GEOGRAPHY

1. India - Location and Physiography

LOCATION

India is a large country located in South Asia with rich civilization. It has often amazed and intrigued the rest of the world by its finite variety of castes and creeds, a tradition of religious toleration, a capacity for survival and the maintenance of its timeless traditions. Its cultural influences had crossed its border from time immemorial and reached far off lands.

It acts as a bridge between developed and developing countries of the world and between the East and the West. India's strength lies in its geography as much as in its culture.

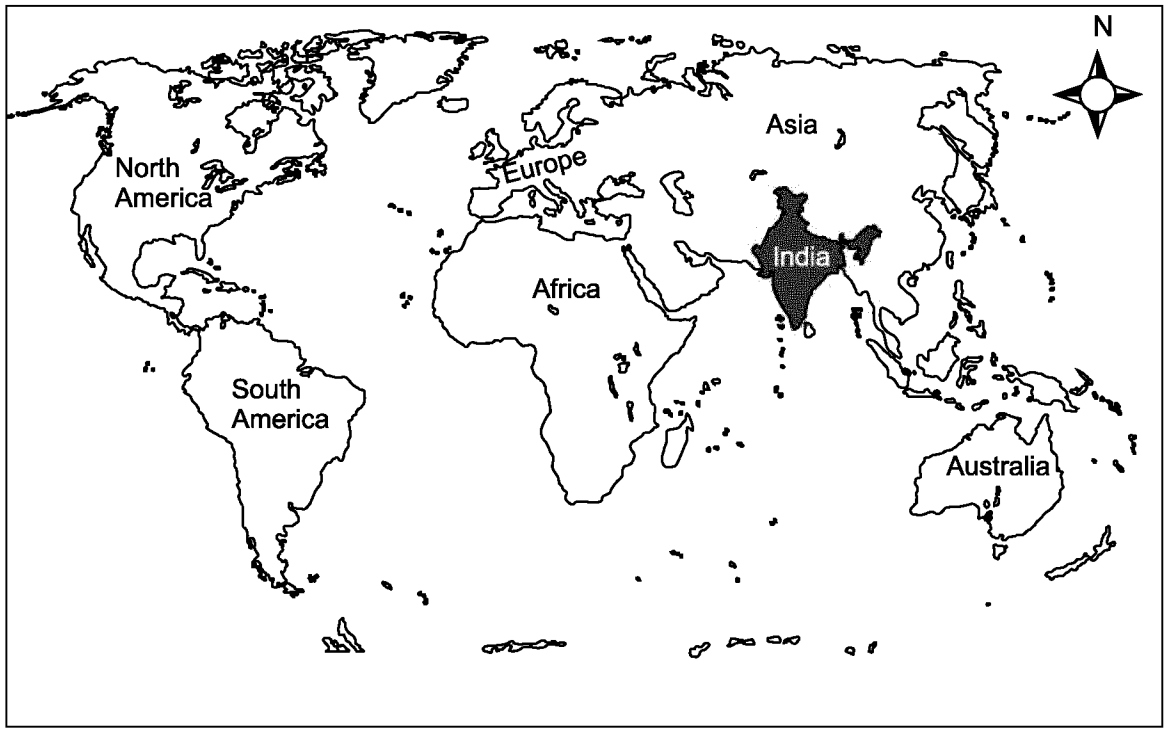
In historical times, India was known as 'Bharat' and 'Hindustan'. The name 'Bharat' refers to the ancient, mighty king Bharat and the name 'Hindustan' is given after the river Sindhu. The Europeans afterwards started referring to this country as 'India' a derivative of the word 'Sindhu'. Today, the officially recognized name of the country is India.

India, a subcontinent

A continent possesses distinct characteristics of diverse,

1) Physical features,
2) Climatic conditions,
3) Natural vegetation,
4) Mineral resources,
5) Human habitations,

Location of India in the World



6) Cultural norms,

7) Ancient ethnic and linguistic groups and

8) Huge area.

All these distinctive continental characteristics are found in India. Hence, we consider India as a subcontinent.

Location and Extent

Let us remember!

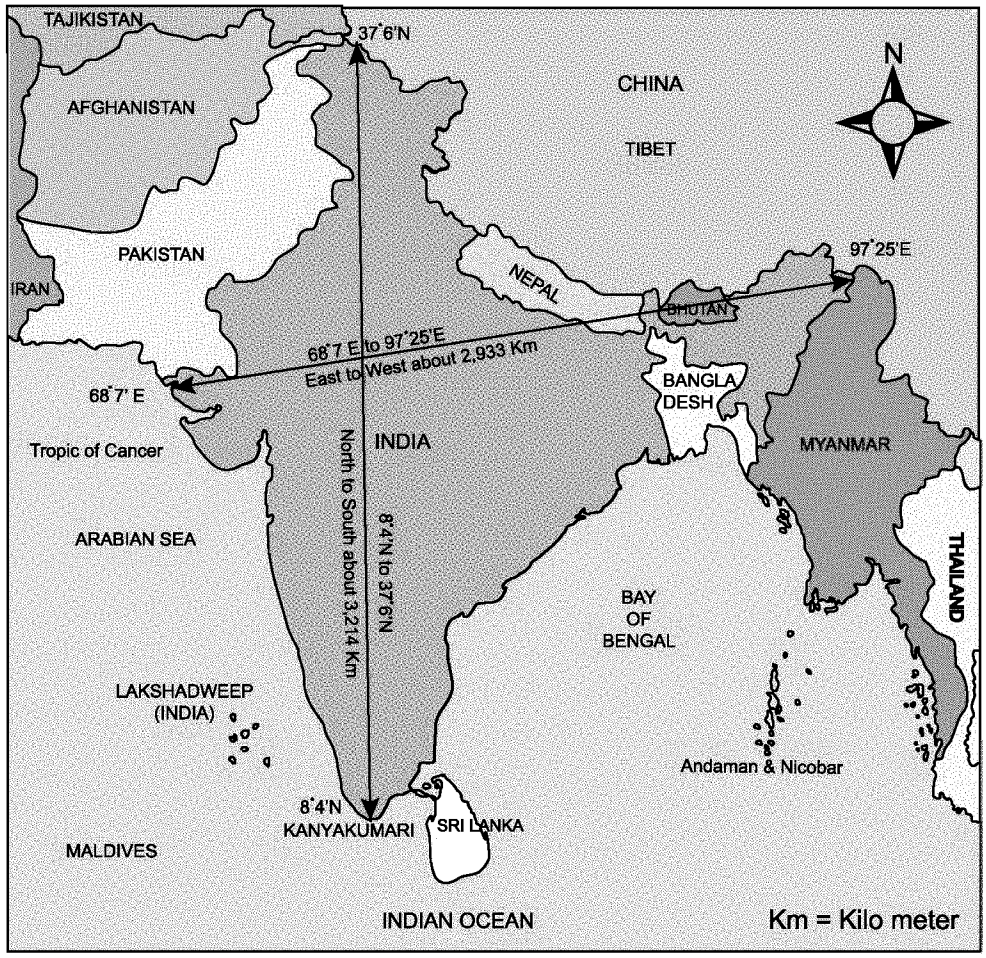
Latitudes and Longitudes help us to locate a place.

