of Ceylon and consolidated Chola domination over Ceylon. He appointed his son Rajathiraja as Yuvaraja to assist him. During his rule he constructed many Siva and Vishnu temples. Rajendra defeated the Bengal king Mahipala – I and brought water from Ganges to Tanjore. This water was put into Chola gangam, a large irrigation tank, near “GangaiKondacholapuram”. In appreciation of this victory, king Rajendra was given the title “Gangai Kondan”. He conquered Malaya region in South East Asia and earned the title “Kadaram Kondan”.

He shifted his capital from Tanjore to Gangai konda Cholapuram. He defeated the Chera and Pandya kings. He fought with Chalukya king Jeyasimha-II. He also defeated the Kalinga king. He started a vedic college. His important titles were Mudikondan, Panditha Cholan, Uthama Cholan. Rajendra was succeeded by Rajathiraja-I, Rajendra-II, Veerarajendra and Adhirajendra. They ruled Chola country for some years.

Kulothunga-I:- 1070–1170 AD : Kulathunga gave a new turning point to the Chola history. Literary sources like Kulothunga cholana pillaitamil, Vikrama Cholan Ula speak about his administration and military conquests. He controlled the Pandya and Chera kings. He fought with the western Chalukya king Vikramaditya. During the reign of Kulothunga, the Chola empire was very extensive. He took back the Vengi throne from Vijayaditya. Kulothunga-I was known to Far Eastern countries like China and Sumatra. He sent an embassy to the Chinese court. Later he lost his control over the northern part of Ceylon. He had control over the southern part of Ceylon. He controlled Kalinga. He introduced reforms to improve the economic conditions of Chola Kingdom. He carried out a systematic land survey. He abolished many taxes and gave relief to the people from tax burden. In appreciation of this service, he was called “Sungam Thavirtha Cholan”. He introduced many administrative reforms. His rule gave the benefits of internal peace and benevolent administration. Kulothunga-I had been called as one of the greatest among the Chola kings. He was succeeded by some weak rulers. Then the Chola power came to an end.

Herodotus is considered as the Father of History

Learning outcomes:

1. Pupil can explain the sources for the study of Chola history.
2. Pupil will be able to explain the boundaries and the regions ruled by the Cholas.
3. Pupil will be able to understand the achievements of Chola rulers

SELF EVALUATION

I. Write True or False:

- 1) Brahadeeswarar temple was built by Rajendra-I
- 2) Kalingathuparani was written by Jayamkondan.
- 3) Karikalan was the ruler of later Cholas
- 4) Paranthaka-I had a title Maduraikondan.
- 5) Rajaraja made Polonnaruva city as his new capital.

II. Choose the correct answer:

- 1) The founder of the later Chola dynasty was
a) Vijayalaya b) Rajaraja-I c) Kulothunga-I
- 2) Uttaramerur Inscriptions tell about the
a) Naval Power b) Village administration
c) Vedic College of the Cholas.
- 3) Gangai Konda Cholapuram was built by
a) Rajaraja-I b) Rajathiraja c) Rajendra-I
- 4) After the expedition of Malaya region, Rajendra-I was given this title
a) Gangai kodan b) Maduraikondan
b) Kadaram kondan
- 5) Ottakoothar wrote
a) Kulothungan pillai tamil b) Veerasolium
c) Sthalapuranam

III. Fill in the blanks:

- 1) _____ inscriptions tell about the Kudavolai system.
- 2) _____ Chola symbol was engraved in the Chola coins.
- 3) Sekkilar had written _____
- 4) _____ was the greatest king among the early Cholas.
- 5) Rajaraja the great earned the title _____

IV. Match the following:

- | | |
|----------------------------|-------------------|
| 1) Numismatics | - Maduraiyum |
| | Ezhamum Kondan |
| 2) Three ulas | - Kulothunga-I |
| 3) Sungam Thavirtha Cholan | - Ruler of Ceylon |
| 4) Parantaka - I | - Ottakoothar |
| 5) Mahinda – V | - Study of coins |

V. Answer briefly:

- 1) Name any four places where the inscriptions of Cholas are found.
- 2) Write about the Chola coins.
- 3) Write about the literary sources for the study of the Cholas.
- 4) Write about the conquest of Parantaka-I.
- 5) Write about the administration of Kulothunga-I.

VI. Write in detail:

- 1) Write about the sources of the Chola period.
- 2) Write in detail about the reign of Rajendra-I.
- 3) Estimate the achievements of Rajaraja-I.

UNIT – I

2 . CHOLA ADMINISTRATION – LOCAL ADMINISTRATION KUDAVOLAI SYSTEM

Learning objectives:

1. To enable pupil to know about the Chola administration.
2. To enable pupil to understand the provinces or mandalams of the Chola empire.
3. To enable pupil to acquire knowledge about the Cholas local administration and Kudavolai System.

The Chola kings followed a highly efficient system of administration. The entire Tanjore district, parts of Trichy, Pudukottai and South Arcot districts formed the part of the Chola Mandalam. The Cholas had three major administrative divisions called Central Government, Provincial Government and Local Government. Tanjore was the capital of the Cholas. The efficient Chola administrative system has been well appreciated by many historians and rulers.

Kingship: The king was the head of the administration. The Chola kings and Queens were considered as representatives of God. Their idols were kept in temples. The Chola kingship was hereditary. The Chola royal family followed the principle that eldest son should succeed the king to the Chola throne. The heir apparent was called Yuvaraja. The Chola monarchs enjoyed enormous powers and privileges. The Chola kings took up titles which marked their achievements. They lived in very big royal palaces. Kings were assisted by ministers and officials in their administration. Chola kings had tiger as their royal emblem.

Central Government: The Central Government functioned under the headship of the King. Council of ministers and officials took active part in running the administration of Central Government. The higher officials were called Peruntaram and the lower officials were called Siruntaram.

Provincial administration: The Chola empire was divided into nine provinces. They were also called mandalams. The head of the province was called viceroy. Close relatives of kings were appointed as viceroys. The Viceroys were in constant touch with the Central Government. Viceroys received orders from the king. They sent regular reply to the king. The viceroys had a large number of officials to assist them in the work of administration.

Administrative Divisions: The success of the Chola administration depended more on the proper functioning of the administrative divisions. Generally mandalams were named after the original names or the titles of the Chola kings. Each mandalam was divided into number of Kottams or Valanadus. Each kottam was sub divided into nadu. Each nadu was further divided into (Urs) villages which form part of the last unit of the administration. Uttaramerur inscriptions speak about the administration of the Cholas.

Revenue: The land revenue was the main source of income of the Chola Government. Proper land survey was made. Lands were classified as taxable land and non taxable land. There were many grades in the taxable lands. Land revenue differed according to these grades. Generally 1/6 of the land yield was collected as tax either in cash or in kind or both according to the convenience of the farmers. Besides land revenue, there were some other sources of income like customs and tolls. Taxes on mines, ports, forests and salt pans were collected.

Professional tax and house tax were also collected. Many other taxes were levied. Tax burden was more on the society. Sometimes due to failure of rain and famine people could not pay tax.

Military: The Cholas had an efficient army and navy. The Chola army consisted of elephantry, cavalry and infantry. Soldiers were given proper training. Commanders enjoyed the ranks of nayaks and senapathis. The army was divided into 70 regiments. The Chola army had 60,000 elephants. Very costly Arabian horses were imported to strengthen the cavalry. The Chola kings defeated the Cheras at Kandalur salai. The kings of Ceylon and Maldives were also defeated. The Chola navy was formidable one in South India. With the help of their navy the Cholas controlled Coromandal and Malabar coasts. Bay of Bengal became the Chola lake. The Chola army and navy together had 1,50,000 trained soldiers. The armies of the tributary chieftains also joined Chola army at needy times. Generally the Chola army was led by the King or Yuvaraja.

Justice: The Chola king was the chief justice. The Chola kings gave enough care for the judicial administration. The village level judicial administration was carried on by the village assembly. Minor disputes were heard by the village assembly. Disputes were settled with proper evidences. Punishments were awarded by the Judicial officers. The trial of serious offences and major cases were conducted by the king himself.

Local administration: The most important feature of the Chola administration was the local administration at districts, towns and villages level. Uttaramerur inscriptions speak much about the Chola administration. Village autonomy was the most unique feature of Chola administrative system.

“I am more inspired and guided by the local administrative systems of the Chola rulers and Tamil literature”

Srimathi Indira Gandhi
Former Prime Minister of India

Nadu: Nadu was one of the important administrative units of the Cholas. Nadus had representative assemblies. The heads of the nadus were called Nattars. The council of nadu was called nattavai. Representatives of the Nattavais and nattars promoted agriculture. They also took care of the protection of the people and tax collection.

Village administration: The entire responsibility of the village administration was in the hands of the village assembly called Grama Sabha. The lowest unit of the Chola administration was the village unit. The village assemblies looked after the maintenance of peace, tanks, roads, public ponds revenue collection, judiciary, education and temples. The village assemblies were in charge of the payment of taxes due from the villages to the treasury. They regulated public markets and helped people at times of famine and flood. Assemblies provided provisions for education. The village assemblies possessed absolute authority over the affairs of villages. They maintained law and order in every village. Brahmin settlement was called Chaturvedi mangalam.

Variyams: Village Assemblies carried on village administration effectively with the help of varyiyams. Male members of the society were the members of these varyiyams. Composition of these varyiyams, qualification and duration of membership differed from village to village. There were many varyiyams in every village. Niyaya varyiyam administered justice, Thottavariyam looked after flower gardens. The Dharma varyiyam looked after charities and temples. Erivariyam was incharge of tanks

and water supply. The pon variyam was incharge of the finance. The Gramakariya variyam looked after the works of all committees. The members of these variyams were known as “Variyaperumakkal”. They rendered honourary service. The village officials were paid salary either in cash or in kind. Good functioning of these variyams increased the efficiency of the local administration of the Cholas.

Request your teacher to tell more about Chaturvedi mangalam and Variyaperumakkal

Kudavolai system: Uttaramerur inscriptions talk about Kudavolai system. This system was a very notable and unique feature of the village administration of the Cholas. There were 30 wards in each village. A representative for each ward was elected through Kudavolai system. Names of the contestants from whom one could be chosen were written on palmleaf tickets. These palmleaves were put into a pot and suffled. A small boy picked up palm leaves one by one from the pot. Persons whose name tickets were picked up by the boy were declared elected. Like that 30 members for thirty wards were elected. This kind of peculiar election system was called kudavolai system. Out of the thirty elected members, twelve members were appointed to the Annual committee, twelve members were appointed as the members of the Garden committee and six members to the Tank committee. Members of th standing committee and a Gold committee were also elected. Qualification of the members were given. A person who could be chosen through Kudavolai system must have age from 35 to 70. He should possess one veli land and of a house built in a taxable land on his own site. He should have knowledge about vedas and mantras. Persons who killed brahmins or women or cow or children were disqualified.

Thieves, drunkards and people who had undergone punishments were also disqualified from contesting election from kudavolai system.

Try to know more about kudavolai system with the help of your teacher

Chola Empire



Names of the Places given in Map as per the Number

1. Ebrolu
2. Nandalur
3. Kanchi
4. Talakad
5. Gangai konda cholapuram
6. Semponmari
7. Kottai
8. Vilgnam
9. Venadu

The people of the Chola empire were more benefited by the Chola administration. Historians like K.A.Neelakanda Sastri appreciates the administrative efficiency of the Chola kings. The best aspects of the Chola administration were followed by the rulers of the later period.

Learning outcome:

- 1) Pupil will be able to explain about the Chola administration.
- 2) Pupil will be able to explain about the functions of the local committees or Variyams.
- 3) Pupil will be able to explain about the local administration of the Cholas.
- 4) Pupil will be able to explain about the Kudavolai system of the Cholas.

SELF EVALUATION**I. Write True or False:**

- 1) The king was the head of the administration.
- 2) The empire was divided into two mandalams.
- 3) The Cholas had a very strong navy.
- 4) Village assemblies were responsible for the military, administration.
- 5) GangaikondaCholapuram was the capital of the later Cholas.

II. Choose the correct answer:

- 1) The capital of the Chola kingdom was
a) Trichy b) Tanjore c) Madurai
- 2) The heads of the Nadus were called as
a) generals b) ministers c) nattars
- 3) The sea known as 'Cholas lake' was
a) Bay of Bengal b) Indian Ocean c) Arabian sea
- 4) The Variyam that looked after the temples and charities was called
a) Erivariyam b) Dharmavariyam c) Thottavariyam
- 5) Mandalams were named after the
a) Kings b) Viceroy c) Nattars

III. Fill in the blanks:

- 1) The eldest son who succeeded the king was known as _____
- 2) The higher officials in the Central Government of the Chola administration were called as _____
- 3) The empire was divided into _____ provinces
- 4) The Chola army was divided into _____ regiments.
- 5) The head of the province was called _____

IV. Match the following :

- | | | |
|--------------------------|---|--------------------|
| 1. Kudavolai system | - | Thottavariyam |
| 2. Higher officials | - | Land tax |
| 3. Members of variyam | - | Peruntaram |
| 4. 1/6 of the land yield | - | Variyapperummakkal |
| 5. Flower garden | - | Palm leaf |

V. Write briefly:

- 1) Write about the provincial administration of the Cholas.
- 2) Explain the judicial administration of the Cholas.
- 3) Write about the Variyams.
- 4) Explain the Kudavolai system?
- 5) Write about the Nadus of the Cholas

VI. Write in detail:

- 1) Write about the village administration of the Cholas.
- 2) Estimate the achievements of the Cholas.

UNIT - I

3. SOCIAL, ECONOMIC AND RELIGIOUS LIFE OF PEOPLE UNDER THE CHOLAS

Learning Objectives:

1. To enable pupil to know about the social and economic life of people during the Chola period.
2. To enable pupil to understand the religious life of the people during the Chola period.

The Chola rule witnessed a large scale development in all spheres of life. Writings of historians, inscriptions, temples, literature and monuments speak much about the social, economic and religious life of the people during the Chola period. Professor K.A.Neelakanda Sastri writes about socio economic and religious life of the people of the Chola period. Economic prosperity, the benevolent attitude and religious faiths of the Chola kings were the main factors which contributed more for these developments.

Social Condition: The Chola society was peaceful one. There were different sections in society. At the same time, the society was based as “Varnasrama”. According to the Varnasrama, society was divided into four major divisions namely Brahmins, Kshatriyas, Vaisyas and Sudras. The poor and unprivileged people lived in slums. Bonded labourers were also there. Professionals like carpenters, weavers, blacksmiths, masons, goldsmiths also lived there. Slavery also existed. There were several grades among the slaves. The details about the sale of slaves are recorded in the inscriptions. Greater social freedom prevailed among the upper classes.

Valangai and Idankai groups: Valankai and Idankai caste groups were also there. 98 castes formed part of Valangai (right hand) group and there were 98 castes in the Idangai (left hand) group. There were disputes among these groups. A story had been told about the origin of the division of these two groups. A small summary of the story is given here. When the sangam Chola King Karikala enquired these disputes, the group which stood on the right hand side of the King was called Valankai group. The group that stood on the left hand side of the King was known as Idangai group. Valangai group had enjoyed more concessions from the Government and privileges in the society. They had the privilege of using palanquins, umbrellas and cheppals. Women of Valangai group rounded the upper cloth across the right shoulder. The Idangai group was considered socially inferior. They did not enjoy any rights. They paid heavy taxes. In spite of these social divisions there was social harmony.

Education: Chola Kings gave importance for the development of education. There were Veda padasalas, Buddha viharas and Jain pallis. During the reign of Rajendra I, two colleges were there at Rajarajachaturvedi Mangalam and Tribhuvanam. The mutt of Thiruvavaduturai had run a school of medicine. Thirumukkudal temple was utilised for running a college and hospital. Apart from the medical and religious education, general education was also imparted. Scholarships were given to students.

Status of Women: Women were given high status and freedom in the Chola society. Chastity and modesty were considered important. The women of upper classes enjoyed the right to property. Some queens were associated with the administration of the kingdom. Queens gave liberal donations to temples. Queen Sembian Mahadevi and Kundavai were patrons of temples. Monogamy was prevalent in society. Less skilled jobs were given to female labourers.

During the Chola period Sati was commonly practiced among the women of royal family. Women were also appointed as officers in the Chola Government. There were child marriages among the higher castes. Women who were talented in music and dance were attached to the temples. They performed programmes during festival times. There were also women slaves. Writings of Morcopolo and some inscriptions speak about the position of women during the Chola period.

Sati was a social practice in ancient India In Sati, wife entered into the funeral pyre of the dead husband. Wife burnt herself and died along with her husband.

Economic condition: The Chola rule witnessed the prosperity of trade and commerce. Income through agriculture yield, land tax, trade tax and other taxes were main revenue of the Government. King was the owner of all public land. Special officers were appointed to look into the income and expenditure of the state. Government money was spent on public works, defence, justice, education, temples, irrigation, police, king and his households, secretariat etc., The Chola kings issued gold, silver and copper coins. Merchant guilds were functioning to take care for the welfare of the merchants and commerce. The Chola economy mainly depended on agriculture and trade. Agriculture was the main occupation of the people. The ownership of the land had a high social value. The landlords were members of the village administrative units. Generally the economic condition of the people during the Chola period was good.

Trade and commerce: The Chola rulers contributed more for the development of cottage industries. Metal images and utensils were made in gold, silver, bronze, copper, brass etc., The art of jewellery was

famous. Gold and pearl were used in making jewels and ornaments. Kanchipuram was an important centre of textile industry. The weavers of Kanchipuram were recognised by the king and they had the privilege of making royal robes to the king Uthama Chola. Salt pans of Marakanam, Kanyakumari were commercially famous.

Foreign Trade: According to informations given by writers like Ibin Batuta and Morcobolo, the Cholas had trade relationship with China and other South East Asian countries. Elephants, cardamom, cotton, textile were exported. Arabian horses were imported. Mahabalipuram, Kavirippumpattinam, and Korkai were Chola ports which were useful for foreign trade. The liberal taxation policies of King Kulothunga I encouraged both internal and foreign trade. Internal and foreign trade led to the economic, cultural and religious developments in Chola territory.

Religious condition: Chola kings were saivites. They worshiped Lord Siva. They built many Siva temples. Parantaka – I, Rajaraja–I, Rajendra–I King Gandraditya and his queen Sembiyan madevi contributed more for the development of Saivism and Bakthi literature. Parantaka – I covered the Siva temple with gold at Chidambaram. King



Kumbakonam Temple

Rajaraja-I built Brahadeeswarar temple (big temple) at Tanjore. Rajendra-I constructed Siva temple at Polonaaruva in Ceylon and Gangaikonda Cholapuram. Lands, Jewels and vessels were donated to these temples.

Chola Kings were tolerant towards other religions. Vishnu worship was also there. Chola rulers supported the spread of Vaishnavism. Saint Ramanujar was the contemporary of Chola Kings. Thiruvallangadu copper plates, Karanthai plates and Anbil plates talk about the religious conditions of the Chola period. Masimaham, Mahamaham, Karthigai, Thaibusam, Sivarathri, Chithiravizha, Aipasivizha, were important festivals celebrated during the Chola period. Tanjore, Kumbakonam, Avudaiyarkoil, Kalahasti, Tirukadaiyur and Kanchipuram were important temple cities. Bakthi songs were sung in all temples. Some people followed Buddhism and Jainism.

Temples acted as centres of learning also. Temples helped the development of painting dance and music. Nambi Andar Nambi compiled the hymns of Saiva saints- Nathamunigal compiled the hymns of Vaishnava saints. Scenes of Periyapuram, portraits of Lord Siva were themes of the paintings on the walls of temples. Bharatha natyam and Kathakali dances were performed in temples at the time of festival times.



Aavudayar koil sculpture

The economic prosperity and religious contributions increased the standard of life and values of the Chola society. By building many temples and mutts, the Chola kings contributed for the development of culture, art and architecture. The royal patronage increased the influence of Hinduism more. The temples and festivals of the Chola period will ever speak about the glory of the Cholas.

Try to know more about the great saint Ramanujar

Learning out come:

1. Pupil will be able to tell about the social and economic life of the people during the Chola period
2. Pupil will be able to explain about the growth of internal and external trades.
3. Pupil will be able to tell about the religious conditions of the Cholas

SELF EVALUATION

I. Write True or False:

1. Sati is a marriage ceremony.
2. Agriculture was the backbone of social life.
3. Brahmins were engaged in the works of the temple.
4. Salt pans were there in Kanchipuram.
5. Chola kings followed the policy of religious tolerance.

II. Choose the correct answer:

- 1) Brahadeeswarar temple was built by
a.) Parantaka-I b) Rajaraja-I c) Kulothunga-I
- 2) Valangai group consisted of
a) 98 castes b) 50 castes c) 30 castes
- 3) Rajendra Chola constructed
a) Big temple b) Meenakshi temple
c) Gangaigonda Cholapuram temple

- 4) This Queen was known as patron of temples
 a) Vanavan mahadevi b) Sembian Mahadevi
 c) Kundavi
- 5) Valangi and Idangai groups were named as such during the period of
 a) King Karikala b) Rajaraja-I c) Kulothunga-III

III. Fill in the blanks:

- Weavers of Kanchi had the privilege of making royal robes to _____.
- The Cholas had foreign trade relations with _____.
- _____ King covered the Siva temple with gold at Chidambaram.
- Raja raja – I built the famous, _____ temple at _____

IV. Match the following:

- | | | |
|-----------------------|---|-------------------|
| 1. Valangai & Idangai | - | Port |
| 2. Vanavan Mahadevi | - | Weavers of Kanchi |
| 3. Patron of temples | - | Sundara Chola |
| 4. Kaveripoompattinam | - | Kundavi |
| 5. Royal robes | - | Karikala Cholan |

V. Answer briefly:

- What were the four castes created by varnasrama?
- Write about the social conditions of the Cholas
- Write about the foreign trade during the Chola period.
- Write about the festivals of the Chola period.
- Which cities were known as temple cities?

VI. Answer in detail:

- Write about the status of women during the Chola rule.
- Write in detail about the temples of the Cholas.

UNIT-I

4. CULTURAL DEVELOPMENT – LITERATURE, ART AND ARCHITECTURE UNDER THE CHOLAS

Learning objectives:

- To enable pupil to acquire knowledge about the cultural development under the Cholas.
- To enable pupil to know the development of literature under the Cholas.
- To enable pupil to acquire knowledge about the development of art and architecture during the Chola period.

The development of literature, art and architecture of the Chola period promoted the cultural value of the Chola rule. The Cholas made lot of improvements in these fields. The temples built by the Cholas increased the value of the bakthi culture of Tamil country. The development of the Chola literature, art and architecture created a profound impact on the cultural development of the Tamil country.

“I have more respect for the Tamils and Tamil literature”

“Mahathma Gandhi”

Literature: The Chola rule marked a milestone in the history of Tamil literature. The Chola kings gave many concessions and patronage to Tamil scholars and writers. Many great Tamil poets namely, Kalladanar, Kambar, Pugalandhi, Ottakoothar, Sekkilar, Avvaiyar, Thirutakkadevar lived during the period of Chola period. Literary styles like epics, parani, kovai, ula, kalambakam, pillaitamil and new works on grammar were famous during that period. Writing meikkirthis, narration of historical incidents, singing songs on religious heros, were new literary trends of

that time. Kalladanar wrote Kalladam about lord Siva. Thiruttakkadevar wrote Seevagasinthamani to spread the idea of Jainism among the Tamil people. This work is respected and ranked as one of the mahakaviyams in Tamil. Jayamkondan composed Kalingathuparani during the period of Kulothunga-I. It talks about second kalinga war.

Ottakoothar: Ottakoothar was a court poet of three Chola kings namely Vikrama Chola, Kulotunga-II and Rajaraja-II. He wrote poems in praise of these three kings namely Vikrama Cholan Ula, Kulothunga Cholan Ula and Rajarajan Ula. Ottakoothar had also written Kulothungan Pillai Tamil in praise of Chola king Kulothunga-II and Saraswathy Andhadhi in praise of Saraswathi the Goddess of learning.

Kambar: Kambar wrote Kambaramayanam. King Kulotunga-III donated Kambanadu to Kambar. The king also conferred the title Kavichakkavarthi on Kambar. Kambar had also written Sadagopar andhadhi, Mummani kovai. Sekkilar wrote Periya puranam during the period of Kulothunga-II. Pugalendhi composed Nalavenba. Avvaiyar wrote Aathichudi and Kondrai vendan. Thirugnanasambandar wrote Thevaram.

Literary Works: Kulothungan kovai and Thanjaiivanan kovai are famous Tamil literature of that period. Great epics namely Valayapathi, Kundalakesi, Viracholiyam, Nannool belong to this period. Thevaram, Nandikalambagam, Bharatha venba and Sivgnanabodam are important literary works of this period. The Chola literature increased the cultural values of the Chola society.

Parani is a form of war poem. Parani explains the circumstances which led to the war. It also gives details about war.

Art and architecture: The Chola kings built many temples throughout their kingdoms. The temples of early Cholas are found in large number in the former Pudukottai region. These Chola temples reveal the gradual evolution of the Chola art and architecture. The Chola kings earlier built stone temples. Later they built brick temples.



Brahadeeswarar Temple at Tanjore

The first Chola ruler Vijayalaya Chola built temple at Narttamalai. This is a stone temple. It is one of the finest examples of the early Chola temple architecture. Balasubramaniya temple of Kannanur in Pudukottai region and Thirukkatalai temple were built during the period of Aditya-I. Nageswarar temple at Kumbakonam is famous for sculptural work. King Parantaka-I built Koranganatha temple at

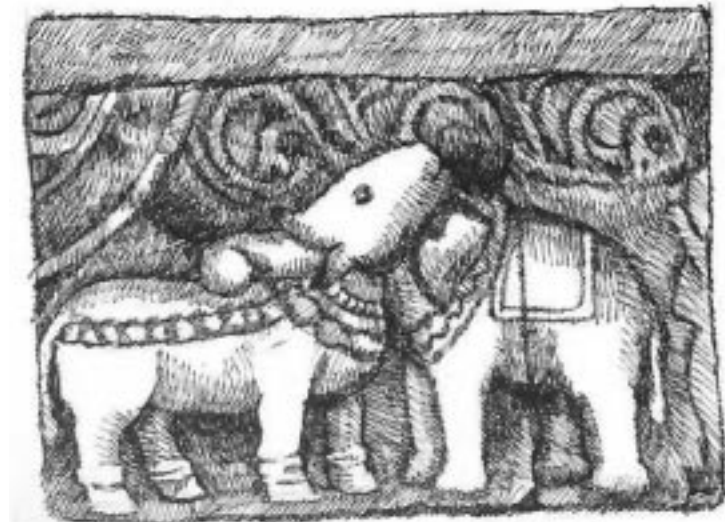
Srinivasanallur (Trichy District). Muvarkoil of Kodumbalur. They are good examples of the later Chola architecture and sculpture.

Besides all these temples of the Chola period, the greatest landmark in the history of south Indian architecture is Brhadeeswarar temple at Tanjore. This is also called as big temple. It has many architectural significance. It was built by Rajaraja-I. This is the largest and tallest temple Tamilnadu. Rajdendra Chola built a temple at Gangaikonda Cholapuram which is also equally famous. King Rajendra Chola added credit to the Chola art and architecture. King Kulothunga-I built a temple for Sun God at Kumbakonam. This temple is first of its kind in the south Indian architecture. Rajaraja-II built Airavatheeswarar temple at Dharasuram.

Special features of Chola architecture: The Cholas followed the Pallava style of architecture. Sanctum of the Chola temples are both circular and square in size. Inner side of the external walls and the sanctum were beautified. On the upper side of the sanctum special vimanas are built. Dome shaped sikhara and kalasa were also there on the top of Gopurams. Chola temples are noted for the sculptures and ornamental works. Gopurams of these temples were meaningful. Many temples are having pillared mandapams namely arthamandapa, mahamandapa and nandi mandpa. Sculptures and inscriptions are also fixed on the walls of these temples.

Sculpture: Stone and metal sculputures are found in plenty in Chola temples. They depict the socio religious ideas of the Chola period. The Nataraja sculpture is world famous not only for its beauty but also for its spiritual meaning. Vishnu idol is placed in Vaishnava temples. A spiritual calmness is depicted in sculptural representations of Alwars. The Cholas made use of sculputures to decorate the walls, pillars and

roofs. The value of sculpture is very much felt on Chola works. The decorative sculptures are still there. Realism dominated sculpture of the Chola period. Scenes from Ramayanam Mahabharatam, Puranas and lives of the 63 Nayanmars are sculptured in narrative panels on the walls of temples.



Dharasuram temple sculpture

Portraits: The Cholas excelled the Pallavas in the art of portrait making. The best specimens of portraits are found on the walls of Koranganatha temple and Nageswarasamy temple. The portraits of Cholamadevi and Kulothunga-III are there in Kalahasti temple. They are good examples of Chola art of portrait making.

Paintings: The art of paintings flourished. Figures were painted with realism. The proficiency of the Chola painters are seen on their paintings. Paintings in Big temple are good examples. Scenes of Periyapuram are beautifully depicted. Kailasanathar temple at Kanchipuram, Vishnu

temple at Malaiyadiatti contain fine specimen of the Chola paintings. Rajaraja-I and Rajendra contributed more for the development of the art of painting during the Chola period.

Music: During the Chola period the art of music was developed. Twenty three panns were used in music. The seven music alphabets sa, ri, ga, ma, pa, da, ni were used. The hymns of Alwars and Nayanmars were sung in every temple. Nambiandar nambi and Nathamuni contributed much for the development of music. Books were written on music. Several musicians were appointed in Brahadeeswarar temple. Drums, udukkai, veena, flute were famous music instruments. Sagadakkottigal formed a group of musicians. Endowments were made to promote music. Musicians were honoured by the kings. Temples and mutts imparted training in vocal and instrumental music.

Dance: The Chola kings patronised the art of dance. Bharatha natyam and kathakali were two types of dances performed during the Chola period. Lord Siva was represented as the exponent of Karana dance. Natarajar temple at Chidamparam and Sarangapani temple at Kumbakonam have dancing poses of Lord Nataraja. Rajaraja-I appointed 400 dancing girls in the big temple at Tanjore. There were two dance directors to co-ordinate these dancing girls. Dance dramas were also performed on stages at festival times. Chola kings made endowments to promote the art of dancing.

Drama: The Cholas promoted the art of drama. Music and dance were affiliated to drama. Many types of theatres and stages were there to perform dramas. Rajarajeswara natakam and Rajarajavijayam were the dramas enacted during festival times. Drama actors received honours from the Chola kings. Koothu is one type of drama. Koothus were also

there. Inscriptions refer about Ariyakuthu, Chakki koothu and Santhi koothu.

Chola literature speaks about the cultural glory of the Cholas. Hundreds of temples built by the Chola kings. Particularly Brahadeeswarar (Big temple) temple at Tanjore and temple at Gangaikonda Cholapuram are cultural monuments of the Cholas. The glorious Chola culture created very big impact on Tamil society and imbibed lot of cultural values like bakthi upon the Tamil society.

Learning outcomes:

1. Pupil can tell about the cultural development during the Chola rule.
2. Pupil will be able to explain the growth of literature under the Cholas.
3. Pupil will be able to tell about the development of the art and architecture of the Cholas.

SELF EVALUATION

I. Write true or false:

1. Kalladam was written by Avvaiyar. ()
2. Kambaramayanam was written by Sekkilar ()
3. King Vijayalaya built Choleswara temple ()
4. Chola temples are both circular and square in size ()
5. Brahadeeswarar temple is a famous Chola temple ()

II. Fill in the blanks:

1. Seevaga sinthamani was written by _____
2. _____ is the largest and tallest temple of the Cholas
3. Sagadakkottigal formed a _____
4. There were _____ dance directors and _____ dancing girls in the big temple.

5. _____ and _____ contributed more for the development of paintings.

III. Choose the correct answer:

1. Kulothungan pillai Tamil was composed by
a) Jayamkondan b) Ottakoothar
c) Thirutakkadevar
2. Sekkilar wrote
a) Nalavenba b) Periyapuranam c) Aathichudi
3. Kalingathuparani talks about
a) Second Kalinga war b) Conquest of Bengal
c) Conquest of Ceylon
4. Best specimen of portraits are found on the walls of
a) Koranganatha temple b) Choleswara temple
c) Thirukkattalai temple

IV. Match the following :

- | | | |
|--------------------------|---|---------------|
| 1. Sadagopar Anthathi | - | Kambar |
| 2. Sekkilar | - | Kulothunga-I |
| 3. Thirukkattalai temple | - | Aditya-I |
| 4. Sun God Temple | - | Rajaraja-I |
| 5. Big temple | - | Periyapuranam |

V. Answer briefly:

1. Write names of the scholars of Chola period.
2. Mention the works of Ottakoothar.
3. Write short notes on Brahadeeswarar temple.
4. Write four points about the paintings of the Cholas.
5. Write about the sculptures at Dharasuram temple.

VI. Answer in detail:

1. Write about the literary development during the Chola period.
2. Write about the development of art and architecture of the Cholas.

UNIT – II

5. SECOND PANDYAN EMPIRE – SOURCES - RULERS

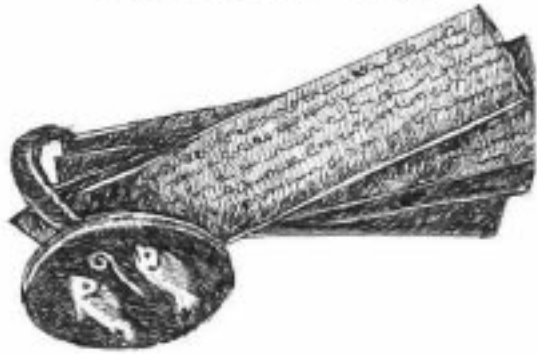
Learning objectives:

1. To enable pupil to know about the sources for the study of the second Pandya empire.
2. To enable pupil to know about the rulers of the second Pandya empire.
3. To enable pupil to know the achievements and importance of the second Pandya emperors.

The Pandyas are one among the great Moovendars of the Tamil country. The Pandyas who ruled Tamil country during the sangam period, are called sangam Pandyas. After defeating the kalabhras the Pandya rulers ruled between 550 AD to 950 AD. They were called as first Pandyas. After the fall of the great pallavas and the cholas once again the Pandyas ruled the Tamil country from 1190 AD to 1310 AD. They were called as second Pandyas. Totally the Pandyas ruled the Tamil country three times for about 460 years. Madurai was the capital of the Pandyas. Fish was the royal emblem of the Pandyas.

Sources: History of the second Pandya empire can be written with the help of the relevant source materials. Plenty of sources are available in this regard. Velvikkudi plates, Seevaramangalam plates. Thalavaipuram plates and chinnamanur plates speak about the war victories and administration of the Pandya rulers. Inscriptions, coins, monuments and the writings of foreign travellers speak about the Pandya rulers and their achievements.

Chinnamanur Plates



Inscriptions: Inscriptions excavated from Chidambaram tell about the personal courage of the Pandya kings in the battle fields and details about the places captured by the Pandya rulers. Inscriptions of Pudukottai throw much light on the judicial and revenue administration of the second Pandyas. Pudukkottai inscriptions also tell about Kulasekara Pandya's policies towards land survey and taxation. Thiruvandipuram inscriptions explain about the warfare of Maravarman Sundara Pandya. Srirangam inscriptions tell about the victories of Pandya kings. Thirunelveli inscriptions give the names and the titles of the Pandya kings.

Inscriptions of the Cholas, Telugucholas, Kadavarayar, Sambuvarayar and Kakathiyas speak about the glory of the Pandya rule. More informations are given about Maravarman Sundara Pandya-I, in the inscriptions of Gudimiyamalai, Rangamali, Thenkasi and Tiruvateeswaram. Particularly Tirunelveli inscriptions speak about Maravarman Kulasekaran-I's victory over the cheras and cholas. They also speak about the wealth that Maravarman had taken from cheras and cholas and used for the construction of the prakara of Thirunelveli

temple. The informations of Maravarman can be obtained from the inscriptions of Achirupakkam, Chidambaram, Tirukkivilur.

Numismatics: The second Pandya Kings issued coins with names and titles of the rulers. Coins bearing the name as 'Sonadukondan', belong to the period of Maravarman Sundara Pandya-I. Sir Walter Elliot writes about the Chola coins. Through these numismatic sources we come to know about the economic condition of the Pandya period. Few gold coins tell about the rulers of Pandya Kingdom. These coins have a fish or a pair of fishes, the symbol of Pandya kingdom on one side. Names of the Pandya kings are engraved on the other side of the coins. Many coins bear the name Sundra Pandya. These coins talk about the conquests and defeats of the Pandyas.



Pandya Coins

Monuments: The cave temples found in Tirumalaipuram, Tiruparankundram, Anaimalai, Kundrakudi and Kalugumalai are the best monuments of the Pandyas period. The Meenakshi temple in Madurai and the Aranganathar temple in Srirangam are also the wonderful monuments, which show the architectural and the sculptural talent of the Pandyas.

Foreign Sources: Foreign writers like Wassaf and Morcopolo write interesting information about the rule of Pandya kings. The political and economic conditions of Pandyas are described by these writers.

The Cholas lost their power after the death of Kulothunga-III. The Pandyas assumed a great strength from the middle of the 12th century. The Pandyas expanded in north upto Nellore and Cuddapha districts. Kulothunga-III made Vikraman as the ruler to the Pandya kingdom. Vikraman was succeeded by Jatarvarman Kulasekara-I.

In History one century means a period of hundred years.

Jatavarman Kulasekara-I :- 1190 AD to 1210 AD: He was son of Vikraman. His Meikeerthi is a very good source. He fought and compromised with the Chola king Kulothunga-III. His reign may be regarded as an important land mark in the history of the second Pandyas. He ruled Madurai, Ramanathapuram, Thirunelveli and Kanyakumari areas. He created the Rajagambira Chaturvedi mangalam, consisting of 1030 Brahmadays. So he was known as “Rajagambeera”. He appointed Maravarman SundaraPandya as his crown prince.

Maravarman SundaraPandya - I :-1216 AD to 1231 AD: He was the brother of Jadavarman kulasekara. He had titles like Kaliyugarama, AdisayaPandyadeva. The King SundaraPandya was an ambitious competent, and capable ruler. He fought wars against the cholas and the Kongu kings. Maravarman sundaraPandya captured some portions of Trichy and modern Pudukottai districts. A good part of the Vishnu temple at Tiruttangal was built. After him Jadavarman Kulasekara–II ruled for sometime.

**Lands donated to Brahmin scholars were called
Brahmadays**

Maravarman Sundara Pandya - II :- 1238 AD to 1253 AD: He made many grants to temples. He defeated the chola king Rajendra-III.