India extends from $8^{0}4'$ N to $37^{0}6'$N latitudes and $68^{0}7'$E to $97^{0}25'$E longitudes. The Tropic of Cancer $23\frac{1}{2}$°N runs across the country and divides it into two equal halves.

It covers an area of 32,87,263 Sq.km, with 1210 millions population (2011 Census). It stretches from Kashmir in the north to Kanyakumari in the south, for about 3,214 Km and from Gujarat in the west to Arunachal Pradesh in the north east for about 2,933Km. It has coastline of about 5,516km inclusive of the main land, Lakshadweep, and Andaman and Nicobar Islands.

India's position is favourable for trade, commerce and economic activities by connecting India with Europe through Suez Canal and also with China, Japan and Australia through Malaccan strait.

India and its boundaries



Remember, The Size of India!

India is the second largest country in Asia; it is 4 times larger than Pakistan, 8 times larger than Japan, 12 times larger than the U.K. but 3 times smaller than the USA.

Indian Standard Time

Longitudes help us to calculate the time of a place. The 82°30' E longitude is taken as Indian Standard Time Meridian (IST), as it passes through the middle of India near Allahabad. This is 5 hours 30 minutes ahead of the Greenwich Mean Time (0° longitude).

After independence in 1947, the Indian Government established IST as the official time for the whole country,

Do you know the reasons, for following IST?

The east-west extent of India is about 30 degrees of longitude. Due to this great longitudinal extent, the sun rises or sets almost two hours earlier in the eastern most than in the western most part. To avoid confusion with respect to time at different places in India, the almost centrally located longitude 82°30'E has been selected as standard meridian for the whole country. The local time of this longitude is used as the Indian Standard Time (IST).

India and its neighbouring countries

A series of mountain ranges in the east separates India from Myanmar. India has the following neighbouring countries. They are: Pakistan in the west, Afghanistan, Nepal, Bhutan, China in the north, and Bangladesh and Myanmar on the east. India is bounded by Arabian sea in the southwest, by the Bay of Bengal in the east and southeast and the Indian Ocean in the south. Kanyakumari or Cape Comorin constitutes the southern tip of the Indian peninsula.

Palk Strait separates India and Sri Lanka on the South. The Himalayas along with Hindukush and Karakoram provide a natural boundary on the north.

The Islands of Andaman and Nicobar and Lakshadweep are the parts of Indian Union situated in the Bay of Bengal and Arabian Sea, respectively.

Unity in Diversity

1) India has unique land forms ranging from the highest peaks to the lowest plains. In the north India, Mount Godwin Austin, otherwise known as Mount K2 is the highest peak of India and coastal plains are the lowest in the south India.

Which is the highest peak?

Mount Everest is the highest peak in Himalayas, which is located in Nepal. The height is 8,848 meters. above the sea level.

2) The climate varies from the tropical to the temperate zone. Cherrapunji in Meghalaya receives the highest amount of rainfall, whereas the Thar Desert receives very low rainfall.

3) We have wet dense tropical forest on the Western Ghats, mangrove trees in the Sunderbans of West Bengal and the shrubs and sparse vegetation in the Thar Desert.

4) The diversity of the physical environment and climate has made India an ideal habitat for varieties of flora and fauna.

5) India is a secular country with total freedom of worship. People follow

Hinduism, Christianity, Islam, Sikhism, Buddhism, Jainism and Zorastrianism with cultural diversities. In spite of its physical, religious and racial varieties, the 'Indian culture' unites all people. Hence India is known for her "Unity in diversity".

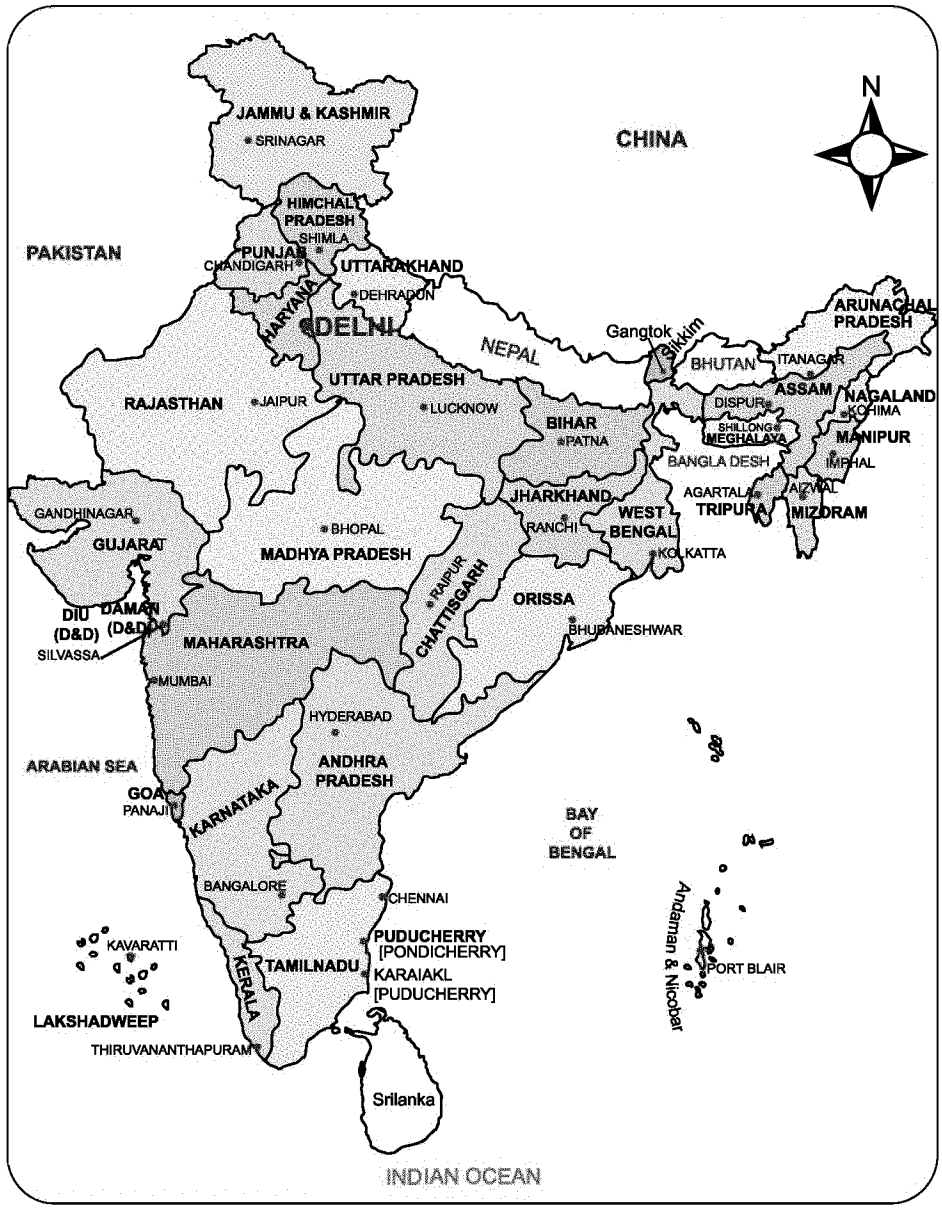
People shed all their differences and stand together when there is a crisis. The best examples are Kargil invasions and natural calamities like floods and Tsunami.

It is our prime duty to conserve and transmit our cultural values to the future generation of our country and it is our duty to prove ourselves as Indians.

Political Division

India has been divided into 28 States and 7 Union Territories on the basis of the language for administrative convenience. Delhi is the National Capital aswellas the Capital of Union Territory.

India - Political Division



INFORMATION ABOUT STATES

S.No	States	Capital	Area in sq.km	Population	2011 Population Density/Sq.Km.
1	Andhra Pradesh	Hyderabad	275045	84665533	308
2	Arunachal Pradesh	Itanagar	83743	1382611	17
3	Assam	Dispur	78438	31169272	397
4	Bihar	Patna	94163	103804637	1102
5	Chattisgarh	Raipur	135191	25540196	189
6	Goa	Panaji	3702	1457723	394
7	Gujarat	Gandhinagar	196024	60383628	308
8	Haryana	Chandigarh	44212	25353081	573
9	Himachal Pradesh	Shimla	55673	6856509	123
10	Jammu & Kashmir	Srinagar, Jammu	222236	12548926	56
11	Jharkhand	Ranchi	79714	32966238	414
12	Karnataka	Bangalore	191791	61130704	319
13	Kerala	Thiruvananthapuram	38863	33387677	859
14	Madhya Pradesh	Bhopal	308245	72597565	236
15	Maharashtra	Mumbai	307713	112372972	365
16	Manipur	Imphal	22327	2721756	122
17	Meghalaya	Shillong	22429	2964007	132
18	Mizoram	Aizawl	21081	1091014	52
19	Nagaland	Kohima	16579	1980602	119
20	Odisha	Bhuvaneshwar	155707	41947358	269
21	Punjab	Chandigarh	50362	27704236	550
22	Rajasthan	Jaipur	342239	68621012	201
23	Sikkim	Gangtok	7096	607688	86
24	Tamil Nadu	Chennai	130058	72138958	555
25	Tripura	Agartala	10486	3671032	350
26	Uttarakhand	Dehradun	53483	10116752	189
27	Uttar Pradesh	Lucknow	240928	199581477	828
28	West Bengal	Kolkata	88752	91347736	1029
	Union Territories				
1	Delhi	Delhi	1483	16753235	11297
2	Andaman and Nicobar islands	Port Blair	8249	379944	46
3	Chandigarh	Chandigarh	114	1054686	9252
4	Dadra and Nagar Haveli	Silvassa	491	342853	698
5	Diu and Daman	Daman	112	242911	2169
6	Lakshwadeep	Kavaratti	32	64429	2013
7	Puducherry	Puducherry	479	1244464	2598

PHYSIOGRAPHY OF INDIA

Physiography means the description of physical relief features of a country. India is a land of great physical contrasts. The peninsular plateaus constitute one of the most stable and ancient land block on the earth. The Himalayas and Great Plains represent the most unstable zones. It is important to understand the varied physical features of India, which came into existence during different geological periods through and different geological processes.

Physiographic Divisions of India

The land of India accounts for differences in geological structure. Based on the structure, India is divided into five physiographical divisions. They are:

I. Northern mountains

II. Northern Great Plains

III. Peninsular Plateaus

IV. Coastal Plains

V. Islands

I. Northern Mountains

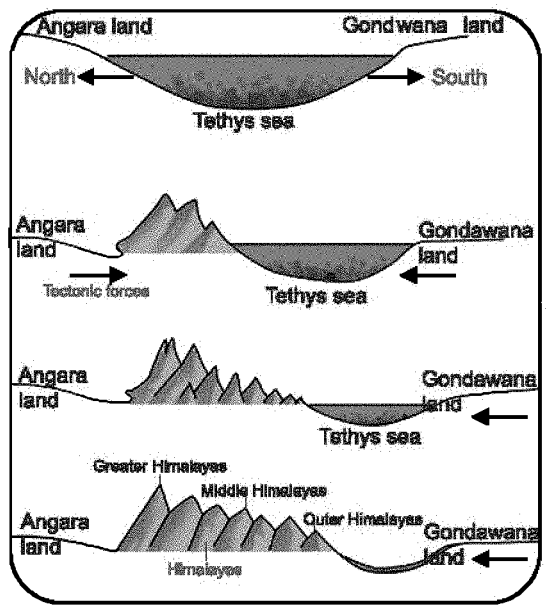
The Northern Mountains are the greatest mountain ranges. The upper slopes of many of the ranges are permanently covered with snow and hence they are known as the 'Abode of Snow' or the 'Himalayas'. This is the highest mountain range of the world.

It extends, in the shape of an arc, for a distance of 2,500 km from west to east between the Indus gorge in Jammu and Kashmir in the west and Brahmaputra gorge in Arunachal Pradesh in the east. Many of the ranges rise more than upto 8,000 metres above the mean sea level. These mountains extend through the states of Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh, Uttaranchal, West Bengal, Sikkim and Arunachal Pradesh.