Jatavarman Sundara Pandya - I :- 1251AD to 1268AD: He succeeded Maravarman Sundara Pandya –II. He had title as Tribhuvana Chakravarthy for conquering Elam, Kongu and the chola kingdom. During his time the Pandya kingdom became the Pandya empire. The cholas completely disappeared from the Tamil scene. The hoysalas retreated to the Mysore highlands. Ceylon was conquered. The Kongudesam became a province of the Pandya kingdom. The chera ruler was defeated. Due to these victories Jatavarman Sundara Pandya-I was known as “Emmandalamum Kondarulliya pandiya”.

Religious Endowments: Jatavarman Sundara Pandya-I provided the roof of Nataraja Shrine in Chidambaram with gold tiles. He built a hall and the west tower of Chidambaram temple. He rendered the same golden service to the Ranganatha swami shrine in Srirangam. So he was titled as “Ponveintha Perumal”. He also endowed liberally to some Jain pallis. He patronised Saivism, Vaishnavism and Hinduism. He coronated his son Maravarman Kulasekaran-I as the crown prince.

Maravarman Kulasekaran–I: 1268AD–1308 AD: During his reign foreign writer Morcopolo visited Tamil country and wrote about it. The social condition of the Tamil country was known from the writings of Muslim historian Wassaf. Maravarman captured kollam from Chera nadu. Due to this he was called as “Kollamkonda Pandya”. He invaded

Ceylon and brought huge wealth from Subhagiri fortress and the tooth relic of the Buddha to Madurai. His Kingdom expanded till cholanadu and upto Thondaimandalam. He appointed Jatavaraman Sundara Pandya as Viceroy of the Kongu country and Maravarman Vikrama Pandya as Viceroy of Chengleput and South Arcot Districts. He built the outer wall of Nellaiyapper temple in Tirunelveli.

War of success among the Pandya heir apparents made the muslim rulers to invade Pandya kingdom. Malik Kafur invaded and carried away as much loote as possible. The whole Pandya country became part of Muslim empire. The second Pandya rule which lasted for 120 years marked a significant land mark in the history of Tamil country. During the period of second Pandya rule the glory of the Pandyas expanded to North only to north India but also to Srilanka.

Learning outcome:

1. Pupil will be able to know about the sources of Pandyas.
2. Pupil will be able to know about the achievements of the Pandya rulers and their contributions.
3. Pupil will be able to know about the expansion of the Pandya kingdom.

SELF EVALUATION

I. Write true or false:

1. Maravarman was the contemporary of Rajaraja-III ()
2. Fish was the emblem of Pandyas ()
3. The Anaimalai cave temple belongs to the Pandya period ()
4. Jatavarman kulasekaran was the last ruler of the second Pandyas. ()

II. Choose the best answer:

1. Ponveintha perumal was the title of
 - a) Jatavarman Kulasekar-I
 - b) Jatavarman Sundara Pandya-I
 - c) Maravarman Kulasekara-I
2. Kollam kondan was the title given to
 - a) Maravarman Kulasekara-I
 - b) Jatavarman Sundara Pandya-I
 - c) Maravarman Sundara Pandya- I
3. Second Pandyas ruled from
 - a) 850 A.D to 950 A.D.
 - b) 1190 A.D to 1310 A.D.
 - c) 1947 A.D to 1980 A.D
4. Emmandalamum kondaruliya was the title of
 - a) Jatavarman Sundara Pandya-I
 - b) Maravarman Kulasekara-I
 - c) Maravarman Sundara Pandya-II

III. Fill in the blanks:

1. Jatavarman Kulasekara – I had _____ title.
2. Tribhuvana chakravarthy was the title of _____.
3. Tirunelveli inscriptions mention Maravarman Sundara Pandyan's title called _____
4. Second Pandyas came to power in _____.
5. _____ was the foreign historian who wrote about the history of the Pandyas.

IV. Match the following:

- | | | |
|--------------------------|---|----------------------------|
| 1. Malavaraya | - | Ceylon |
| 2. Madurai | - | Maravarman Vickrama Pandya |
| 3. Subagiri fortress | - | Thirumalaipuram |
| 4. Viceroy of Chingleput | - | Capital |
| 5. Cave temple | - | Maravarman Sundara Pandya |

V. Answer briefly:

1. Write about the numismatic sources of the Pandyas?
2. Why did Jatavarman Sundara Pandya – I was known as “Emmandalamum Kondarulia”?
3. Who was called Adisaya Pandya deva?
4. Write about Maravarman Kula sekara-I.
5. Write about Malikkafur.

VI. Write answers in detail:

1. Write about the sources for the study of the Pandyas.
2. Write about the achievements of Jatavarman sundra Pandya-I

6. DEVELOPMENT OF LITERATURE-ART AND ARCHITECTURE UNDER PANDYAS

Learning objectives:

1. To enable pupil to know about the contribution of the Pandyas to art and architecture.
2. To enable pupil to know about the growth of language and literature during the rule of the Pandyas.
3. To enable pupil to understand the development of sculpture and painting during the Pandya rule.

Pandya kings made significant contributions for the progress of literature, art and architecture. They made important milestones and remarkable turning points in the cultural history of Tamil country.

Sources : There are many sources for the study of Pandyas. Sangam literature is very useful to know about sangam Pandyas. Several inscriptions and copper plates, like Velvikkudiplates, Seevaramangalamplates, Thalavaipuramplates, Srivilliputhurplates, Sivakasiplates and Chinna manur plates are very much valuable to study about the development of literature, art and architecture



Pandya Seal

during the Pandya rule. Several Pandya coins are also available. Some literary works give information about the Pandyas. The writings of foreigners like Marcopolo, Hiuen Tsang are useful sources. Stone inscriptions of Pandya kings are useful to fix the geneology.

Tamil literature: Sangam Pandya kings patronised and developed Tamil language. They organised three Tamil sangams at Madurai namely Mudhal sangam, Idai sangam and Kadai sangam. Sangam was an assembly of Tamil poets and scholars. Agathiyam, Tholkappiyam, Silappathikaram, Ettuthogai, Pathupattu and many valuable Tamil literary works were released in these Tamil sangam meetings. Nakkeerar was the chief Tamil poet of the Pandya court. The city of Madurai was known as Tamil koodal.

Request your teacher to explain more about three Tamil sangams and sangam literature

Saivite literature: According to the informations given by a foreign writer Hiuen Tsang and Velvikudi plates, the Pandya kings worked for the development of literature, art and architecture. Particularly they contributed more for the development of Saivite literature. Thirugnanasambandar influenced his contemporary Pandya king Maravarman Arikesari. Saint Manikavasagar composed the divine hymn Thiruvagasam. He also wrote Thiruchirrambalakovai. The saiva nayanmars were more respected. Saivism flourished with their patronage.

Vaishnavite literature: The Pandya kings patronised Alvars and vaishnavite literature. Periyazhvar and his daughter Andal contributed greatly for the progress of Vaishnavism. Andal composed the famous Thiruppavai. Nammalvar composed Thiruppallandu. These two

vaishavite literary works of the Pandya period are given very high position in the Indian religion and literature. The Pandya literatures like Thiruppavai and Thiruppallandu have enriched the Indian religion and literature.

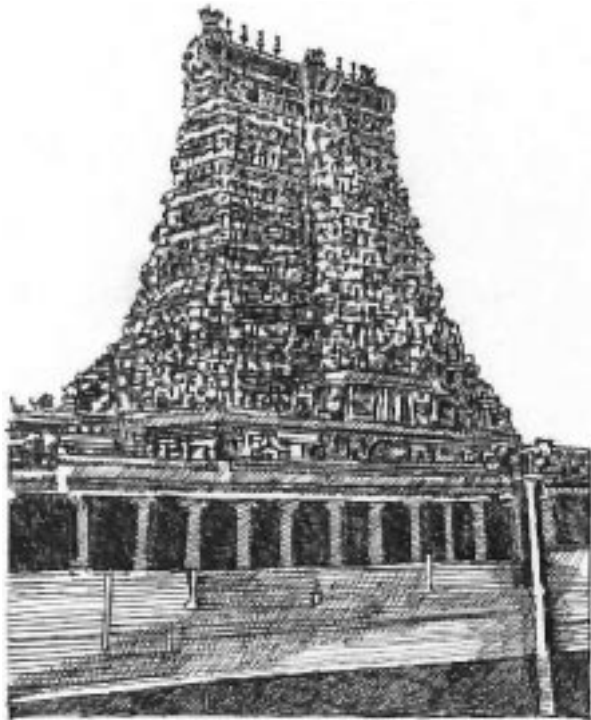
The Pandya king Adhivēerama Pandya of Thenkasi wrote Naidadham. Sri Kaviraya wrote four books namely Thirukkalathinatharula, Thiruvannamalaiyar vānam, Seyur Murugan ula, Rathinagiriula. King Varathungarama Pandya wrote three books namely pathitru pathu, Kalithurai andhathi and Venba andhathi. Mayilai nathar wrote commentary on Nannool. Adiyarkkunallur wrote commentary on Silappathiharam. Senavrayar wrote commentary on Tholkappiyam, Parimelazhagar wrote commentaries on Thiurkkural.

Art and architecture: The Pandyas contributed more for the development of architecture. Gopuras, Prakaras, Vimanas, Garbagrahas are the special features of the Pandya temple architecture. Temples at Madurai, Chidambaram, Kumbakonam, Thiruvannamalai, Srirangam are good examples for the development of Pandya architecture. The images of horses and other animals are carved on pillars. According to historian A.L.Basham, The zenith of Pandya architecture are Meenakshi temple at Madurai and Aranganathar temple at Srirangam.

Rock cut temple: The Pandya period is marked as renaissance period in the field of rock cut temple. The rock cut temples are known for their merit. More than 50 rock cut temples were excavated from the Pandya kingdom. More rock cut temples are found in Thirupparankundram, Anaimalai, Karaikudi, Kalugumalai, Malaiyadikurichi and Trichy. These

temples were constructed for Lord Siva and Vishnu. Cave temples are also found in temples at Kalugumalai and Trichy. Rock cut caves were also there.

Structural temples: Structural temples were built on stones. They were simple in style. Each temple consists of Garbagraha, arthamandapa and mahamandapa. Such structural stone temples are found in Kovilpatty, Thiruppathur and Madurai. The Pandya kings constructed structural temples at Ambasamuthram, Thiruppathur, Mannarkudi, Madurai, Alagarkoil, Srivilliputhur and in Chinnamanur. Internal structures of these temples were constructed in a planned manner.



Meenakshi Temple at Madurai

The second Pandya kings also promoted structural temples. The Vadapadrasayi temple at Srivilliputhur, Siva temple at Ambasamudhram, Vijayanarayana temple at Nanguneri, Lakshmi narayana temple at Athur are some of the famous structural temples. Pandya rulers built big gopurams at the entrance of the temples. Pandyas built temples mandapas, gopurams at Chidambaram and Srirangam. Kulasekara Pandya built arthamandapa, manimandapa and sannathi in every temple. Sundara Pandya and Sadaiyavarman built gopurams during their period. Pandya rulers renovated Alagarkoil and Jambukeswara temples.

Sculpture: Pandya sculptures are beautiful and ornamental. Some sculptures are engraved on single stone. They have got more messages and values. Pandya period witnessed renaissance in the art of sculpture. Sculptures of Somaskandar, Durgai, Ganapathy, Narasimha, Natarja are very good specimens. Sculptures at Kalugumalai, Thirupparankundram, Thiurmalaipuram and Narthamalai are very famous. Vishnu sculpture at Kunnakudi and Nataraja sculpture at Thiurkolakkudi are on par excellence with the sculptures of pallava, chola period.

Paintings : The beauty of the Pandya mural painting can be seen in the Chittannavasal cave temples constructed during the time of Srimaran and Srivallaba Pandyan. The ceilings and pillars at Chittannavasal bear the paintings of dancing girls, the kings, the queens, plants and animals. The picture of lotus, bathing elephants and playing fishes were good at Chittannavasal. Oil painting was also there. They are outstanding examples of pandiya paintings.

The paintings on the walls and pillars of temples are called as mural paintings

Pandya rulers contributed more for the development of literature, art and architecture. Their contributions created a unique and permanent cultural impact upon the Tamil society.

Learning outcome:

1. Pupil will be able to explain the growth of language and literature during the Pandyas rule.
2. Pupil will be able to understand the growth of art, and architecture, sculptures and paintings during the Pandya period.

SELF EVALUATION

I. Write True or false:

1. Andal composed Thiruppavai. ()
2. The Pandya kings did not patronise the Tamil language during their rule. ()
3. Sangam Pandyas organised three Tamil sangams in the capital city Madurai. ()
4. Chinttanavasal cave temple was built by Srimaran and Srivallabha Pandya. ()
5. Big gopurams were built at the entrance of the temple during the period of Pandya. ()

II. Choose the correct answer:

1. Adiyarkku nallar wrote commentary on
a) Silappathiharam b) Tholkappiam
c) Nannool d) Veerachozhiyam
2. The chief Tamil poet in the Pandyas court was
a) Nakkeerar b) Agathiyar c) Manickavasagar
d) Thirugnanasambandhar
3. The city of Madurai was known as
a) Tamil koodal b) Tamil koodam
c) Tamil peravai d) Tamil kadal
4. During the Pandya rule Tamil sangam was established in the city
a) Chennai b) Madurai
c) Kovai d) Tanjore
5. Thiruchittrambalam was written by
a) Manickavasagar b) Gnanasambandhar
c) Appar d) Sundarar

III. Fill in the blanks:

- 1) _____ was written by Manickavasagar
- 2) The vaishnavite saints patronised _____
- 3) The saivite saints patronised _____
- 4) Cave temples are found at _____ and _____
- 5) Thiruppavai was composed by _____

IV. Match the following :

- | | | |
|------------------------|---|---------------------------|
| 1) Thiruppallandu | - | King Varathunga Pandya |
| 2) Naidatham | - | Nammalvar |
| 3) Kalithurai Anthathi | - | King Athiveerarama Pandya |
| 4) Parimelazhagar | - | Thirukkalathinatharula |
| 5) Srikaviraya | - | Commentary of Thirukkural |

V. Answer the following briefly:

- 1) Write about of the development of painting during the Pandya period.
- 2) Explain the development of vaishnavism during the Pandya rule.
- 3) Explain about the structural temples.
- 4) Write about the rock cut caves.
- 5) Describe the paintings of Chittannavasal.

VI. Answer in detail:

- 1) Describe the progress of Tamil literature during the Pandyas rule?
- 2) Write about the growth of Saivite and Vaishnavite literatures during the Pandyas rule
Write an essay on the development of art and architecture during the Pandya period.

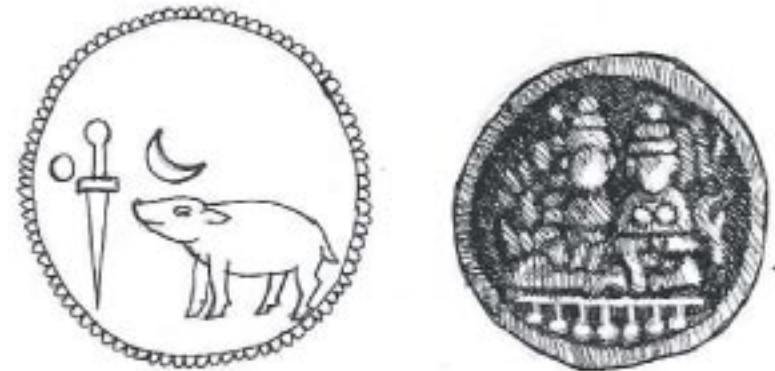
UNIT – III

7. TAMIL NADU UNDER VIJAYA NAGAR EMPIRE - SOCIAL AND CULTURAL IMPACTS

Learning Objectives:

1. To enable pupil to know about the social customs and practices that entered into Tamil society during this period.
2. Pupil to learn about the contributions of the Vijaya Nagar rulers to literature, art and architecture.
3. To enable pupil to understand the impact of Vijaya Nagar rule in Tamilnadu.

The Vijaya Nagar empire was one of the famous empires in India. Two brothers namely Harihara and Bukka established Vijaya Nagar empire on the Southern banks of the river Tungabhadra in 1336. Vijaya Nagar was the capital of this empire.



Vijayanagara Emblems and Coins

Sources: Literary, architectural, numismatics and epigraphic sources are available for the study of Vijaya Nagar empire. Bagapalli copper plates, Ramanuja inscription, Srirangam plates Srisailam plates give details about the geneology, political and socio, economic conditions of Vijaya Nagar empire. Foreign writers like Ibin Batuta, Abdul Razak, Nikitin, and Ferno Nuniz give useful informations about the Vijaya Nagar kingdom.

Establishment of Vijaya Nagar rule in Tamilnadu: Bukka I was the first Vijaya Nagar ruler to invade Tamilnadu. Then Vijaya Nagar ruler Kumarakampana captured Thondaimandalam, Trichy, Madurai, Kongudesam, Rameswaram and established Vijaya Nagar Government in Tamilnadu. Kumarakampana's rule may be regarded as the brightest chapter in the history of Vijaya Nagar rule in Tamil country. After Kumarakampana, Tamilnadu was ruled by some Vijaya Nagar kings namely Virupanna, Harihara-II, Devaraya Saluva Narasimha and some others.

Krishna Devaraya 1509AD. – 1529AD.: Krishna Devaraya was of medium height and had fair complexion rather fat than thin. He had signs of small pox on his face. He was physically so strong. He was a brave warrior and a statesman. He was gentle and generous in character. Among the Vijaya Nagar rulers Krishna Devaraya was the greatest administrator. He had extended the boundaries of Vijaya Nagar empire in Tamilnadu by capturing many new areas. His success over Udayagiri, Kondapalli were significant. His expedition against Kalinga and battle of Raichur are important.



Administration of the Vijaya Nagar empire: Vijaya Nagar empire was ruled by the emperors belonging to four dynasties namely Sangama, Saluva, Thuluva and Araveedu dynasties. King was the supreme authority in civil, military and judicial matters. There was an imperial council of ministers to advice the king on important matters. In continuation of Vijaya Nagar rule in the Tamil country, Krishna Devaraya created Nayakship in Madurai and Tanjore. A feudal type of Nayankara administrative system was introduced to replace local self Government institutions in Tamilnadu. They appointed nayaks in their provinces in Tamil country. The administrative reforms of Vijaya Nagar rulers continued till they were defeated by the sultans in the battle of Tali Kotta in 1565.

Social Condition: The economy of the Tamil society under Vijaya Nagar rule was prosperous. The flourishment of inland and foreign trade had good impact in the Tamil society and economy. People with various cultures and languages lived together happily. Caste system was there. Royal family members and nobles led a luxurious life. Common people led poor life.

Women were respected more. Some women participated in Public life. Some of them were appointed in both civil and military departments. Some women were talented in music, dance and poetry writing. Marriages had sacred and social importance. Dowry system was there. Horse riding, hunting, chess, boating, kolattam, kummy were the favorite games in the society. Krishna devaraya's daughter was a very good chess player. The Telugu, Kannada speaking people migrated in to Tamilnadu. Sourashtras of Gujarat who came and settled in

Tamilnadu had supplied clothes to the royal house and nobles. The Reddies and other agriculturists migrated to Tamilnadu during the Vijaya Nagar rule. Music and dance were encouraged.

Social Divisions: Vijaya Nagar society was divided into many divisions. Brahmins and Vellalas were dominant groups. The Portuguese, the French, the Dutch, the English and the Arab muslims settled here. These foreigners had their own churches and mosques. They had mixed response from the native population. Indian muslims, christians formed another section. Goldsmiths, blacksmiths, carpenters, and weavers formed sizable group in the society. Fishermen who lived in the east coast were converted into christianity. Valangai and Idangai groups had frequent conflicts among themselves. Some times they joined together on certain issues.

Education: During the Vijaya Nagar rule education was confined only to certain sections of the Society. Gurukula education was there. Classes were conducted both in teacher's houses and temple premises. These educational institutions had royal support. Vedas, astrology, subjects like medicine were taught.

Gurukula system of education was prevalent in ancient India. In this system, students of royal family and privileged class stayed with Guru in his house and learnt lessons from Guru

Food and Dress: Rice and millet were their main food. The habit of chewing the betel leaf was also there. Free meals were provided in the choultries. Generally people wore cotton wool and linen dresses. The nobles wore embroidered dresses with golden threads. Rich people wore shoes and poor people remained bare footed. Women had the practice of wearing costly gold ornaments with precious stones and pearls.

CULTURAL IMPACTS

Religious condition: The Vijaya Nagar rulers encouraged all religious faiths. Their most favourable religion was Hinduism. Many areas of Tamilnadu were relieved from Muslim sultan's rule and were placed under the Vijaya nagar Hindu rulers.

Temples of Madurai, Srirangam, Thiruvavur, Rameswaram, Chidambaram, Tirunelveli, Thiruvannamali, and Sirvilliputhur were repaired and rebuilt. Some of them were enlarged with an additional gopuras, praharas, entrance towers, corridors and mandapas. New temples were built in Kanchipuram, Kumbakonam and Vellore. Sculptures were carved on pillars. Maharasankaranthi, Mahanavami, Ugadi, Deepavali, karthigai and holi were celebrated. Coins issued by Vijaya Nagar kings proclaim their conviction towards Vaishnavism. King Achyutaraya made liberal grants to the Varadaraja and Ekmabareswarar temple at Kanchi. He built the image of Lord Thillai Govindaraja at Chidambaram. Jain temples were built. Muslim dargas were respected. Christian missionaries were functioning in Tuticorin, Vellore and other areas. The early Vijaya Nagar kings were saivites and the later kings were vaishnavites. So both saivism and vaishnavism flourished during this period. This reflected in Tamil country also.

Vadaglai and Thengalai: Vadagalai and thengalai groups were there among the vaishnavites. The Vadagali group was led by vedhanta Desikar. They followed Sanskrit vedas. Thengalai group was led by Manavala Mahamuni. The Thengalai group followed Tamil Prabandhams. Vadagalai people believed in caste system but Thengalai people did not believe in caste system.

Literature: Vijaya Nagar kings patronised Tamil, Telugu and Sanskrit scholars, poets and philosophers. Krishna Devaraya composed Amuktamalayada. Which is considered as one of the five Telugu kavyas. There were eight scholars in the court of Krishnadevaraya. They were known as Ashtadiggajas. Krishnadevaraya stopped the practice of translating from Sanskrit to other languages. He encouraged original thinking and writing in the field of literature. Krishna Devaraya marked a new beginning in the literary history of South India. The influence of Vaishnavism was found in the Telugu and Tamil literature. Gangadevi wrote Maduravijayam which is an important literary evidence about her husband Kumarakampana's conquest of Tamil country. Allasanipeddanna, Nanditimmanna Tenaliramakrishna were leading Telugu scholars. Telugu literature flourished well.

Tamil Literature: Vijaya Nagar period marked good development in Tamil literature. Tamil Scholars of Saivism, Vaishnavism and Jainism were encouraged. Meykandar wrote Sivagnana Bodham. Velliyambala Tambiran wrote Gnanapuravilakkam, Alagiyadesikar's Sethupuranam, Kachiappasivachariar's Kandapuram were important Tamil literary works. Villiputhurar translated Viyasar's Bharatam in Tamil. Chidambarapuram and Chokkanatharula were written by Thirumalainathar. Haridasars wrote Irusamaya vilakkam. Nalavenba, is famous Tamil work of that period. Commentaries were written on Tholkappiyam and Silappathiharam and also on many vaishnavite religious texts. Nallurveerakavirayar's Harichandrapuranam and saint Pavanandhi's Nanool were important works written during Vijaya Nagar period.

Art and Architecture: During the period of Vijayanagar rulers the Tamil country faced an introduction of new style in the field of art and

architecture. Two different styles of architecture namely the Dravidian and Indo-Saracenic architecture were famous during this period.



Names of the Places given as per the number in the map.

- 1) Vijaya nagaram
- 2) Monavar
- 3) Keri
- 4) Bhatkal
- 5) Bellur
- 6) Villal
- 7) Vellore
- 8) Bangalore
- 9) Ginjee
- 10) Mysore
- 11) Tanjore
- 12) Madura
- 13) Kalkulam

The two gopuras of Rameswaram temple and Seshagiri mandapam at Srirangam are the best examples of Vijaya Nagar art. Vijaya Nagar king built a famous temple inside the Vellore fort. Special feature of the Vellore temple is the Kalyana mandapam attached to that temple. This is one of the best examples of the Dravidian architecture

style of Vijaya Nagar kings. The palace of Madurai built during this period is a good example of Indo Saracenic architecture style. Krishna Devaraya built a good part of a northern tower of Chidambaram. He also constructed the south side of Ekambaranatha shrine at Kanchipuram. He built pudumandapam and many temple towers at Madurai and Thiurvannamalai.

Make a study of the sculptures of the Vijaya Nagar period

New temples were built in Vellore, Kumbakonam, Srirangam and Kanchipuram. Gopurams towers, forts and palaces constructed during this period are famous even today. The last stage of the Vijaya Nagar architecture was known as Madura style. The art of casting bronzes was famous. Some of the Vijaya Nagar paintings of God, Goddesses, purana story pictures and images of kings are familiar even today.

Revival of Hinduism, and some of the new social and cultural patterns introduced and emerged in Tamil Country during Vijaya Nagar period had established a very big impact in the social and cultural life of Tamil country.

Learning Outcome:

1. Pupil can explain about the greatness of king Krishna Devaraya.
2. Pupil will be able to know the social conditions and cultural impacts during the Vijaya Nagar rule.
3. Pupil will be able to write about the contributions of Vijaya Nagar rulers to literature art and architecture.

SELF EVALUATION

I. Write True or False:

- 1) Vijaya Nagar empire was famous empire in India ()
- 2) The Tamil country was free from Muslim rule by the establishment of Vijaya Nagar empire ()
- 3) Krishna Devaraya created nayakship in Madurai ()
- 4) Achyutharaya made liberal grants to Kailayanthan and Kamakshi Amman temples at Kanchipuram ()
- 5) Chidambarapuram and Chokkanathanula were written by Villiputhurar ()

II. Choose the correct Answer

- 1) The Vijaya Nagar empire was established in
(a) 1556 AD, (b) 1336 AD, (c) 1056 AD,
(d) 1456 AD
- 2) The Vijaya Nagar empire was established on the banks of the river
(a) Caveri, (b) Thungabadhra (c) Gangas
(d) Krishna
- 3) The capital of Vijaya Nagar empire was
a) Vijaya Nagar b) Talikkotta c) Kanchi d) Dharmapuri
- 4) The Book written by Krishna Devaraya was
(a) Amukthamalayatha (b) Ushaparinayam
(b) Sivagnanapodham (d) Jambavathy Kalayanam
- 5) The eight scholars at Krishna Devaraya's court were known as
(a) Navarathinas (b) Ashtadiggajas
(c) Ashtaprathan (d) Enperayam

UNIT – III

8. TAMIL NADU UNDER THE NAYAK RULE - MADURAI, TANJORE, GINJEE AND VELLORE NAYAKS- SOCIAL AND CULTURAL CONDITION

Objectives of Learning :

1. To enable pupil to learn about the origin of the Nayak rule in Tamilnadu.
2. To enable pupil to know the Nayak rule in Madurai, Tanjore, Ginjee and Vellore
3. To understand the social and cultural conditions under the Nayak rule.
4. To understand the achievements of the Nayak rulers.

THE NAYAK RULE IN MADURAI: 1529AD. - 1739 AD.

The Nayak rule in Tamilnadu was established by the Vijayanagar emperors. Krishna devaraya popularised the Nayak system. King Achyutharaya had 200 Nayaks under his control. Among them, the Nayaks of Madurai, Tanjore, Ginjee and Vellore were important. After the battle of Talikotta and after the downfall of Vijayanagar empire the Nayaks emerged as an independent rulers. The Nayak rule lasted for a century.

Sources: We have lot of epigraphic and literary sources for the study of the Nayaks. Inscriptions give details about the donations made by the Nayak rulers to Brahmins and temples. The monuments reveal the culture of the Nayaks. The letters of Fernao Nuniz, Domingo Poes and Jesuits are very important sources. Factory records of Portuguese, the Dutch and the English are useful to know the Nayak rule.

III. Fill in the blanks:

- 1) _____, _____ were the two brothers established the Vijaya Nagar empire
- 2) Meykandar wrote _____, _____
- 3) _____ was the first ruler of Vijaya Nagar empire.
- 4) The battle of Talikkota was fought in the year _____
- 5) Maduravijayam was written by _____

IV. Match the Following:

- | | |
|-------------------|--|
| Bukka I | - Head of the Thengalai group |
| Abdul Razak | - Head of the Vadagalai group. |
| Amukta Malayatha | - Foreign Writer |
| Vedhantha Desikar | - Krishna Devaraya |
| Manavala mahamuni | - The first ruler of Vijaya Nagar empire |

V. Answer the Following Briefly:

- 1) What are the sources to know about the Vijaya Nagar empire?
- 2) Write notes about the great king Krishna Devaraya?
- 3) What are the four dynasties which ruled the Vijaya Nagar empire?
- 4) Who were the Telugu leading scholars during the period of Krishna Devarayar?
- 5) Write about Vadagalai and Thengalai.

VI. Answer in Detail:

- 1) How did the Vijaya Nagar emperors patronise the art and architecture.
- 2) Describe the contributions of Vijaya Nagar rulers to the growth of language and literature?
- 3) Write about the social conditions and cultural impact during the period of Vijaya Nagar empire.

Nayankara System: Krishnadevaraya extended this system to Tamil country. According to this system, king was considered as owner of all land. Those who received lands from the king were also called Nayaks. In return the Nayaks had to pay a fixed amount and send an army whenever the king needed. The Nayaks carried on the administration in the name of the King. They presented gifts and money to the King on his birthday. This system is known as Nayankara system.

Nayaks of Madurai: On the request from a Pandya king, Krishnadevaraya deputed his general NagammaNayak to Madurai to help the Pandya king. Later Krishnadevaraya sent NagammaNayak's son ViswanathaNayak and established Nayak rule in Madurai.

Viswanatha Nayak 1529AD.–1564 AD.: Krishnadevaraya appointed ViswanathaNayak as viceroy or Nayak of Madurai in 1529. He ruled Madurai for about 35 years. He was the first Nayak of Madurai. He was loyal to Vijayanagar emperors. Viswanatha Nayak was assisted by his able Dalavoy Ariyanathar. Viswanatha Nayak defeated many local chieftains and brought them under his control.

Viswanatha Nayak introduced poliga system during his period. In accordance with this system ViswanathaNayak divided his principality into 72 palayams. The new system enabled the Nayaks to collect revenue. The poliga system was a semi military and feudal arrangement. Through which he tightened the imperial hold over the conquered territory. Viswanatha Nayak brought the hill chief of Kambum and Gudalur under his control.

He renovated the Ranganatha temple at Srirangam and Rock temple at Trichy, the temples of Tirunelveli. He brought the Pandyas of

Thenkasi and Kayathar under the poliga system. The streets were widened. ViswanathaNayak extended the territory of Madurai Nayak which included Trichy, Salem, Ramanathapuram and Tirunelveli. He brought some parts of chola dominions and the Pandya Kingdom under his control. He constructed some forts also. ViswanathaNayak was considered as the real founder of the Nayak rule in Madurai.

Dalavoy Ariyanathar: Dalavoy was both the minister and military general during the period of ViswanathaNayak. He was an administrator of both civil and military matters. Ariyanathan was the first dalavoy during the period of ViswanathaNayak. He contributed much for the victories and achievements of ViswanathaNayak.

Krishnappa Nayak 1564 AD.–1572 AD: He was son of ViswanathaNayak. During his period the poligas and muslims revolted against him. But the revolts were put down by Dalavoy Ariyanathar. He developed Krishnapuram temple which is a good model for Nayak architecture. He renovated and built some temples.

Veerappa Nayak 1572 AD.–1595 AD.: VeerappaNayak, was the eldest son of KrishnappaNayak. He was a pious and peace loving ruler. He was ably assisted by Dalavoy Ariyanathar. He developed the fort at Trichy and built a new fort at Aruppukottai. He renovated Chidambaram temple. Improvements were made in Meenakshi Temple at Madurai. After his demise Krishnappa Nayak II, Muthukrishnappa Nayak I and Muthuveerappa Nayak I ruled for sometime.

Thirumalai Nayak 1623 AD. – 1659 AD: ThirumalaiNayak was the greatest among the Nayaks of Madurai. He transferred the capital from Trichy to Madurai. He was pious and a genius king. His kingdom included Madurai, Tirunelveli, Coimbatore and some parts of Thiruvananthapuram. He defeated Mysore king Chamarajaudaiyar.

He freed himself from the control of Vijayanagar sovereignty and became an independent ruler.

He built many forts. He renovated many temples. By introducing many more festivals, he made Madurai as city of festivals. Theppakulam, Thirumalai Nayakar Mahal, Pudhu mandapam, Raja gopuram were some of his contributions. He partitioned art and architecture. He built choultries, gopurams, palaces in Madurai. He donated a number of villages for the maintenance of temples.

The Battle of Noses: ThirumalaiNayak defeated the Mysore ruler KanthiravanarasaNayak at Dindigul. Barbarious punishments were given to the war prisoners. They cut off the noses and upper lips of the war prisoners. So this war has been called the “War of Noses”.

Tirumalai Nayakar Mahal: ThirumalaiNayakar mahal built at Madurai during the period of ThirumalaiNayak is the unique example for architectural work. The arches, domes and large pillars of the mahal attracted the pilgrims of various places.



Thirumalai Nayakar Mahal at Madurai

Rani Mangammal: 1689 AD.– 1706 AD.: She was a good administrator and courageous general. She had diplomatically dealt with the mughal army and avoided a defeat. She defeated and brought King Ravivarma of Trivancore under her control. She had successfully defeated the Mysore invador brought Trichy and Tanjore under her control.

Rani Mangammal donated lands to muslims, brahmins and she also patronised christians. She built many irrigational tanks for the development of agriculture. Rani Mangammal successfully completed many public works, like digging wells, and canals, laying roads, building choultries, mandapams, temples, planting trees on both sides of the road. The Mangammal choultry in Madurai is the good example of art and architecture of Rani Mangammal.

Vijayaranga Chokkanathar 1706AD. – 1732 AD: He was not a powerful leader.

Meenakshi 1732AD. – 1739 AD: Meenakshi the wife of Vijayaranga Chokkanathar was the last ruler of Madurai Nayaks. During her period Tanjore, Dindigul, Trichy and Madurai were attacked by Arcot Nawab. Meenakshi was arrested and poisoned to death. Thus the rule of Nayaks of Madurai was brought to an end by the Nawabs.

THE NAYAKS OF TANJORE 1532AD. – 1637AD.

SevvappaNayak 1532AD.–1580AD: Vijayanagara king Achyutharaya appointed SevvappaNayak as the Nayak of Tanjore. He was the first Nayak of Tanjore. His dominion included the Cholamandalam and Thondaimandalam. During the Talikotta war and Trivancore war Sevvappa Nayak gave military help to his overlord

Krishnadevaraya. He repaired and renovated the lake at Tanjore which was later called Sevapaneri. He built Sivaganga fort and many temples

AchyuthappaNayak: 1580 AD.– 1600 AD: He was the son of Sevvappa Nayak. He ably assisted his overlord Krishnadevaraya The famous Mahamaham tank in Kumbakkonam was renovated during his period. He built many temples.

Raghunatha Nayak: 1600AD. – 1634 AD: RaghunathaNayak was the son of AchyuthappaNayak. He was the greatest among the TanjoreNayak rulers. He sent his army to Jaffna. He encouraged the British, Portuguese and the Dutch to establish their trading companies in Tamil country. He was a great scholar and an expert in the art of music. He patronised Telugu and Sanskrit languages.

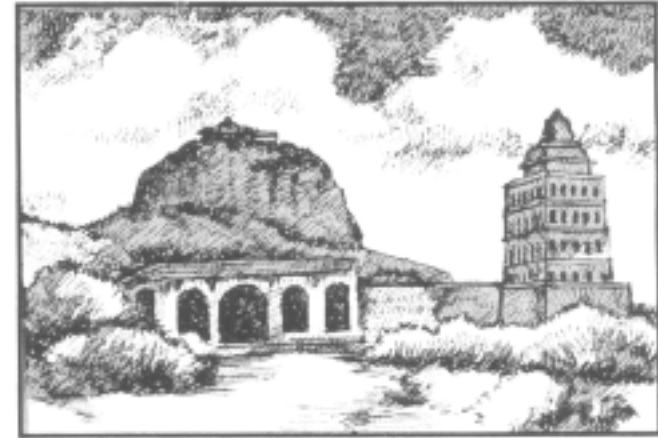
Vijaya ragava Nayak: 1633AD. – 1637 AD:

VijayaragavaNayak was the son of RaghunathaNayak. He was a scholar in Telugu. He wrote the book called Raghunatha Bhyudayam. During his period the Golkonda Sultan attacked Tanjore and caused great damage to the kingdom. In 1673 ChokkanathaNayak of Madurai defeated and annexed Tanjore with Madurai and appointed his relative Alagiri as Viceroy of Tanjore. With this the TanjoreNayak rule came to an end. The society was peaceful during this period.

THE NAYAKS OF GINJEE 1526 AD. - 1671 AD.

The Region between palar and kollidam formed part of the Nayak Kingdom of Ginjee. The Nayaks of Ginjee were relatives of Vijayanagar rulers. Krishnadevaraya appointed VaiyappaNayak as the ruler of Ginjee. Ginjee is one of the historical places of Tamilnadu. During the period of Krishnadevaraya Ginjee was the capital city.

Try to make a visit to Ginjee fort



Ginjee Fort

VaiyappaNayak: 1526 AD. – 1541 AD: He was loyal to Krishnadevaraya. During his period he built temple in Thirukoilur.

Thubakki Krishnappar: 1541AD. – 1554AD: Thubakki krishnappar was the son of VaiyappaNayak. He was very helpful to the southern expedition of Krishnadevaraya. During his period he built great walls around the three hills of Ginjee. He built great granary and a luxurious wedding mahal. He also constructed wall around the Rajagiri fort. After the rule of small rulers for some time Ginjee was captured by the Sultan of Bijapur 1671.

THE NAYAKS OF VELLORE

The Nayak rule in Vellore was established by ChinnaNayak Pommar. He was the first Nayak of Vellore. After ChinnaNayak Pommar, LingamaNayak ascended the throne. The Nayaks ruled Vellore for short period.

Social Conditions: The Nayaks were conservatives. Caste system remained very rigid. Trade and commerce flourished. Valangai and Idangai groups continued their activities. The artisan communities like carpenters goldsmiths and blacksmiths were there. Common people suffered from contagious diseases like cholera and smallpox. Poverty, slavery and bonded labourers were there. Taking advantage of the sufferings of the local people, the Dutch merchants started slave markets and enslaved people. Lot of Telugu speaking people migrated in to Tamil country and emerged as a new land holding class. The Government gave land grants and big support to them.

Education: The brahmins enjoyed the right of education. Vedic education was given in Sanskrit medium. Nayak rulers gave liberal grants to mutts to promote education. Ordinary villagers lived in poverty and ignorance. Illiteracy prevailed among them.

Occupations: The land based agricultural economy was mainly dependent on natural water resources like rain. Some Nayak rulers like Tirumalai Nayak and Rani Mangammal attempted to improve the irrigation system. Oil crushing (Chekku Alai) Palm Sugar and Jaggary making, Pottery, salt making were famous domestic industries in Tamilnadu. Spinning and weaving were familiar in Kancheepuram and Madurai. Textile industry got importance in Coimbatore, Kancheepuram and Madurai. Iron, silver, gold and other metals were available. Utensils and ornaments were produced through domestic industries. Bullock carts were the main inland transport.

Rice, millets, vegetables, salt, species and cloth were sold in local market. Rice, powdered sugar, millets, spices, cotton and silk clothes were exported gold, tin, silver, lead, copper brass and luxury items were imported.

Religious conditions: The Nayak rulers patronised Hindu religion. The Nayak kings gave liberal donations to temples. ViswanathaNayak extended good service to the temples at Srirangam and Trichy. VeerappaNayak raised huge wall around the Chidambaram temple. Rani Mangammal gave liberal grants to muslim darghas. Temple built during this period at Thiruvannamalai, Tindivanam, Ginjee are famous. They patronised saivism and promoted Linga worship. Mahamaham festival, Sivarathiri and Ekathesi festivals were celebrated. During the period of ThirumalaiNayak Chithirai thiruvizha, Theppa thiruvizha and Ther thiruvizha were introduced.

Literature: Tamil and Telugu languages were given importance. Saiva mutts played good role in the development of religious literature. Ellappanavalur wrote Arunachalapuranam. Kumarakurubarar wrote Kandarkalivenba. Arunagirinathar's Thiruppukazh was more appreciated. Gnanaprakasadesikar wrote Kachikkalambakam. Namachivaya pulavar wrote Chithambaravenba. Revanna siddhar wrote Thirupatheeswarar puranam. King RaghunathaNayak wrote two books on music entitled Sangita Sudha and Bharata Sudha. These two books talk about new ragas and thalas discovered by him. During the period of Nayaks rule Telugu literature flourished more.

Art and Architecture: The Nayaks followed Vijayanagar style. Many existing temples were expanded with additional structures, Gopurams and mandapams. The contributions of Viswanatha Nayak, Thirumalai Nayak and Rani Mangammal to the development of art and architecture are more appreciated. Madurai was promoted as temple city and also

as the city of art and architecture. Rajagopuram of Meenakshi temple, Nayak mahal, Mangammal choultry, Pudu mandapam, 1000 Pillars mandapams, Huge gopuras, Prakaras are some of the best examples of Nayaks art and architecture. Srivilliputhur Andal temple, Krishnapuram, Thiruvenkata nathar temple, Srirangam temple and Nellaiyappar temple are some of the good models of the Nayak's art and architecture.

Painting: The Art of drawing and painting was improved. Paintings at Meenakshi temple are very famous. The ceilings of the mandapa and side walls were beautifully painted with scenes from Ramayanam and Mahabharatham.

The social and cultural impacts of Vijayanagar empire were reflected in the social and cultural conditions in the Tamil country under the Nayak's rule. The new administrative measures followed by the Nayak rulers had led to the introduction of many new social, economic and religious styles in the Nayak society. These new systems lasted even after the Nayak's rule. The Nayaks of Madurai, Tanjore, Ginjee and Vellore contributed much for the social and cultural development of Tamil Country. Impact of the Nayaks rule and their contributions are very much appreciated in the history of Tamil Nadu.

Learning out come:

- 1) Pupil will be able to know the factors led to the establishment of the Nayak rule in Madurai, Tanjore, Ginjee and Vellore.
- 2) Pupil will be able to understand the social and cultural development under the Nayak rule.
- 3) Pupil will be able know about the growth of literature and development of art and architectures during the Nayak period.

Chennappa Nayak was the ruler of Chennapatnam which later became Chennai

SELF EVALUATION

I. Write True or False:

1. Aruppukottai fort was built by MuthuveerappaNayak()
2. Krishanapuram town was established by KrishnappaNayak ()
3. Tiruvancore got independence during the period of Vijayaranga Chokkantaha Nayak ()
4. Dalavoy Ariyanathar was responsible for the downfall of Viswanatha Nayak ()
5. Thirumalai Nayak built Thirumalai Nayakar mahal ()

II. Choose the correct answer:

1. The Real founder of Nayak rule in Madurai was
 (a) Nagamma Nayak (b) Viswanatha Nayak
 (c) Krishnappa Nayak (d)Muthukrishnappa Nayak
2. The Nayankara System was introduced by
 (a) Krishna devaraya (b) Achyutharaya
 (c) Ramaraya (d) Viswanatha Nayak
3. The last Nayak ruler of Madurai was
 (a) Thirumalai Nayak (b) Rani Mangammal
 (c) Meenkashi (d) Krishnappa Nayak
4. The Nayak rule in Vellore was established by
 (a) Chinna Nayak Pommar (b) Lingama Nayak
 (c) Veerappathra Nayak (d) Muthukrishnappa Nayak

5. The founder of the Nayaks rule in Tanjore was
(a) Achyuthappa Nayak (b) Raghunatha Nayak
(c) Vijayaragava Nayak (d) Sevvappa Nayak

III. Fill in the blanks:

1. The rule of Nayak was established in Madurai in the year _____
2. Viswanatha Nayak was appointed as _____ of Madurai by Krishna devaraya
3. Poliga system was introduced by _____
4. The first Nayak ruler of Ginjee was _____
5. _____ was the last Nayak ruler of Tanjore.

IV. Match the following:

- | | | |
|-----------------------------------|---|---|
| 1. The first Dalavoy | - | ThirumalaiNayak |
| 2. Renovation of Meenakshi Temple | - | Ariyanathar |
| 3. Thirumalai Nayakar Mahal | - | ViswanathaNayak |
| 4. Rani Mangammal | - | Ellappanavalalar. |
| 5. Arunachala Kalambakam | - | Grand mother of VijayaRangaChokkanathar |

V. Answer the following in brief:

1. Write short Note about “Dalavoy”.
2. Write any four achievements of the ViswanathaNayak.
3. Describe the war of noses.
4. What are the achievements of Rani Mangammal?
5. Write short notes about Thirumalai Nayakar mahal.
6. Write about the education system under Nayak rule.

VI. Answer the following in detail:

1. Explain the social, cultural and economic development during the Nayak rule?
2. Assess the growth of literature during the Nayak rule?
3. Write about the development of art and architecture during the Nayak rule.

UNIT – IV
**9. MARATHA RULE-CULTURE-
DEVELOPMENT OF LITERATURE AND ART**

Learning Objectives:

1. To enable pupil to acquire knowledge about the Maratha rulers in Tamilnadu.
2. To enable pupil to understand the contributions of the Marathas to the Tamil cultural development.
3. To enable pupil to understand the contributions of the Marathas for the development of literature art and architecture

Marathas played an important role in the history of India. Shahji Bonsle had two popular sons namely Shivaji and Venkaji. Shivaji established a separate Maratha kingdom in the Maharashtra region. Venkaji established a Maratha kingdom in Tanjore region of Tamil country.

Life of Shivaji: Shivaji was the greatest Maratha king. Shahjibonsle was his father. His mother's name was Jijabai. Shivaji's mother taught Shivaji the stories of Ramayanam and Mahabharatham and imbibed the art of bravery and patriotism. Dadajikondadev taught him the art of administration. At the young age he got military training. He aimed to free India from the Mughal rule. He established a strong army. Shivaji captured Torna, Raigarh, Baramati, Indrapura and purandhar forts. He had successfully tackled the treacherous attempts on his life by Afzal Khan and finally Shivaji killed him. Shivaji defeated the Mughal army which came under the leadership of Shayeista Khan.



Shivaji

Shivaji established the Maratha kingdom and provided an efficient administration. Shivaji was a creative genius of a very high order. He rose from the level of petty Jagirdar to the status of Chatrapati. He had a very high standard of morality. He established an indigenous Government against a muslim rule. Shivaji created a very big impact in the history of India.

Shivaji's southern conquests: Marathas emerged as a formidable military power. Shivaji's army consisted of 30,000 horses and 40,000 foot soldiers. Shivaji invaded the Tamil country. He defeated the rulers of Ginjee, Vellore, Tanjore and occupied these regions. He appointed Shantaji as his representative to rule there. Shivaji spent 10 months in Tamil Country. Shivaji met his brother Venkaji and asked his due share in his father's property. Venkaji agreed and gave Tanjore to Shivaji. Some time later when Shivaji died Venkaji captured Tanjore and became independent ruler of Tanjore.

**Request your teacher to tell more about the great ruler
Chatrapathi Shivaji and his achievements**

Establishment of Maratha rule in Tanjore: Shivaji's father Shahji was serving as a general under the sultan of Bijapur. Sultan captured Tanjore, Ginjee and the Carnatic region and made shahji as governor of that region. Venkaji also served under the Bijapur Sultan.

A conflict between Chokkanathanayak of Madurai and his governor Alagirinayak of Tanjore was brought to the notice of the Bijapur Sultan. Adilshah the Bijapur Sultan sent his army under the leadership of Venkaji in support of Chokkanathanayak. Venkaji defeated Alagirinayak at the battle of Ayyampet and made Sengamaladas as nayak of Tanjore. Sultan made Venkaji as Jagirdar of Karnataka. When Adilshah passed away Venkaji removed Sengamala das and occupied the throne. Venkaj, established the Maratha rule in Tamilnadu in 1675 AD.

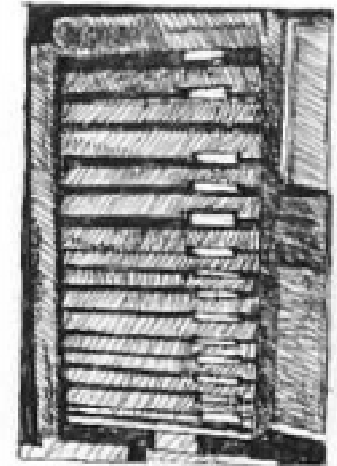
Venkaji 1675AD-1684AD: Venkaji was the first ruler of the Tanjore Maratha empire. He was also called as Ekoji. He consolidated his empire by conquering Tanjore, Trichy, South Arcot and Bangalore. The nayaks and the muslim rulers frequently invaded his kingdom. He strengthened and re-organised his administration. The Marathas took away the fertile lands from the Tamil agriculturists. Apart from making a major sections of the people as landless the Government collected heavy taxes from them with harassment. During his rule common people suffered, because of famine and flood.

Shahji-I 1684AD – 1712AD: Venkaji's son Shahji became the next ruler. He controlled the nayaks. He captured the territories of Madurai and Pudukkottai. He fought frequent wars. He built many hospitals for poor people. He also established a civil and criminal courts. He patronised art and literature.

Sarfoji-I – 1712AD–1728AD: Shahji-I was succeeded by his younger brother Sarfoji. Taking advantage of the civil war in the Ramnad region he annexed some more areas with Tanjore. An independent state of Sivaganga was created. He was finally supported by the British Government.

Sarfoji – II: Sarfoji-II was the next ruler. The British Government recognised Sarfoji-II as King in 1798. He surrendered the principality of Tanjore to the British East India Company. Later Tanjore was annexed with Madras presidency. Sarfoji – II was succeeded by his son Shivaji to the Maratha throne. Shivaji was the last ruler of Tanjore Maratha empire. With him the Maratha rule in Tanjore was brought to an end. Sarfoji got pension from the East Indian Company Government.

Saraswathi Mahal: When Sarfoji II was relieved from the political activities he developed interest in English literature and engaged himself in the scholarly activities. He collected books, palm leaves manuscripts, old records and preserved them in Saraswathi mahal. Collections covered the subjects of Vedanda, Kaviya, Grammar, Music, Dance, Astronomy, Medicine and Architecture. With huge collections of literature and other sources Saraswathi mahal became centre of learning and research Institute. It had a huge collections of Marathi and Sanskrit manuscripts-2200 palm leaves are preserved there. Books in English, French, German, Greek, Latin, and Sanskrit languages are arranged in ten shelves. In 1805 Sarfoji II established a printing press at Tanjore



Saraswathi Mahal Library

Maratha administration: Marathas of Tanjore ruled the fertile areas of Tamil country from 1676 to 1856. Ministers and officials carried on administration. For administrative purpose the Maratha country was divided into Pudukottai, Mannargudi and Kumbakonam region. Each region was divided into Seemai or Mahanam. They were further divided as villages. There were 5753 villages.

Literature: The Maratha Kings of Tanjore, Tukkoji, Tuljaji, and Sarfoji-II Patronised the Scholars and poets. They contributed much

for the development of literature. There were 46 poets in the court of King Shahji. Ramapathara. Alluri Kuppanna was a great Telugu poet in his court. He was respected as Kalidasa of Andhradesa. Dramas, Kavyas and commentaries were written both in Sanskrit and Telugu languages. Thiruvavur Vaidyanathadesikar, Vedaranyam Thayu manavar, Swaminathadesikar, Seerkazhi Arunachalakavirayar were famous Tamil scholars of Tanjore Maratha empire. Tamil poets wrote sthala puranas and commentaries to devotional songs. Apart from poets, scholars on various other subject like philosophy, astronomy and medicine were also encouraged.

Art and Architecture: The Saraswathi Mahal, established by king Sarfoji II was a unique example for the art and architecture of the Tanjore Marathas. According to Robinson, who visited Saraswathi Mahal in 1824, it was a full fledged centre of learning, where research facilities were available on western model. The ancient architecture patterns were followed in the construction of Hindu temples during this period. The Indo-sarasonic type of architecture was also followed. The Tanjore Marathas built many temples. Among those the Ganesa Temple which was built in of the Brahadeeswara temple complex at Tanjore and Vaidyanatha Swamy temple were the classical examples. They built many choultries. Among them the choultry in Orthanadu was a magnificent one. The art of music, dance, painting and printing were encouraged.

Sculptures: Maratha sculptures are beautiful and ornamental. They are engraved on single stone. They are also placed on walls and pillars. They have more messages and values. One of the masterpieces of Maratha sculpture was the bronze image of Ammani Amma, the wife of Pratapsingh. It is a Portrait figure. It is now in the temple of Tiruvidaimarudur. It is in a standing posture holding a lamp in her hand.

A parrot is seated on her right shoulder. Another sculpture was the silver-plated bullvahana in Tanjore temple. The stone sculptures of the King Sarfoji II was an excellent piece of Art. This statue is now in the Saraswathi mahal Library in Tanjore.

Paintings: The mural paintings in the front mandapa of the subramaniya shrine in the Brahagdeeswara temple at Tanjore are classical examples of Maratha painting. The valuable portrait paintings of the Maratha rulers adorn the inner walls of Tanjore palace and Saraswathi Mahal.

Try to visit Saraswathi Mahal and study the mural paintings and palm leaves

The importance of the Tanjore Maratha rule: The Tanjore Marathas ruled for nearly 180 years. They ruled the most fertile Tanjore region of the Tamilnadu. They patronised literature, art and architecture during their period. The Tanjore Maratha rule established a very big social and cultural impact in the Tamil Society. Saraswathi Mahal will speak the glory of Tanjore Maratha rule for ever.

Learning Outcome

1. Pupil will be able to understand the sources for the study of the Tanjore Maratha empire in Tamil country.
2. Pupil will be knowing the history of the Maratha rule in Tanjore.
3. Pupil will be able to understand the development of art and architecture under the Maratha Kings.
4. Pupil will be able to know, about the Saraswathi Mahal, the educational and research centre.

SELF EVALUATION

I. WRITE TRUE OR FALSE

- 1) The first ruler of Tanjore Maratha was Shivaji ()
- 2) The Saraswathi mahal was established by Sarfoji ()
- 3) Prohit was incharge of Justice ()
- 4) 2200 palm leaves are preserved in Saraswathy Mahal ()

II. CHOOSE THE CORRECT ANSWER

- 1) The founder of the Tanjore Marathas empire.
(i) Shahji, (ii) Shivaji, (iii) Venkaji, (iv) Sarfoji
- 2) A Good library and a centre of learning and research was established during the Tanjore Marathas Kingdom.
(i) Saraswathi Mahal at Tanjore, (ii) Nayakar Mahal, (iii) Brahaddeeswara temple at Tanjore, (iv) Amir Mahal.
- 3) The last ruler of Tanjore Maratha empire
(i) Venkaji , (ii) Sharfoji-I, (iii) Sharfoji-II, (iv) Shivaji

III. FILL IN THE BLANKS

1. The Tanjore Maratha empire was established by_____
2. Venkaji's father was _____
3. Another name of Venkaji was _____.
4. The Maratha king of Tanjore who was responsible for the establishment of Sivaganga was _____

5. The Ruler who established a printing press in Tanjore was _____
6. The Tamil poets who lived during the period of the Marathas of Tanjore were _____, _____.
7. The great Telugu poet who got the title of Andhra Kalidasa was _____.

IV. MATCH THE FOLLOWING

- | | | |
|------------------|---|-------------------------------------|
| 1. Shahji Bonsle | - | Rise of Sivagangai |
| 2. Shivaji | - | The first ruler of Tanjore marthas. |
| 3. Venkaji | - | The last ruler of Tanjore marthas. |
| 4. Sarfoji II | - | Father of Shivaji and Venkaji. |
| 5. Sarfoji I | - | Established the Saraswathi Mahal. |

V. ANSWER THE FOLLOWING BRIEFLY

- 1) Write short notes about the life of Shivaji of Maharashtra region?
- 2) What are the Reforms of Shahji-I?
- 3) What are the importance of the Tanjore Marathas rule?
- 4) Write about the Tamil scholars lived in Tanjore during Maratha Rule.
- 5) Write about Saraswathi mahal.

VI. ANSWER THE FOLLOWING IN DETAIL.

1. Explain the administrative system of the Marathas of Tanjore.
2. Describe the contribution of Tanjore Marathas to the development of literature, art and architecture.

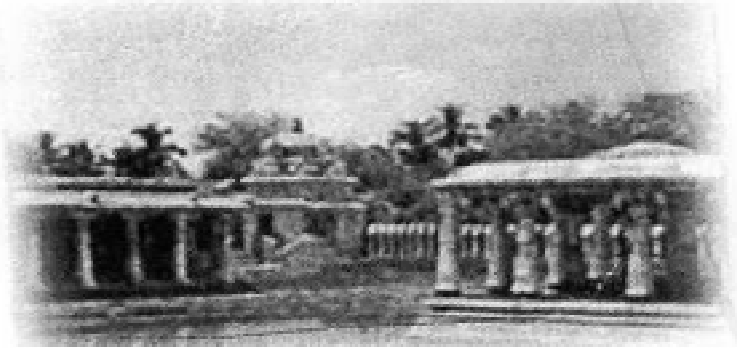
10. THE SETHUPATHIS, THONDAIMANS AND NAWABS - SOCIAL LIFE OF PEOPLE

Learning Objectives:

1. To enable pupil to acquire knowledge about the social conditions of Tamilnadu during the rule of the Sethupathis, Tondaimans and Nawabs.
2. To enable pupil to understand the achievements of these rulers.

Sethupathis of Ramand and Sivaganga: The rulers of Ramnad and Sivaganga region of early 17th Century were called Sethupathis. The Nayak ruler Muthukrishnappa Nayak appointed Sadaikkathevar in 1605 as protector and guardian of the pilgrims to Sethusamudram and Rameswaram. The protector of Sethusamudram was called as

Ramanatha Swamy Temple at Rameswaram



Sethupathy. Sadaikkathevar was a loyal subordinate of the Nayaks. He emerged as the chief of the poligas. Sethupathis were maravas of Ramnad, Madurai and Tirunelveli. They had Ramnad as their official head quarters. Sadaikkathevar and his son KuttanSethupathi acted as

Sethupathis and extended protection to the pilgrims who visited Rameswaram. Apart from giving protection these two Sethupathis did religious services to the Ramanathaswamy temple at Rameswaram.

Sadaikka Thevar II: 1636AD. – 1645AD.: Kuttan Sethupathi made his adopted son Sadaikkathevar II as the next ruler. This was opposed by Kuttan Sethupathi's natural son Thambi. Thirumalai Nayak supported the claim of Thambi. The ruler Sadaikka thevar was dethroned and jailed. Thambi was made as Sethupathi. Thambi was not competent. Sadaikka thevar's nephews Raghunathathevar and Narayanathevar rebelled against Thambi's rule. Accepting the popular representation, Thirumalai Nayak released Sadaikkathevar from Jail and made him Sethupathi after dismissing Thambi from the throne. Sadiakkathevar constructed a new Chokkanatha temple at Rameswaram. He did lot of Charitable and public works.

Raghunatha Sethupathi – 1645AD. – 1670AD.: He was loyal to the Nayak ruler. He helped the Nayaks by defeating the Muslims under Kutbkhan and the poliga of Ettayapuram. In appreciation to this help the Nayak ruler gave the privilege of celebrating Navarathri festival at the capital city. The Nayak ruler also donated places like Thirubhuvanam, Mannar Koil Thiruchuli to Sethupathi. He successfully annexed Devakottai and Aranthangi. He helped Thirumalai Nayak in his war against Mysore army. Thirumalai Nayak recognised the valuable military services of Raghunatha Sethupathi and conferred the title 'Thirumalai Sethupathi' on him. Sethupathis loyalty towards the Nayaks was over with Thirumalai Nayak.

Raghunatha Sethupathi recaptured all the forts and places from the Nayaks and became an independent ruler. Raghunatha Sethupathi patronised art and literature. He made Tamil and Telugu as an official languages of his court. He encouraged Tamil poets namely Alagiya Chitramabala Kavirayar and Amirtha Kavirayar. He constructed the Second Prakaram of the Ramanathswami temple in Rameswaram. The famous poet Thayumanavar spent his last days under the Patronage of Raghunatha Sethupathi. After Raghunatha Sethupathi both Surya thevar and Athana thevar were in power for a very short duration in 1670.

Raghunatha Sethupathi II alias Kilavan Sethupathi : 1671AD. – 1710AD.: Kilavan Sethupathi was the greatest ruler among the Marava kings. He was helpful to Chokkanatha Nayak. The Nayak king conferred him a title Para Rajakesari (Lion to alien kings). He annexed some territories of Madurai Kingdom, Aranthangi, Thirumayam, Piranmalai. He opposed the spread of Christian missionary activities. Kilavan Sethupathi liberated the Marava country from the control of Madurai Nayak. After defeating Rani Mangammal's army, he declared independent Marava country in 1707. He shifted his head quarters from Pughalur to Ramnad.

Kilavan Sethupathi established the Nalcottal palayam (later Sivaganga) and appointed Udaya Thevar as Governor. He served well for the development of Hinduism. He endowed villages to a temple at Thiruvadana and Kalaiyar Koil. He constructed a fort around the Ramanathapuram, the capital city. He constructed a dam across the Vaigai. His rule was marked as the golden age of the Maravas. Kilavan Sethupathi was succeeded by Bhavani Shankarathevar and Thandathevar.

After Kilavan Sethupathi the kingdom was divided into two. A new Sivaganga Kingdom emerged. During the later period of Sethupathi's rule, the Ramnad was reduced to a zamin level. Then it was brought under the control of the Britishers. Finally it became a part of the Indian Union. Among the later Sethupathis, Baskara Sethupathi was an exceptionally enlightened zamindar. He was an English educated ruler. He honoured Swami Vivekananda who attended the parliament of Religion at Chicago. The social life under Sethupathi's rule was good.

THE THONDAIMANS OF PUDUKOTTAI

Kilavan Sethupathi established a new Pudukottai Kingdom and made his son Raghunatha Raja Thondaman as its first ruler.

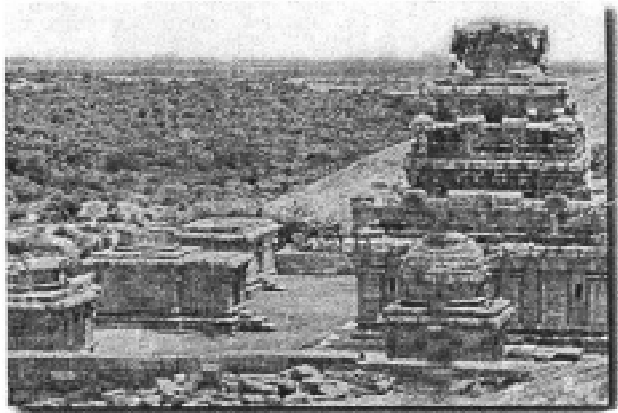
Pudukkottai was the first kingdom to join Indian union as soon as the unity call was given by the then Home Minister Sardar Vallababai Patel in 1948

Raghunatha Thondaiman: After becoming the ruler of Pudukottai, Raghunatha Thondaiman fought against the Nayaks of Tanjore in support of the Nayaks of Madurai and conquered Thirukkattupalli a very important place. Then there was a direct clash between Thondaimans of Pudukottai and the Nayaks rulers of Tanjore. Thondaiman conquered the west of Thirukkattupalli. The Pudukottai Thondaiman's army defeated a combined army of the Maravas of Ramnad and Marathas of Tanjore. With this victorious experience the Pudukkottai Raja supported poligas. Pudukottai was made as the capital of the Thondaiman's Kingdom.

The Nizam of Hyderabad recognised the independent rule of Pudukottai Thondaiman. Pudukottai Thondaiman maintained friendly relation with the British and the Nawab of Arcot. Raghunatha Thondaiman was the real founder and consolidator of the independent Pudukottai kingdom.

Thondaiman helped Arcot Nawab against Hyder Ali the ruler of Mysore. He was also loyal towards the British Government. After some time, when Hyder Ali's army tried to enter into Pudukkottai, the Thondaiman's army successfully defeated them and drove Hyder's army away. Thondaiman captured Kilanilai and Aranthangi. He helped the British Government against Tipu Sultan. Raja Raghunatha Thondaiman died in 1789. As he had no male issue, he was succeeded by his uncle's son Vijaya Raghunatha Thondaiman.

Vijaya Raghunatha Thondaiman: During his rule, charitable services continued. The Nawab of Arcot conferred a title Raja Bahadur on



Pudukkottai Temple

Thondaiman. Thereafter the Thondaimans of Pudukkottai came to be known as Rajas of Pudukkottai. Pudukkottai Raja supported Arcot Nawabs in their battle against the poligas and the rulers of Tanjore and Ramnad. He built many choultries to provide free rest houses. He fed the poor pilgrims. He consolidated the state of Pudukkottai.

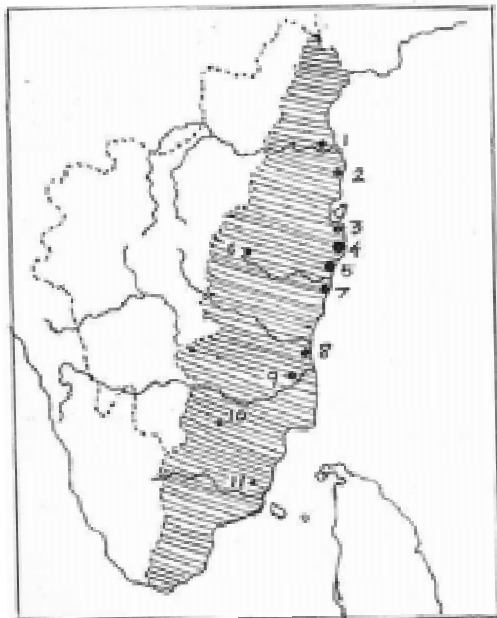
During his period he replaced the old weak administration of Tondaiman with Thanjavur Maratha's new administrative system in Pudukkottai region. Many Marathi brahmins were employed in state administration. Due to calamities the old city of Pudukkottai faced destruction. The present city of Pudukkottai was designed and rebuilt during his period.

After Raghunatha Thondaiman, Ramachandra Thondaiman, Marthanda Bairava Thondaiman and Raja Rajagopala Thondaiman ruled Pudukkottai. During the period of these weak Rajas, the British influence had increased in Pudukkottai. Many social, judicial educational reforms were introduced. A new Anglo vernacular free School was started. Population census was commenced. Irrigation tanks were built to overcome famine. Finally Pudukkottai became a part of the Indian Union in 1948.

Social Condition: During the early part of Thondaiman's rule people of Pudukkottai region led normal life. Kings concentrated more on political matters and also on the people's welfare. Choultries were built for pilgrims. In the later part of their rule due to famine people faced many types of sufferings. Heavy rain and flood damaged the city of Pudukkottai and natural diseases were there. Later after sometime city of Pudukkottai was modernised. New school was opened. Tanks were built to increase water supply. Vaccination was introduced against small Pox. Many reforms were introduced during the last phase of their reign.

THE NAWABS

Mughal King Aurangzeb's representative General Zulfikar Khan invaded and captured Vellore, Ginjee and Arcot. He brought the Nayaks of Tanjore, and Madurai and the Rajah of Trivancore under the control of the mughals. He established the mughal rule in the Carnatic region and became the Nawab. The sovereign representative of the mughal empire in the carnatic region was called as Nawab. Arcot was made as head quarters of the Nawab rulers.



Names of The Places as per the number given in the map.

- 1) Nellore
- 2) Arcot
- 3) Palaverkadu
- 4) Chennai
- 5) Chengalpet
- 6) Vellore
- 7) Saturanga pattinam
- 8) Karaikal
- 9) Tanjore
- 10) Trichirappalli
- 11) Madurai

Independent Rule: After the death of Zulfikar Khan his deputy general Daud Khan acted as a Nawab for a short time. He was succeeded by Sadatulla Khan. Taking advantage of the political situation and weakness of the mughal empire he became an independent Nawab of Carnatic region. He extended his kingdom up to Kaveri.

Dost Ali: Then Dost Ali became the Nawab. During his period the Nawab army under the combined leadership of his son Safdar Ali and his son in law Chanda Sahib fought vigorously and brought Madras, Pondicherry, Thanjavur, Trichy, Madurai, Trivancore under the Nawab rule. Then a political change took place. At the invitation of the Rajah of South, the Maratha army came to Tamilnadu and defeated the Nawab army. Dost Ali was killed and Chanda Sahib was arrested. The Marathas allowed Dost Ali's son Safdar Ali as the Nawab.

European influence: There was a lot of infights among the Nawab's family members over the throne. Taking advantage of the weakness of the Nawabs the French and the English consolidated their position in the Carnatic region.

Anwar-ud-din: Anwar-ud-din of Wallajah became the next Nawab. During his tenure the English built St. George Fort at Chennai. The French established their control in Pondicherry. In violation of Nawab Anwar-ud-din's order the French army captured Fort St. George from the English. This led to a war between the Nawab's army and the French army in 1746 at Adayar. This is known as battle of Adyar. The French army defeated the Nawab's army in this battle.

The Tamil Nadu Government Secretariat is functioning at St. George Fort in Chenani

Chanda Sahib: Later, the French Governor Dupleix released Chanda Sahib from Jail and sent him to fight against the English. Anwar-ud-din was killed at the battle of Ambur in 1749. The British tried to make Anwar-Ud - din's son Mohamed Ali as next Nawab. But the French Governor wanted to make Chanda Sahib as the a next Nawab. Finally Chanda Sahib became the Nawab with the help of the French.

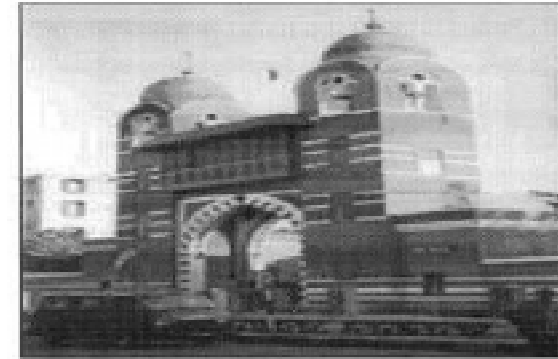
Mohamed Ali: When Chanda Sahib marched with his army to Trichy the British General Robert Clive captured the Nawab's fort at Arcot and Cuddalore. The English made Mohammed Ali as Nawab. Mohammed Ali captured Nellore and Thanjavur. He defeated the Poligas of South and the pathans of Madurai.

The English Control: The French tried to make Raja Sahib the son of Chanda Sahib as Nawab and gain control over the carnatic region. This attempt failed. The English got final victory over the Nawabs and consolidated their position by bringing all the areas of Nawabs under the British rule.

Social condition under the Nawabs: The social condition in the Nawab Kingdom had been generally good. People led peaceful life. In spite of the external influence the Nawabs contributed much for the social development. Each village had a head man, Kannakkan, Thalaiyari and other officials to serve the people. The office of the village head man was hereditary. Village headmen and the Palaykkars were looking after the Judicial matters at the bottom level. The tax collecting officials applied hard methods to collect taxes from the people. The farmers and villagers had to live at the mercy of the tax collecting officials. The privileged people paid less tax, the unprivileged people paid more taxes. Salary of the officials were paid either as cash or land. Europeans were also appointed in Government services.

Art and Culture: The Nawabs patronised art and literature. They also encouraged Arabic and Persian languages. The Nawab's period experienced the mingling of different cultures together.

The Tamil society received many cultural inputs from the Muslims and Europeans. Nawabs were liberal towards Hindus and Hindu temples. They built many forts. Amir Mahal at Chennai is a very good example of the Nawab style of architecture.



Amir Mahal at Chennai

Amir Mahal is the reputed palace of Arcot Nawab. The present Nawab of Arcot is recognised by Government. Amir mahal is in Pycrafts Road, Royapettah, Chennai-14.

Learning Outcome:

1. Pupil will be able to understand the contributions of the Sethupathis, Tondaimans and Nawabs for the development of Tamilnadu.
2. Pupil will be able to understand the social life of people under these rulers.

SELF EVALUATION

I. Write True or False:

1. Sivaganga was established by Thirumalai Sethupathi()
2. Thirukkattupalli was conquered by Raghunatha Raja Thondaiman ()
3. The title of 'Raja Bahadur' was conferred by Arcot Nawab during the period of Raja Raghunatha Thondaiman ()
4. The new present city of Pudukottai was established during the period of Vijaya Raghunatha Thondiaman ()
5. Fort St. George was built by the British at Cuddalore()

II. Choose the correct answer:

- 1) The Protector of Sethu Samudram was called as
(a) Sethupathi (b) Thondaiman (c) Nawab.
- 2) The first Sathupathi was
(a) Sadaikka Thevar (b) Kuttan Sethupathi
(c) Kizhavan Sethupathi.
- 3) The first ruler of Pudukottai kingdom was
(a) Raghunatha Raja Thondaiman
(b) Raya Ragunatha Thondaiman
(c) Vijaya Raghunatha Thondaiman.
4) The Capital city of Nawab region
(a) Arcot (b) Vellore (c) Ginjee.
- 5) The first Nawab of Carnatic region was
(a) Zulfikarkhan (b) Daudkhan (c) Anwar – ud - din.

III. Fill in the Blanks

- 1) The ruler of Ramnad and Sivaganga region was called as _____
- 2) Sadaikka thevar II constructed _____ temple at Rameswaram.
- 3) Raghunatha Sethupathi was conferred the title of _____ by Thirumalai Nayak.
- 4) The famous poet _____ spent his last days under the patronage of Raghunatha Sethupathi.
- 5) Pudukottai became the part of the Indian Union in the year _____
- 6) The battle of Adyar was fought in the year _____

IV. Match the Following:

Sethupathis	-	Arcot
Thondaimans	-	Ramnad
Nawabs	-	Pudukottai
KilavanSethupathi	-	Swami Vivekananda
Baskara Sethupathi-		A dam across the river Vaigai
Amir Mahal	-	Cuddalore.
Fort. St. David	-	Chennai

V. Answer the following questions briefly:

1. Who was called as Sethupathi?
2. Write notes on Sadaikkathevar II.
3. Write notes on Kilavan Sethupathi.
4. Who was the real founder of the Pudukkottai kingdom?
5. Write short notes about The Battle of Ambur.
6. Explain the Battle of Adayar

VI. Answer in Detail:

1. Describe the contributions of the Sethupathis to the development of literature art and architecture.
2. Write about the social conditions during the period of Thondaimans.
3. Describe the social conditions during the period of Nawabs.

II. CIVICS

UNIT - I

I. OUR NATION – NATIONAL EMBLEMS

Learning objectives :

1. To enable pupil to acquire knowledge about India.
2. To enable the pupil to understand the meaning of nation and the national emblems.
3. To inspire pupil with patriotism.

Nation is the part of a continent where people of different culture live together. A nation is kept together by many ties. Every free nation has certain emblems called national emblems. Name of our nation is India. India is a sovereign democratic republic. As an independent nation, we have our national flag, national anthem, national emblem and other national symbols. Infact they are the symbols of our sacrifice, culture and unity. They are also the symbols of our age old ideals and hopes. These symbols infuse a spirit of patriotism and oneness among us. They serve as important ties which bind more than 103 crores of Indians together.

India – Physical Features

Head Quarters	: New Delhi
Area	: 32,87,263 Sq.Km.
North to South	: 3214 Kms.
East to West	: 2933 Kms.
Population (2001 Census)	: Male : 53,12,77,078
	Female : 49,57,38,169
	Total : 102,70,15,247
Literacy (2001 Census)	: Males : 75.85%,
	Females: 54.15%

National flag: Our national flag is a symbol of freedom. It is a horizontal tricolour of deep saffron (Kesari) at the top, white, in the middle and dark green at the bottom in equal proportion. Hence our flag is referred as tiranga or tricolour. Each colour has its own significance. saffron colour at the top of the flag denotes courage and sacrifice. It reminds us of the sacrifices made by our freedom



fighters. White colour on the middle band stands for purity and truth. In the centre of the white band there is a wheel in navy blue, which represents the chakra that appears on the abacus of the sarnath lion capital of Ashoka. Its diameter approximates to the width of the white band and it has 24 spokes.

The design of the chakra has been taken from the sarnath lion capital of Ashoka stupa. The chakra inspires us to move forward along the path of dharma to bring peace and prosperity to the nation. The wheel represents motion and dynamism.

Dark green colour band at the bottom signifies faith and prosperity. It implies the richness and prosperity of the people. When we salute the national flag, we get inspired and purified. When we see the flag, we understand the sacrifices of the freedom fighters of India.

This flag was adopted as the National flag by the Constituent Assembly of India on 22nd July 1947 and was presented to the nation at midnight of 14th August 1947. It was hoisted for the first time on 15th August 1947. The flag is rectangular in shape and has three colour stripes in equal proportion. The ratio of width and length is 2:3. Its use and display are regulated by a code. The chakra should preferably be screen-printed on both sides of the flag or otherwise printed, stenciled or suitably embroidered on both sides in all cases.