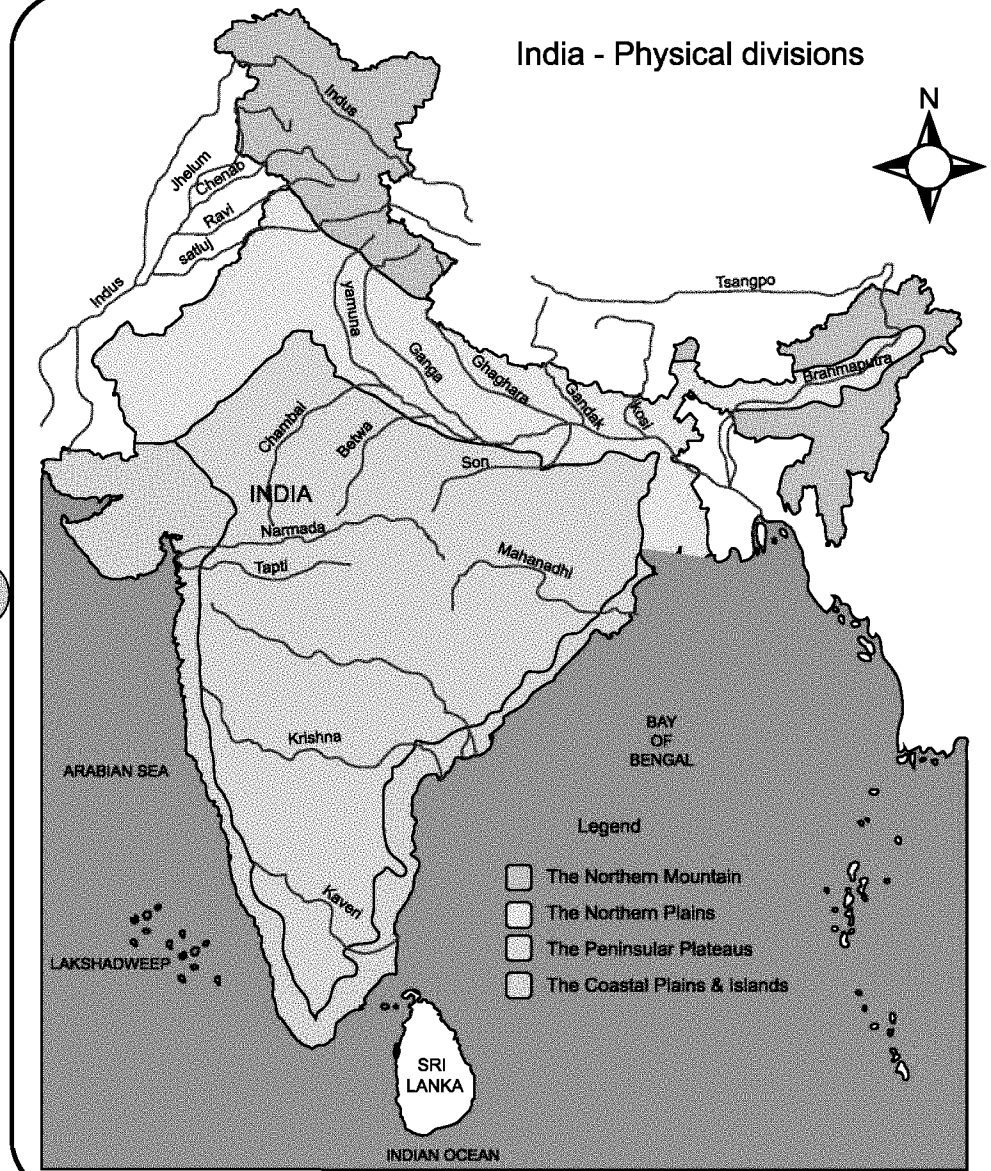
Formation of Himalayas

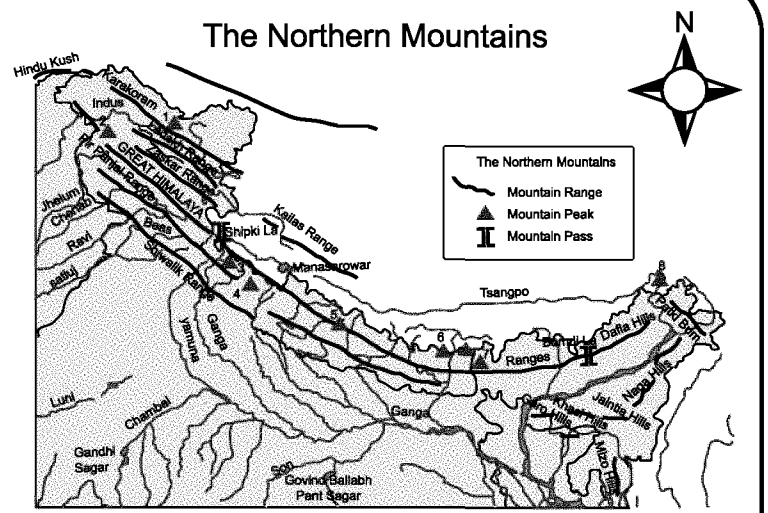
The Himalayas are not a continuous range of mountains but a series of several, more or less parallel or converging ranges separated by valleys and plateaus. Let us see how they were formed?

Millions of years ago, there was only one large land mass on the surface of the Earth and it was surrounded by oceans on all sides. The landmass was called 'Pangea', surrounded by a water body, known as 'Panthalasa'. This large land mass split up into two parts. The northern part was known as 'Angaraland' and the southern part was known as 'Gondwana land'. The sea separating these two was called the 'Tethys sea'.



Formation of Himalayas





Mountain Peak

1. Mt. K2 (8611 m)
2. Nanga Parbat(8126 m)
3. Kamet (7756 m)
4. Nandadevi (7817 m)
5. Dhaulagiri (8172 m)
6. Mt. Everest (8848 m)
7. Kanchenjunga (8598 m)
8. Namcha Barwa (7756 m)

This sea stretched along an east-west direction. The river from Angara and Gondwana deposited their silts along the Tethys Sea. After a long period, the deposits due to tectonic forces uplifted to form fold mountains called the Himalayan ranges.

The "Aravalli Range" in India is one of the 'oldest' mountain ranges of the world. The Himalayas is an example of young fold mountains.

The Himalayas are further subdivided into three parts from west to east. They are:

1. Western Himalayas
2. Central Himalayas
3. Eastern Himalayas

1. Western Himalayas

The Western Himalayas are also known the Trans-Himalayas. The lofty Karakoram Mountains extend eastwards from Pamir Knot, which lies in the North West India. These ranges in the southwest of Kashmir form India's frontier with Afganistan and China. Godwin Austin known as K2 (8,611 metres), the world's second highest peak, belongs to this range. The 'Karakoram pass' has acquired special importance now. Baltora and Siachen are the two big glaciers, found to the south of Karakoram. There are two parallel ranges, known as the Ladakh and Zaskar. The extension of Ladakh range is 'Ladakh plateau', and it is the highest plateau of India. It lies in the northwest of Kashmir.

2. Central Himalayas

The Himalayas, which radiate from Pamir Knot in the southeast direction is called Central Himalayas. The width varies from 400 km in the west to 150 km in the east. The height of the mountains increasing towards east from the west. The steep slopes, the high pointed peaks and parallel ranges of the Central Himalayas indicate that Himalayas are young fold mountains. These ranges are interspersed by valleys and plateaus. There are three parallel ranges found in the central Himalayas from north to south. They are:

i) Himadri

ii) Himachal

iii) Siwaliks

i) Himadri

Himadri is the northern most range of Himalayas. The average height of this range is 6,000 metres. It extends from Indus Valley in the north west to Brahmaputra in the northeast. It consists of several peaks of the world. Mt. Everest is the highest peak of the world with an altitude of 8,848 m. The other peaks of Himadri are Kanchen Junga (8,598 m), Nanga Parbat (8,126 m), Dhaulagiri (8,167 m) and Nanda Devi (7,817 m). Many glaciers which are source of rivers are found in Himadri. For example, Gangotri and Yamunotri glaciers are the sources of Ganga and Yamuna rivers, respectively.

'Passes' are the natural gaps across the mountains. They provide route to us with neighbours. Zojila pass in Kashmir Shipkila in Himachal Pradesh and Nathula and Jelepla in Sikkim are the most important passes across Himadri.

ii) Himachal

Himachal lies between the Himadri in the north and Siwaliks in the south. It extends over a variable width of 80 km in average. The altitude varies from 3,700 m to 4,500 m. It is a highly rugged topography consisting of spurs

and dissected uplands. "Pirpanjal" in Kashmir is the longest range of Himachal region. 'Dhauladar ranges' stretches from Jammu and Kashmir across Himachal Pradesh. Kashmir valley, Khangra valley and Kulu valleys are in between these ranges. The popular hill resorts, Srinagar, Pahelgam, Gulmarg, Mussourie, Shimla and Nainital are located here. The places of pilgrim interests such as Amarnath, Kedarnath, Badrinath and Vaishnavidevi temples are the assets of the Himachal ranges.

iii) Siwaliks

Siwaliks is the southern most range of the Himalayas. Its average height is 1,000 m. It is a discontinuous range, made up of mud and soft rocks. The narrow longitudinal valleys called 'Duns' are found in Siwaliks. The best example is 'Dehra Dun'. Along the foothills of Siwaliks, pebbles and gravels are being deposited by the rivers. 'Terai plain' is made up of deposits of fine silts in the south of Siwalik. It supports the growth of thick forests and marshy lands.

3. Eastern Himalayas

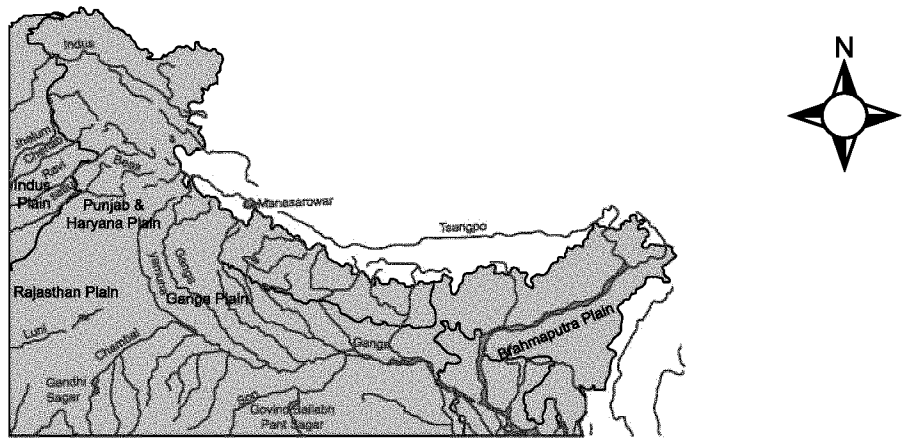
Brahmaputra river marks the Eastern most geographical limit of the Himalayas. These mountains along the Eastern boundary of India is called Purvachal. They are of medium height. They comprise of Patkai hills and the Naga Hills in the North and the Mizo Hills in the south. At the centre, they take a westward turn along the Bangladesh-India border in Meghalaya. Here they consist of Jaintia, Khasi and Garo hills from East to west.

II. Northern Great Plains

The Northern Great Plains are located at the south of Himalayas. These are formed by the deposits of Indus, the Ganga and Brahmaputra rivers. It extends over a length of 2,400km. It covers an area of over 7 lakh sq.km. Important characteristics include the soil features such as Bhabar (unassorted sediments) Terai (marshy track) Bhangar (Older Alluvium) and Khadar (newer alluvium).

The Bhabar lies along the foothills at about 8 to 16km wide. The rivers, coming from the mountains, deposit their load along the foot hills in the form of alluvial fans. The porosity of the deposits is so high that streams sinks and disappears in the bhabar tract and flow underground. The area is marked by dry river courses.

India: Northern plains



The Terai is a marshy tract, where most of the underground streams of the bhabar belt reappear. The terai belt is located towards the south of the bhabar tract and is about 15km to 30km wide. It is a zone of excessive dampness. It helps to the growth of forests and variety of wildlife. Most of the Terai land has been developed into farm lands.

The Bhangar represents the alluvial terrace. It is formed by thedeposition of older alluvium which lies above flood-limit of the plains. Bhangar is mainly composed of clay.

The Khadar is the newer alluvium brought by the rivers. It is deposited in the flood-plains along their banks. It is enriched by fresh deposits of silt every year during the floods.

Northern Plains can be divided into the following regions.

1. Rajasthan plain
2. Punjab – Haryana plain
3. Ganga Plain
4. Brahmaputra Plain

1. Rajasthan Plain

Rajasthan plain is found located in the west of Aravalli Range and it extends for about 640kms with an average width of about 300kms. It covers western Rajasthan where two thirds of this region is desert. It is about 300 metres above mean sea level. In general, the eastern part of the desert is rocky, while western part has shifting sand dunes.

This plain is drained by a number of seasonal streams, originating from the Aravalli ranges. Luni is an important river of this region. It flows into Rann of Kutch. In north of Luni, there is a large area of inland drainage. It has several dry river beds.

How does a river disappear?

Several rivers disappeared during recent geological history. Some have changed their courses and some have disappeared completely. The saraswati was a mighty river in the vedic and pre-vedic time, but disappeared gradually, due to the advancing desert area. The 'Ghaghra' is believed to be the present day successor of the saraswati river.

There are several saline lakes in Rajasthan plain. The largest is the Sambhar Lake, which is located about 65km west of Jaipur.

2. Punjab-Haryana Plains

The fertile plains of Punjab and Haryana lies to the northeast of the Great Indian Desert. These plains extends for about 640km from the northeast to the south west and about 300km from west to east. In the east, the Delhi ridge separates the Punjab Haryan a Plains from the Ganga plain.

The Punjab – Haryana plains are formed by depositional activities of the sutluj, Beas, Ravi rivers. The southeastern part of the plains, bordering the Rajasthan plain, is sandy and has shifting sand dunes. The area between Ghaghra and the Yamuna rivers lies in Haryana and forms the Haryana plain. It acts as water- divide (doab) between the Yamuna and the Satlej River.

What is Doab?

The alluvial tract of land between two adjacent rivers. For example, the plains between the Ganga and the Yamuna.

3. Ganga Plain

The Ganga plain is the largest plain. It extends from the Yamuna river in the west upto Bangladesh in the east, covering a distance of about 1500 Km. with an average width of 300km. It covers the states of Uttar Pradesh, Bihar and west Bengal. The Ganga along its large number of tributaries, such as Ramganga, Gomti, Ghaghra, Gandak, Kosi, Yamuna etc, from the north and Son, Chambal, Betwa etc. from the south, have brought large quantities of sand and silt from the mountains and plateaus respectively, and deposited in this vast plain. The general slope of the entire Ganga plain is towards the east and the southeast. The average elevation of the plain is about 200m above the sea level.

Ganga – Yamuna Doab lies in the western part of this plain. The lowlying Rohilkhand is located in the east of the Doab. In the middle part, the flow of the rivers is sluggish and most of them keep shifting their courses. This has made the region prone to frequent floods.