We have to follow some rules when we display our National flag :

- We must always hoist it with the Saffron band on top
- No other flag can be higher than it nor to its right.
- We must raise it to the top of the mast
- We fly our flag lower, at half-mast, to indicate sorrow when a great national leader or the head of State of a friendly nation passes away
- We must always lower it at sunset.
- When carried in a procession, as in a Republic Day parade or in an international events like sports the bearer has to carry it on his right shoulder in front, ahead of other flags.
- During flag hoisting, all the persons present should stand at attention
- The Indian national flag is hoisted on all important Government buildings like the Parliament, the Supreme court, the State assembly and on top of all Indian embassy buildings in foreign countries.

Giving Pledge to the Flag: Standing with folded hands, all repeat together the following pledge.

“I pledge allegiance to our national flag and to the sovereign democratic republic of India for which it stands”.

National Anthem: Every Nation has a patriotic song known as National Anthem. The hoisting of the National flag is always accompanied by the National Anthem. When the National Anthem is sung or its tune is played on a band, we should stand at attention to show our pride and respect.



Rabindarnath Tagore

Our National Anthem was composed by the great national poet Rabindarnath Tagore. This original Bengali song has got five stanzas. However, only the first stanza has been selected as our National Anthem. This song was formally adopted as the National anthem by our constituent assembly on 24th January 1950. Our National Anthem was first sung on 27th December 1911 at the Calcutta session of The Indian National Congress.

Learn and understand the meaning of our National anthem

The National Anthem is sung at the Independence day and the Republic day celebrations. It is sung in Government functions, schools and colleges on all important occasions. The National Anthem should be sung in 52 seconds. Our National Anthem reflects the glory and greatness of our motherland. It spreads the message of tolerance national unity and patriotism.

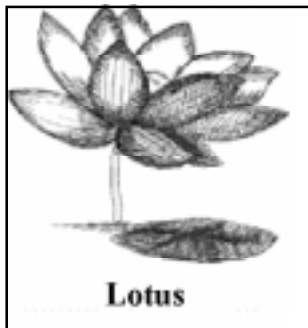
National emblem: Every free nation has a national emblem, which represents the authority of the nation. Our national emblem, the lion capital is taken from the capital of the Ashoka pillar of Sarnath. It was adopted on the Republic Day, 26th January 1950. The national emblem is the official seal of the Government. It is found on all Government documents, currency notes and coins and postage stamps. Our National

emblem consists of four lions sitting back to back on a circular pedestal. 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 stands for hard work and steadfastness. The chakra represents dharma and righteousness. Below the crest, the motto of India is inscribed. The motto, “Satyameva Jayate”, is in Devanagiri script. Its meaning is “truth alone triumphs”.



National Emblem

National song: “Vande Mataram” is our national song. It was written by Bankim chandra chatterjee. This song is published in his book Anand Mutt in 1882. This song is equally respected along with national anthem. The song was first sung at Calcutta session of the Indian national congress meeting in 1886.

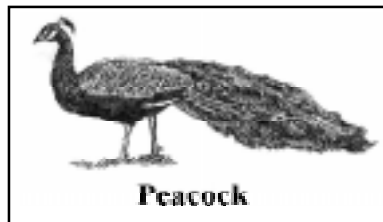


Lotus

National flower:

The lotus is our national flower. It symbolizes unity. It has been given respect and importance in Indian literature.

National bird: The peacock is our national bird. Its beautiful, rich feathers indicate the natural beauty of our country. Indian literature speak high of Peacock.



Peacock

National animal: The royal Bengal tiger is our national animal. It symbolizes strength and bravery.



Tiger

National languages: The Indian constitution has recognized 18 languages as national languages. Hindi is acknowledged as our official language.

NATIONAL LANGUAGES – 18		
Assamese	Bengali	Gujarathi
Hindi	Kannada	Kashmiri
Konkani	Malayalam	Manipuri
Marathi	Nepali	Oriya
Punjabi	Sanskrit	Sindhi
Tamil	Telugu	Urdu.

National calendar: At the time of independence, India was following a calendar system, which was based on Gregarian calendar. Based on Calendar Reformation Committee’s recommendations, Government of India followed a calendar based on Saka year, which was declared on 22.03.1957. This calendar was recognized as national calendar. Saka year has 365 days. The Gregarian calendar system is also followed here.

National tree: Banyan tree is respected as our national tree.

SELF-EVALUATION

Learning outcome:

1. Pupil will be able to understand the meaning of the colours of the national flag.
2. Pupil will be able to realise the significance of the national symbols.
3. Pupil will be able to appreciate the glorious past as reflected by our emblem.

I. Write true or false:

1. Poet Rabindranath Tagore wrote the Kambaramayanam ()
2. National flag was adopted by constituent assembly on 22nd July 1947. ()
3. Chakra in the flag is taken from the () Sanchi pillar
4. Message written below the national emblem is "Satyameva Jayate" ()
5. Our national flower is lotus ()

II. Fill in the blanks with suitable words :

1. The Indian flag is referred as _____
2. The ratio of the width to the length of our national flag is _____ to _____.
3. The saffron colour in our national flag stands for _____ and _____.
4. The national flag was adopted by the _____ of India on _____.
5. Our national emblem has been taken from _____.

III. Choose the correct answer :

1. "Satyameva Jayate" is written originally in
a) Tamil b) English c) Devanagiri script
2. When a respected national leader or a foreign dignitary dies, the national flag is
a) Flown at sunset b) flown at half-mast
c) not flown at all
3. The lion on the national emblem symbolizes
a) majesty and power b) energy and speed
c) steadfastness

IV. Match the following:

- | | | |
|--------------------|---|---------------------------|
| 1) Vandemataram | - | Rabindranath tagore |
| 2) Jana gana mana | - | Bankim chandra chatterjee |
| 3) National bird | - | Sarnath |
| 4) National animal | - | Peacock |
| 5) Ashoka pillar | - | Tiger |

V. Answer the following briefly :

1. Mention four rules we must observe while hoisting our national flag.
2. What is the significance of our national emblem?
3. What are the occasions on which our national anthem is sung or played?
4. Name the poet who composed our national song.
5. Who wrote "Vandemataram"?

VI. Answer in Detail:

1. What are our national symbols and how do they make us proud?
2. What do the three different colours in our national flag signify?

CIVICS

UNIT – I

2. SOCIAL AWARENESS ROAD RULES – ROAD SAFETY AND FIRST AID

Learning objectives:

1. To enable pupil to understand their role in the society
2. To enable pupil to understand the need for road rules and road safety
3. To enable pupil to understand the importance of first aid

Significance of road safety: Home safety, school safety, safety in laboratory, safety in sports, safety in boarding a public transport and driving safety are to be given utmost priority. Developing a positive attitude towards safety is important. Knowledge about road rules, road safety methods and first aid are more important for every one. Accidents may occur almost everywhere in home, on road, in schools, in playgrounds or during recreation. Most of the accidents may be prevented. Accidents have a large impact on the life, health and financial aspects of the persons involved. Accidents could even completely paralyse ones normal routine life.

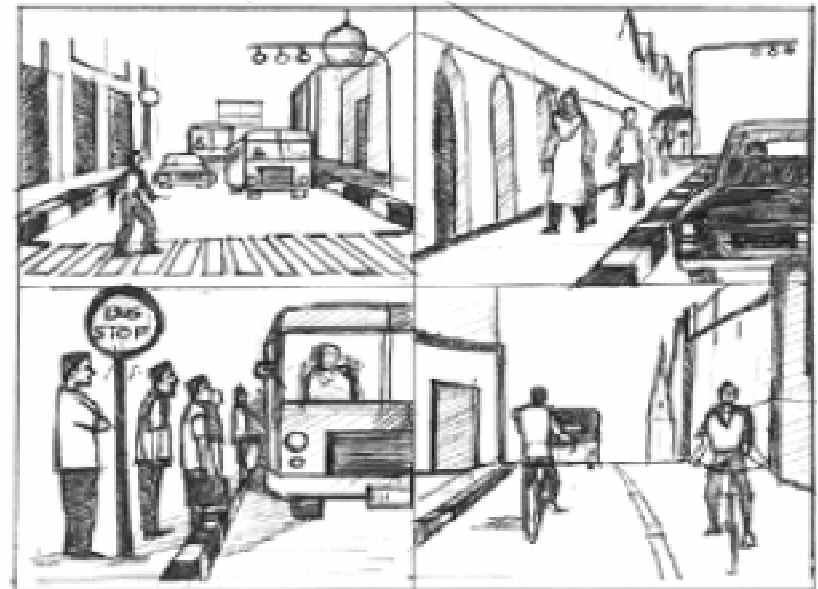
For Traffic assistance call 103 through telephone

Safety precautions to avert accidents should be a part of our daily habits. An understanding of various factors influencing different types of accidents will help us to adjust ourselves to avert such accidents. These factors can be classified as Personal factors and Environmental factors.

a) **Personal factors:-** Age, fatigue, attitude, physical defect, less knowledge about driving and disorder come under this category.

b) **Environmental factors -** Tools, machinery, weather, driver and engine fault of other vehicles come under this category.

Road Rules: The rules of the road regulations came into effect from July 1, 1989. They serve as a basic guide lines for every Indian driver. He or she has to follow them while on the roads. Rules deal with basic facts such as overtaking, traffic signals, towing, speed limits, the necessary vehicle documents to be carried while driving etc. The following rules should be followed to ensure road safety and avert accidents.



ROAD RULES

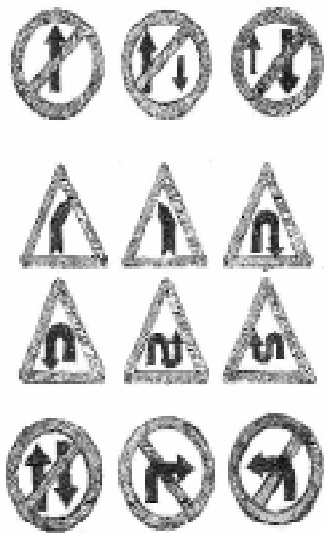
1. **Keep left:** Drivers shall drive their vehicles on the left side of the road.
2. **Overtaking** may be avoided as far as possible.
3. **Caution at road Junction:** The driver of a motor vehicle shall slow down when approaching a road intersection, pedestrian crossing or a road corner.
4. **Fire service** vehicles and **Ambulances** must be given free passage. These two vehicles need not wait at traffic signals.
5. **Taking 'U' Turn :** No driver shall take a 'U' turn where 'U' turn is especially prohibited on a busy traffic road. The 'U' turn facility can be availed only in allowed turnings.
6. **Signals** to be given by drivers appropriately
 - a) when about to slow down
 - b) When about to turn to the right or left.
 - c) when about to stop

7. **Direction indicator** should be used while taking a 'U' turn or while turning to the left or right side of the road.

8. **One way Traffic:** Drivers shall not drive motor vehicles on road declared 'one way'

9. **Drive on channelised roads** (Lane Traffic)

- a) where roads are marked as lanes for movement, the driver of a motor vehicle shall drive within the lane and change the lane only after giving proper signal.



LANE TRAFFIC RULES

- b) Where any road is marked by a yellow line dividing road, vehicles proceeding in the same direction trying to overtake each other shall not cross the yellow line.

10. **Use of horns and silence zones :** Drivers of vehicles shall not use the

- a. Sound of the horn needlessly or continuously or more than necessary to ensure safety.
- b. Drivers should avoid sound of the horn in silence zones.
- c. Drivers should not drive vehicles which have mechanical defect and create undue noise when in motion.

11. **Distance from vehicles in front:** The driver of a motor vehicle, moving behind another vehicle, shall keep at a sufficient distance from that other vehicle to avoid collision of the vehicle in front which may suddenly slow down or stop.

12. **Production of documents :** Drivers of vehicles shall always carry with them, their driving licence, Insurance copy, registration and road tax and other needed certificates.

Light-emitting Diode system is a 1.75 crore project. It is launched in Chennai city by the Tamilnadu Government. New signals with timers are being installed by the traffic police on all important junctions in the city.

Road safety cell : Road safety cell was set up by the ministry of surface transport in September 1986. The cell was entrusted with the right to formulate policies for road safety to minimise road accidents. The road safety cell compiles road accident datas, it prepares and implements annual road safety plans. It prepares national road safety policies. It prepares and implements schemes and programmes envisaging road safety. Important schemes are being implemented by road safety cell includes publicity programmes, Grants-in-aid to

voluntary organisations for organising road safety programmes, national highway accident relief service schemes and setting up of model driving training schools.

Causes for Road Accidents:

- 1. Drunken driving:** When under the influence of alcohol, drivers lose the ability to take any decisive action resulting in unfortunate crashes.
- 2. Heavy vehicles traffic:** In big cities, volume of vehicle traffic is high. Apart from normal vehicles heavy vehicles are also run on road. Separate routes and separate timings are allotted for the movement of heavy vehicles in cities.
- 3. Absence of ample space for pedestrian:** The roads are so narrow vehicles and pedestrian move side by side. In such cases pedestrians are at high risk of getting hit for they are not visible to drivers coming from behind.
- 4. Traffic violations:** In most of the cases, speedy vehicles dash some pedestrians. In such collisions chances of death are higher. Sometimes red light violations by the vehicle drivers become a cause of pedestrians death.

Lack of Pedestrian discipline : Pedestrians tend to cross the road anywhere, anytime. They just dart to cross roads. They are least bothered about the traffic situation and also the traffic rules.

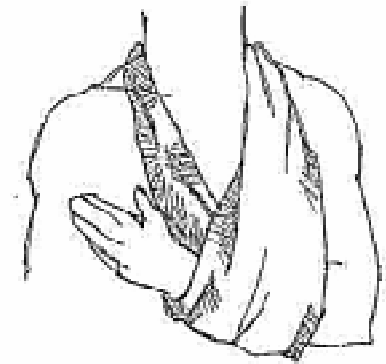
**Try to follow and create awareness about road rules,
traffic regulations and first aid.**

Safety tips for road users :

1. Drivers should obey traffic signals and traffic rules.
2. Drivers should drive in a prescribed speed limit.
3. Drivers should be alert regarding pedestrians.

4. Bus commuters should never board or deboard moving buses.
5. Motorists should dip their head lights at night.
6. Cyclists should follow highway code. They must obey traffic rules and light signals. They should ride on the left side of the road and avoid riding across pedestrian crossings.
7. Motorists must wear a helmet properly strapped below the chin because helmets are very effective in reducing the severity of head injuries in a crash.
8. Everyday before starting vehicles, drivers should check fuel oil, brakes, clutch, gears, lights etc.
9. Inexperienced, under aged persons who do not possess a valid driving licence should never be allowed to drive vehicles.
10. While driving, one should never use cell phone or listen to music or allow the children to distract the attention of the driver.

First aid: First aid is the immediate and temporary relief given to the victim of an accident or sudden illness until the services of a doctor are called for. The primary objective of first aid is to save the life. With this in mind the person who administers first aid must first try to prevent heavy loss of blood, then maintain breathing and prevent any further injury and shock. The first aider must also communicate with the physician, avoid panic, inspire confidence. The first aider should not do more than what is necessary until professional help arrives.



First Aid

General Principles of First aid:

1. The victim should not be given any form of alcoholic drink.
2. The first aider should loosen the tight clothing around victim's neck or waist of the victim and ensure fresh air and blood circulation.
3. Conserve the body heat, try to cover with a blanket.
4. If the victim vomits, turn the victim's head gently to right or to the left.
5. Try to obtain the victim's name, address and phone numbers of relatives and friends and inform them to the relatives.
6. Do not leave the victim until you handover the victim to a physician or to an ambulance attendant or hospital.

Common first aid measures in case of fracture, internal bleeding and external bleeding:

1. Fractures: If fracture is suspected, do not attempt to move the injured person. Summon a doctor at once. In case if it is necessary to move the victim immobilise the fractured bone to the extent possible either with the help of splints or folded newspaper before moving.

2. Internal bleeding: Keep the patient warm, avoid stimulants and call for a doctor at once. Blood from the stomach or lungs may come through mouth or nose. Blood from stomach is usually dark red, while from lungs it is usually bright red. In this case, place an ice cap over the chest or cover the



First Aid to Fracture

stomach as the case may be. Give crushed ice for thirst in case the victim is conscious. If unconscious, turn him on his side with his head and chest lowered to prevent aspiration of fluid into the lungs. If bleeding occurs during pregnancy, immediate medical aid is important and essential.

3. External bleeding : Try to stop bleeding at once. Put pressure directly over the wound with a sterile cloth. In a real emergency, apply the bare hand, use finger tips to press blood supplying vessels against the underlying bone.

4. Unconsciousness: Do not give anything by mouth to an unconscious person. Put him in a flat lying position. Turn head slightly to one side, loosen any tight clothing. Always summon a physician for further medication.

5. First aid kit: A handy first aid kit in cars, in bikes, scooters, autos, in offices, the schools, colleges and at home will be of immense use. First aid kit should contain some assorted adhesive dressings, paper tissues, triangular bandages, a packet of cotton wool, measurement glass, scissors, safety pins, note book and pencil, sterile dressings, antiseptic lotions, cream and rubber band.

Every school office shall have first aid kit. make use of it and help the needy student who is in need of emergency help and first aid.

Learning outcome:

1. Pupil will be able to follow and explain the need for road rules and road safety to others.
2. Pupil will be able to highlight the importance of first aid.

SELF EVALUATION

I. Write true or false:

- 1) Fire service vehicles and ambulances should stop at signals. ()
- 2) Doctors only can do first aid. ()
- 3) Accidents may occur in laboratory. ()
- 4) Use of horn continuously is permitted in silence zones. ()

II. Fill in the blanks:

1. The road safety cell was set up in the ministry of _____ in September 1986.
2. The primary objective of first aid is to _____
3. Factors causing accidents can be classified as personal and _____
4. _____ should be used while taking a 'U' turn.
5. Always drive on _____ roads.

III. Match the following :

- | | | |
|-------------------------------------|---|-----------------------------------|
| 1. Road safety cell | - | First aid tools |
| 2. Taking 'U' turn | - | One of the road rules |
| 3. Model road safety schools run by | - | Road safety cell |
| 4. Medicine and cotton- | - | Ministry of surface and transport |

IV. Choose the correct answer:

1. The rules of road regulations came into effect from
a) 1989 b) 1990 c) 1988
2. If fracture is suspected, we
a) should not move the patient
b) should move the patient to hospital
c) should put a bandage.
3. Pedestrians can cross the road
a) any where
b) near the signals
c) in the pedestrian cross area
4. The driver of a vehicle should possess with him
a) Driving Licence
b) Birth certificate
c) Appointment order
5. The primary object of first aid is
a) to give temporary treatment
b) to save life
c) to call a doctor

V. Answer briefly:

2. Explain the significance of safety.
3. Explain any four road regulations.
4. Suggest ways to avoid accidents.
5. What is meant by first aid?
6. What are the causes for road accidents?
7. Name the documents that a person driving a vehicle should possess.

VI. Answer in detail:

1. Write about road rules and road safety measures
2. Explain the importance of first aid.

CIVICS

UNIT – I

3. SECULAR POLICY OF THE STATE

Learning objectives:

1. To enable pupil to understand the meaning of secularism.
2. To enable pupil to understand the need for unity in diversity in India.
3. To enable pupil to learn and follow secular practices.

Unity in diversity is base for Indian Cultural Nationalism. India is a home of many religions. Hindus, Muslims, Christians, Sikhs, Parsis, Buddhists, Jains and people of other religions live well in India. Though religion is a dominant factor in India, the constitution and Government of India announced secularism as an official policy of India.

History of secularism: The English word “secular is derived from the Latin word SAECULUM”. Earlier in Monarchical countries secularists were described as republicans. The French Revolution of 1789 popularised the idea of secularism. The French constitution of 1791 introduced the idea of secular state.

Great Indians like, the mughal king Akbar, social and religious reformers like Raja Ram Mohan Roy and Swamy Vivekananda respected the people of all religions. Particularly Indian king Maharaja Ranjith Singh officially announced secularism as the policy of his Government. He was successful in this regard.

Ranjith Singh is considered as a forerunner in implementing the idea of Secularism through Government means. In the year 1888 the Indian National Congress opened a debate on secularism and proposed

secular nationalism for India. The idea of secularism began in Indian politics in 1920 when Mahathma Gandhi organised Khilafat movement in support of the Sultan of Turkey.

The concept of Secularism: During the ancient period religion was a dominant factor in the human society. Religion controlled the politics. Religious had control over politics. Pope controlled all Christian countries and Sultan of Turkey had political control over the muslim rulers for a long period. Then there was a struggle between the authority of the pope and the power of the King. Gradually politics had been liberated from religion. At last politics emerged successful and superior.

Revolutions that broke out in various parts of the world resulted in the formation of democratic and constitutional Governments in many countries. Some countries have religion as base for their Government. For example Islam is the official religion of Pakistan. Hinduism is an official religion of Nepal. Some countries follow Christianity and Buddhism as their official religions. Countries like India follow secularism.

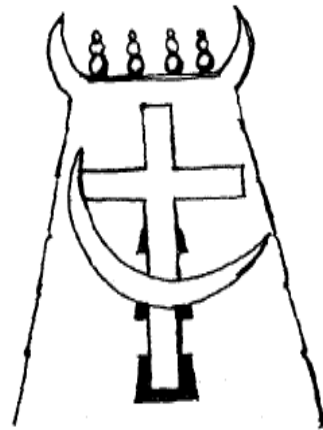
Constitution of India and Secularism: The constituent assembly which was constituted to frame a constitution for India declared eight guiding principles of Indian constitution. Among these eight basic and guiding principles of the constitution–Secularism is placed in fifth position. To that extent the constitutional pandits gave importance for secularism. The idea of secularism is essential to maintain unity in diversity. Secularism is a basic ideology for the effective functioning of a healthy Democracy. When the Indian constitution was adopted in January 1950, it has got sufficient provisions to promote secularism.

Amendment: Right to freedom of religion is given as one of the fundamental rights by the constitution of India. Later many amendments have been made in the Indian constitution. The word secularism was officially included in the preamble of the constitution by the 42nd amendment on 18.12.1976. This gave a good turning point in the cultural nationalism of India. Secularism is not anti God or anti religion. Secularism has been neutralising all religious sentiments of the people through the policies and functionings of the Government.

Request your teacher to tell more about the preamble and the importance of 42nd amendment in the Indian constitution.

Equal status: In India, Hinduism is a dominant religion. Some religions are minority religions. The Government of India has not announced any religion as the official religion. The Government of India officially gives equal importance to all religions. It would not support or suppress any religion. Government of India shall not discriminate any citizen based on religion. Right to equality is assured in our constitution.

People and Secularism: The people of India have the freedom to practice and propagate any religion as they like. Accordingly one can follow any religion and worship any God. They can construct and maintain temples, mosques, churches, gurudwaras and other places of worship. People of different religions establish educational institutions and give general and religious education. The Government educational institution shall not preach



Symbol of Secularism

any religious ideology to any student. The above factors prove that our constitution is purely secular in character. Religion is a matter of personal choice and it cannot be mixed with politics. No tax can be levied upon people on the basis of religion.

The Constitution of India, firmly believes in the principle of secularism. Secularism is one of the important national goals. Though secularism has been an official Government policy, bulk of people in India still remain non secular. Communalism and Terrorism are big threat to secularism. Celebrating the national festivals like Independence day, Republic day, Gandhi Jayanthi and respect to national symbols and national flag would promote the feeling of oneness among the Indians. Respect to Indian classical dances, music and art would promote patriotism, this would enable Government to implement the ideas of secularism successfully. As responsible citizens of our motherland India, we can also contribute for the successful functioning of secularism by promoting communal harmony, patriotism, religious tolerance, humanism, and spirit of national brotherhood and good will among the Indians.

PRINCIPAL RELIGIONS IN INDIA (As per Census 1991)		
Hinduism	-	82.00%
Islam	-	12.12%
Christianity	-	2.34%
Sikhism	-	1.94%
Buddhism	-	0.76%
Jainism	-	0.39%
Others	-	0.45%

SELF EVALUATION

Learning out come.

- 1) Pupil will be able to explain the meaning of Secularism
- 2) Pupil can tell about the 42nd amendment in Indian constitution.
- 3) Pupil will promote secular nationalism.

I. Write true or false:

1. The Sultan of Turkey controlled the politics of the christian country. ()
2. Secularism is an official policy of India. ()
3. During the ancient period politics was a dominant factor in the human society ()
4. Some countries have religion as the base for their Government. ()
5. Unity in diversity is a base for Indian cultural nationalism. ()

II. Choose the correct answer:

1. Secularism is followed in
a) India b) Turkey c) Pakistan
2. The forty second amendment in Indian constitution was made in the year
a) 1976 b) 1977 c) 1978
3. Islam is the official religion of
a) Pakistan b) India c) Bhutan
4. Hinduism is the official religion of
a) Nepal b) India c) Iran
5. Indian constitution was adopted in the year
a) 1935 b) 1950 c) 1947

III. Fill in the blanks:

1. _____ announced secularism as the policy of the Government.
2. Secularism is derived from the Latin word _____.
3. The idea of secularism was made as an official policy of the government by an Indian King namely _____
4. Religious control paved the way for the formation of _____ Governments.

IV. Match the following:

- | | | |
|---------------------|---|---|
| 1. Pope | - | 42 nd Constitutional Amendment |
| 2. 1976 | - | Religious head of Christians |
| 3. Sultan of Turkey | - | Raja Ram Mohan Roy |
| 4. Social Reformer | - | Ranjith Singh |
| 5. Hindu King | - | Religious head of muslims |

V. Write briefly:

1. How can we promote secularism?
2. Write short notes on 42nd amendment.
3. Write the names of some of the religions in India.

VI. Write in detail:

1. Describe the history of Secularism
2. Explain how our Indian constitution is purely secular in character.

CIVICS UNIT – II

4. DEMOCRACY – MEANING – DEFINITION – DIRECT AND INDIRECT DEMOCRACY

Learning objectives:

1. To enable pupil to understand the types of Democracy.
2. To enable pupil to understand the work of Democracy in modern era.

Democracy has been accepted and practiced as one of the best political ideologies in many parts of the world. Most of the civilized countries are having democratic form of government. In a Democracy, people can rule themselves through their elected representatives. Democracy upholds human dignity and promotes patriotism.

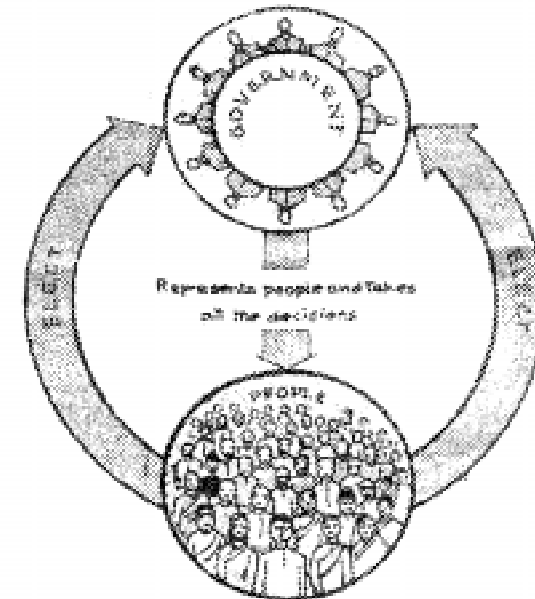
History of Democracy: Democracy was in practice in some of the Greek and Roman states. Democracy faced a set back in the middle ages. The American war of Independence, the French revolution and the Indian freedom struggle increased importance of the ideas of liberty equality and fraternity. They contributed more for the revival and spread of the idea of Democracy.

Meaning of Democracy: Democracy is a term derived from two Greek words- Demos and Kratos. Demos means ‘the people’. Kratos means ‘the power or rule’. Thus Democracy means the Power of the people. Democracy is a base for a democratic Government.

The great Historian Herodotus said “Democracy is a rule of the masses”. The Great Philosopher Aristotle defined Democracy as the government of many. Former American president Abraham Lincoln described Democracy as “the Government of the people, by the people and for the people”.

INDIA : CONSTITUTION AND GOVERNMENT

DEMOCRACY



**Government of the People by the
People and for the People**

Basics of Democracy : The Government, which follows the principles of Democracy as a base, is called the democratic Government. In a Democracy, supreme power of the state is vested in the hands of the people. Legislatures are run and decisions are taken by the majority of people. In a democratic Governments, people are called citizens and they are guaranteed fundamental rights and better life. Political parties

and general elections are the main pillars of Democracy. Democracy is based on the principle of sovereignty of the people. The people run administration of the Government either directly or through their elected representatives. In a Democracy all decisions are taken based on the majority. Democratic Government should enhance public welfare. Principles of liberty equality and fraternity are the foundation of Democracy. A democratic Government upholds the dignity of the human personality and every one is guaranteed fundamental rights.

Aristotle is called the father of politics

Types of Democracy: Democracy can be classified as direct Democracy and indirect Democracy.

Direct Democracy: Direct Democracy existed in ancient Greece and Rome. This type of Democracy was revived in medieval period of the Italian city-states. In ancient India, village panchayat system was functioning based on direct Democratic norms.

In direct Democracy, people directly participate in the functions of the Government. The people have direct connection in the decision making process of the Government. Decisions are taken based on the majority opinion. Direct Democracy is possible only in small nations where the population is less. Now direct Democracy is in operation in Switzerland. This idea of direct Democracy is not acceptable to most of the 20th century big nations, due to the larger size and increased population. In direct Democracy people speak for themselves.

India is a sub continent Try to know more about continent and sub continent from from your teacher

Indirect Democracy: Indirect Democracy was their even during the Chola period. the Kudavoli system was an example for this. In Indirect Democracy, the representatives are duly elected by the people and act on behalf of the people. These elected representatives form and run the Government. People can express their ideas through their elected representatives. Countries like India, England, France and the United States of America have Indirect democratic form of Government. In the modern world most of the countries follow indirect Democracy.

Indian Democracy at work: Constitution of India is based on the democratic principles. India has been following parliamentary Democracy. India is a union of states. Constitution of India has provided two types of Government. One at the centre and the other at the state level. In Democracy People of India have separate rights to elect their representatives respectively to parliament, state legislature and municipal bodies. The body of the elected representatives to the central Government is known as parliament. The body of the elected representatives at the State level is known as state legislature. A Member of Parliament is known as M.P and a member of the legislative assembly at State level is known as M.L.A.



Parliament of India

In the indirect or representative democratic system, electing the representative is a very important task. It is done through elections. The Election commission of India has been conducting elections in India.

The Government of India introduced the principles of universal adult franchise. All citizens above the age of 18 have been given right to vote in the elections. People above the age of 25 can contest in the elections either to the parliament or to legislative assembly. National and regional political parties get their representatives elected through the process of election to form and run the Government. Political parties play a very vital role in indirect democratic system. Newspapers, television, radio, magazines, public meetings and cinema play an important role in shaping the public opinion in Democracy. Success of Democracy depends on the honest and efficient functioning of the elected representatives and citizens. A good Democratic Government will not have gape between the Government and the governed.

Forms of Government: Governments can be broadly classified into two : (a) Dictatorship (b) Democratic

Dictatorship: Dictatorship was a rule of a powerful individual. In the ancient and medieval period there were dictators in some part of the world. In dictatorship, all powers of the Government are in the hands of one person. The dictator need not explain the Government's policies to the people and people can not have their representatives. The Dictator is not accountable to the people and people have no say in the dictatorship type of Government. This type of Government is not in practice.

Democratic Government: In a democratic Government people or their representative take active part in the activities of the Government. People exercise their supreme power of voting through elections for electing their representatives. In a Democracy, Government is accountable to the people.

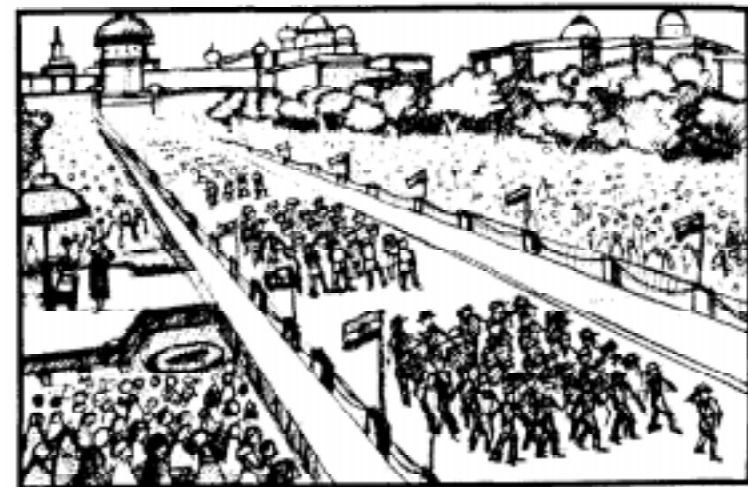
Every year June 5th is observed as the international environment day all over the world

Social Democracy: It is one form of Democracy. Social equality is the aim of social Democracy. It aims for equal opportunities and equal benefits to all citizens of India in the matters of food, clothing and shelter. Indian Government is aiming to achieve the target of social Democracy.

Economic Democracy: The Indian parliamentary Democracy aims to achieve economic Democracy. By applying this form of economic Democracy, the Government aims to lessen the gape between the rich and the poor in the society. As per this theory, everyone should be given equal opportunities to earn their livelihood and develop themselves.

Role of Citizens in Democracy: Success of any Democracy depends on the honesty and efficiency of the citizens. Citizens must actively participate in public and community affairs. Citizens must keep themselves well informed about the current issues and day-to-day happenings through mass media. People should elect their representatives carefully and honestly. People should have proper civic sense.

Republic Day Parade



Merits of Democracy: Democracy is based on public opinion. It safeguards the interests of people. It is based on the principles of liberty equality and fraternity. It promotes the spirit of patriotism. Democracy has been accepted as one of the best form for a good Government. Democratic Governments take more care about the needs of the citizens and fulfill them.

Demerits of Democracy: Generally Democracy fails to attract the best brains in the society. In Democracy, the voice of the minorities may not be heard by the majority. If the elected representatives fail in their duties, the main purpose of indirect Democracy is bound to face a setback.

Several factors contribute to the successful conduct of a democratic Government. The minority must accept the verdict of the majority. The majority must not try to impose its opinions on the minority. People must learn to tolerate the differences. The concept of give and take, unity in diversity, co-existence, patriotism, humanism will increase the efficient functioning of a democratic Government. Democracy is in fact the most popular form of Government. The modern era is called the era of Democracy.

Learning outcome:

- 1) Pupil will be able to know various types of democracy.
- 2) Pupil will be able to know the role of youth in Democracy and works of M.Ps, and M.L.As.

SELF EVALUATION

I. Write true or false:

- 1) The body of representatives in the state level is called Parliament. ()
- 2) In a Democracy the supreme power is exercised by the dictator. ()
- 3) In indirect Democracy the representatives are duly elected by the people. ()
- 4) Direct Democracy is possible only in big nations ()
- 5) India is the largest Parliamentary Democracy in the World ()

II. Fill in the blanks:

- 1) The two distinct forms of Government are _____ and _____.
- 2) Demos means _____ and Kratos means _____
- 3) The constitution of India is based on _____ principles.
- 4) Direct Democracy is practiced in _____
- 5) Member of parliament are shortly called _____

III. Match the following:

- | | | |
|----------------|---|--------------------------------|
| 1) India | - | Direct Democracy |
| 2) Switzerland | - | Indirect Democracy |
| 3) M.P. | - | Member of legislative assembly |
| 4) M.L.A. | - | Voting age |
| 5) 18 Years | - | Member of Parliament |

IV. Choose the Correct answer:

1. India is following
(a) Direct Democracy (b) Indirect Democracy
(c) Dictatorship
2. Direct Democracy is practised in
(a) Switzerland (b) England
(c) France
3. Indian citizens can exercise their right to vote at the age of
(a) 17 (b) 18 (c) 21
4. Republic day is celebrated in India on
(a) 15th August (b) 26th January
(c) 30th December
5. India is following
(a) Parliament Democracy (b) Presidential Democracy
(c) Kingship

V. Write briefly:

- 1) What is the role of education in a Democracy?
- 2) How did Abraham Lincoln define Democracy?
- 3) What are the ideals of Democracy?
- 4) Explain universal adults franchise.
- 5) Mention the different forms of Democracy.

VI. Write in detail:

- 1) Explain the role of citizens in a Democratic country?
- 2) Distinguish between direct Democracy and indirect Democracy.

CIVICS

UNIT – II

5. POLITICAL PARTIES – ROLE – NATIONAL AND REGIONAL PARTIES - FUNCTIONS

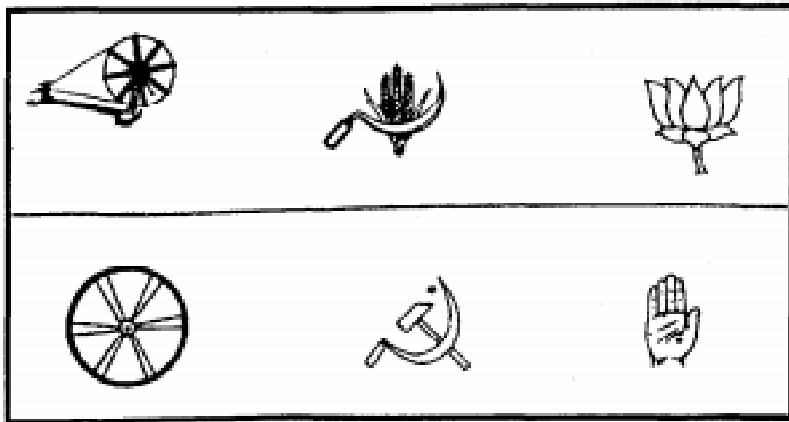
Learning Objectives:

1. To enable pupil to know the meaning of political parties.
2. To enable pupil to know the functions of political parties.
3. To enable pupil to know the role of national parties and regional parties.

Democracy is a form of Political ideology. India has adopted a democratic form of Government. Political parties play significant role in the proper functioning of Democracy and Government.. Democratic Governments are run by the representatives of people. This is done in two stages. At the first stage the people elect their representatives through the election process. At the Second stage, the elected representatives elect their own leader from among them and try to form and run the Government. At both these stages political parties play a very important role.

Definitions and meaning of Political Parties: Political science experts have given several definitions of political parties. Political Philosopher Gentell defines political party as “a group of citizens, more or less organised, who act as a political unit and who by the use of their voting power aim to control the Government and implement their general policy”. According to another scholar Gilchrist, “a political party is an organised group of citizens who profess to share the same political views and by acting as a political unit and try to control the Government”.

Political parties provide an important connection between individual and state, then between state and society. People with common ideas and goals organise themselves into small groups. They have their own principles and programs of action. They work together to capture power and form the Government. Such organisations are called political parties.

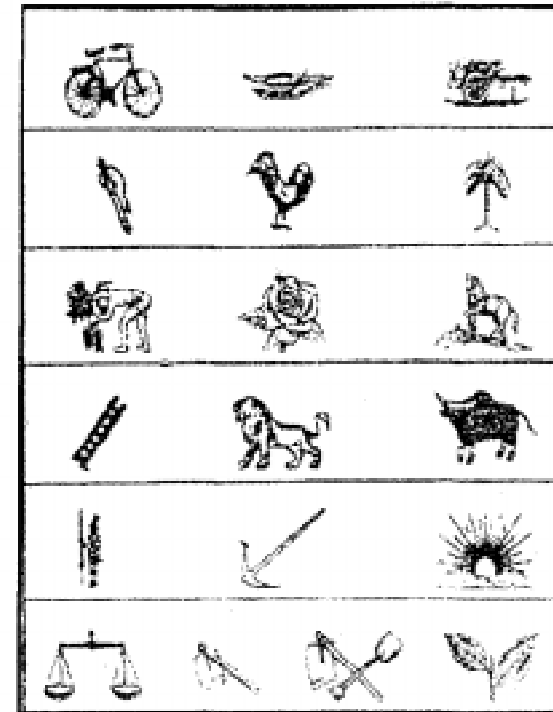


Election symbols of the national political parties

Political parties contest in elections. Elections are conducted between independent candidates or candidates of different political parties. A single party or a combination of parties getting the majority forms the Government.

Essentials of Political Parties: The first essential feature of a political party is that its members must be organised. The members of the political parties must have practically same views on important public matters. They must work to promote national and social interest. They must aim to capture power by peaceful and constitutional means. They must have faith in the ballot boxes and not in brute force to achieve their

objectives. Dr. Roucek rightly points out that a political party “is held together primarily by its ideology and organisation”. Political parties have to be registered with Government. They should have Government approval for their functioning. Political parties should have emblems of



Election symbols of the regional political parties

their own choice. Political parties have to function in accordance with the rules of election commission.

Elections: Election commission of India is a statutory body. It conducts elections for parliament, legislative assembly and municipal bodies in co-ordination with the state level Election Commissions. Elections to the local bodies are conducted by the state level Election Commission.



VOTING

Functions of Political Parties: Political parties mobilise public opinion. They influence the minds of the people in such a way that they are willing to vote for them. They nominate candidates and organise election campaigns. It is done by organizing processions, distributing pamphlets, pasting posters, arranging good public speeches to help the voters to understand the policies and programmes of their respective parties. Political parties act as a link between the Government and the people. The party that secures maximum votes forms the government and becomes the ruling party. The ruling party must honour the promises made at the time of elections. The elected representatives of the successful political parties (MPs or MLAs) meet and elect their leader as Prime Minister or Chief minister to head the Government. The head of the ruling party runs the Government along with other members. The party, which does not win the election but has secured the second largest vote, becomes the opposition party. The opposition party keeps a

check on the ruling Government. This constitutional formula has been followed in both assemblies and parliament.

Party Programmes and Election Manifesto: At the time of election, every political party announces the policies and programmes. The parties make certain promises. They seek the people's votes on the basis of their policies and programmes. The document that contains the policies and programmes of a party is called a manifesto. The election manifesto contains the policies that a party will try to implement if it comes to power.

Classification: There are three types of party system

The single Party System : In some countries, only one political party exists. The constitution of the country does not allow any other party to exist. Countries like China and Russia have only one political party. That is the Communist party. In this system, the party in power may become authoritarian. In one party system the leader of the existing party may become a fascist.

The Bi-Party System : Successful functioning of democracy requires atleast a two party system. One to be the ruling party and the other to act as an opposition party. In a bi-party system, there are two parties. Countries like United States of America and England have two-party system. The major parties in USA are the Democrats and the Republicans. If one party wins in the election and becomes the ruling party, the other party which loses the election will becomes opposition party. The Bi-Party System simplifies the voters' choice. The two-party system can give stability to the Government.

The Multi - Party System : In a multi-party system, many political parties come into existence. India has such a system. Political strength

prevails in countries where multi-party system is in practice. People will have wider chance to choose best candidate from among many candidates. The possibility of forming coalition Government is possible where multiparty system is in operation. In multi party system even the last citizens living in a remote village also can play his or her political role.

Party System In India: In India, we have two types of political parties, namely national parties and regional parties. Political parties which have base at national level are called national parties. Parties which have the base at the regional level are called regional parties.

National parties: National parties have influence all over the country. This does not mean that they have equal influence in every state. The Election Commission recognises a party as a national party if it secures not less than 4% of the total valid votes in previous general elections at least in four states. The Indian National Congress, The Bharatiya Janata party and The communist parties are some of the major recognised national parties in India. National parties are concerned with national problems and leave the local problems to the regional parties. They cater to the needs of the Indian people as a whole. They form or share the Government at the centre. Some of them work as an opposition party at the centre and keep a check on the central Government.

MEMBERS OF PARLIAMENT
Total members of Lok Sabha – 545
Total members of Rajaya Sabha – 245

There are 30 districts in Tamil Nadu.

Regional parties: Regional parties work for the development of a particular region or a state. They are popular there. Regional parties are concerned with regional demands and problems. When the members of the regional parties are elected to the parliament, they represent the people of their respective region and draw the attention of the country towards the regional problems. DMK, ADMK (Tamil Nadu), Telugu Desam (Andhra Pradesh), Shivaseena (Maharashtra) are some of the examples of the regional political parties.

**In Tamilnadu total Members of Legislative
Assembly (MLAs) 234 + 1 = 235
(Elected MLAs 234 and Nominated MLA 1)**

Political parties are life and blood of democracy. Pandit Jawaharlal Nehru emphasised the importance of political parties in his words. “Democracy without a political party is just like a ship without pilot or a boat without rudder”. It is also said that “democracy can not deliver goods in the absence of political parties”. Nature and number of political parties depend upon the population, culture and size of the country. Aims of Democracy are fulfilled if only the successful parties take care of the welfare of the minorities also. India has been more comfortable with national and regional party system. India is also satisfied with the multiparty system which is represented by every corner of the country and every sections of the Indian society.

Learning Outcome:

1. Pupil will be able to explain the role of political parties.
2. Pupil will be able to distinguish between national and regional Parties.

SELF EVALUATION

I. Write True or false:

1. Political parties have to be registered with Government ()
2. India has a single party system ()
3. The ruling party helps for the progress of our nation()
4. Election commission of India is not a statutory body ()
5. India has adopted a democratic form of Government ()

II. Choose the correct answer:

1. India has
a) multi-party system b) single-party system
c) bi-party system
2. Indian National Congress is a
a) Regional party b) National party c) Non-regional party
3. A party, which keeps a check on the Government is called
a) single party b) opposition party c) bi-party
4. A national party must have influence in atleast
a) six states, b) five states c) four states

III. Fill up the blanks :

1. _____ conducts the election process in India.
2. _____ party has influence all over the country.
3. Political parties contest _____
4. Political parties help to mobilise _____.
5. The party, which wins the election forms _____.

IV. Match the following :

- | | | |
|----------------------------|---|---------------------|
| 1. India | - | Bi-party system |
| 2. China | - | Regional party |
| 3. USA | - | National party |
| 4. Telugudesam | - | Single party system |
| 5. Communist part of India | - | Multi party system |

V. Short Questions:

1. Explain the nature of national parties? Give examples.
2. Explain the nature of Regional parties? Give examples.
3. Explain what is the election manifesto.

VI. Answer in Detail :

1. Explain the significance of political parties in a democracy.
2. Explain the functions and importance of political parties.

CIVICS UNIT - II

6. HUMAN RIGHTS – CHILD RIGHTS

Learning objectives:

1. To enable pupil to understand the meaning and importance of Human Rights.
2. To enable pupil to understand the growing international importance of Child Rights.
3. To enable pupil to understand the human right organisations which promote Human Rights and Child Rights.

Human Rights promote human dignity. A right is something that every human being is entitled. Human Rights are evolved from the theory of natural rights. These natural rights are derived from the natural laws.

Total number of member countries of UNO – 189 The headquarters of UNO is in New York

History of Human Rights in brief: Progress of human civilization brought natural, social, personal, religious and political rights to humanity. The Romans gave importance for the freedom of individuals, whereas the Greeks were not aware of such rights. In England, the famous human right documents Magna Carta was published in 1215 A.D. and Bill of Right in 1689 A.D. The American war of Independence, the French Revolution, the Russian Revolution and the Indian freedom struggle resulted in establishing constitutional guarantee for Human Rights. The League of Nations was a milestone in the history of Human Rights. The United Nations Organisation has been the champion of Human Rights. The contributions of UNO towards human right has made 20th century

as meaningful era in the human history. Leaders like Buddha. Abraham Lincoln, Martin Luther King, Mahatma Gandhi, Nelson Mandela played a significant role in promoting Human Rights.

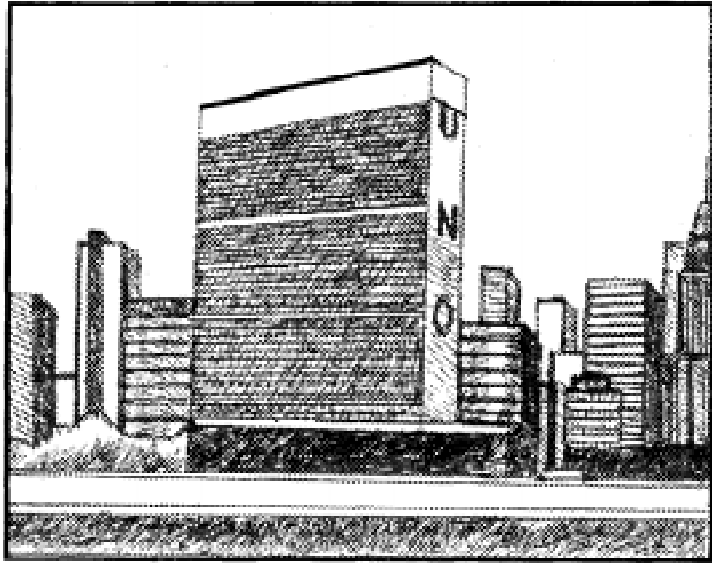
Definition: Many scholars have given various definitions for Human Rights. According to Bosanquet. “A right is a claim recognised by society and enforced by the state”. Earnest Barker says that “rights are guaranteed by the state”.

Characteristics of Human Rights: Rights are conditions of good life. Without Human Rights the human personality cannot be developed. Rights are intimately related to duties. They are not static. They grow and change according to the needs and aspirations of the people. Rights can be liberty oriented and security oriented. People all over the world are entitled to these rights without any discrimination based on gender, race, colour, sex, language, nationality, age, and religion. Rights of men, women and children are broadly classified into two categories. They are moral rights and legal rights. The legal rights are further sub divided into civil rights and political rights.

United Nations organisation: The United Nations organisation was established on 24th October 1945 at the end of the second world war. United Nations Organisation is a supreme body in the world. It has been taking adequate care about Human Rights, particularly about child right. The United Nations Human Rights Commission was set up as per the UN charter of 1945. This commission prepared an International Bill of Rights, which is followed by every member nation.



Emblem of UNO



**United Nations Organisations – Head Quarters
(Secretariat Building) is in New York**

United Nations General Assembly adopted Universal Declaration of Human Rights on 10th December 1948. United Nations Organisation's specialised agencies like ILO, UNICEF and WHO also play a remarkable role in the protection and promotion of Human Rights. The Universal Declaration of Human Rights provides protection to children. The International covenant on Economic, social and cultural rights emphasised the importance of Human Rights and Child Rights. As per the decision of UNO every year 10th December has been celebrated as International Human Rights day all over the world.

**Every year October 24th is observed as
UNO day all over the world**

Human Rights and Indian Constitution: Constitution of India has provided valuable fundamental rights to Indians, which are similar to Human Rights. They are right to life, right to liberty, right to property,

right to freedom of religion, right to freedom of thought, right to equality, right against exploitations, right to privacy, freedom of expression, right to association etc., The Indian constitution in its Articles 39 (f) explains that all children must be given equal opportunities and facilities to develop a healthy freedom and dignity. It further says that children must be protected against all types of exploitations. Article '24 of our Indian constitution prohibits employment of children below the age of 14 in hazardous, industries. Our constitution guarantees free and compulsory education for all children up to the age of 14.

National and State Human Right Commissions in India: As per the UN charter and also as per the orders of the Government of India, the National Human Rights Commission was constituted in India on 12.10.1993 by the Government of India. Retired Supreme Court Judge is appointed to head the commission and four other experts are also appointed as its members for a term of 5 years.

This commission has judicial powers to protect and promote the Human Rights. As per the Government of India norms, the State Human Right Commission is set up in every state in India. A team consisting of one chairman and four members are appointed for a term of 5 years to every State Human Rights Commission to look after the Human Rights issues. The head quarters of Tamilnadu State Human Rights commission is in Chennai. The commission can enquire cases related to Human Rights violation. Human Right courts are also functioning at district level. These National and State Human Rights commissions play significant role in the field of Human Rights in India.

**Every year November 14th is observed as
children's day in India**

Care for children: As soon as a child is born, parents should register the birth of the child. After giving a name, the child should be brought up with proper care as a good citizen. Proper education and job opportunities should be provided to every child. All the Governments of the member countries of UNO are giving attention to protect and promote the rights and welfare of the children. The Government of India passed the children's Act in 1960. Government of India announced a national Policy for children in 1974. It also promulgated the juvenile Justice Act in 1986 to provide special protection to children who commit crimes at the tender age.

International year of the children: The United Nations Declared 1979 as the international year of the children and created awareness among the parents children and nations all over the world about the protection of child right.

The UN General Assembly's Declaration of the right of the child on 20.11.1959 emphasised the importance of Child Rights. UNO also insisted about the security of children and women during war times. United Nations has been mobilising international support to protect child right. Physical, mental well being, parental or guardian care and educational opportunities are emphasised for the well being of every child. SAARC in its first summit stressed the need to safeguard children and make them useful citizens of tomorrow. Geneva declaration of 1924 also speak about child right.

SAARC: South Asian Association for Regional Co-operation.

Conditions of child labour : Child labour is a world wide phenomenon. Persons under the age of 14 are classified as children. Government of India officially notified that no child below the age of 14 years shall be employed in any factory.

Children are employed as child labourer. Millions of children in the developing nations work in mines, match factories, knit wear companies, automobile workshops, hotels, brick industries and fire works. Some are deployed for begging. Poverty, illiteracy, frustration and compulsions are the factors that make one as a child labourer.

The specialised agencies of UNO namely WHO, ILO and UNICEF emphasised the importance of education to solve the child labour problem. They work for the betterment of Human Rights and Child Rights. United Nations Convention of 1992 gave guidelines for the Rights of children.

WHO:World Health Organisation Every year April 7th is observed as International health day all over the world

Statistics on Child Labour: Inspite of all these child care provisions of UNO and constitutional guarantees, some children are neglected. It is estimated that every year nearly one million children are being abandoned due to the socio, economic conditions of the parents. 75 crores of child labourers are there all over the world. 17 crores of children in the age between 5 and 14 are unlawfully employed. 20 million children are identified as child labourers in many countries. Among the 103 crores Indian people, it is estimated that children in the age group of 5 to 14 are 18.56 crores. In knitwear industries in Tiruppur 25,000 children are employed. More than 16 lakhs children are employed in match factories in Sivakasi. 42% of the power loom work is based on child labour. Around 2 lakh children are employed in the Indian Diamond Industries in Varanasi Jaipur and Allahabad.

ILO : International Labour Organisation Every year May 1st is observed as **International Labour Day** all over the world

Child rights : The interest of the child is the interest of the society and Nation. Every Indian child shall be entitled to the following rights:

- ◆ the right to live with human dignity.
- ◆ the right to be cared by his or her parents
- ◆ the inherent right of life without discrimination of race, colour, sex, nationality, language etc.,
- ◆ to be provided with equal opportunities and facilities to grow in a healthy manner.
- ◆ the right to education for the development of personality.
- ◆ the right to enjoy the freedom of expression.
- ◆ the right to acquire nationality.
- ◆ the right to be free from all forms of physical or mental violence and exploitation.
- ◆ the right to social security.

**UNICEF : United Nations International children's
Emergency Fund**

UNO and National Human Rights Commission and other national and international bodies along with Non Government agencies have been working for the promotion of Human Rights. Millions of people and children all over the world are enjoying Human Rights. UNO and other Non Governmental organisations(NGOs) are taking adequate care about the rights of the affected children all over the World.

Learning outcome:

- ◆ Pupil will be able to understand the UN declaration of Human Rights and Child Rights.
- ◆ Pupil can explain the rights of children.

SELF – EVALUATION

I. Write true or false:

1. Magnacarta was published in France ()
2. U.N.O was founded in 1945 ()
3. Human Rights day is celebrated every year on 1st December ()
4. National Human Rights Commissions tenure is for 5 years. ()
5. International year of the children was declared in the year 1979 ()
6. The child labourers in the world are 75 crores ()
7. Free elementary education to all children in India is guaranteed upto the age of 14 ()

II. Choose the correct answer:

1. The United Nations Organisation was established on
a) 24th October 1945 b) 24th October 1954
c) 24th October 1948
2. The famous Human Rights document Magnacarta was first published in
a) France b) USA c) England
3. The constitution prohibits employment of children in hazardous jobs below the age of
a) 14 b) 18 c) 21
4. The United Nations General Assembly adopted the Universal Declaration of Human Rights on
a) 10th December 1948
b) 24th October 1945
c) 26th January 1949
5. The Government of India passed the Children's Act in
a) 1960 b) 1944 c) 1989
d) 1950

III. Fill in the blanks:

1. National Human Rights Commission was constituted in India in the year _____.
2. The protection of children is guaranteed in the U.N.Human Rights Article No. _____
3. In England, Bill of Rights was published _____
4. Government of India passed the children act__

IV. Match the following:

- | | | |
|--|---|------|
| 1. U.N.O | - | 1993 |
| 2. French Revolution | - | 1689 |
| 3. Human Rights Charter | - | 1945 |
| 4. Bill of Rights | - | 1789 |
| 5. National Human Rights Commission of India | - | 1948 |

V. Write shortly:

1. Name the leaders who have played a significant role in promoting Human Rights.
2. How did Bosanquet and Earnest Baskar define Human Rights?
3. Write short notes on child labour.
4. What are the important Child Rights?

VI. Answer in detail:

1. Explain the functions of National and State Human Right Commissions in India?
2. What are the steps taken by the Indian Government to protect the rights of children?
3. Explain any six rights that are listed in the child right document.

GEOGRAPHY

INTRODUCTION

Let us recall what we have studied in Standard VI. We have learnt that the universe is made up of billions of galaxies. One of the galaxies is the Milky Way in which our Solar System is found. We have also learnt about the Sun and its nine planets, including the planet we live on, which is the Earth.

The Earth is a very tiny part of the Universe. The questions most often asked are, “How was the Universe created”? ‘When did all this happen’? Many theories have been put forward to answer these questions. The recent and most accepted answer is the Big Bang theory. It is said that about 15 billion years ago all matter and energy was contained in a hot dense spot. In a flash it exploded and started expanding outwards and is still continuing to expand like a balloon that is being blown. The sudden explosion and expansion is known as the ‘Big Bang’. After the explosion, matter and energy in the universe was in the form of clouds of cosmic dust and gases. These clouds of gas and dust formed galaxies consisting of stars and planets. One such galaxy is the Milky Way. One of the stars in the Milky Way is the Sun, which has 9 planets revolving around it. The Earth, which is one of the 9 planets, is placed third from the Sun at a distance of 150 million kms away from it. Because of this appropriate distance from the Sun, the Earth does not become too hot or too cold, maintaining an average surface temperature of 14°C.

The Earth also has many other unique features; it is the only planet with liquid water covering two-thirds of its surface. The Earth is the densest of all planets, exerting a strong gravitational attraction which

holds the atmosphere in place. It is the only planet whose atmosphere contains life-supporting oxygen. The Earth's atmosphere also has a protective ozone layer. The ozone layer filters the harmful ultra-violet rays of the Sun and prevents them from reaching the Earth's surface. Because of all these unique features, the Earth is able to support life, the most precious feature of all.

Earth, which is a tiny part of the universe, is in reality a very large home for man. At present the Earth supports more than 6 billion population (i.e. 600 crore people).

You would have seen a very small part of the Earth around your home and neighbourhood. Some of you might have travelled to distant places. Is it possible for us to see and understand each and every part of the Earth? The answer will be 'No'. But, do you want to know more about this beautiful planet? If yes, you can learn about our Earth through the subject geography. It will help you to understand the Earth, how it was formed, what it is made up of, its different types of landforms, the types of climates prevailing over its different parts, the distribution of flora and fauna, the different peoples of the world, their ways of living and so on.

This year in Standard VII you will be learning about the Earth, its origin and spheres. You will learn about the atmosphere and its role in determining the different types of weather and climate prevailing over this Earth and the different regions of the Earth.

Human beings by their greed and misuse are slowly spoiling the Earth and polluting its atmosphere. Let us learn and understand more about this planet, so that we can together love it and care for it and save this beautiful and bountiful planet for the future generations.

UNIT - I

THE EARTH

Objectives of learning

1. To understand the origin of the Earth
2. To understand the origin of Lithosphere, Atmosphere, Hydrosphere and Biosphere
3. To understand the relationship between the four spheres

The Earth's surface is made up of 29 percent land and the remaining 71 percent is covered by water. When we look at the moon from the Earth it looks like a silver ball, whereas from space the Earth looks like a blue ball, as most of its surface is covered by water. How did this blue Earth originate?

Apollo 11 (1969) astronaut Michael Collins described the view of the Earth from lunar orbit thus: - "A tiny glistening blue ball floating lazily in space."

The origin of the Earth: The more recent and accepted theory states that the Earth was formed around 4.6 billion years ago from the cloud of dust and gases surrounding the Sun. The gas and dust in the cloud or nebula condensed to form particles. These particles collided together to form the nine planets of which Earth is the third from the Sun in distance. All the planets rotate on their axis.

As millions of years passed, the hot gaseous rotating planets began to cool and formed molten masses. Heavier metals such as iron

and nickel which were present in the gases sank towards the centre to form the core of the Earth. Lighter minerals such as silicates and aluminium were pushed above.

If a piece of burning charcoal is kept away from the oven, a layer of ash forms on the surface within a few minutes. When we remove the layer of ash, we can still see the fire inside. In the same way the surface of the Earth cooled faster to form a thin solid crust, called the lithosphere. But the interior of the Earth is still very hot and molten.

Even today volcanic eruptions take place in certain parts of the Earth's surface. You might have watched the T.V. pictures of volcanic eruptions, throwing out hot molten lava. This lava is nothing but the magma or molten rock found below the Earth's crust.

After the formation of the crust, there were continued volcanic eruptions all over the Earth. Gases trapped inside the hot Earth escaped and covered it like an envelope to form the primitive atmosphere. This original atmosphere consisted of thick clouds formed by gases such as nitrogen, carbon dioxide and water-vapour. Slowly the Earth cooled and the clouds (water-vapour) began to condense, producing very heavy rainfall. The waters filled the basins and depressions of the Earth's surface to form the Earth's first oceans. Thus the hydrosphere was formed and a blue planet emerged.

Then the air began to clear and carbon dioxide slowly dissolved into the oceans, leaving the atmosphere dominated by nitrogen. After the oceans were formed, the first life appeared in the form of blue-green algae. The oceans protected them from the harmful ultra violet

rays of the Sun. These algae used Sunlight and Carbon-di-oxide dissolved in the water to produce food by photosynthesis, thereby releasing oxygen. With the evolution and multiplication of plant species, more and more oxygen was released into the atmosphere. Over the next billion years, an Oxygen rich atmosphere evolved. Around the same time, Photochemical reactions in the upper atmosphere created a thin layer of ozone (O_3) that began to filter the ultra-violet rays of the Sun from reaching the Earth. Under the protection of the ozone layer in the atmosphere, life forms moved out of oceans on to land. On land, life evolved further to create a variety of complex organisms.

We have so far studied how, over millions of years, the three physical spheres of the Earth came into being. By the interaction of these three spheres, a suitable environment was created for the origin and survival of life – biosphere on Earth.

Thus the Earth's present environment is highly interrelated. It is not dominated by rock, water or air alone. Rather it is a continuous interaction of the three spheres and the biosphere. Though we divide the Earth into four spheres, in reality all the four spheres exist together. For example, consider an ocean, which is part of the hydrosphere. We find solid rock or lithosphere below it. Above the water surface is the atmosphere. Within the water are found many varieties of plants and animals-the biosphere. It is for the purpose of better understanding that the different spheres have been explained separately in this chapter.

Lithosphere: The rocky surface of the Earth is known as the lithosphere. The lithosphere consists of very large landmasses called continents (e.g.)

Asia. Very small landmasses surrounded on all sides by water are called Islands (e.g.) Srilanka. The lithosphere also extends below water as the ocean bed. The land surface of the Earth is divided into seven major continents. Find them in your atlas.

Our country India is in the Southern part of the Asian continent. India is surrounded on three sides by water. Therefore India is called a Peninsula.

The radius of the Earth is 6,380 km. Compared to its size the solid outer crust of the Earth is very thin, ranging from 5 km at the ocean floor to about 64 km below high mountains. Below the crust is the mantle, below the mantle is the core. The structure of the Earth is like that of an egg. The crust is like the shell, the mantle is like the white and the core is like the yolk.

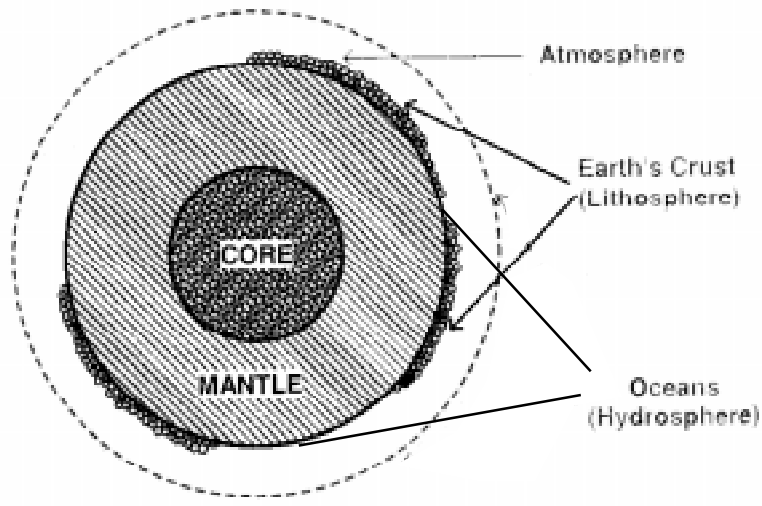


Fig. 1.1 Structure of the Earth

The Earth is not shaped like an egg, but its structure is like that of an egg.

The land on the Earth's surface is not even, but highly irregular. We can classify the landforms into three major categories.

- a) Mountains b) Plateaus c) Plains

a) Mountains: Highly elevated landforms are called mountains. When they are continuous, they are called mountain ranges or mountain chains. The topmost part of the mountain is called the peak. There are a number of high mountain ranges in the world. The highest mountain range in the world is the Himalayas and they form the northern boundary of India.

b) Plateaus: Elevated landmasses with flat tops and steep sides are called plateaus. They are also known as tablelands. The Tibetan plateau is the world's highest plateau.

c) Plains: Vast, low and level land are known as plains. Plains may be of many types

1. Alluvial plains - Formed by deposits of rivers
2. Loess plains - Formed by wind deposits
3. Coastal plains - Formed by wave action .

As plains are level land they are more favourable for human settlements. Plains are generally the most thickly populated regions of the world (e.g.) the Gangetic plain of India.

Hydrosphere: Look at the map of the world in your atlas. You will find a large part of the Earth's surface coloured in blue. These represent the water bodies. Very small water bodies inside the land are called ponds, larger water bodies are lakes. Very vast and deep water bodies surrounding the land are called Seas and Oceans. Deep below all these water bodies is a solid floor.

The deepest places on the Earth's surface are found in the oceans. They are called deeps or trenches. The deepest part of the Earth is the Mariana trench in the Pacific ocean. It reaches a depth of 10,990mt. If Mount Everest, the highest point on land at 8848mt, were to be placed in the trench, the peak will be submerged and there will be 2000mt of water above it.

Rains, melting snow and glaciers from Polar regions and high altitudes, run down slopes through channels are called rivers. These rivers empty their water into the seas and oceans. Seawater is salty and therefore not used for human consumption or irrigation. Fresh water is found in ponds, lakes and rivers. Out of the total water covering the Earth's surface, 97 percent is salt water from the seas and oceans and only the remaining 3 percent is fresh water. Only this water is used for drinking, washing, irrigation and by industries. Numerous species of plants and animals live in the waters of rivers, ponds, lakes and oceans.

Atmosphere: We can live without food for many days and without water for a few days. But we cannot live even for a few minutes without breathing. All living organisms breathe air. We get this air from the atmosphere that surrounds the Earth. Air is colourless, odourless and tasteless. We cannot see it with our eyes. We realize the air moving

when we see lighter materials like rustling of leaves on trees or the fluttering of clothes that are hung up to dry or when kites flying in the sky. We feel the air when we switch on an electric fan. Thus air or atmosphere surrounds the whole Earth (both land and water). Therefore life exists on both land and water. You will learn more about the atmosphere in the following chapters.

Biosphere: The availability of an atmosphere rich in oxygen, the presence of the hydrosphere and the vast expanse of land with its varied resources have made this planet a home for many varieties of life forms. The oldest known living creature, the simple single-celled bacterium, took form in the Earth's oceans some 2.5 billion years ago. Today there are about 30 million species of plants and animals occupying the Earth.

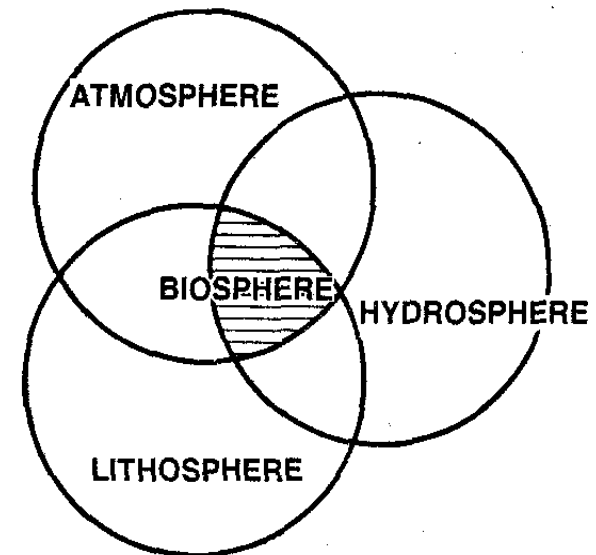


Fig. 1.2. Four Spheres of the Earth

Thus it is not surprising that life is everywhere on the Earth from the tropics to the poles, on the land and in the oceans, from the depths of the soil to higher up in the atmosphere. Earth, the blue planet, is also a living planet.

Outcome of learning

The pupils

1. Understand that land, water and air are the basic elements for living beings.
2. Get awareness about the protection of environment.

Exercise

I. Choose the correct answer:

1. Land occupies _____ percent of the Earth's surface.
(a) 28 (b) 27 (c) 29 (d) 30
2. The highly elevated portions of land on the Earth's surface are known as _____.
(a) Land Surface (b) Mountains (c) Plains
(d) Plateaus
3. The Earth was formed _____ years ago.
(a) 460 million (b) 4.6 billion (c) 46 billion
(d) 4.6 million

4. The very large permanent water bodies on the Earth's surface are called _____.
(a) Lakes (b) Ponds (c) Tank (d) Oceans
5. The percentage of fresh water found on the Earth's surface is _____.
(a) 5 (b) 2 (c) 3 (d) 6

II. Fill in the blanks:

1. _____ Large land masses on the surface of the Earth are called
2. _____ plains are formed by wind deposits.
3. The air that envelops the Earth's surface is known as _____
4. _____ Plateau is the highest in the world.
5. All life forms on Earth are together known as the _____

III. Match the following:

- | | | |
|------------------|---|-----------|
| 1. India | - | Plateau |
| 2. Low lands | - | Ocean |
| 3. Earth | - | Peninsula |
| 4. Deccan | - | Biosphere |
| 5. Bay of Bengal | - | Plains |

IV. Differentiate between :

1. Plateau and Plains
2. Lithosphere and Atmosphere
3. Island and Peninsula
4. Magma and Lava

V. Answer in brief :

1. Why is the Earth known as the Biosphere?
2. What is the Lithosphere?.
3. What are mountain ranges? Give an example.
4. What are Islands? Name some islands belonging to India.
5. What are the different types of plains? How are they formed?

VI. Answer in detail :

1. Describe the origin of the Earth?
2. What are the different spheres of the Earth? Describe each of them.

VII. Project work / Activities:

1. Find the continents of the world and the major mountain ranges, plains and plateaus in each of them
2. Prepare question and answer cards on the origin of Earth and the spheres of the Earth. With the help of these cards, conduct a quiz programme in your class.

UNIT – II

ATMOSPHERE

Objectives of learning

1. Atmosphere is a mixture of gases, dust particles and water-vapour
2. To learn about the structure of the atmosphere
3. To study the importance of the atmosphere

We have learnt in the previous chapter that the Earth is a life sphere or Biosphere. The atmosphere is most essential for the existence of life on Earth. Let us learn more about the atmosphere in this chapter.

Air is a mixture of gases such as Nitrogen, Oxygen, Carbon dioxide, Argon, Neon, Methane, Ozone, Helium, Hydrogen and many other gases. It extends for a height of 500 Km above the Earth's surface. This layer of air enveloping the Earth's surface is called atmosphere. Due to Earth's gravity the air is attached to the Earth's surface. Along with the Earth the atmosphere also rotates.

While flying a kite, we find the kite going up above our head. If the atmosphere were not rotating with Earth, we would be moving towards east, away from the kite.

Composition of the atmosphere: The atmosphere is composed of a mixture of gases such as Nitrogen, Oxygen, Carbon dioxide, Argon, Neon, Methane, Krypton, Ozone, Helium and Hydrogen. It also has dust particles and water-vapour.

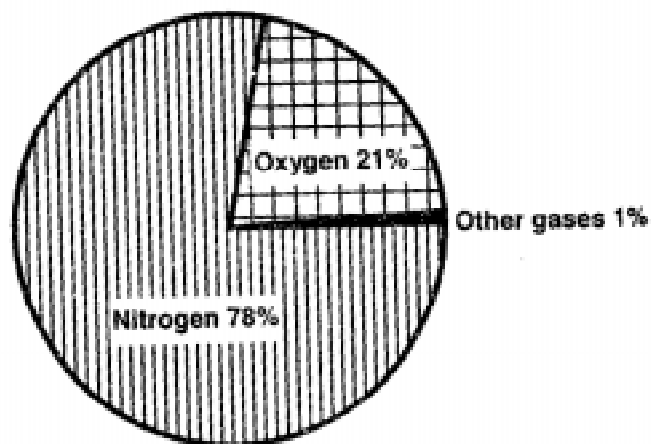


Fig.2.1 Gases found in Atmosphere

The following table shows the composition of gases in the atmosphere.

Sl.No.	Name of the Gas	Proportion
1.	Nitrogen	78 %
2.	Oxygen	21 %
3.	Argon	0.9 %
4.	Carbon dioxide	0.03 %
5.	Other gases	0.006 %

Nitrogen: Nitrogen does not have colour, odour or taste. It has the property of extinguishing fire.

Nitrogen is essential for all living things. The bacteria in the soil absorb the nitrogen from the atmosphere and fix it to the soil. This Nitrogen converts as Nitrate and it helps in the growth of both plants and organisms.

During lightning, Nitrogen in the atmosphere mixes with Oxygen to form Nitrates. These Nitrates combine with rain and come down in the form of diluted Nitric acid. The Nitric acid reacts with the different rock minerals present on the Earth's surface. For example - diluted Nitric acid reacts with Calcium rocks to form Calcium Nitrates, which is essential for plant growth.

Oxygen: The proportion of Oxygen in the atmosphere is 21 percent of the total air. Oxygen helps in burning. It does not have colour, or taste. It easily mixes with the other compounds and produces Oxides. Oxygen is used in respiration by all living things. Oxygen also helps in body metabolism.

Carbon dioxide: Carbon dioxide is heavier than any other gas. It has the property of absorbing heat.

The continued burning of fossil fuels and addition of vehicular emissions are causing an increase in the proportion of Carbon dioxide in the atmosphere. Can you imagine what this can lead to?

Through the process of photosynthesis, plants convert Carbon-di-oxide into Carbohydrates, which is an important source of energy for animals and human beings.

Fossil fuels such as coal, petroleum and natural gas are used widely all over the world. Where do these fuels come from? These are organic remains of vegetation, which were buried under the Earth many millions of years ago. Due to intense heat and pressure, the buried vegetation turned into Carbon rich fossil fuels such as coal and petroleum.

Other Gases: A number of other inert gases such as Argon, Neon, Methane, Krypton and Helium are found in the atmosphere. Argon, Neon and Krypton are used in electric lamps. Helium and hydrogen are very light gases therefore they are found in the upper layers of the atmosphere.

Water-vapour: Water-vapour accounts for 2 to 3 percent of the atmosphere. Due to the heat from the Sun, evaporation takes place from oceans, lakes, ponds and other water bodies. The evaporated water, which is called water-vapour, gets mixed in the atmosphere. It spreads to a height of 5 km above the Earth's surface. When atmospheric temperature falls sufficiently, water-vapour cools, condenses into water drops and comes down in the form of rain, snow and hail.

The amount of water-vapour in the atmosphere is very important for rains to fall.

Dust particles: When you go to school after an annual vacation, do you notice a layer of dust on the desks and chairs in your classroom? Where did this dust come from? it is the dust present in the atmosphere. This dust is composed of salt particles from the oceans, pollen from plants, sand particles, ash, etc.,

The dust particles in the atmosphere are able to scatter 7 percent of energy coming from the Sun. They also act as nuclei in the conversion of water-vapour into water droplets.

The structure of the atmosphere: The air is not evenly distributed over the atmosphere. More than 50 percent of the air is found within a height of 5 km above the Earth's surface and 80 percent of the air is within 16 km above the Earth. The density of air decreases rapidly with increasing altitude. It is because of the low density of air that we experience breathing difficulty when we visit hill stations.

Mountaineers climbing very high peaks such as the 8848 mt. high Everest carry oxygen cylinders with them. How do passengers travel by aircrafts at an altitude of 12,000 mts. above sea level breathe?