The Ganga and the Yamuna rivers are sacred to the followers of the Hinduism. Thus many religious places have developed along the bank of the sacred rivers, such as, Haridwar, Mathura, Varanasi, Allahabad and so on. The religious places have developed into large cultural, educational and tourist centres.

The Kosi river, known as the "Sorrow of Bihar" has shifted its course by about 100km in the recent times.

In the lower part the Ganga and the Brahamputra rivers divided into several channels in this region to form the largest delta in the world. The lower part of the delta called the Sundarbans is covered with thick tidal and mangrove forests. The sea – facing region of the delta has a large number of estuaries, mangrove swamps, sand banks and islands.

4. Brahmaputra Plain

The easternmost part of the northern plains is drained by the Brahmaputra River and its numerous tributaries. The Brahmaputra River originates in Tibet and is locally known as Tsangpo (the purifiers). Before entering India, it cuts through the Dihang gorge and enters the Assam valley. This plain is about 720km long and about 60-100km wide. The general slope is from the northeast to the southwest. The region is surrounded by high mountains except on the west.

Brahmaputra River-Assam

A large number of tributaries coming from the Assam hills in the north join the main river and form 'alluvial fans'. There are large marshy tracts in this area. The alluvial fans have led to the formation of Terai.

III. Peninsular Plateau

The peninsular plateau is located to the south of northern great plains. It is triangular in shape and covers an area of about 16 lakh sq.km. It is surrounded by hill ranges on all sides,

such as the Aravalli, Vindhya, Satpura and Rajmahal ranges in the north, the Western Ghats in the west and the Eastern Ghats in the east.

The average height of this plateau varies between 600-900 mts above the mean sea level. The general slope is from west to east, while in the Narmada–Tapti region it is from east to west.The Narmada River divides the peninsular plateau into two unequal parts. The northern part is called the 'Central Highlands' and the southern part is called the 'Deccan Plateau'.

A) Central Highland

1) Malwa Plateau is bounded by the Aravali range, the Vindhya Range and Bundelkhand. It is made up of lava and is covered with black soil. The Chambal River and its tributaries have created ravines in the northern part of the plateau.

2) The Bundelkhand is located towards the south of the Yamuna River and is composed of igneous and metamorphic rocks. In the northern part, the Ganga and Yamuna system have deposited alluvium. The hilly areas are made up of sandstone and granite. Some rivers like Betwa and Ken have carved out deep gorges.

3) The Baghelkhand lies to the east of 'Maikala Range'. It is made up of sandstone and limestone in the west and granite in the east. The central part of the plateaus acts as water divide between the son and the Mahanadhi drainage basins.

4) The Chotanagpur Plateau is located towards the northeast. It is drained by Damodar, Subarnarekha, Koel and Barakar river systems. The Damodar River flows from west to east through the middle of this region. This region has a series of plateaus and hills, such as the Hazaribagh plateau to the north of the Damodar River, Ranchi plateau to the south and the Rajmahal hills in the north eastern part.

B) Deccan plateau

It covers an area of about 5 lakh sq. km. It is bounded by the satpura and the Vindhya ranges in the northwest, the Mahadev and Maikala ranges in the north, the Western Ghats in the west, and the Eastern Ghats in the east. The Deccan plateau slopes from west to east. That is why the rivers like Mahanadi, Godavari, Krishna and Kaveri flow eastward and join the Bay of Bengal. The northern part, also known as the Deccan trap is made up the lava rocks and has black regur soils. In the southern part, the Karnataka plateau merges with the Nilgiri Hills. The Telengana plateau is drained by the Godavari, Krishna and Pennaru rivers.

Hill Ranges of Peninsular India

I) Aravalli Range is one of the oldest fold mountain systems in the world. From northeast to southwest, its extent is about 800km. In the north, the average height is about 400 metres, while in the south it is about 900 metres. Gurushikhar (about 1722 metres) in the Abu hills is the highest peak of the Aravalli range. The Aravalli ranges are highly eroded and dissected.

ii) Vindhya Range rises as an escarpment overlooking the Narmada Valley, and runs parallel to it

in the east - west direction for about 1200km. It is composed of sand stone, lime stone and shale. It acts as a watershed between the Ganga river system and the river systems of south India.

iii) Satpura range lies between the Narmada and the Tapti rivers. It is a series of seven hills and stretches for about 900km. A major Part of the Satpura Range has height of more than 900 meters.

C) Western Ghats

Western Ghats are continuous range of hills running in the North-South direction and form the western edge of the Deccan plateau. Its extent is about 1600km from the Tapti valley in the north upto Kanyakumari in the south. The western Ghats rise abruptly from the western coastal plain. That is why on the western side, the rivers flow swiftly and make a number of waterfalls like the Jog falls(270mts) on the Sharavati River. The slope is gentle towards the eastern side of the Western Ghats and the main rivers like the Godavari, Krishna and Kaveri rise from the eastern slopes and flow east wards and fall into the Bay of Bengal Thal Ghat, Bhor Ghat and PalGhat are the three important passes in the Western Ghats, which provide passage for roads and railways, between the Konkan plains in the west and the Deccan Plateau in the east.

The Eastern Ghats and Western Ghats join at the Nilgiris hills and the highest point is Dodda Beta (2637m). 'Udhagamandalam', a hill station, lies at the foot of the Doda Beta in the Nilgiris.

The southern part of the Western Ghats is Palghat gap. It is connected the coastal plains of Kerala with Tamil Nadu by roads and railways.