The temperature of air is not the same throughout the atmosphere. At the same time the temperature is not uniformly increasing or decreasing with altitude. The temperature is different, at different altitudes. On the basis of these characteristics the atmosphere is divided into five layers. They are:

- 1.Troposphere
- 2.Stratosphere
- 3.Mesosphere
- 4.Thermosphere and 5.Exosphere

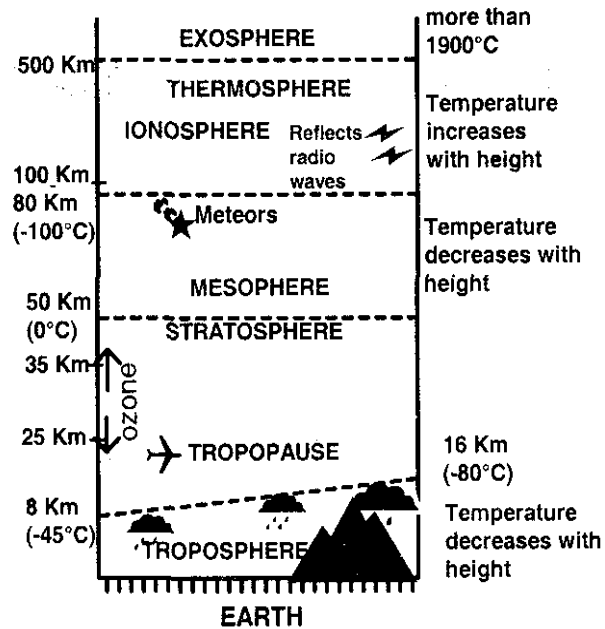


Fig.2.2 Structure of the Atmosphere

1. Troposphere: The troposphere is the lowest layer of the atmosphere. It extends to a height of 16 Km over the equator and to about 8 km above the poles. This layer contains 80 percent of the total air in the atmosphere, a large quantity of dust particles and all the water-vapour present in the atmosphere. All weather phenomena such as rain, thunder, lightning, cloud and mist occur only in the troposphere. Therefore it is sometimes referred to as the weather sphere. Air moves both horizontally and vertically within the troposphere.

In the troposphere, temperature decreases with increasing altitude at the rate of 6.5°C for every 1000 mt. This is why hill stations like Kodaikanal and Ooty, located at about 2000 mt. above sea level, are very cool.

If you happen to travel to Ooty or Kodaikanal notice the signboards on the roadside indicating the altitude of the place.

2. Stratosphere: Above the troposphere lies the stratosphere. This layer extends for a height from 16km to 50 km above the Earth's surface. It contains about 19 percent of atmospheric gases and certain varieties of clouds.

The temperature of the stratosphere remains constant. There is absence of water-vapour in this layer and therefore weather phenomena such as clouds, rain and lightning are also absent here. These conditions are suitable for flying of supersonic aircrafts, i.e., aircrafts which fly faster than the speed of sound.

Within the stratosphere, between 20 and 35 km above the Earth's surface, lies the ozone layer. The Ozone layer filters the ultra-violet rays and prevents them from reaching the Earth's surface. Human beings and animals are thus protected from the harmful ultraviolet rays which can cause skin diseases and cancer.

Chlorofluorocarbon (CFC) used as a refrigerant, does not have any harmful effect in the troposphere. When CFC reaches the stratosphere it reacts with the ultra-violet rays from the Sun thereby isolating the chlorine molecule. The chlorine molecule chemically reacts with Ozone (O₃) present in the stratosphere and splits it into Oxygen and Chlorine -mono-oxide. Thus it weakens the Ozone in

the atmosphere. This is known as ozone depletion. Continued depletion can cause holes in the Ozone layer. Through these Ozone holes the harmful ultra-violet rays can reach the Earth's surface.

In 1987 the Montreal Protocol, a treaty for protection of the Ozone layer, was signed by 36 nations including the USA. In 1989 a total ban on the use of CFC's was proposed by the European Union to be enforced by the Developed Nations by 1995 and the Developing Nations by 2010.

To monitor Ozone depletion on a global level NASA (National Aeronautics and Space Administration) has launched a satellite in 1991, which measures the Ozone level in different parts of the atmosphere.

3. Mesosphere: The third layer of the atmosphere known as the Mesosphere extends over a height from 50 to 80 km above sea level. The amount and density of air in this layer are very very low. The temperature also decreases to as low as minus 90°C.

You might have seen stars in the sky suddenly burning and falling. They are nothing but the Meteors, which are wandering in the space. When they come nearer to the Earth, they are attracted by Earth's gravity. While entering the Earth's atmosphere, due to friction with air molecule in the Mesosphere, they get heated and start burning. Most of them get completely burnt-out in the atmosphere itself. In rare cases, big burnt-out Meteorites fall on the Earth's surface. If there were no atmosphere, the Earth's surface would have been hit frequently by the Meteorites.

4. Thermosphere: This layer extends over a height between 80 and 500 km above the Earth's surface. The density of air in this layer is very, very low. The temperature in this layer is very high. It can go even low up to 2,000°C at the upper level. This high temperature is due to

the absorption of very short-wave solar radiation by atoms of Oxygen and Nitrogen.

There are electrically charged positive + and negative – ions present in this layer at a height of 100 to 300 km. This layer is known as the Ionosphere.

In Radio broadcasting sound waves are converted into electromagnetic waves and sent to the atmosphere. The layer of ionosphere in the atmosphere reflects the electro-magnetic waves back to the Earth's surface. Thus we are able to listen to radio broadcasts that are made at different places of the world.

5. Exosphere: Above the troposphere and above a height of 500 km from the Earth, lies the outer layer of the atmosphere known as the Exosphere. This is a zone of rarefied gases such as Hydrogen and Helium. Beyond this there is no air or gases but only vacuum or void that we call as outer space.

Importance of the atmosphere:

We may now list out the importance of atmosphere to us.

1. During the day the atmosphere acts as a filter and prevents the Earth's surface from receiving the total radiation from the Sun.
2. During the night the atmosphere acts as a blanket and prevents the Earth from losing the entire heat received from the Sun in the form of land or terrestrial radiation.

The atmosphere prevents the Earth from becoming too hot during the day or too cold during the night.

3. It prevents the harmful ultra-violet rays of the Sun from reaching the Earth's surface. It thus protects animals and humans from skin diseases and cancer.
4. The atmosphere is responsible for providing the much needed water for life in the form of rain.
5. The atmosphere is the source of life-supporting gases such as Oxygen, Nitrogen, and Carbon dioxide.
6. It protects the Earth from Meteors.
7. It helps in radio broadcasting.

Atmospheric pollution: We are continuously polluting this protective and useful atmosphere by our un-mindful actions. The smoke from industries, exhaust from vehicles, dust and waste due to mining are some of the main pollutants of the atmosphere. We have to try and reduce the amount of pollutants released into the air. Since green plants use carbon dioxide during photosynthesis, we can effectively maintain the present level of carbon dioxide in the atmosphere by growing more trees.

Let us plant more trees.

Let us receive more rain.

Let us strive towards a pollution free atmosphere.

Outcome of learning

The pupils

1. Understand the significance of all gases present in the atmosphere.
2. Understand the importance of atmosphere and the need for its protection from pollution.

Exercise

I. Choose the correct answer:

1. The layer of air enveloping the Earth's surface is called _____.
(a) Atmosphere (b) hydrosphere (c) Biosphere
(d) Lithosphere
2. Atmosphere extends to the height of about _____ km above the Earth's surface.
(a) 400 (b) 550 (c) 500 (d) 600
3. The bacteria in the soil absorb the _____ from the atmosphere and fix it to the soil.
(a) Hydrogen (b) Oxygen (c) Nitrogen (d) Argon
4. More than _____ percent of air is found within the height of 5 km above the Earth's surface.
(a) 80 percent (b) 70 percent (c) 65 percent
(d) 50 percent
5. The Ionosphere in the atmosphere reflects _____ the waves back to the Earth's surface.
(a) Radio (b) long (c) short (d) microwave

II. Fill in the blanks:

1. Atmosphere protects the Earth from _____.
2. The dust particles in the atmosphere are able to scatter _____ percent energy from the Sun.
3. The density of air _____ rapidly with increasing altitude.

4. In Troposphere, temperature decreases with increasing altitude at the rate of _____ °C for every 1000 mt.
5. The proportion of _____ in atmosphere is 21 percent of the total air.

III. Match the following:

- | | | |
|-------------------|---|------------------------|
| 1. Nitrogen | - | weather changes |
| 2. Carbon-dioxide | - | used in electric lamps |
| 3. Argon | - | Ozone layer |
| 4. Stratosphere | - | heavier gas |
| 5. Troposphere | - | used by plants |

IV. Answer in brief :

1. Define Atmosphere
2. Name the gases in the atmosphere
3. How is Nitrogen helpful for plants?
4. What happens, when atmospheric temperature reduces?
5. Write any two salient features of the Troposphere.

V. Answer in detail:

1. How is atmosphere important to man? explain
2. Write a note on the Troposphere.

VI. Projectwork / Activities:

Frame a weather-chart in your class and try to note down the sunny, windy and cloudy days. Plan for a field-trip to visit an Observatory or a Planetarium.

UNIT – III

ATMOSPHERIC TEMPERATURE

Objectives of learning

1. To understand the process by which the atmosphere is heated
2. To understand the reason for variation in temperature over different parts of the Earth

In the previous chapter we have learnt about the atmosphere, its composition and structure. In this chapter we will learn about the temperature of the atmosphere.

The atmospheric temperature is the basis for all weather changes that takes place such as winds, cloud cover, rainfall and thunderstorms. The origin and survival of all living beings on the Earth, mostly depends upon the atmospheric temperature. Hence it is important to understand atmospheric temperature.

We feel the air temperature increase from morning until noontime, after which it begins to decrease. Heat is needed to increase the temperature of air. How does the air get its heat?

Insolation: The Sun is at the centre of the Solar system. The Sun is the source of heat to all planets and satellites of the solar system. So the Sun is the main source of heat and light for the Earth also.

You already know that the Earth is 150 million km away from the Sun. The furnace that melts hard iron has a temperature of 1100°C. Only when we are very near to the furnace we feel the heat. But even

at a distance of 150 million km we are unable to bear the heat of the mid-day Sun. Therefore to emit light and heat over such a distance, what would be the temperature of the Sun?

The Sun, which is a star, is very huge compared to the planet Earth. Its mass is 3,30,000 times that of Earth. The Sun is an extremely hot body. It has a surface temperature of 6000°C. The Sun emits heat energy in all directions in the form of solar radiation. Since the Earth is very small and placed 150 million km away from the Sun, it receives only one out of five billion rays (1/5 billion) from the Sun. The Sun's energy received by the Earth is known as incoming solar radiation or insolation.

Solar radiation consists of two types of rays. They are;

1. The visible Sunrays that consists of seven colours
2. The invisible Sunrays consisting of Gamma rays, X rays, Ultraviolet rays, Infra red rays and Radio waves.

Since the temperature of the Sun is very high, it emits heat in the form of short wave radiation. This short wave radiation can travel a distance of 150 million km to reach and heat the Earth.

We have learnt that the atmosphere extends only upto 500 kms above the Earth's surface. There is a vacuum between the upper limit of the atmosphere and the Sun. Since the area between the Sun and the Earth's atmosphere is a void or vacuum, the Sun radiates its heat to the Earth.

Solar radiation passes through the atmosphere before reaching the Earth's surface. Thus atmosphere, which is closer to the Sun, should get more heat than the Earth's surface. But in fact, temperature in the atmosphere gradually decreases as we go up from the Earth's surface. This is because the atmosphere acts like a glass window around the Earth.

When Sunlight passes through the glass window into a room, the room gets heated. But the glass window does not heat up. In the same way the atmosphere allows the incoming solar radiation to pass through it to the Earth. It acts like a transparent glass, it does not get heated.

If the atmosphere does not get heat directly from the Sun, then how does it get heated?

Generally heat energy is transferred from one object to another in three ways such as conduction, convection and radiation. Of these, radiation is the only method by which heat is transferred without a medium.

Heating and cooling of the atmosphere: There are four ways by which the atmosphere or air gets heated and cooled. They are conduction, convection, radiation and the latent heat of water-vapour.

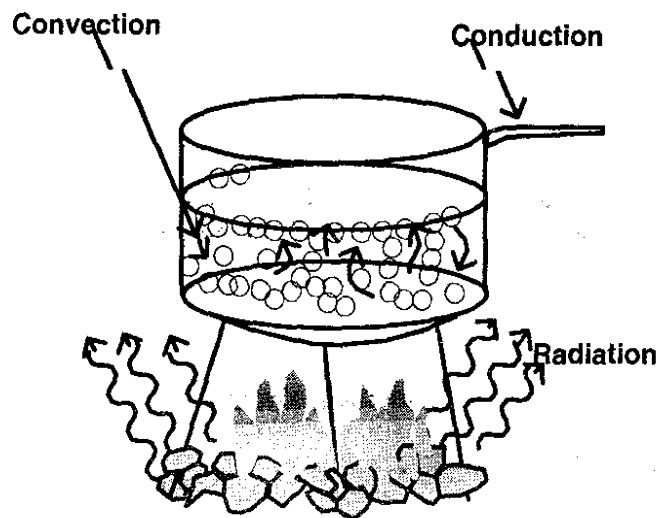


Fig. 3.1 Illustration of conduction, convection and radiation

Conduction: The molecules of air lying in contact with the Earth's surface get heated up. These molecules in turn heat up the adjoining molecules and so on. This process of heat transfer from one molecule to another is known as *conduction*.

Convection: The air nearer to the Earth's surface gets heated, expands, becomes lighter and moves upwards. The cool, heavier, upper air sinks downward to take its place. When the cool air reaches the Earth's surface it gets heated, expands and rises up. This process continues and is known as *convection*.

Radiation: When heat is transferred from one body to another without the help of any medium (e.g. solids, liquids or gas) it is called radiation. Incoming solar radiation heats the Earth. The heated Earth re-radiates this heat to the atmosphere in the form of long wave *radiation*.

Latent heat of water-vapour: Evaporation takes place continuously from the hydrosphere, biosphere and lithosphere. Much energy is needed to convert water into water-vapour. The energy, which is absorbed by water to become water-vapour is hidden in the vapour. This hidden heat energy is known as 'latent heat'. The water-vapour, mixes with the air and rises up along with the air. As it rises up, it cools and begins to condense, when condensation takes place, the water-vapour present in the atmosphere becomes water particles there by releasing its latent heat. The latent heat released during the process of condensation heats the air column.

The atmosphere is heated mainly by the four methods mentioned above. Since the Earth heats the atmosphere, the temperature of the air column closer to the Earth is higher. The temperature decreases as we move upwards. That is why the temperature of a hill station is lower than that of a plain.

Let us imagine that the Earth's surface is like an oven. An oven is hotter than the vessel that is kept over it. In the same way, the surface of the Earth is hotter than the column of air above it. We cannot walk with bare feet at 2 p.m. on a hot summer day. But the air above that area is much lower. For example, the temperature of the Earth's surface in a desert may be 60°C while at the same time the temperature of the air column at a height of 15cms in that same desert may be 37°C.

The temperature of a place indicates the temperature of the air column lying approximately 1.5 metres above that place. A Thermometer is used to measure the temperature of a place.

At night the temperature of the Earth's surface will be lower than the air column above it.

The surface, which is very hot during daytime, becomes very cool at nighttime. All the heat energy that is received by the Earth in the daytime is given out after sunset.

A vessel kept on the oven is hot even after we put off the oven. In the same way, the air column that surrounds the Earth is hot, even after the surface of the Earth loses its heat. That is why the air above the Earth is warmer than the Earth during night.

Heat balance of the Earth: Now we understand that the Sun heats the Earth and the Earth passes the heat to the atmosphere. So both the Earth and the atmosphere get their heat from the Sun. This process of heating of the Earth by the Sun occurs everyday, for millions of years. But the temperature of the Earth is maintained at a particular level because there is a balance between the heat that comes from the Sun to the Earth and that which goes from the Earth back to space.

Experiment: Take a piece of iron. Put it in the fire, it will become hot. Remove the iron piece from the fire. Leave it on the floor for sometime. The iron piece loses all its heat. Once again put the piece of iron in the fire and it becomes hot. Take it out and it loses its heat. We see that the iron piece gets heated every time it is put in the fire and loses heat when it is taken out.

The Earth which is heated during the day loses its heat every night. This is a continuous process. But there is a difference between the heat gained during the day and the heat lost during the night according to seasons.

In summer, due to the vertical rays of the Sun and the longer duration of day, more heat is received. Because of this the summers are hot. In winter, due to the oblique rays of the Sun and the shorter duration of day, less heat is received. Thus the amount of heat received and lost at any particular place on the Earth's surface, in a year, is more or less equal. This is known as the heat balance of the Earth's surface.

Factors responsible for difference in temperature from the equator to the poles: Though the whole Earth receives its energy only from the Sun, the amount of energy received is not uniform throughout.

Isotherms are imaginary lines joining places having the same temperature. The distribution of temperature over the Earth's surface is shown on weather maps by isotherms. .

The temperature at the equator is very high, and as we go towards the poles the temperature decreases to even below freezing point. This shows that the amount of Solar energy received by the Earth's surface is not uniform. This is mainly due to two important factors:

1. The angle of incidence of solar radiation at a particular place
2. The duration of solar radiation falling at a particular place

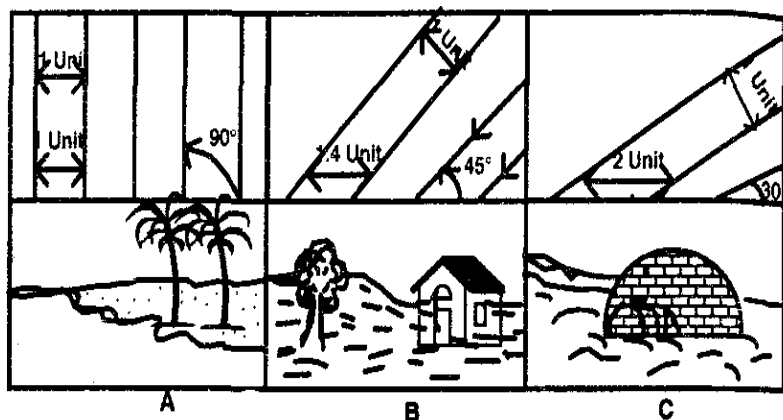


Fig.3.2 Angle of incidence of solar radiation

1. The angle of incidence of solar radiation: The angle of incidence of solar radiation is not the same all over the Earth because the Earth is spherical in shape. The angle of incidence of the Sun's rays is vertical over places at and near the equator and it decreases polewards. The region that receives the vertical rays of the Sun is heated more because the Sun's rays heat a smaller area. The regions that receive the oblique rays of the Sun get less heat because the rays are distributed over a larger area (fig.3.2). We do not feel very hot in the morning or evening compared to noontime because the angle of incidence of the Sun's rays are oblique in the morning and evening, but vertical at noontime.

2. Duration of solar radiation at a particular place (length of day): The duration of sunshine is known as daytime. If the duration of daytime is longer, the solar energy received is more. If the duration of daytime is shorter, the solar energy received is less. From Figure (3.3) you can

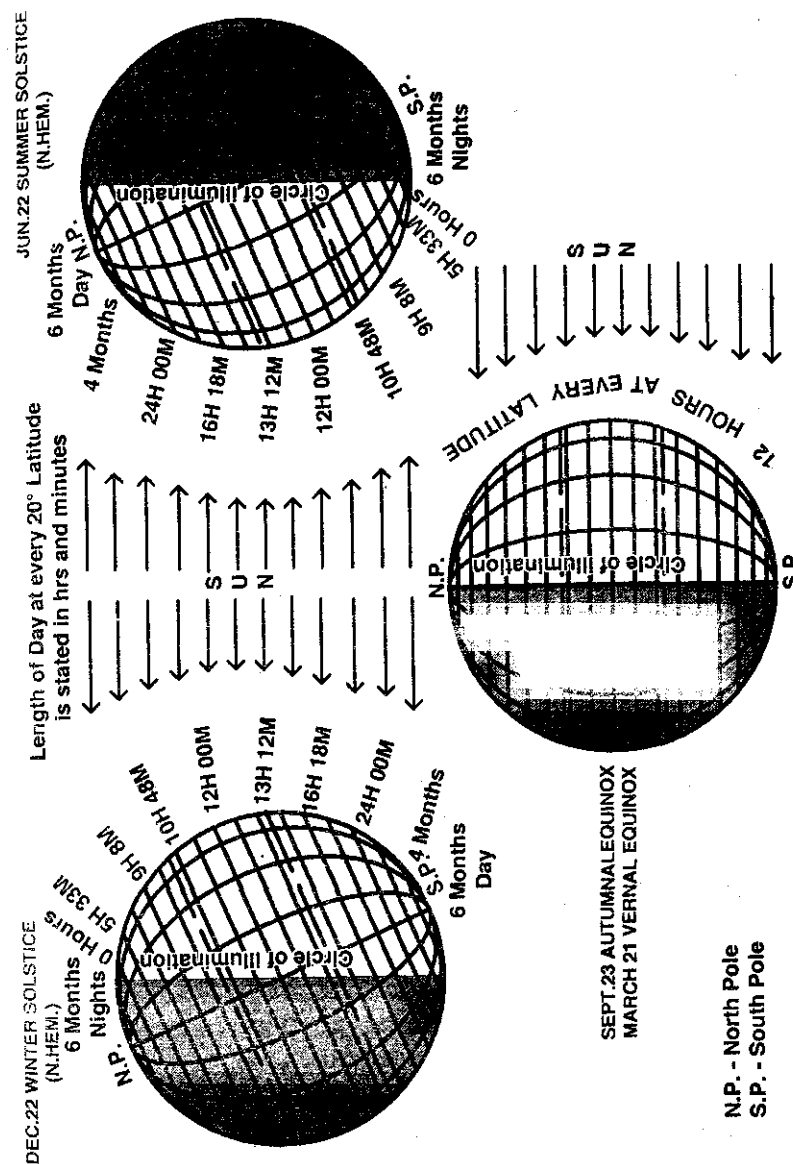


Fig.3.3 Length of Days and Nights during different Seasons in the year

understand that the duration of daytime is always twelve hours at the equator throughout the year. That is why the equator experiences high temperature throughout the year. Thus the equator experiences a very low annual and diurnal range of temperatures.

Temperatures are recorded every day at weather stations. Minimum temperatures are recorded at 5.00 am and maximum temperatures at 2.00 pm every day. The difference between the daily maximum and minimum temperature is known as the *diurnal range of temperature*. The difference between the average monthly maximum and minimum temperatures is known as the *annual range of temperature*.

Fig.3.3 Length of Days and Nights during different Seasons in the year

The Earth rotates on its inclined axis and revolves around the Sun. As a result, the duration and inclination of solar radiation falling at a place varies throughout the year. This causes seasons.

In your place you might have noticed that the duration of daytime is more than 12 hours in summer and less than 12 hours in winter.

Heat zones of the Earth: We have seen that the inclination of the sunrays and the duration of day and night determine the amount of heat received at a place. As these two factors vary from the equator to the poles the temperature also varies from the equator to the poles. Based on these variations in temperature, the Earth's surface can be divided into four temperature zones (Fig 3.4).

1. Equatorial zone 2. Tropical zone 3. Temperate zone 4. Frigid or Polar zone

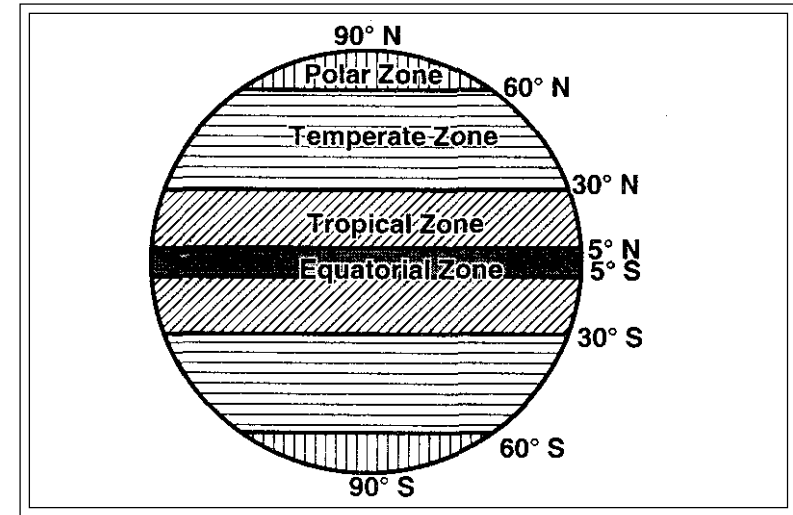


Fig.3.4 Temperature Zones

1. Equatorial zone: The zone lying between 5° North and 5° South of the equator, is known as the equatorial zone. The Sun shines vertically overhead throughout the year over this zone. Therefore it is a very hot zone.

2. The Tropical zone: This zone lies between 5° and 30° North and South of the equator. This region receives the vertical rays of the Sun during summer, therefore summers are hot. In winter the incidence of sunrays is low and the temperature is lower than in summer. Therefore winters are warm.

3. Temperate zone: This zone extends from 30° to 60° north and south of the equator. This zone experiences warm summers and cold winters. Since the temperature is moderate throughout the year, this zone is known as the temperate zone.

4. The frigid zone: It extends beyond 60° North and South latitudes to the poles. Since this zone lies around the poles, it is also called the polar zone. This zone receives very small amounts of solar energy (only

for six months during summer). The temperature is always below freezing point (0°C). Hence this zone is always covered with ice.

Though there are various temperature zones, the temperature patterns are not the same at different places, along a particular latitude. This is due to the following factors:

1. Altitude or elevation above sea level: We know that temperature decreases as the height from sea level increases at an average rate of 6.5°C per thousand meters. So the temperature of a place will differ according to its height from the sea level. Chennai and Bangalore are situated on the same latitude. Still Chennai experiences a hotter climate because it is situated at sea level. Bangalore experiences a cooler climate because it is situated at a higher altitude. Similarly, hill stations like Ooty and Kodaikanal experience very low temperatures according to their altitudes from the sea level.

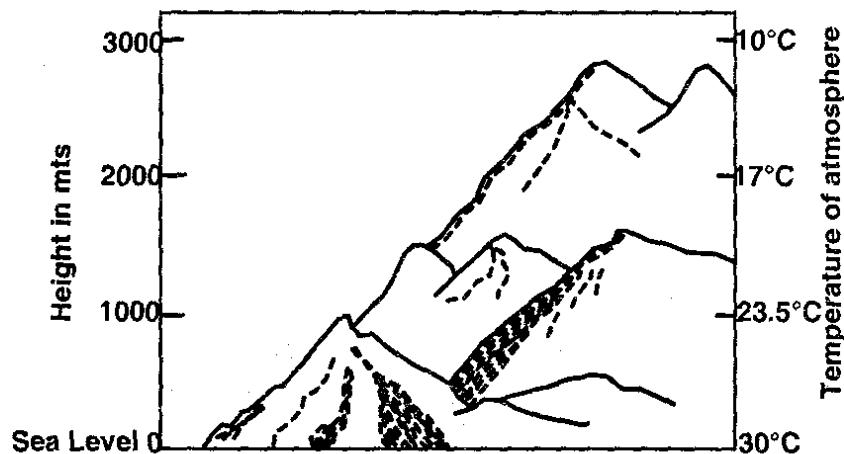


Fig 3.5. Temperature Changes with Altitude

2. Distance from the sea: Places situated near the coast experience cool sea breeze by noontime (Land and sea breeze will be explained in detail in the following chapter). The temperature of the coastal belt is reduced when sea breeze begin to blow over the land. The coastal areas experience minimum daily range of temperature (the difference between daily maximum and minimum temperature is known as daily range of temperature), compared to places away from the coast.

3. Prevailing wind: The temperature of a place is determined by the temperature of the wind that blows over it. Hot winds blowing over a place increase the temperature of the place. Similarly cold winds blowing over a place decrease the temperature of the place.

4. Nature of ground surface: Snow covered surfaces, which reflect most of the incoming solar radiation or insolation, receive less heat and thus have very low temperatures. Sandy surfaces absorb more insolation. Therefore deserts are very hot during the day.

5. Effect of ocean currents: The temperatures of coastal belts are affected by the temperature of the ocean currents of that region. Warm ocean currents give warmth to the adjoining coastal belts. Similarly cold ocean currents cool the temperature of adjoining coastal belts. For example, the British Isles experience a warmer climate than that of the adjoining places because of the warm ocean currents flowing along its western coast.

6. Slopes: The slopes of mountains facing north in the northern hemisphere and south in the southern hemisphere are always in the shadow zone. Hence they receive little heat from the Sun. They are considerably darker and cooler than the slopes facing south in the northern hemisphere and north in the southern hemisphere.

The temperature varies from place to place at a particular time and from season to season at a particular place. Accordingly the density of air varies from place to place at a particular time and from season to season at a particular place. The variation in atmospheric density gives rise to various pressure belts. We will study about pressure belts in the next lesson.

Outcome of learning

The pupils

1. Understand that the Sun is the source of the heat energy for all the planets and satellites.
2. Understand that the methods in which air gets heated and cooled.
3. Understand that the Temperature variation at different places gave rise to different climatic regions.

Exercise

I. Choose the correct answer:

1. The visible Sunrays consist of _____ colours.
(a) 7 (b) 6 (c) 5 (d) 8
2. The only method by which heat is transferred without a medium is _____.
(a) conduction (b) convection (c) radiation
(d) Evaporation
3. The zone lying between 5° North and South of the equator is the _____ zone.
(a) Temperate (b) polar (c) Tropical
(d) equatorial
4. The surface temperature of the Sun is _____ °C.
(a) 4800 (b) 5400 (c) 6000 (d) 6100
5. The heated Earth re-radiates the heat to the atmosphere in the form of _____ wave radiation.
(a) short (b) long (c) medium (d) none

II. Fill in the blanks:

1. The Sun's energy received by the Earth is known as _____.
2. The main source of heat and light for the Earth is _____.
3. Earth is _____ km. away from the Sun.
4. The zone extending between 30° to 60° North and South of the equator is _____ zone.
5. The angle of incidence of Sun's rays is _____ near the equator.

III. Match the following:

- | | | |
|----------------|---|----------------------|
| 1. Atmosphere | - | Hidden heat |
| 2. Latent heat | - | vertical rays |
| 3. Equator | - | absorbs heat |
| 4. Poles | - | acts like a medium |
| 5. Sand | - | very low temperature |

IV. Distinguish between:

1. Conduction and convection
2. Radiation and convection

V. Answer in brief:

1. What is meant by Radiation?
2. What is meant by heat balance of the Earth?
3. The solar energy received by the Earth's surface is not uniform. What are the factors responsible for this ?
4. Define conduction.

VI. Answer in detail:

1. Name the processes by which the atmosphere gets heated?
Explain each process?
2. Name the temperature zones of the Earth and explain.

VII. Project work /Activities:

Try to collect information about the temperature conditions from the weather report given in the newspaper. Try to interpret it with the help of your teacher.

UNIT IV

PRESSURE

Objectives of learning

1. To learn about air pressure
2. To understand that pressure differs from place to place
3. To understand the pressure belts of the world

We have already learnt in Standard VI that the Earth exerts gravitational force.

All matter on and above the surface of the Earth is attracted towards the Earth due to its gravitational force. All the solids, liquids and gaseous matter have mass. Weight of an object is nothing but the Earth's gravitational force multiplied by its mass. Hence, matter has weight.

Take a wooden sphere and an iron sphere of the same size. Which is heavier? Iron is heavier than the wooden sphere. Why is this so? Because the mass of iron is more than the mass of wood.

The air that surrounds the Earth also has mass. Air is attracted towards the Earth due to gravitational force. Therefore air also has weight.

The average weight of the atmospheric air is 1 kg per sq. cm. at the mean sea level, i.e., the atmospheric air column that lies over an area of one square centimeter weighs 1kg.

The weight of air resting on the Earth's surface exerts pressure on the Earth's surface. The pressure exerted on the Earth by the atmosphere is called the atmospheric pressure.

An instrument called a barometer measures atmospheric pressure, and it is expressed in millibars. The average air pressure at sea level is 1013 millibars. In the weather maps, pressure distribution is shown by 'isobars'. Isobars are imaginary lines, drawn on maps joining various places having equal pressure.

Have you noticed isobars drawn on weather maps of India in the daily English newspapers?

Factors affecting atmospheric pressure of a place: The atmospheric pressure is not uniform at all the places over the Earth. This is due to two factors: 1. Altitude 2. Temperature

1. Altitude: You have learnt that the atmospheric pressure of a place indicates the weight of the air column present above that place. The atmospheric pressure of a place at a particular altitude is the weight of the air column that lies over it. Hence the air pressure at a higher altitude is lesser than the air pressure at the sea level. We can understand this with an example.

The air pressure at sea level is the total weight of the air column lying over it. Ooty in the Nilgiris is situated at an altitude of 2000 mts. above sea level. The pressure at Ooty is the total weight of air resting on it. i.e. 2000 mt. above sea level. It means the total weight of air at

sea level, minus the weight of the air within 2000 mt. above sea level. Thus air pressure at Ooty is much lesser than the air pressure at sea level.

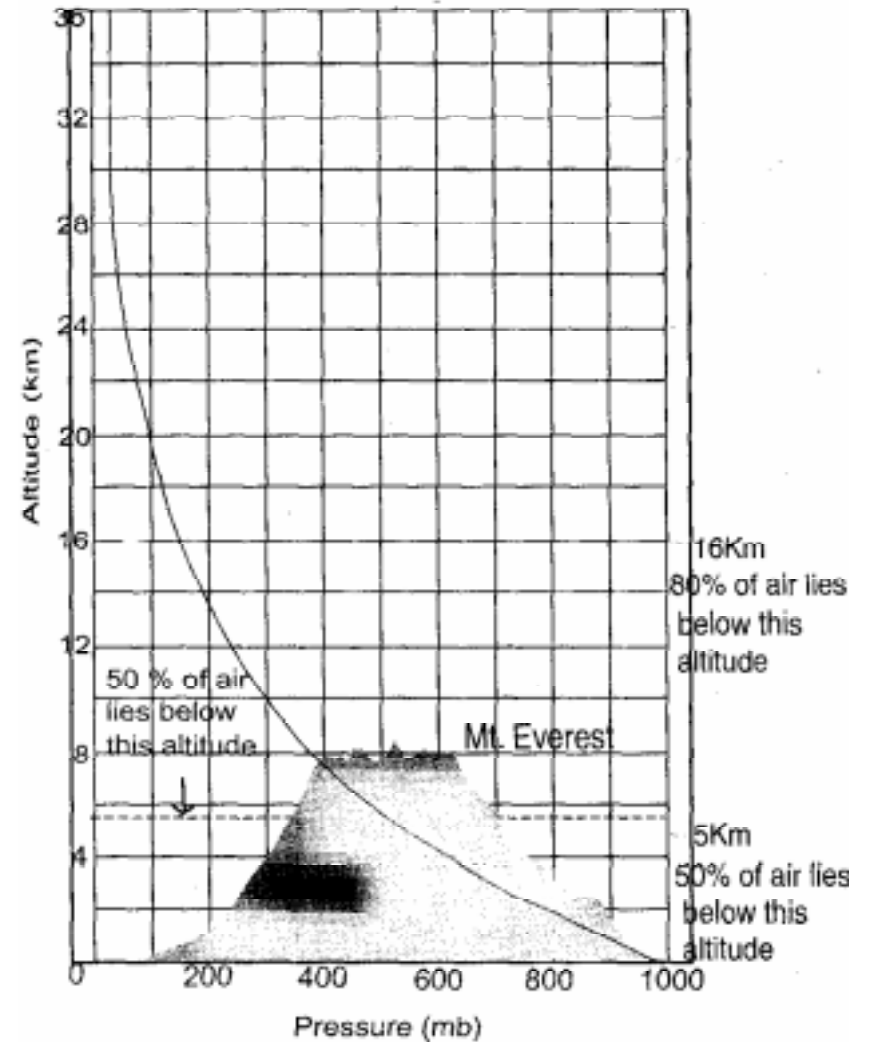


Fig.4.1 Atmospheric Pressure variation with Altitude

The air pressure decreases steadily as the height increases above sea level. There is a decrease of one millibar for every 10 meters rise in elevation.

If you happen to travel to hill stations such as Ooty or Kodaikanal, carry a closed empty plastic bottle with you. When you reach the hill station unscrew the cap of the bottle. You will find the cap opening with force as air rushes out of the bottle. This is because the pressure inside the bottle is higher than the surrounding air pressure in the hill station.

In the same way while returning to the plains carry back the same closed empty bottle. When you reach the lower level, what do you see? You will find the bottle twisted out of shape. This is because the pressure of the surrounding air in the plains is much higher than the pressure inside the bottle. Therefore, the outside pressure crushes the bottle.

2. Temperature: Materials expand due to increase in temperature. Likewise air also expands wherever there is high temperature. As the air expands it becomes lighter and ascends. When this happens, the atmospheric pressure of that place is also reduced.

Materials contract due to decrease in temperature. Likewise over cooler places, the air cools, contracts and becomes dense and heavy. So the atmospheric pressure in such places is high.

Types of pressure: From the above discussions we can understand that there are two types of pressure conditions found in the atmosphere.

- (a) High pressure and
- (b) Low pressure.

But the pressure of a place cannot be defined as high or low in absolute terms. It can be stated on a comparative basis only.

If your teacher asks you, “Are you tall?” you cannot answer it unless you compare yourself with someone else taller or shorter than you. Only after comparison you can say that you are taller or not.

Likewise the pressure of a place is expressed as high or low in comparison with the pressure of nearby places.

Pressure belts of the Earth: On the basis of prevailing pressure differences in the atmosphere, over the Earth’s surface, the Earth is divided into four major air pressure belts. They are:

1. Equatorial low-pressure belt.
2. Sub-tropical high-pressure belt.
3. Sub-Polar low-pressure belt.
4. Polar high-pressure belt.

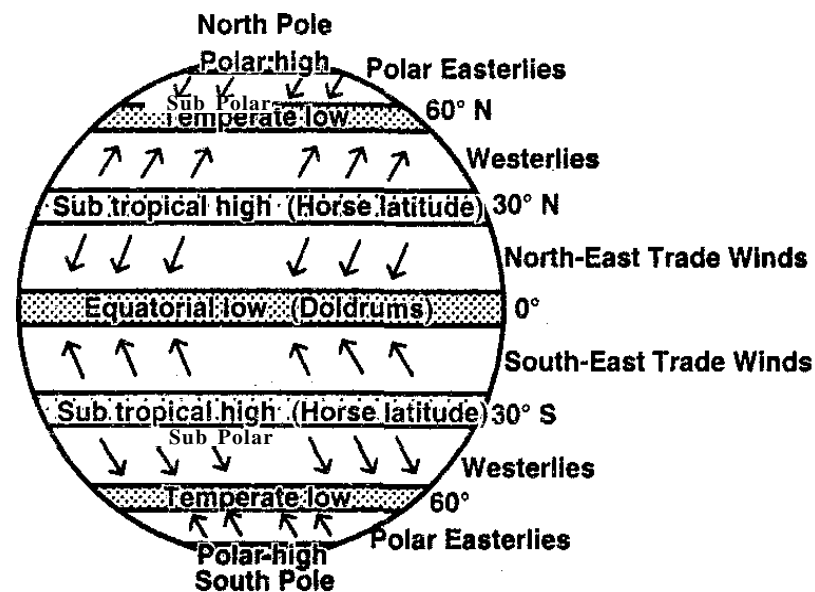


Fig.4.2 The Distribution of World Pressure Belts and Planetary winds

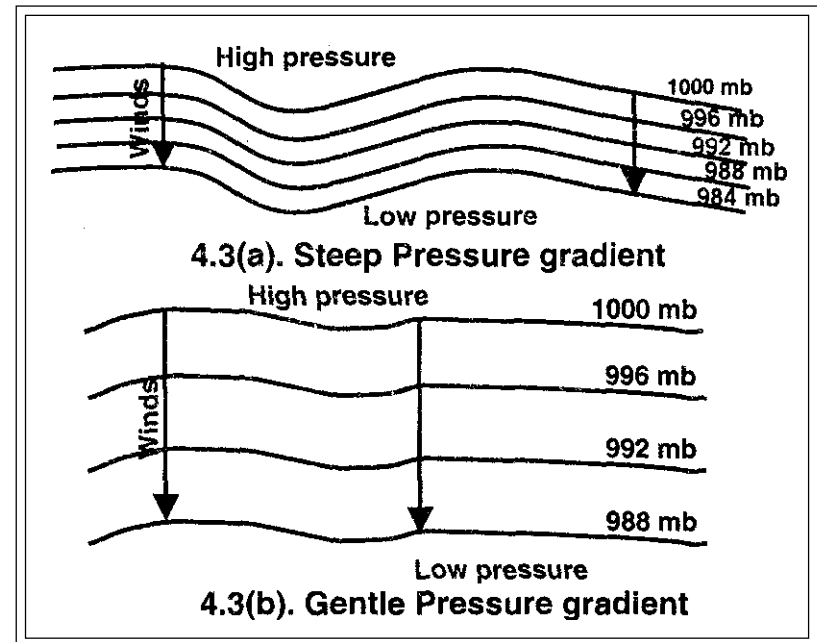
1. Equatorial low-pressure belt: The Equatorial low-pressure belt lies between 5°North and 5°South of the equator. This area receives the vertical rays of the Sun throughout the year. Vertical rays give more heat than oblique rays. Therefore the equatorial belt is the hottest part of the Earth throughout the year. In the equatorial region the air gets heated up and expands. The heated air becomes light and rises. Thus we have low-pressure over this belt.

2. Sub-tropical high pressure: Sub-tropical high-pressure belt lies between 30°- 35°North and South of the equator. We have already seen that in the equatorial belt the air gets heated, expands and rises. The air that rises from the equator spreads towards north and south due to the rotation of the Earth. At higher altitudes it cools, condenses and sinks at about 30° N and S latitudes. So at these belts the density of the air increases. Hence a high-pressure belt is formed in these belts.

3. Sub-Polar low-pressure belt: This belt lies between 60° - 65° latitudes in the northern and southern hemispheres. High pressure prevails in sub-tropical and Polar belts. Since sub-polar belt lies in-between sub-tropical and polar high-pressure belts, sub-polar belt has comparatively low pressure.

4. Polar high-pressure belt: The North and South poles, due to very low temperature, experience very high pressure. The air is very cold and dense here and therefore Polar Regions have high pressure.

Pressure gradients: We have already learnt about the types of pressure and the pressure belts of the Earth. This will help us to understand the pressure difference between places.



The pressure difference between any two places at a particular distance is defined as 'pressure gradient'. If the difference in pressure between two places is high, the pressure gradient is steep. If the difference is low, the pressure gradient is gentle.

The pressure gradient can be understood from the spacing of isobars. Closely spaced isobars denote steep pressure gradients, whereas far spaced isobars denote gentle gradients.

Pressure gradients and wind speed: Water flows from a higher level to a lower level. In the same way winds always blow from high-pressure areas to low-pressure areas.

The velocity of the wind depends upon the pressure gradient. When the pressure gradient is steep, the velocity of the wind is also

high. If the pressure gradient is gentle, the velocity of the wind is low. This can be explained with an example:

Take two tins with a small hole at the base. Connect the holes with a rubber tube as shown in the diagram. Fill half the tin with water. Hold both the tins at the same height from the base level. Note the water levels in both the tins. They are at the same level and there is no water flow in between the tins. Now change the level of any one of the tins slightly, the water level in the tins also changes. You observe that the water starts flowing from the tin that is placed at a higher level to the tin placed at a lower level. After some time, the water level in both the tins become the same. At that time further flow of water stops.

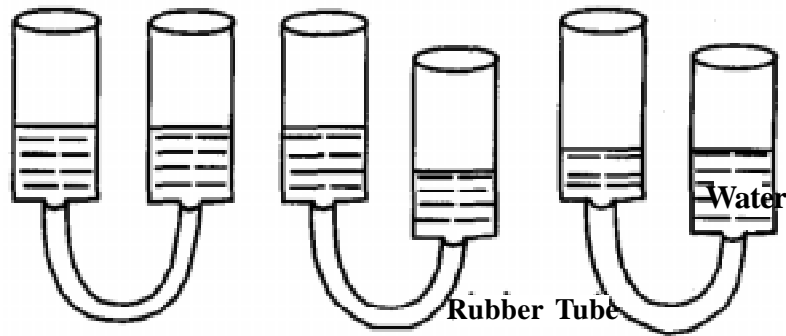


Fig. 4.4 Experiment

FIG 4.4

The speed of the water flow depends upon the difference in the level of the tins from the base level. When the tin is held at a higher level than the other, the water flows at a great speed, but if the tin is held at a comparatively lower level, the speed of the water flow is low. Likewise, when the pressure gradient is gentle, the velocity of the wind is also low.

We shall study in detail about winds in the following lesson.

Outcome of learning

The pupils

1. Understand how air gets weight.
2. Understand that the velocity of the wind depends upon the pressure gradient.
3. Understand that the pressure belts are formed on the earth

Exercise

I. Choose the correct answer:

1. Atmospheric pressure is measured by an instrument called _____
 (a) Thermometer (b) Barometer (c) Anemometer
 (d) wind vane
2. The average air pressure at sea level is _____ millibars.
 (a) 1011 (b) 1000 (c) 1012 (d) 1013
3. There is a decrease of one millibar for every _____ meters in elevation
 (a) 9 (b) 8 (c) 11 (d) 10
4. When the pressure gradient is steep, the velocity of the wind is _____ .
 (a) low (b) high (c) medium (d)
5. In weather maps, pressure distribution is shown by _____
 (a) Isotherm (b) Isobars (c) Isohalines (d) Isohyets

II. Fill in the blanks:

1. Air has _____ .
2. In equatorial belts _____ pressure prevails.
3. If the difference in pressure between two places is high the pressure gradient is _____ .
4. Wind always blows from _____ pressure area to _____ pressure area.
5. The _____ of the wind depends upon gradient.

III. Answer in brief :

1. What is meant by atmospheric pressure?
2. What are Isobars?
3. Define pressure gradient?
4. What is the relationship between pressure gradient and wind speed?
5. How does temperature affects the pressure distribution?

IV. Answer in detail:

1. What are the factors affecting pressure distribution of a place. Explain.
2. Draw the diagram of pressure belts and explain any one of the pressure belts.

V. Project work / Activities:

Collect weather maps given in the English daily newspaper and find out the places of high and low pressure centers.

UNIT V

WINDS

Objectives of learning

To know in detail about

1. Winds
2. The different types of wind
3. The importance of winds

We have learnt in the previous chapter that there are high-pressure belts and low-pressure belts over the Earth. Air blows from high-pressure belt to low-pressure belt. This horizontal movement of air is known as wind.

Factors that control the direction and speed of winds:

There are 3 factors that control the direction and speed of winds. They are: 1. Pressure Gradient 2. The rotation of the Earth

1. Pressure Gradient: Winds blow in the direction of gradient that is from high to low-pressure. The direction of wind will be perpendicular to the Isobars. When isobars are far apart the pressure gradient is gentle and wind movement is slow. When isobars are closely spaced the gradient is steep and winds move with great speed.

2. The rotation of the Earth: According to a great geographer Dr.Ferrel, “Due to the rotation of the Earth all moving bodies including winds are turned towards right (clockwise) in the northern hemisphere and to the left in the southern hemisphere”- (anti-clock wise). This is known as ferrel’s law.

To understand this take a globe or a ball and rotate it fast from west to east. Take a chalk and try drawing a straight line from one pole to equator as the globe rotates then repeat it from the other pole. You will find that a straight line cannot be drawn and that the line gets deflected to the right in the northern hemisphere and to the left in the southern hemisphere. The force of rotation of the Earth causes changes in the direction of winds.

Classification of winds

Winds may be classified into 4 types:

1. Permanent or Planetary winds
2. Periodic or Seasonal winds
3. Variable winds
4. Local winds

1. Permanent or Planetary winds: These winds are found all over the world. They are caused by latitudinal changes in pressure due to temperature and rotation of the Earth. They blow constantly throughout the year in a particular direction from areas of high-pressure to areas of low pressure. They are named after the direction from which they blow. The planetary winds are (a) The Easterlies or trade winds (b) The Westerlies or anti-trade winds and (c) The Polar winds.

(a) Trade winds or the Easterlies: In the equatorial region, low pressure is created due to high temperature. Sub-tropical high-pressure belts exist on both sides of the equatorial low-pressure belt. Hence winds blow from these two high-pressure belts towards the equatorial low-pressure belt.

Wind blow from North to South in the Northern Hemisphere and from South to North in the Southern Hemisphere.

Due to rotation of the Earth the direction of the wind in the Northern hemisphere is deflected to the right as Northeast winds. Similarly, the direction of the wind in the Southern hemisphere is deflected to the left as Southeast winds. Hence, these winds are known as Easterlies.

In olden days, cargo ships sailed with the help of such prevailing winds. The Easterlies were very helpful for the sailing of such cargo ships, and thus these winds are also known as Trade winds.

(b) The Westerlies: The wind that blows from the sub-tropical high-pressure to sub-polar low-pressure belt is known as Westerly winds. These winds blow between 40° to 60° North and South latitudes.

On land surface the hills, mountains, plateaus and plains act as natural barriers for winds. Such barriers do not exist on the water surface. Hence the wind is steady and fast over seas and oceans.

In the Northern hemisphere, land surface with hills mountains and plateaus are more. So the velocity and continuity of the winds are affected. The Southern hemisphere consists mainly of oceans. So the velocity and continuity of the winds are not affected. Hence the wind blows steady and fast over the surface of the seas and oceans in the Southern hemisphere. Along 40°S latitude winds blow at high velocity creating a lot of noise. These winds are called 'the roaring forties'.

(c) Polar Easterlies: From the high-pressure belts of the polar region winds blow towards sub-polar low-pressure belts. These winds are very cold and dense.

2. Periodic or seasonal winds: If a wind blows in one direction in one part of the day or year, it will blow in opposite direction in another part of the day or year is called seasonal winds. Monsoons and Land and Sea breeze are the best examples of periodic winds.

a) Monsoons: The word monsoon is derived from the Arabic word 'Mausam' meaning season. Seasons are created because of the apparent migration of the Sun. The atmospheric pressure varies according to seasons giving rise to seasonal winds.

The winds that blow from one direction in a particular season, and from the opposite direction during the other season of the same year are called 'monsoon winds'.

India, South East Asia and northern parts of Australia experience monsoon winds. India experiences the South - West and North - East monsoons.

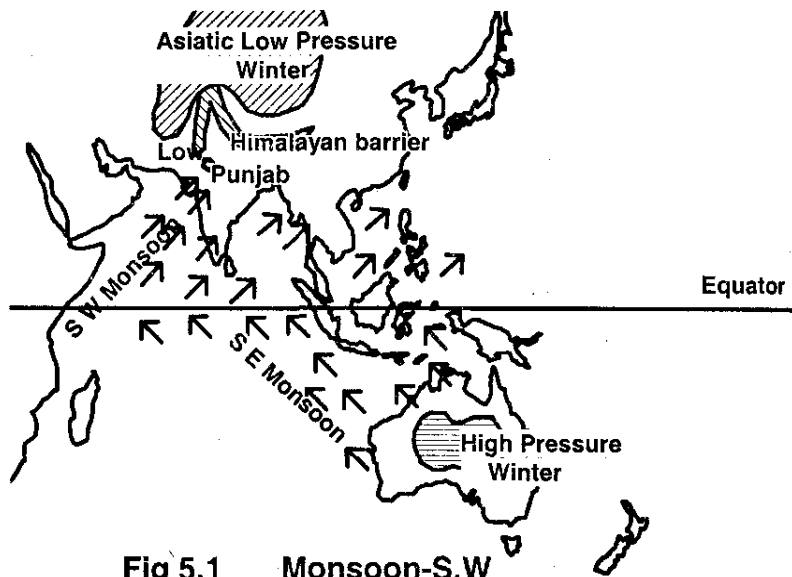


Fig 5.1 Monsoon-S.W

(i) South - West monsoon: India experiences summer season from March to September because the Sun shines over the Northern hemisphere during this time. The North - Western part of India becomes very hot during this season. As a result a low-pressure centre is created here.

During these months, the southern hemisphere experiences winter season. Because of low temperature, a high-pressure centre develops over this region. Winds start blowing from the high-pressure belt in the southern Hemisphere towards the low-pressure centre over northwestern part of India. Winds that blow from South to North is deflected as southwest wind by the rotation of the Earth. This wind is known as the '*South - West Monsoon wind*'.

South-West monsoon winds blow over the entire Indian sub continent from June to September. The whole of India except the east coast including Tamil Nadu receives rainfall due to this monsoon wind.

(ii) North - East monsoon: The Southern hemisphere experiences summer season from October to March. Because of high temperature, a low-pressure belt is developed over the Southern hemisphere.

India experiences winter season during these months. A high-pressure belt is developed over Northwest India due to low temperature. From the high-pressure centre of India, wind starts blowing towards the low-pressure centre in the Southern hemisphere. Due to rotation of the Earth, this wind is deflected as North-East winds. So it is known as

North-East Monsoon wind. Entire Tamil Nadu and Eastern Coast of India receive rainfall due to the North - East monsoon wind.

There are places where winds are blowing in opposite directions everyday. Such winds are created because of the pressure variation that occur over the adjoining areas everyday. Coastal and mountainous regions experience such reversal of wind.

b) Land and Sea-Breeze

(i) Sea - Breeze: Land gets heated faster than water for the following reasons.

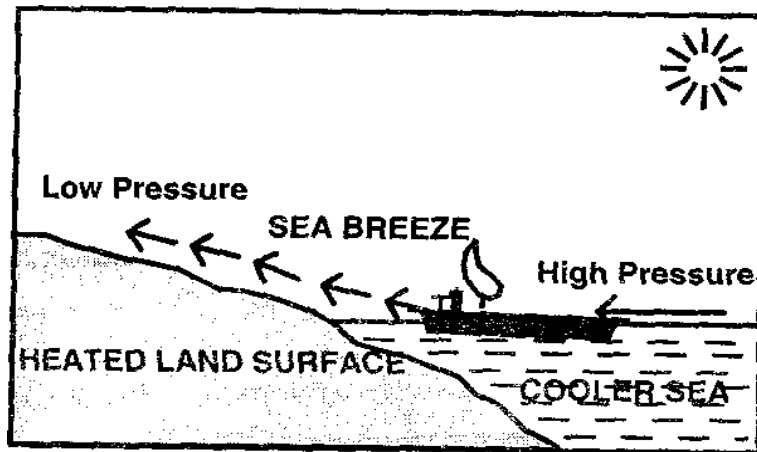


Fig.5.2(a) Sea - Breeze (day)

- 1) A given quantity of water requires more heat than that of the same quantity of landmass, to be heated up to a particular temperature. Hence, land surface heats up sooner than water surface.

- 2) Solar radiation penetrates the water surface, distributing the heat energy to a greater depth. Solar radiation cannot penetrate the land surface of the Earth.
- 3) Due to convectional movement of water, heat is distributed to lower layers. There is no such conventional movement below the land surface. The entire heat is concentrated on the surface of the Earth.
- 4) During the day the land gets heated faster than the sea and the temperature over land becomes much higher than that of the oceans and seas. A low pressure develops over land whereas the pressure over adjoining water surface remains high. By mid afternoon the variation in pressure becomes pronounced and wind blows from seas towards land. This is known as sea-breeze.

Afternoon temperature of the coastal belt is reduced due to cool sea breeze.

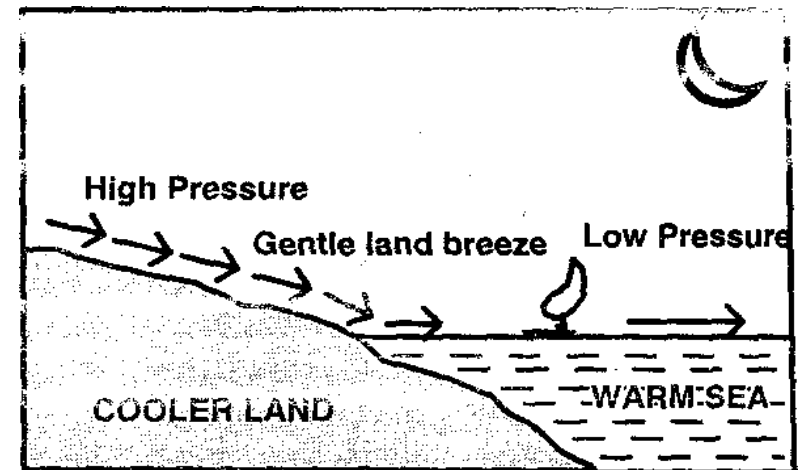


Fig.5.2(b) Land Breeze (night)

(ii) Land Breeze: Immediately after Sunset, the land surface loses its heat at a faster rate than that of the water surface. As a result, at about midnight land surface becomes much cooler than the adjoining water surface. Because of the variation in temperature, high and low pressure centers develop over land and sea respectively. Due to pressure variation, wind starts blowing from land to sea after midnight. This wind is known as land breeze.

Sea and land breeze are blow in opposite directions over the coastal belt everyday.

3. Variable winds: Winds that do not have definite location or direction are known as variable winds. They keep changing their direction and location. The winds of this type are the cyclones and the anti-cyclones.

Cyclones are intense low-pressure systems towards which winds move in from all directions. Cyclones bring heavy rainfall and are associated with high speed winds. They cause damage to both life and property.

Normally cyclones are formed in the Bay of Bengal during in the months of September, October and November. They move towards the eastern coast of India and bring heavy rainfall; sometimes damaging life and property along the coastal areas.

Cyclones are called by different names. They are called Hurricanes in North America and West Indies; Typhoons in China and Japan; Storms in India; Willy Willy in Australia; Sumoon in Arabia; and Bosiquiss in Philippines.

Anti-cyclones are high-pressure centers from which winds blow outward towards the low-pressure area. It is associated with clear weather without any rainfall.

4. Local winds: The winds that blow in a different direction from that of the prevailing wind over smaller areas are known as local winds. These winds are created because of pressure variation in a local area.

The local winds are hot when they blow from a hot region. They are cool when they blow from a cool region.

a) Hot winds:

- 1. Foehn:** It is a strong dry and hot wind, which blows down the leeward side of the swiss Alps. They cause melting of snow so that pastures are available for animals.
- 2. Loo:** It is a hot wind which blows over the plains of Northern India during May and June its temperature ranges between 45-50°C causing many people to suffer Sunstroke.
- 3. Chinook:** Like foehn it blows down the Rockies of North America to the prairies. It melts the snow in parts of Canada. It is also called the 'snow eater'.
- 4. Sirocco:** It blows from the Sahara desert northwards over the Mediterarian-sea to reach Southern Italy. Sirocco wind dries up vegetation and damages crops like vine and olive.

b) Cold winds:

1. **Mistral:** It is a strong cold wind of speed 100 km./hr. that blows from the Alps over France towards the Mediterranean Sea through the Rhone valley. They are harmful to plants.
2. **Bora:** It is a cold dry icy wind that blows from Europe to the Mediteranian Sea over Yugoslavia.

Importance of winds:

1. Heat energy is transmitted from one place to another by winds. Thus, the temperature of cooler regions is increased and the temperature of warmer regions is reduced to some extent.
2. It is the wind that carries water-vapour all over the Earth and gives rainfall.
3. Wind is favourable for ships to sail. It is also necessary for aircrafts to fly.
4. Wind power is harnessed for generating electricity, lifting water, grinding and other purposes.

In the next lesson we shall learn about atmospheric moisture and rainfall.

Outcome of learning

The pupils

1. Understand that the difference in pressure causes air to move from one place to another.
2. Understand that India receives rainfall due to monsoon winds.
3. Know about the uses of wind.

EXERCISE

1. Choose the correct answer:

1. The wind which blow from sub tropical high pressure to equatorial low-pressure is called _____ winds.
(a) Trade (b) Easterlies (c) Westerlies
2. Monsoon winds are _____ winds.
(a) seasonal (b) prevailing (c) variable (d) local
3. Westerly winds along 40° South latitude are known as _____ winds.
(a) Easterlies (b) Roaring Forties (c) Monsoon (d) Spring
4. North-East monsoon gives rain to Tamil Nadu during
(a) winter (b) summer (c) autumn (d) spring
5. Cyclones are called as _____ in North America.
(a) Typhoons (b) Storms (c) Sumoons (d) Hurricane

II. Fill in the blanks:

1. Wind that blows from Polar high-pressure to sub polar low pressure belt is known as _____ .
2. Due to rotation of the Earth the direction of the wind in the Northern hemisphere is deflected towards _____ .
3. _____ winds are very cold and dense.
4. The word monsoon is derived from the Arabic word _____
5. The best example for periodic wind is _____ .

III. Match the following:

- | | | |
|-------------------------------|---|--------------------------|
| 1. Loo | - | High pressure centers |
| 2. Typhoons | - | wind |
| 3. Anti cyclones | - | Northern plains of India |
| 4. Trade winds | - | China and Japan |
| 5. Horizontal movement of air | - | Easterly wind. |

IV. Distinguish between :

1. Monsoon winds and Planetary winds.
2. Westerly winds and Easterly winds.

V. Answer in brief:

1. What is meant by planetary winds?
2. How does rotation of the Earth affect wind circulation?
3. Why are the westerlies around 40° South latitudes called the 'roaring forties'?
4. What are variable winds?
5. What are periodic winds?

VI. Answer in detail:

1. What are periodic winds? Explain land and sea breeze with suitable diagram.
2. Draw the diagram of prevailing winds and explain trade wind belt.

VII. Project work / Activities:

Try to collect the symbol used to show the wind speed and direction from the Atlas or from weather maps.

UNIT VI

ATMOSPHERIC HUMIDITY AND RAINFALL

Objectives of learning

- 1.To understand about the process of atmospheric humidity
- 2.To understand the process of clouds formation
- 3.To learn about the types of rainfall

Water is one of the most important requisites for all living beings on the Earth. On the Earth, only water is present in the three states i.e. in the *Solid state* as ice in the cold regions; in *Liquid state* as water in the ponds, lakes, rivers and oceans; in *Gaseous state* as water-vapour in the atmosphere.

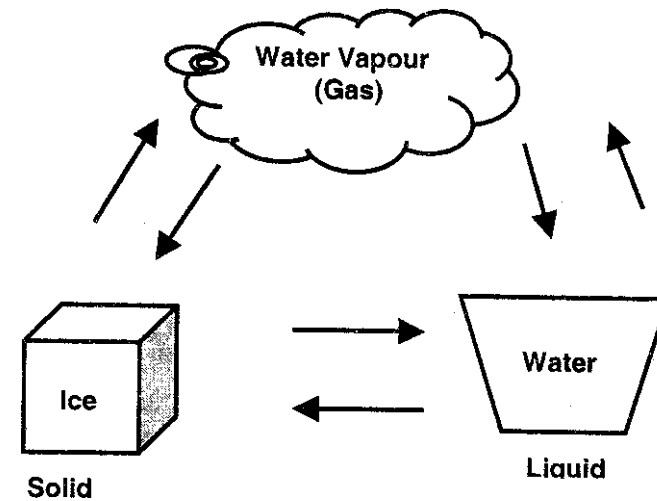


Fig. 6.1 States of Water

Water changes from one state to another according to its temperature. To change from one state to another the water either requires heat or releases heat. In colder regions like the poles and high mountains, the temperature is below freezing point (0°C). Hence the water is found in the form of ice. When the temperature of the surrounding air increases, the ice absorbs heat from the air and melts. Thus the ice becomes water after absorbing heat. In the same way by absorbing more heat from the surrounding air, the water changes into water-vapour through evaporation. The water, which evaporates, mixes with the air as water-vapour, in the atmosphere. In the reverse process, when the water-vapour changes into water and then into ice, it releases heat.

Humidity: The water-vapour that is present in the air is called as Humidity.

The Humidity in the atmosphere is measured in many

The relative humidity the ratio between the water-vapour that is present in a particular air column and the maximum water-vapour holding capacity of the same air column at a given temperature.

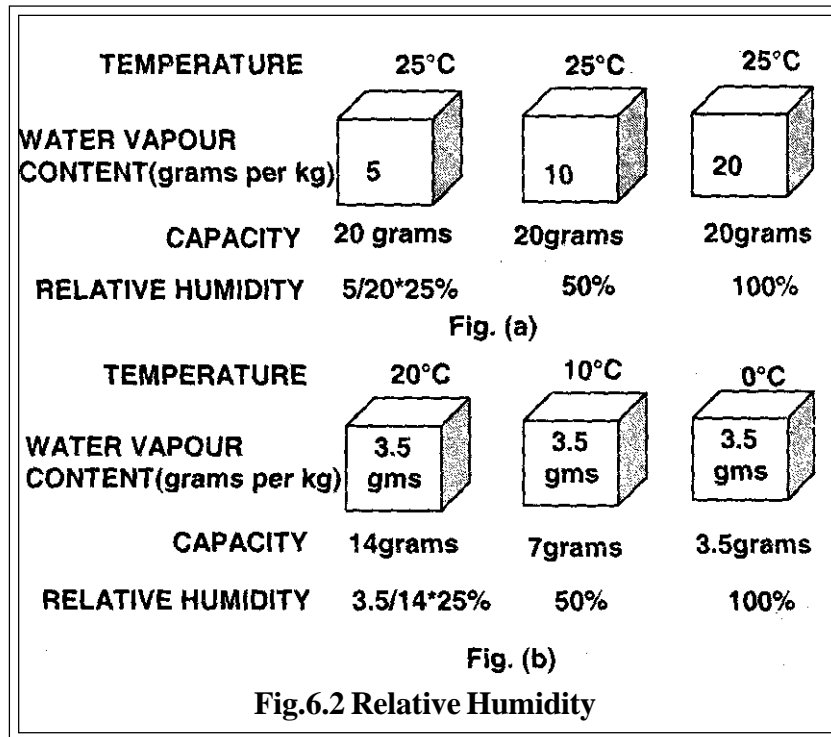
For example, if a particular quantity of air at a particular temperature has a capacity of holding 10 grams of water-vapour but contains only 6 grams of water-vapour, then the relative humidity of air is

$$\frac{\text{Water vapour that is present}}{\text{Vapour bearing capacity of the air}} \times 100 = \frac{6 \times 100}{10} = 60 \text{ percent}$$

Since relative humidity is based on the air's water-vapour content as well as on its capacity, it can be changed in either of the two ways.

First, if moisture is added through evaporation the relative humidity will increase. For example consider the above case. If the amount of water-vapour is increased from six grams to eight grams then the relative humidity will be eighty percent.

Second, a change in temperature will also affect the relative humidity. If the temperature of the air column increases, its water-vapour holding capacity also increases. If the temperature decreases its capacity to hold water-vapour also decreases. For example, at 20°C the capacity of the air will be 14 grams. At 10°C, the capacity will be only seven grams. So if the temperature increases the relative humidity decreases and if temperature decreases, relative humidity will increase. This is explained in Fig. 6.2.



Saturation of air: When the air column contains water-vapour up to its maximum bearing capacity then the air is said to be saturated. The relative humidity of saturated air is 100 percent.

“The temperature at which the air column becomes saturated is called dew point”.

The air column that is saturated does not absorb water-vapour any more. The air gets saturated in two ways.

1. When there is increase in the supply of water-vapour
or
2. When there is fall in temperature.

Supply of water-vapour to the atmosphere is only through evaporation. Let us understand how evaporation takes place.

Evaporation: The process by which the water gets transformed into the gaseous state is called evaporation. Evaporation takes place at all temperature from all over the Earth surface. Hence evaporation is a continuous process occurring throughout the day.

We have seen the steam coming out of a containing water vessel, when it is heated up to boiling point. Steam is the gaseous state of water. What happens to the steam that is coming out of the vessel? The steam mixes with the air and becomes invisible. The clothes that are washed at home every day soon dries up. Water that spills over the floor of the house also dries up soon. The land that is irrigated dries up within a few days. Where does the water from the wet cloth, the floor and the irrigated land go? The water from these bodies evaporated and mixes with the surrounding air.

Large-scale evaporation takes place over water bodies such as lakes, ponds, rivers and oceans. Plants absorb water from the ground and releases it through *evapo-transpiration*. Water-vapour from all these sources that mixes with the atmosphere is responsible for causing rainfall. Because plants are responsible for supplying water-vapour, we have to grow more plants and trees.

The quantity of water-vapour that is present in a particular air column depends upon its temperature and the availability of water at that place.

Wherever there is abundant water over the Earth's surface along with high temperature, the vapour content of the air column will also be high because of high evaporation.

High temperature prevails over hot deserts. Still, the water-vapour of the atmosphere is very low because there is very little or no water in the desert for evaporation.

Plenty of water is present in the form of ice over the Polar Regions but very low temperature prevails over these regions. Hence, the vapour content of the air column over Polar region is very low.

Fall in temperature of the air: You know that the temperature will decrease with increasing height in the atmosphere. In the same way, when a parcel of air column rises, its temperature also reduces depending upon the height it reaches. When the air over the Earth's surface gets heated by midday, the heated air expands and starts rising. The relative humidity of air is low near the Earth's surface but as the air rises, its temperature, decreases and its water-vapour holding capacity reaches saturation point.

Condensation of water-vapour : Because of increase in water-vapour content or decrease in air temperature, the relative humidity of air may reach 100 percent. Then that parcel of air reaches saturation level or dew point. Once the air attains saturation level and when the temperature of the air falls below dew point condensation occurs.

Condensation is a process by which water-vapour is converted into water particles.

When condensation occurs in an air column, having a temperature of above 0°C, water-vapour is converted into water particles. If condensation occurs in an air column, having a temperature of below 0°C, water-vapour is converted into ice particles.

The process of condensation by which water-vapour is converted into water particles can be understood from a few examples.

Steam comes out while boiling water in a vessel. Part of the steam is converted into water particles when it touches a cooler surface. In the morning hours of winter season, we can see water droplets on the leaves and on the blades of grass. We can see water droplets on the outer surface of the glass tumbler, filled with ice water. Where do we get these water droplets? The invisible water-vapour, present in the air, cooled and condensed to form water droplets.

Condensation takes place at all heights in the atmosphere. There are many forms of condensation that takes place in the atmosphere due to varying temperature and altitude. One form of condensation that takes place at higher altitudes are clouds. Let us learn more about clouds.

Clouds: The sky is not always clear. Different types of clouds are found on the sky. Some of the clouds are white, some clouds are dark and some clouds are very bright. These clouds are moving along with the wind.

What is a cloud? A cloud is a mass of minute droplets of water or tiny crystals of ice formed by the condensation of water-vapour in free air at considerable elevations. Due to condensation water-vapour is converted into minute particles of water or ice according to the air temperature of the place. These minute water particles and ice particles stick to dust particles that are present in the atmosphere. They join together to form clouds.

The air that is close to the Earth's surface absorbs the water-vapour. During the daytime, the surface of the Earth, which is heated up by the Sun, heats up the moisture laden air column lying above it. The air that gets heated up expands, becomes light and hence starts rising up. While rising, it gets cooled and attains dew point. Thus condensation takes place and clouds are formed. The clouds are formed at different altitudes because condensation takes place at different altitudes. These clouds can be classified into 4 categories according to the altitudes where they are formed.

- 1.Low altitude clouds
- 2.Middle altitude clouds
- 3.High altitude clouds
- 4.Vertical clouds

1. Low altitude clouds: Clouds that are formed below 2000 meters are known as low altitude clouds. These clouds are formed of dense dust particles, water particles and ice particles. Hence, the clouds are dark or brown in colour. These clouds are so dark and thick that we cannot see the Sun or moon through these clouds. Rainfall occurs often from these clouds.

2. Middle altitude clouds: Clouds that are found at an altitude of 2000 to 7000 meters above the Earth's surface are called middle altitude clouds. These clouds are broad and thick. They are formed by the particles of dust, water and ice. They are brown in colour. When we

see the Sun or moon through these clouds, they appear to be dull. Rainfall occurs whenever such clouds form.

3. High altitude clouds: The clouds that are found at an altitude of 7000 to 12000 meters above the Earth's surface are known as high altitude clouds. These clouds appear to be soft and white like a cotton heap. These clouds are formed at great heights where temperature is below freezing point. Hence the clouds are formed of ice particles only. These clouds are white and transparent because they are formed of ice particles. These clouds commonly produce a halo around the Sun and moon.

4. Vertical clouds : Vertical clouds are formed due to the sudden upward movement of air. These clouds are generally dark in colour. These clouds are formed by dense water particles and dust. So the Sunrays cannot penetrate through these clouds.

They are often accompanied by sharp showers, thunderstorm and sometimes hail. Vertical clouds are formed mainly in equatorial region giving heavy rainfall to that area.

Apart from these 4 major types, clouds are also formed due to smoke in industrial towns and volcanic eruptions.

Clouds are named as Cirrus, Stratus, Cumulus, Nimbus and so on, according to their shape, size and colour. Learn about the various types of clouds from books in your school library.

Clouds are good indicators of weather conditions at a place. When we see dark clouds, we predict rains. The dark clouds that are associated with lightning and thunder are dangerous for aeroplanes to fly through.

Other forms of condensation: Clouds are not the only form of condensation. There are other forms of condensation such as:

Dew : In the winter month, you can see a lot of tiny water droplets on the grass. These tiny water droplets are called as dew. Dew is formed; when moisture is deposited in the form of water droplets on cooler surface of solid objects such as stones, blades of grass and leaves of plants. Dew is formed when the dew point is above freezing point.

White Frost: In hilly areas like the Nilgiris in the early morning, when the dew point is below freezing, the moisture is deposited in the form of minute ice crystals instead of droplets of water. This is called as white frost. They cause damage to the plants.

Fog: When condensation takes place near the Earth's surface fog is formed. Fog is defined as a cloud whose base is at or very near the ground.

Mist: Mist is also a kind of fog, much thinner than the fog. Mist reduces visibility slightly.

Rainfall : Clouds are formed due to the condensation of water-vapour into water and ice particles. These particles are very small. Hence they float in the air. When condensation continues, more and more water particles are added to the cloud. The tiny water particles join together to form bigger particles. As the size increases, the weight of the particles also increases. Thus they cannot float in the air and fall as rainfall.

The falling of water droplets from the atmosphere is called as rain fall.

Types of rainfall: Rising of moisture-laden air is essential for condensation and rainfall. The air rises due to three different processes. Based on these processes, we have three types of rainfall.

1. Convective rainfall
2. Orographic rainfall
3. Cyclonic rainfall

1. Convective rainfall: We get heavy rainfall associated with thunder and lightning during the afternoons of summer season. Such rains occur for a short duration only. Why is it so?

In summer the Earth surface gets heated during the day. The air column that lies over the Earth surface also gets heated up. The hot air expands and rises vertically upwards. As the air moves up, it cools and reaches dew point. Hence saturation, condensation and precipitation take place.

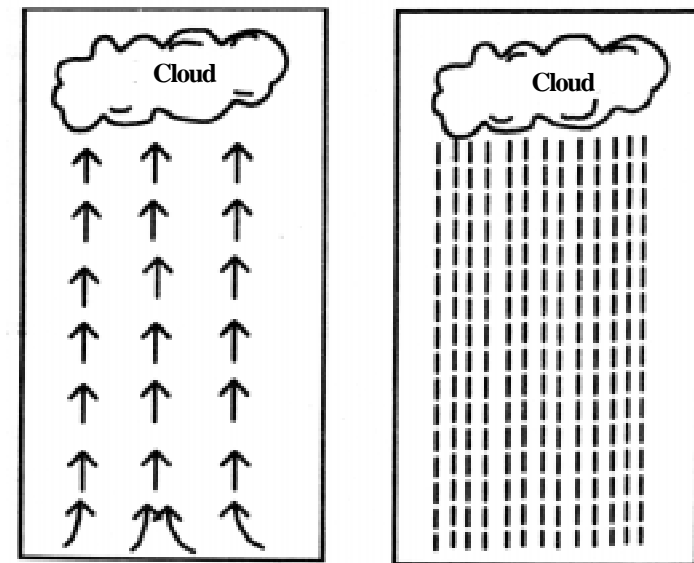
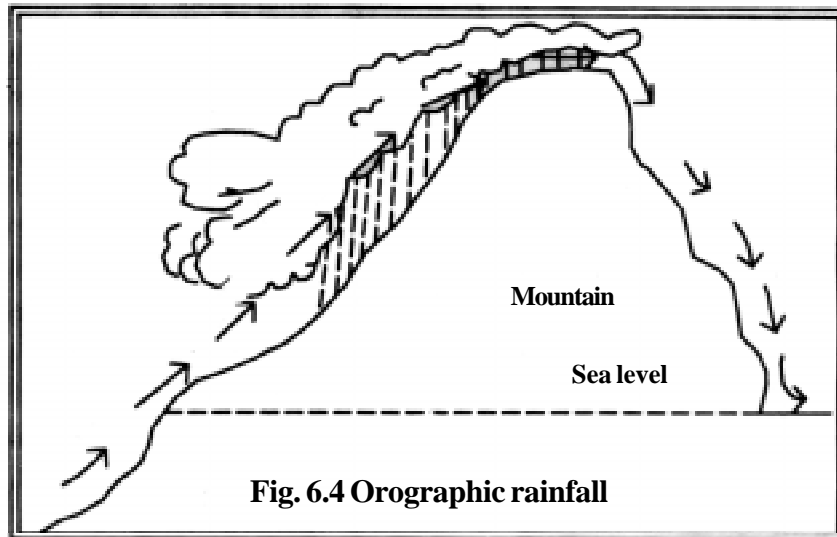


Fig. 6.3 Convective Rainfall

The rainfall thus caused by rising air mass due to excessive heating of the Earth's surface is known as convective rainfall. A large proportion of rainfall that occurs over the Earth's surface is of the convective type.

2. Orographic rainfall: There are a number of mountains and mountain ranges on the surface of the Earth. When the moist air confronts a mountain barrier, what happens? The moist air is forced to rise along the slope of the mountains. The rising air cools when it reaches higher altitudes. This cooling causes condensation and rainfall. This is known as orographic rainfall.

The moist air when rising along the windward slope of the mountain, gives very heavy rainfall. By the time, the air crosses the mountain peak, it has given away all its moisture and become dry. This dry air, when it descends along the leeward slope of the mountain, thus the leeward side of the mountain remains dry.