The highest peak of South India is 'Anai Mudi' (2695m) which is the nodal

Western ghats

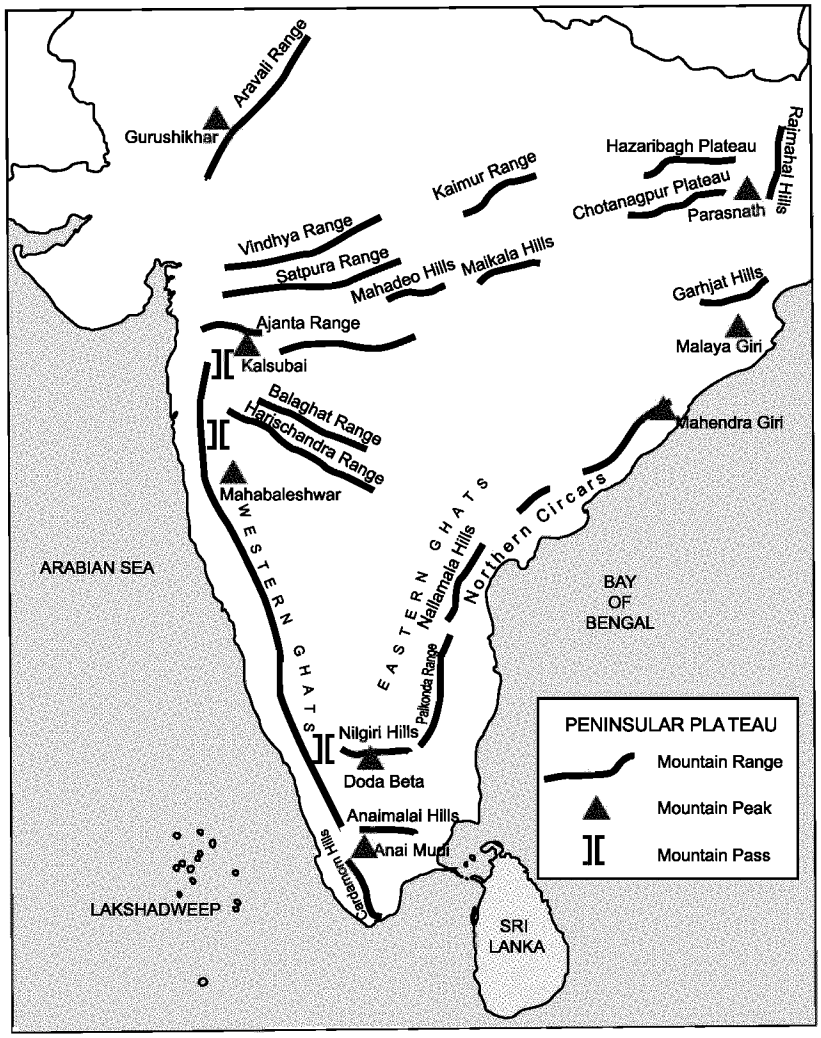
point from which hill ranges, like Anaimalai in the north, Palani in the northeast and cardamom in the south radiate. The western Ghats terminate about 20km north of cape comorin. Kodaikanal is a hill station which lies in the southern tip of the Palani hills.

D) Eastern Ghats

They run almost parallel to the East coast. These are a series of intersected hills, lying between the Mahanadhi River in Orissa and the Vaigai river in Tamil Nadu. These hills are not continuous and almost disappear between Godavari and Krishna rivers. The Godavari valley divides the Eastern Ghats into the northern and southern parts. The northern part is about 200km wide, while the southern part is only 100km wide. 'Mahendra Giri' (1501m) is the highest peak in the northern part. In the southern part, the 'Nallamalai range' is the most prominent. It is composed of quartz and slate. The hills and plateaus in the southern part have low altitude further south the Eastern Ghats merge with the western Ghats at Nilgiris.

The peninsular plateau has a number of hill stations such as

Physiography of peninsular India



Udagamandalam (Ooty), Kodaikanal, Pachaimalai, Mahabaleshwar, Khandala, Matheron and so on.

IV) Coastal plains

The Peninsular plateau of India is surrounded by coastal plains of variable width. It extends from the 'Rann of Kutch 'in the west to the Ganga-Brahmaputra delta in the east, covering a distance of about 6000Kms. The area between the western Ghats and the Arabian sea is called the western coastal plain. The area between the Eastern Ghats and the Bay of Bengal is called the Eastern coastal plain. The two coastal plains meet each other at Kanyakumari the southernmost tip of the mainland of India.

a) Western coastal plains

It stretches from the Rann of Kutch in the north to Kanyakumari in the South. Except in Gujarat, the western coastal plain is quite narrow and has an average width of about 65km.

The Gujarat plain, lying towards the east of Kutch and Kathiawar, was formed by the Narmada Tapti, Mahi and Sabarmati river. It includes the southern part of Gujarat and the

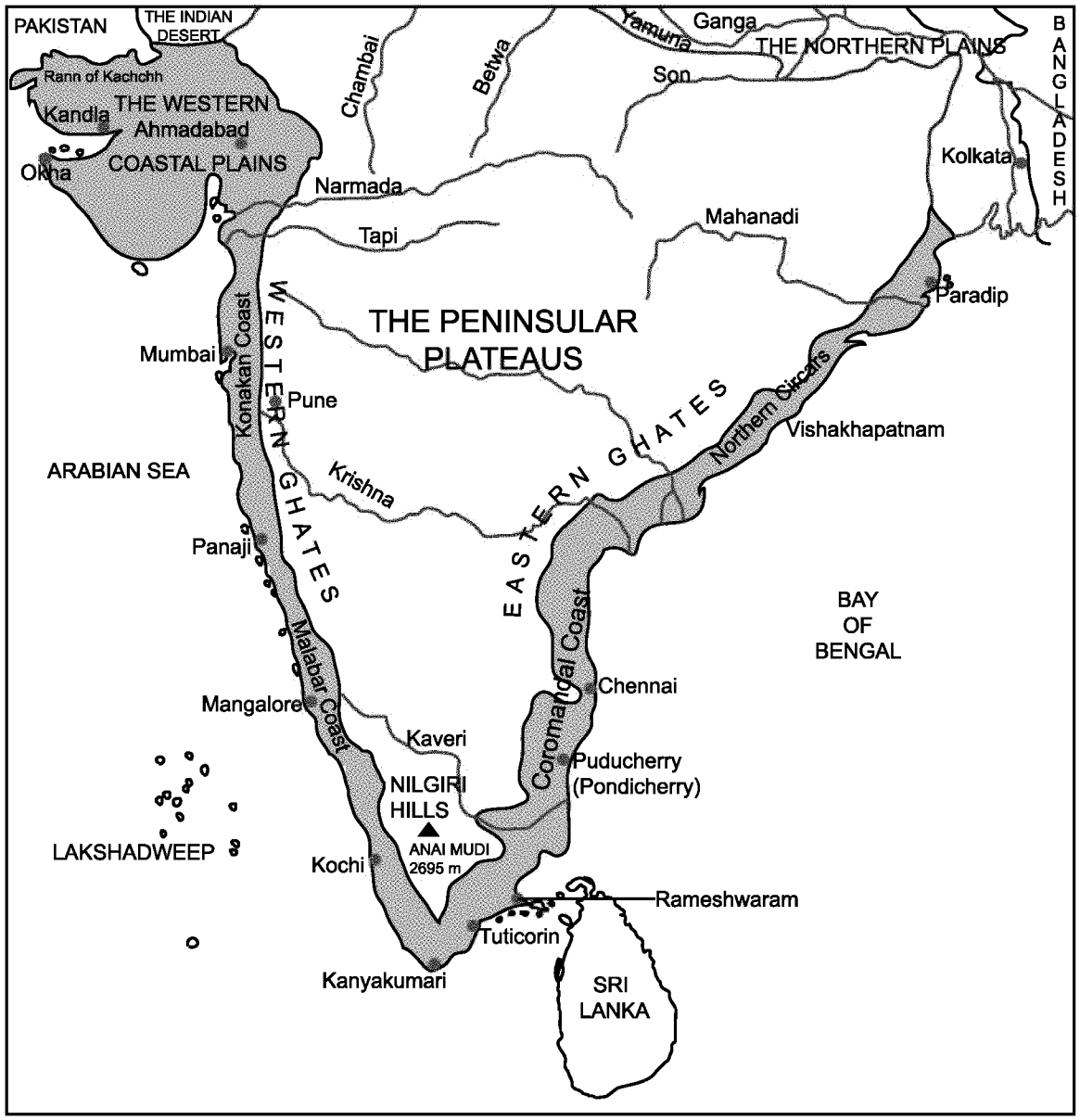
coastal areas of the Gulf of Khambhat. It has a chain of saline marshes near the coast, which are flooded during high tides.