The Western ghats lie along the western coast of India in a North - South direction. The Southwest monsoon wind which blows from the Arabian sea is full of moisture. This moisture-laden air is blocked and forced to rise up along the western slopes of the Western ghats. Hence, the western slopes of the Western ghats receive very heavy rainfall during the Southwest monsoon. By the time, the monsoon wind crosses to the other side of the Western ghats, it becomes dry. The dry air that blows along the eastern slopes of the Western ghats does not give any rainfall. Thus the Deccan plateau that lies to the east of the Western ghats, is called as the Rain shadow region.

With the help of an Atlas identify the major mountain ranges of the world. Identify the slopes receiving very heavy rainfall and also the slopes that lie in the rain shadow region.

3. Cyclonic rainfall : If an area is heated, the air that lies above that area gets heated and moves upward. Hence a low pressure develops in that area. The region adjacent to the low-pressure area is having comparatively a high pressure. The air from the surrounding high pressure rushes to the low-pressure area. Due to the Earth's rotation, the wind gets deflected and a circular motion of winds develops. At the low pressure centre, the air rises upward in the form of a funnel.

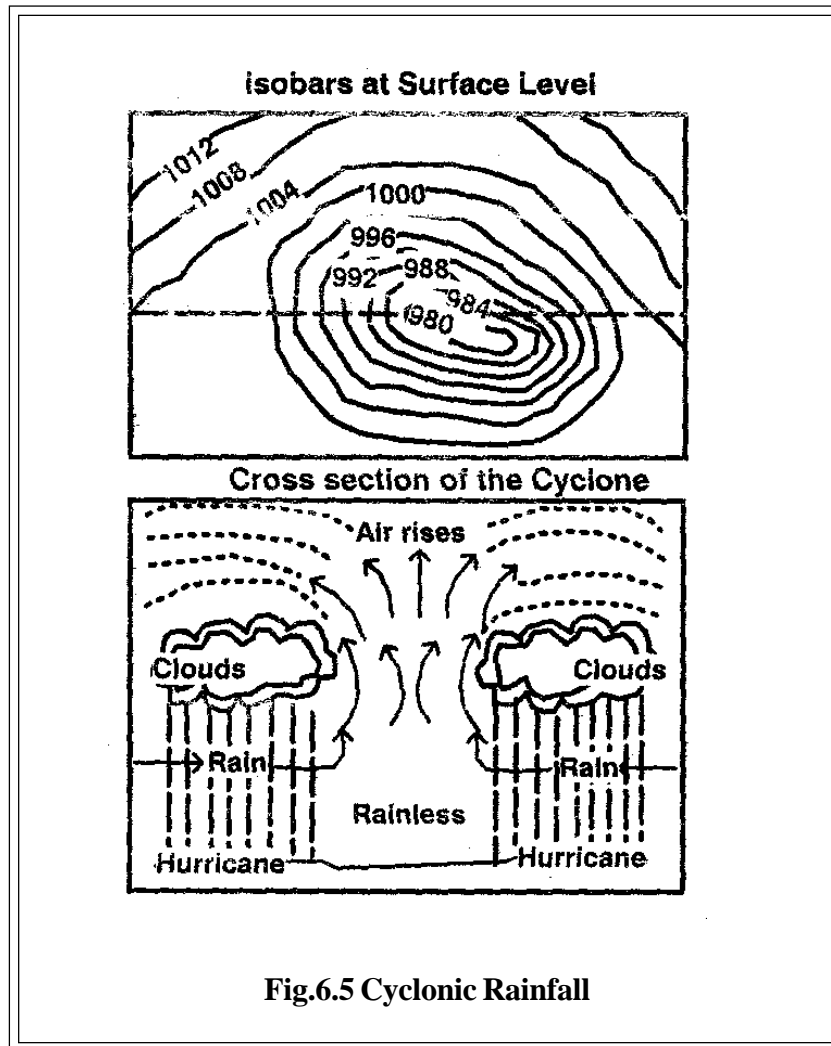


Fig.6.5 Cyclonic Rainfall

The rising air gets cooled and condensation takes place. This brings heavy rainfall to the areas adjacent to the low pressure centers. This is known as cyclonic rainfall.

When the dew point is above 0°C, rainfall occurs in the form of water drops or rain. When the dew point is below 0°C water-vapour is converted into ice particles. These ice particles join together and become heavy. These heavy ice particles fall in the form of snow or hail because of the gravitational pull of the Earth.

Snowfall occurs mostly in temperate and polar regions. Snowfall occurs in Simla, Kashmir and Himalayas in India. Snowfall can block roads and affect traffic flow.

Sometimes in your place also you might have noticed ice pieces falling along with rains on summer afternoons. This falling of ice pieces along with rains is known as Hail. Sometimes these ice cubes may cause damages to agricultural crops. Sometimes they may damage the roof of our houses.

The high temperature in summer is the main factor for the formation of hailstone or sleet. Sleet is a mixture of rain and snow. In the summer afternoons, the land surface gets heated. The air close to the Earth surface also gets heated up excessively. The very hot air becomes very light and rises rapidly and goes up to a very high altitude. Since the temperature of the atmosphere at this high altitude is below 0°C the water-vapour is converted into ice pieces directly and falls on the Earth's surface as hail.

The distribution of rainfall is not uniform over all parts of the world. Some places of the world receive more rainfall throughout the year. Some places receive rainfall during certain seasons.

Rain never occurs in some places for many years. Some places receive very low rainfall. There are a number of reasons for the differences in the distribution of rainfall. You will study them in detail in higher classes.

Outcome of learning

The pupils

1. understand the determinant factors of rainfall.
2. understand the various forms of condensation.

Exercises

I. Choose the correct answer:

1. Water changes from one state to another due to changes in _____.
a) Quantity b) Temperature c) Evaporation d) Mass
2. The temperature at which the air column gets saturated is called _____.
a) Dew point b) Heat point c) Cold point
d) Saturation level
3. White, transparent and bright clouds are formed at _____.
a) Low altitude b) Mid altitude c) High altitude
d) Vertically
4. When condensation takes place at ground level _____ are formed.
a) Fog b) Clouds
c) Dew point d) Cumulus clouds

II. Fill in the blanks:

1. Wherever there is abundant water and high temperature, the evaporation will be _____.
2. The amount of water-vapour present in the air is called as _____.
3. The temperature at which the air gets saturated is called _____.
4. When the temperature of atmosphere is above 0°C the rainfall will be in a _____ state.
5. Hail occurs during _____ season.

III. Match the following:

1. Relative Humidity - clouds
2. 100 percent humidity of air - low altitude clouds
3. Collective form of minute water particles - a method to measure humidity
4. Clouds that give rainfall - Frost is formed
5. When the atmospheric temperature is below 0°C - saturated air

IV. Answer in brief:

1. What are the factors that determine the amount of water-vapour in an air column?
2. What are the ways by which the air column gets saturated?
3. What is 'condensation'?
4. What are clouds? How can we classify them?

5. Define 'rainfall'.
6. What is convectional rainfall?
7. What is meant by rain shadow region? Give an example.
8. What is known as 'snowfall'?

V. Answer in detail :

1. What is precipitation? What are the different types of rainfall?
2. Explain the three states of water with a suitable diagram.

VI. Project work / Activities:

Plan for a field visit to an observatory and observe how rainfall is being measured with the help of rain gauge.

UNIT - VII

CLIMATIC TYPES

Objectives of learning

1. To know the difference between weather and climate.
2. To understand the climatic types in the world.

We have so far studied about the temperature, pressure, wind, humidity and precipitation. They are, otherwise called as elements of weather and climate. The combined effect of these elements create a particular type of weather and climate.

Weather: The atmospheric conditions such as temperature, pressure, wind velocity and direction, humidity cloudcover rainfall etc., of a particular place in a particular day is called as '*Weather*'.

Climate: The average atmospheric conditions such as temperature, pressure, wind velocity and direction, humidity, cloud cover rainfall etc., of a particular place for a minimum of 35 years is known as climate.

Climate is the average atmospheric conditions prevailing over a place for a longer period of time.

Climate sets limits to the distribution of different kinds of plant and animal lives. It has, therefore, a great significance for man. It influences human activities both directly and indirectly. Hence, it is necessary to understand the different types of climates that

are found on the Earth. Based on the climate, the world can be divided into 6 major zones.

1. Equatorial climatic zone.
2. Tropical climatic zone.
3. Sub - tropical climatic zone.
4. Temperate climatic zone.
5. Sub- polar climatic zone.
6. Polar climatic zone.

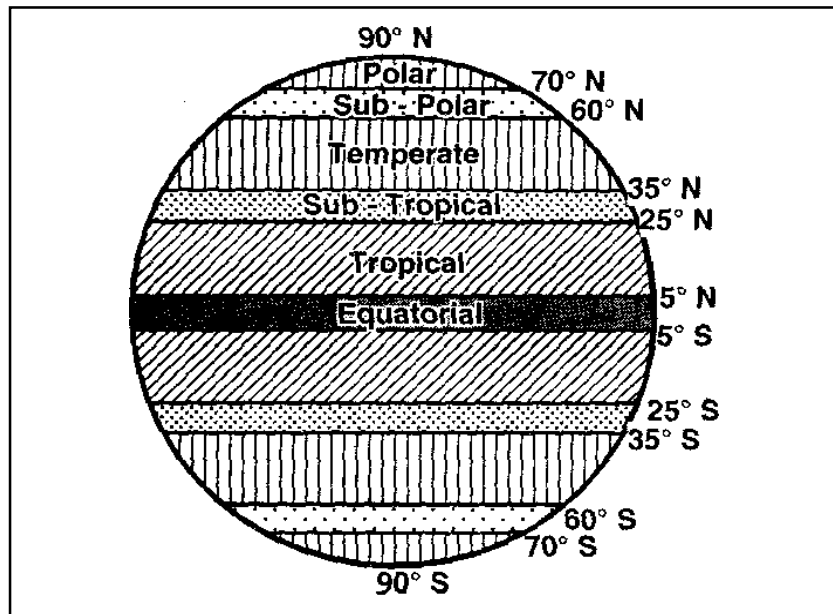


Fig.7.1 Climatic Zones

Equatorial climate: Equatorial climate prevails in the region between 5° North to 5° South latitude. Sunrays fall vertically

throughout the year over this region. Hence this region is intensely heated. The annual average temperature of this zone is 27°C the annual average rainfall is about 250 cm.

There is no winter season in the equatorial region because the temperature is high throughout the year. The difference between day and night temperature is also very low in this region.

Since the Sun shines overhead in the equatorial region, the duration of day and night remains equal. The temperature at equatorial region increases rapidly during day time and reaches its maximum at 2 p.m. The rate of evaporation also increases as the temperature increases, adding more moisture to the air column. The moisture laden air column adjacent to the Earth is heated up to a maximum at about 2 p.m. This air column expands due to heat and begins to move up rapidly. As the air rises, its temperature decreases rapidly. At a particular height, the air becomes saturated. When saturated air moves further up and condensation begins. When it moves further, it gives rise to thick dark clouds. Heavy rainfall, associated with thunder and lightning occur for about 20 to 30 minutes every day. This type of rainfall, called convectional rainfall, occurs almost everyday of the year in the equatorial zone.

Tropical climate: The Tropical climate prevails over the region between 5° to 25° latitudes in the northern and southern hemispheres. The Earth rotates on its inclined axis. Therefore vertical rays of the Sun appears to migrate apparently from 23 ½° North to 23 ½° S and then back to 23 ½° N and so on. When the Sun shines over the Northern hemisphere, the belt between 5° N to 25° N receives the vertical rays of the Sun. Hence, this period is summer season for the Northern hemisphere. During the same period, inclined Sunrays

fall on the corresponding latitudes in the Southern hemisphere, and thus these latitudes receive less heat. Hence, winter season prevails over the Southern hemisphere.

When the Southern hemisphere is inclined towards the Sun, the zone between 5°S to 25°S receives the vertical solar radiation. Hence, summer season prevails over the Southern hemisphere. The tropical region in the Northern hemisphere experiences winter season during this period. The annual average temperature of this region is 23°C and the annual rainfall is about 160 cm.

The duration of rainy season and average amount of rainfall varies from place to place. This is because of the influence of trade winds. During summer, humid air moves from oceans to land thereby causing heavy rainfall. But in winter, dry wind blow from land to sea which do not give any rainfall.

The tropical region receives rainfall only for a few months of a year. So, there are well marked rainy and dry season in a year. The average rainfall is lesser than the rainfall of the equatorial region.

Sub Tropical Climate: This region lies between 25° N to 35° N and 25°S to 35° S latitudes. These regions receive the inclined solar radiation throughout the year, because they lie beyond the Tropics. So these regions do not experience high temperatures at any part of the year. The subtropical belt experiences warm summers and cool winters. This region receives rainfall for few months in a year and the average rainfall is below 90 cm.

In winter the duration of nights are longer than days. The difference in temperature between summer and winter is very high. Similarly the temperature difference between day and night is also very high.

Temperate climate: This region lies between 35° to 60° North and South of the equator. In the temperate region, the angle of incidence of the solar radiation is low in summer and very low in winter. Summers are cool and winters are very cold. The temperature difference between winter and summer is high. During summer, duration of days are longer than nights. Rainfall is seasonal. The annual average rainfall in this region is 75 cm.

Sub-polar climate: Sub polar climate prevails in the regions that lie between 60° to 70° North and South of the equator. The angle of incidence of Sun rays is very low throughout the year. Hence this region receives less solar radiation.

In winter, the temperature is below freezing point and precipitation is in the form of snow. The summer temperature exceeds 6° C. The annual average rainfall is 55 cm.

Polar climate: The region lying beyond 70° North and South of the equator experience polar climate. Temperature is below freezing point throughout the year.

The Sun is not visible in the North over the Polar region for six months of the year when it shines over the Southern hemisphere. Similarly the south polar region also does not see sunlight

for six months when the Sun shines over the Northern hemisphere. In summer, when the Sun shines, it is visible throughout the day and night, so there is no darkness during summer. In winter, The Sun is not seen at all. Hence, there is no light even during day time.

We have so far seen 6 distinct climatic regions as we go from the equator to the poles. In each one of these climatic regions, different sub climatic types may be found.

Vast continents lying in any one of these climatic regions, may experience sub climatic types specially in their eastern, central and western parts.

Similarly, the plains, plateaus and mountains that are lying in the same climatic region experience different types of climate. This can be understood by studying the climate experienced by different parts of India.

In order to understand all these major and minor types of climatic conditions prevailing over different parts of the world, your school library may be intensively used.

We will study about natural vegetation of the world in the next chapter.

Outcome of learning

The pupils

1. learn more about the climatic types of the world.
2. understand that our life style depends upon the climatic condition.

Exercise

I. Choose the correct answer:

1. The atmospheric condition prevailing over a place on a particular day is called _____.
a) Sunlight b) Weather c) Climate d) Season
2. The region between 35° and 60° North and South latitudes experience _____ climate.
a) Tropical b) Temperate c) Polar d) Equatorial
3. In the _____ belt summers are warm and winters are cool.
a) Tropical b) Temperate c) Sub-tropical d) Sub-Polar
4. The _____ regions experience 6 months of sunlight and 6 months of darkness.
a) Polar b) Equatorial c) Temperate d) Equinox

II. Fill in the blanks :

1. We can classify the world climate into _____ major divisions.
2. Convectional rainfall occurs everyday in _____ region.
3. Subtropical climate is found between the latitudes _____ and _____.
4. The _____ monsoon brings rain for Tamil Nadu.
5. There are climatic differences between plains, plateaus and _____ which are located in the same climatic belt.

III. Match the following:

1. The region that receives vertical Sunrays - sub polar climatic belt

2. The region where the temperature differences is high between day and night - winter season
3. The climate that prevails between 60° to 70° latitudes - equatorial region
4. The region where the Sun never sets for many months - sub tropical climate region
5. When the Sun shines in Northern hemisphere, the Southern hemisphere will be experiencing - Polar region

IV. Answer in brief :

1. What is meant by 'Climate'?
2. What are the elements of climate?
3. There is no winter season in the equatorial region. Why?
4. When do we get equal hours of day and night in our place?
5. Which region experiences long winter season ?
Why is it so?

V. Answer in detail:

1. Write the similarities and dissimilarities between the equatorial climate and tropical climate.
2. Draw and name the climatic belt of the world.

VI. Project work / Activities:

1. Prepare an essay on different types of climate. Write how the culture of the people depends upon the climatic condition of the place.

UNIT – VIII

SOIL

Objectives of learning

1. To understand the process of soil formation
2. To learn about soil type
3. To understand the need for conservation of soil

Soil is found around the house. Agricultural fields are covered by soil. Most of the land surface of the Earth is covered by soil.

Soil is the most important natural resource of the Earth.

“Soil is made up of minute particles of disintegrated rocks, containing minerals, decomposed organic matter and Bacteria”.

The plants are able to grow, extending their roots downwards only because of the presence of soil. They absorb water and required minerals from the soil. So the plants grow only because of the presence of soil. The plant kingdom is directly responsible for the existence of herbivorous animals such as cow, sheep, deer etc., Carnivorous animals such as lion, tiger etc., depend on herbivorous animals for food. Mankind depends on both plants and animals for their food.

Plant growth is the basis for existence of all living beings. Soil is the basic requirement for plant growth.

Look at the rocky surface. The rocky surface is barren. There is no plant growth because of the absence of soil. Animals do not exist in a rocky region because there is no plant growth. Such regions are not suitable for mankind because of the absence of plants and animals.

Life would not have existed on the Earth if the entire surface were made up of rocks. It is clear that soil is responsible for the existence of plants, animals and mankind. It is soil that makes the Earth a biosphere.

It is necessary therefore to learn the process of soil formation.

The process of soil formation:

The Earth is a small part of the Sun which parted, drifted and cooled. When the Earth separated from the Sun, it was also in the gaseous form, as that of Sun. The Earth cooled for several millions of years and the surface solidified. The solidified surface of the Earth consisted of hard rocks.

Now we see that the Earth's surface is mostly covered by soil. The depth of soil is not the same everywhere. Soil is few centimeters deep in certain places. In some other places, the soil exists for few meters in depth. In certain other places, the soil extends upto a depth of 20 to 30 meters also. However the soil extends only to a certain depth in any place over the earth and below the soil are found hard rocks.

How did the soil column get deposited on the rock surface?

Soil is formed from rocks. When the big rocks are broken, stones are formed. When the stones are broken, jally is formed. When the jally is crushed soil is formed.

Have you been to a rock crushing unit? In these units big rocks are broken into jally and fine soil particles. In the same way soil is formed by disintegration of rocks when they are subject to natural forces.

Disintegration of rocks gives rise to the formation of soil. Rocks can be disintegrated only when force is applied. There are number of natural forces that act on rocks. The temperature, rain, wind, waves, animals and plants are powerful and important natural forces. These forces act upon the rocks and disintegrate them. It is necessary to learn about how these natural forces act on rocks and disintegrate them to form soil.

1. Temperature: Objects expand when heated and shrink when cooled. On a Sunny day rocks on the Earth's surface are very hot at noontime. The same rock becomes cool by mid night. Rock surface is heated during the day time and cooled at night. So the rock expands and cools everyday. Due to expansion and shrinking cracks develop on the rock surface. The rocks are broken when the cracks expand. The broken pieces are subject to further expansion and shrinking resulting in their disintegration. The continuous process of heating and cooling; expansion and shrinking give rise to disintegration of rock and formation of soil.

2. Rain: We see the rivers and water courses flooded during heavy rains. Floods are very powerful that even powerful and can drag anything on their way. Such powerful floods drag the rocks, roll

them and move them downstream. The rocks are worn out when they are dragged, rolled and moved by running water. The rocky floors of the water courses are also eroded, when the rocks are dragged and rolled over them. Thus the rocks that are rolled, and the floor over which it is rolled are both eroded. The eroded portions of these rocks are deposited on river banks to form soils.

3. Wind: The wind is a powerful natural agent. The power of the wind depends upon the wind velocity. Strong wind carries dust and sand particles according to its strength. These particles dash against the rocks, found on the way and disintegrate. Similarly the rock that are attacked by the sand particles carried by the wind also disintegrate. The disintegrated portions of the sand particles and rocks form the soil.

4. Animals: There is a proverb, “Even hard rock surface gets eroded when ants move over it continuously”.

There are many small and large insects and animals crawling and walking on the Earth’s surface. Earthworms, ants, rats, etc., are responsible for disintegration of rocks and formation of soil.

5. Human-being: Man is responsible for the formation of soil in many ways. Rocks are broken for the construction of buildings and roads. Rocks are crushed into powder for various purposes. All these activities result in the formation of soil.

6. Plants: Plants are greatly responsible for the formation of soil.

The plants that grow on walls and roofs of buildings should be removed immediately.

Why should plants that grow from the seeds dropped by birds in the cracks of the walls be removed?

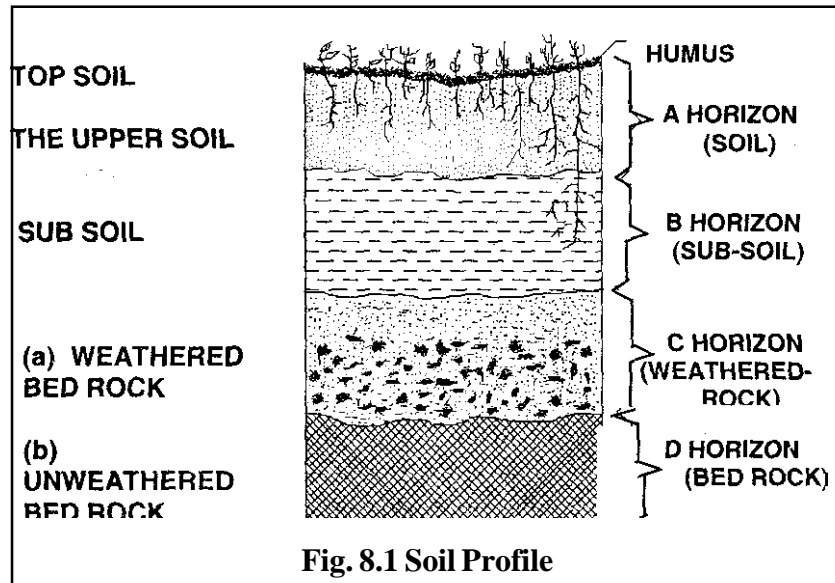
As the plants grow, its root system also grows. When the roots become long and thick, the cracks on the walls expand. Continuously growing roots ultimately break the walls. The plants that grow in cracks on the wall are capable of destroying the buildings.

Due to heating and cooling, cracks develop in the rocks. The cracks are filled with soil by the wind. Seeds are dropped in the cracks by birds. These seeds germinate when it rains. These growing plants expand the cracks and disintegrate the rocks.

All these natural forces have been acting and disintegrating the rocks for millions of years. Yet only a thin layer of soil exists on the land surface. This is clear indication that the process of soil formation is very slow.

The soil that is formed from rocks are not fertile. The fertility of soil is increased when plants and dead animals decay and mix with it. Agriculturists enrich the soil by adding cow dung and green leaves to the soil. In the forest, the soil is naturally enriched by the decay of leaves.

Soil Profile: When we dig pits to plant trees, to erect poles and to construct house we can observe four layers of soil.



They are:

1. The first or topmost layer of soil that we see on the ground. This is made up of minute soil particles and decayed plant and animal matter.
2. The second layer is made up of fine particles like clay. Hence this layer is dark in colour.
3. The third layer has weathered basic rock materials found along with soil.
4. Unweathered hard rocks are found in the fourth layer.

Types of soil: Look at the river bed and the floor of the water course in and around your place. What type of soil do you see along the river course? Where do we get sand from, for

construction purpose? For construction sand is brought from near by river beds.

Sand is a type of soil.

Look at the ponds and lakes in your place. The ponds and lakes dry up during summer. Cracks develop on the floor when water dries up. Take a piece of soil block and crush it. You will see that the soil particles are very fine. This is another type of soil known as Alluvial soil.

When we travel through Salem and Periyar districts. We see the ploughed field which are red in colour. Water also becomes red in colour when it rains over these fields. These fields have another type of soil known as red soil.

The ploughed fields in Coimbatore and Ramanathapuram regions are black in colour. These fields have yet another type of soil known as Black soil.

Other types of soils, are also found over the different parts of the Earth.

Sand: Look at the sand surface when it rains. Rain water never stagnates on sand surface. Why? Sand is made up of large grains. There are gaps between these grains. So water percolates down very easily through sand. Sandy soil has very poor moisture retention capacity. It is very poor in humus content therefore the fertility of the soil is very low. Hence, sandy soil is not suitable for agriculture. However coconut trees grow well in this soil where the rainfall is heavy. Trees like casuarina, cashewnuts etc., also grow well in sandy region.

Alluvial soil: Alluvial soil is made up of very fine soil particles. There are no gaps between these minute soil particles. It is difficult for the water to percolate down through this soil. That is why, there is water stagnation, when it rains over alluvial soil. The alluvial soil has a very high moisture retention capacity. This soil expands when it is wet, and shrinks and develop cracks when it is dry.

Alluvial soil is rich in potassium and deficient in phosphorus content.

Alluvial soil is a fertile soil. This soil is highly suitable for agriculture. Crops like paddy, sugarcane, plaintain etc., grow well on Alluvial soil.

Red soil: Red soil is formed of particles that are smaller than sand but bigger than alluvium. There is some gap between the grains which allows the water to percolate down. Moisture retention capacity of the soil is poor. Iron content of the soil is very high. That is why the soil is red in colour. Calcium, Nitrogen and Phosphorus content of red soil is low. Acidic content is high.

Red soil is moderately fertile and suitable for agriculture. Crops like redgram, Bengal gram, Greengram and oil seeds like groundnut, castor seed etc., grow well in this soil.

Black soil: Black soil is made up of very fine particles. There are no gaps between the soil particles. So the water does not percolate easily. It has very high moisture retention capacity. Hence, this soil is capable of supporting plant growth even if the rainfall is very low.

Black soil is light brown to very dark in colour. It is rich in calcium, potassium, magnesium, aluminium, iron and other carbonates. This soil is poor in nitrogen content. Black soil is suitable for agriculture. Crops like cotton, tobacco, chilli, oil seeds, jowar, ragi, maize, etc., grow well in this soil.

Conservation of soil: Soil, which is the basis for the existence of all living being has to be protected. Soil is lost or leached in two ways. 1.Erosion 2.Depletion of soil fertility.

The soil that is formed at a place, does not remain in the same place for ever. The natural forces like running water, wind etc., remove the soil from one place, transport and deposit them at another place.

The process of removal of soil from a place is known as soil erosion.

Due to erosion, the fertility of soil decreases. Yield decreases when the fertility of soil decreases. When the yield decreases, the output of food grain, oil seeds etc., diminishes. The diminishing agricultural returns affect the standard of life. The fertility of soil has to be protected, in order to increase agricultural productivity and income.

Running water: Soil is eroded by running water. When it rains, water turns red in regions of red soil and black in regions of black soil. Rain water is colourless. Rain water gets its colour by absorbing very fine soil particles from the surface.

Take a bucket of water and pour it on a soil heap. Water flows along the slope. Look at the water course. It is deeply eroded. How did it happen? The water that was flowing along the slope, eroded and transported the soil down stream. When one bucket of water can erode a heap of soil, imagine the power of rivers like Cauvery and Ganges in eroding, transporting and depositing the soil. It is absolutely necessary that soil be protected from the force of running water.

Erosion on steep slopes is higher even in the absence of rainfall. Therefore steep slopes have to be ploughed perpendicular to its slope for protecting the soil. Contour bunding has to be put up to prevent soil erosion. It is necessary to put up bunds across the water course and arrest its flow to protect the soil from erosion.

The root system of plants holds the soil tightly. They protect the soil from erosion both from running water and wind. That is why, we have to grow more plants to protect the loss of soil.

Wind: Wind has the capacity to erode transport and deposit the soil. We sweep the classroom everyday. We wipe the benches and tables in the morning. The dust and dirt that we sweep and wipe are nothing but minute soil particles. How did these soil particles come into the classroom? The soil around the classroom is eroded, transported and deposited by the wind. During hot summer day when the wind velocity is high the entire atmospheric column is laden with dust. In red soil region, the entire air column is red in colour. That shows that wind is capable of eroding soil and transporting it to other place. The eroding power of the wind increases as the velocity of wind increases. Soil has to be protected from wind erosion, by growing

trees across the wind direction. The root system of the plants also protects the soil from wind erosion. That is why we have to grow more plants in windy regions.

Human activity: Overgrazing leads to destruction of root system. When the root system is destroyed, the soil becomes loose. Loose soil is easily subject to wind erosion. The grasslands have to be optimally used to protect the soil from wind erosion.

Man is also directly or indirectly responsible for soil erosion.

When plants and trees are removed wind moves without obstruction causing soil erosion. Thus, mankind indirectly facilitates running water and wind to erode the soil.

Fertile alluvial soil is used for making bricks. Soil is also used for making tiles and pots. Sand is used for construction of buildings and roads. So man uses soil for many purposes which result in soil erosion.

The use of fertile soil for such purposes should be reduced by substituting it with other materials.

Depletion of soil fertility: Every plant has a specific requirement in the form of minerals, humus, bacteria etc., for its growth. If a particular type of crop is cultivated repeatedly, the soil will be depleted with reference to its requirements.

It is necessary to cultivate crops in rotation to protect the soil fertility.

The fertility of soil can be enriched by adding natural and artificial manures. Salt content in the soil affects its quality. The soil has to be provided with good drainage facility for avoiding saturation. The soil has to be tested, deficiencies understood and fertilizers applied for enriching the soil.

There is no use if protective measures are taken after the soil is depleted of its fertility. It is necessary to take all the precautionary measures before the damage is done.

Outcome of learning:

The pupils

1. Know that soil is essential for plant growth.
2. Understand that plant growth depends upon the properties of soil.
3. Understand the importance of soil conservation.

EXERCISE

II. Fill in the blanks:

1. Everywhere on the Earth surface, _____ can be found below the soil.
2. Rocks should be _____ for the formation of soil.
3. _____ soil is found in Salem and Periyar districts.
4. _____ bunds are built across the mountain slopes to prevent soil erosion.

5. To conserve the fertility of soil _____ method of cultivation should be followed.

III. Match the following:

- | | | |
|-----------------------------|---|---|
| 1. Humus | - | Coimbatore and Ramanathapuram |
| 2. The second layer of soil | - | Adds fertility to soil Dark coloured fine particles |
| 3. Black soil | - | Soil conservation |
| 4. Coconut tree | - | Sand |
| 5. Crop rotation | - | |

IV. Answer in brief:

1. What is soil?
2. What are the natural agencies of rock weathering?
3. How do the weathered rocks change into fertile soils?
4. How many types of soils are there? What are they?
5. What is known as soil erosion?

V. Answer in detail :

1. Write briefly about the soil types and their properties.
2. Draw the soil profile and explain.

VI. Projectwork / Activities:

1. Show the distribution of different types of soil of India on a map.
2. Collect different types of soil samples.

UNIT IX

NATURAL VEGETATION AND WILDLIFE

Objectives of learning

1. To know that the growth of Natural vegetation depends upon climate
2. To understand the types of Natural vegetation existing over the Earth
3. To study the uses of Natural vegetation

Farmers cultivate crops like paddy, wheat, maize, jowar etc., for food. Different types of crops such as vegetables, gingly, groundnut, castor seed are also cultivated. All these are agricultural crops. They do not grow naturally but are cultivated. All these crops grow in agricultural lands only.

Apart from the agricultural lands, we see plants growing on both sides of the roads and on vacant or open lands. Various types of grasses, plants, creepers, cactai and trees like Acacia, neem, banyan etc., grow in these places. All these grasses, plants and trees are not cultivated. They germinate and grow naturally without the effort of man and are known as ‘natural vegetation’.

The plants that grow in a place without the interference of man is known as Natural vegetation.

Natural vegetation covers many parts of the Earth’s surface, but the type of natural vegetation differs from place to

place. Some places are covered by grass. Short shrubs grow in some areas. Some other areas are covered by tall trees and thick vegetation.

Plant growth depends mainly on sunlight, rainfall and soil. According to the availability of these resources, the type of natural vegetation changes.

Even if a region has sufficient sunlight and soil fertility still it will be a desert if there is no rainfall, but even a little rainfall will give rise to grasslands.

Any region with abundant sunlight, fertile soil and heavy rainfall throughout the year will support dense forest growth.

A rocky region without soil cover will not support plant growth even if it receives good sunshine and rainfall.

A region with good rainfall and good soil does not support plant growth when there is no sunlight.

Regions with sufficient sunlight heavy rainfall and fertile soil are able to support broad leaved deciduous trees like Teak and Sal. Cooler regions with poor sunlight support coniferous trees (needle shaped leaves) like the pine, fir and spruce.

Thus we understand that as sunlight, rainfall and soil fertility is not equally distributed. Natural vegetation differs from place to place.

The natural vegetation over the Earth can be classified into 4 broad groups.

1) Forests 2) Grasslands 3) Desert vegetation 4) Alpine or Tundra vegetation.

I. Forests: Forests are dense vegetation consisting of trees shrubs, climbers, grasses etc., According to the type of vegetation forests can be classified into three major types.

i. Evergreen forests.

ii. Deciduous forests.

iii. Coniferous forests.

i. Evergreen forests: Evergreen forests are found in the equatorial regions where the temperature and rainfall is very high. Due to heavy rainfall throughout the years, these forests are evergreen.

Most of the trees found here are over 46 m. in height. Trees of medium height i.e. 9 to 15 metres as well as different varieties of shrubs and climbers are found here in abundance. As the sunlight cannot penetrate into the dense forests. Evaporation is less and the land is moist hence the trees that grow here are sturdy with broad hard wood trunks which grow to great heights. The forests appear to be at different heights according to vegetation. Several varieties of parasites and saprophytes also grow there. Trees like teak, mahogany, ebony and rosewood are found here. These forests are found in the Amazon basin of South America and Congo basin or Zaire in Africa. The Silent Valley in Kerala is the best example of evergreen forests in India.

ii. Deciduous forests: The trees of the deciduous forests shed their leaves at a particular time of the year. Deciduous forests are of two

types. They are (a) Tropical deciduous forests and (b) Temperate deciduous forests.

(a) Tropical deciduous forests: As these forests receive only seasonal rain, they shed their leaves during the dry season in order to avoid loss of moisture due to evapo-transpiration. These forests are found in the tropical monsoon regions of the world. Hence they are also called monsoon forests. They are not as dense as evergreen forests. The important trees found here are teak, sal, sandalwood and *pillamarudhu*.

(b) Temperate deciduous forests: Due to severe winters with heavy snowfall the trees shed their leaves just before the winter season. Heavy snowfall may destroy leaves, due to the weight of the snow the branches tend to break.

The important trees grown here have great commercial value. They are Oak, Cyprus, Maple and Olive. These are used to make furniture.

iii. Coniferous forests: These forests are found beyond the temperate regions in the sub-polar areas where the summers are warm and winters are very cold below 0°C. Here the trees are cone shaped and the leaves are like needles. The snow slides down the sloping sides of the trees and the needle like leaves preserve the moisture. The Pine, Spruce, Fir and Larch are among the important trees found here.

II. Grasslands: In regions of insufficient annual rainfall grasslands are found. (i.e. below 100 cms) According to climate grasslands can be divided into two types. a) Tropical grasslands and b) Temperate grasslands.

a) Tropical grasslands: They are also called Savana grasslands. Here the grass grows between 2 and 3 metres high. Stunted trees and shrubs are also scattered here. Savana grasslands are found in the tropical regions of Africa.

b). Temperate grasslands: They are found in the temperate regions. Due to extreme conditions during winter the roots are preserved under the soil and the grass sprouts only during summer. Temperate grasses are relatively shorter than tropical grasses, but spread over an extensive area. They are known by different names in different countries. In Russia they are called the *steppes*; in North America they are called the *prairies*; they are called the *pampas* in Argentina; *downs* in Australia and the *veldts* in South Africa.

In some parts of the world, with irrigation facilities these grasslands have been converted into agricultural lands.

III. Desert vegetation: Vast stretches of land without vegetation are called *deserts*. Deserts may be classified into two types: (a) Hot deserts and (b) Cold deserts.

(a) Hot deserts: They are dry throughout the year. Plants that survive with very little water like Cactus, prickly pear aloe and thorny bushes are found here. Such vegetation are found in the Sahara and Kalahari deserts of Africa. Thar desert of India and the great Australian desert.

(b) Cold deserts: Cold deserts are found in the higher latitudes where there is absence of rainfall. These deserts are Gobi deserts of China 'Taklamakan' of Tibet. Patagonian desert of South America.

IV. Alpine or Tundra vegetation: 'Tundra ' means land without trees. This is found in the poles. Here plants grow only in summer when there is sunlight. Plants grow very close to the ground level. Examples of Tundra plants are moss, lichen and algae. During winter this region is completely covered by ice and snow.

The uses of Natural vegetation: Forests and grasslands are important natural resources of the Earth.

The uses of natural vegetation can be classified into 3 major categories.

- I. Use of vegetation in enriching nature.
- II. Direct use of natural vegetation to mankind.
- III. Industrial uses of natural vegetation

I. Use of vegetation in enriching nature:

1. Oxygen:

All living beings breath in oxygen, plants absorbs carbon-dioxide and release oxygen, at the time of photosynthesis. Hence plant kingdom is the basis for the existence of animals and man.

Plants provide us with oxygen.

1. Rainfall:

About 30 percent of land surface is covered by forest, making the world green. These forests release lot of water-vapour, thereby increasing the moisture content of the atmosphere. Forests obstruct wind movement and forces it to go up. When the moisture laden air goes up, condensation takes place and rainfall occurs.

2. Soil fertility:

In forests and grasslands, leaves, grass and other vegetative parts that fall on the ground decay and enrich the soil.

5. Natural vegetation is useful for nature, man and _____
a) Regions b) Climate c) Industry d) None of the above

II. Fill in the blanks:

1. The natural resources like _____rainfall and soil help growth.
2. The tropical grassland found in Africa is called as _____.
3. Only mosses, lichens and algae grow in _____ region.
4. The root system of the plants hold the soil tightly. Hence plants help to prevent _____.

III. Match the following:

1. Three tier plant growth - deciduous forest
2. Teak, Sal, Sandal - humus content
3. Prairie grassland - coniferous forest
4. Enriches soil fertility - ever green forest
5. Sub polar climate - temperate grasslands

IV. Answer in brief:

1. What is meant by 'natural vegetation'?
2. What is the reason for the growth of evergreen forests in equatorial region?
3. Why do the trees shed their leaves in the deciduous forest?
4. What is Temperate grassland?
5. Why should we conserve natural vegetation?

V. Answer in detail:

1. List out the uses of natural vegetation.
2. Write an essay on the consequences of deforestation.

VI. Project Work / Activities:

1. Collect pictures of different types of natural vegetation and prepare an album.