The 'Konkan Plain' lying towards the south of Gujarat, extends upto Goa for a distance of about 500km. Its width is about 50 to 80km. It has features of marine erosion like cliffs, reefs and islands in south of Mumbai. The 'konkan coast' has series of bays and sand beaches. The northern part of Konkan is sandy while the southern part is rocky and rugged.

'The 'Karnataka plain' extends from Goa to Mangalore, and has an average width of about 30 to 50km. At some places, it descends sharply along steep slope and makes waterfalls.

The 'Malabar plain' lies between Mangalore and Kanyakumari.

Coastal plains of india



The main characteristics of the Malabar coastal plain are the existence of lakes, lagoons, backwaters, locally called 'kayals' Vembanad is the largest lagoon in Kerala. Most of the backwaters are parallel to the coast line. The lagoons and backwaters are linked by canals to provide easy navigation with the help of small country boats.

b) Eastern Coastal Plain

It stretches from the delta region of west Bengal to Kaniyakumarai. It lies between the Eastern Ghats and the Bay of Bengal. The Eastern coastal plain is more extensive and wider than the western coastal plain. A major part of this plain is formed by the alluvial deposits brought by the Mahanadi, Godavari, Krishna and Kaveri rivers. The average width is about 120km and it reaches upto 200kms in the deltaic regions. The region has a straight shoreline with well defined beaches of sand, such as the Marina beach in Chennai. The coastal plain between Mahanadi and Krishna rivers is known as the 'Northern circars'. The part lying between Krishna and Kaveri rivers is called the 'coromandal coast'.

The 'Utkal plain' is found along the coast of orissa and extends for about 400km and includes the deltaic region of Mahanadhi river. The coast line of Utkal plain is smooth and fringed with sand dunes. Chilka Lake the biggest lake in India is located towards the south of the Mahanadi river delta.

The 'Andhra plain' lies between Berhampur and Pulicat Lake.

It has been formed by the deltas of the Godavari and the Krishna rivers. The Andhra plain has straight coast and has few sites for good harbours. 'Vishakhapatnam' and 'Machilipatnam' are notable examples. Kollerulake is found in Andhraplain.

The 'TamilNadu' plain stretches from the pulicat lake to Kanyakumari for a distance of about 992 km. Its average width is about 100 km. The fertile soil and well-developed irrigation facilities have made the Kaveri river delta the 'Granary of south India'.

V) Indian Islands

Andaman Islands

There are two main groups of islands in the Indian ocean. The Andaman and Nicobar groups in the Bay of Bengal and the Lakshadweep in the Arabian sea. They are located far away from the coast of the Indian Main land. The Andaman and Nicobar group of Islands is situated between 6°N to 14°N latitudes and between 90°E to 94°E longitudes. It consists of about 572 big, small and tiny islands, out of which only 38 are inhabited. The total area is about 8249sq.km. The Andaman island groups are separated from the Nicobar island groups by the 'Ten Degree channel'. The extreme southern most point is the 'Indira Point'. The Andaman is a closely knit group of islands in which only 25 islands are inhabited. In the Nicobar group only 13 islands are inhabited most of the islands are made up of

sandstone, lime stone and shale. Most of them are of volcanic origin, and some are fringed with coral reefs. The islands are mountains with maximum elevation of about 750 metres. Since the climate is hot and humid the area is covered with thick forests and coconut groves.

Lakshadweep

The Lakshadweep groups of islands are located in the Arabian Sea and have only 27 islands out of which only 11 are inhabited. The Laccadives, Minicoy and Aminidivi group of islands were renamed as Lakshadweep (literally means one lakh islands) in 1973. This islands group is widely scattered over an area of about 110sq.km. Lakshadweep is located about 200 to 500km south west of the Kerala coast. These islands are of coral origin.

Significance of Indian Physiography

1) The presence of the Himalayas in north prevents southwest monsoon winds and cause rainfall and snowfall. If this mountain is absent, a major part of the Indian sub–continent would have been a hot and dry desert.

2) Himalayas forms a natural boundary for the sub-continent. It is permanently frozen and is a barrier to invasion.

3) The northern plains of India are of great economic and social significance due to their fertile alluvial soils, flat level land, slow moving perennial rivers and a favourable climate, agriculture and trade have been developed.

4) Peninsular Plateau is rich in mineral resources and has huge reserves of Iron, Manganese, Copper, Bauxite mica, Chromium, Limestone etc.

5) A large number of big and small ports have been developed all along the coastal areas. These ports play an important role in the growth of national and international trade.

DRAINAGE (Rivers and Lakes)

Rivers, with their tributary systems, are the main channels of drainage of the land surface. Rivers are beneficial to us in many ways. Besides providing water for cooking, washing and bathing, they provide water for irrigation, generation of hydel power, navigation and recreation. They also bring down alluvium from the highland areas and deposit it in the flood-plains and deltas. Alluvial soils in these areas are, therefore, extremely fertile. During each flood, new alluvium is deposited in the lands and fertility of the soil is renewed. Thus rivers are really boon to man kind.

Birth of a River System

Usually, mountains receive heavy rainfall and hence a majority of rivers originate in mountainous areas. The sheet of water flows down the slope in the form of rills which, after uniting with others, form streams. A number of tributary streams develop to join the

Distinction Between Himalayan Rivers and Peninsular Rivers

Himalayan Rivers	Peninsular Rivers
The Himalayan rivers like Indus, Ganga and Brahmaputra originate from the snow - covered mountains.	The Peninsular rivers like Mahanadi, Godavari, Krishna, Kaveri, Narmada and Tapi originate from the peninsular plateaus.
These rivers have large basins and catchment areas.	These rivers have small basins and catchment areas.
These rivers flow through deep, nearly I - Shaped valleys.	These rivers flow through broad and shallow valleys.
These rivers are perennial in nature and receive water both from the monsoons and the melting of snow.	These rivers are seasonal as they receive water only from the monsoon rains.
Due to their perennial nature, these rivers are very useful for irrigation.	Due to the seasonal nature, these rivers are not very useful for irrigation.
These rivers are suitable for navigations as they flow over plain areas.	These are not suitable for navigation as they flow over uneven land in the plateau region.
These rivers form large deltas near their mouth like the Ganga-Brahmaputra delta.	The west flowing rivers mostly form estuaries and the form smaller deltas.

main stream at different points along its course. This main stream is known as a river and this stream together with its tributaries constitutes a river system. The drainage system is related to a number of factors for example slope of land, geological structure, amount of volume of water and velocity of water.

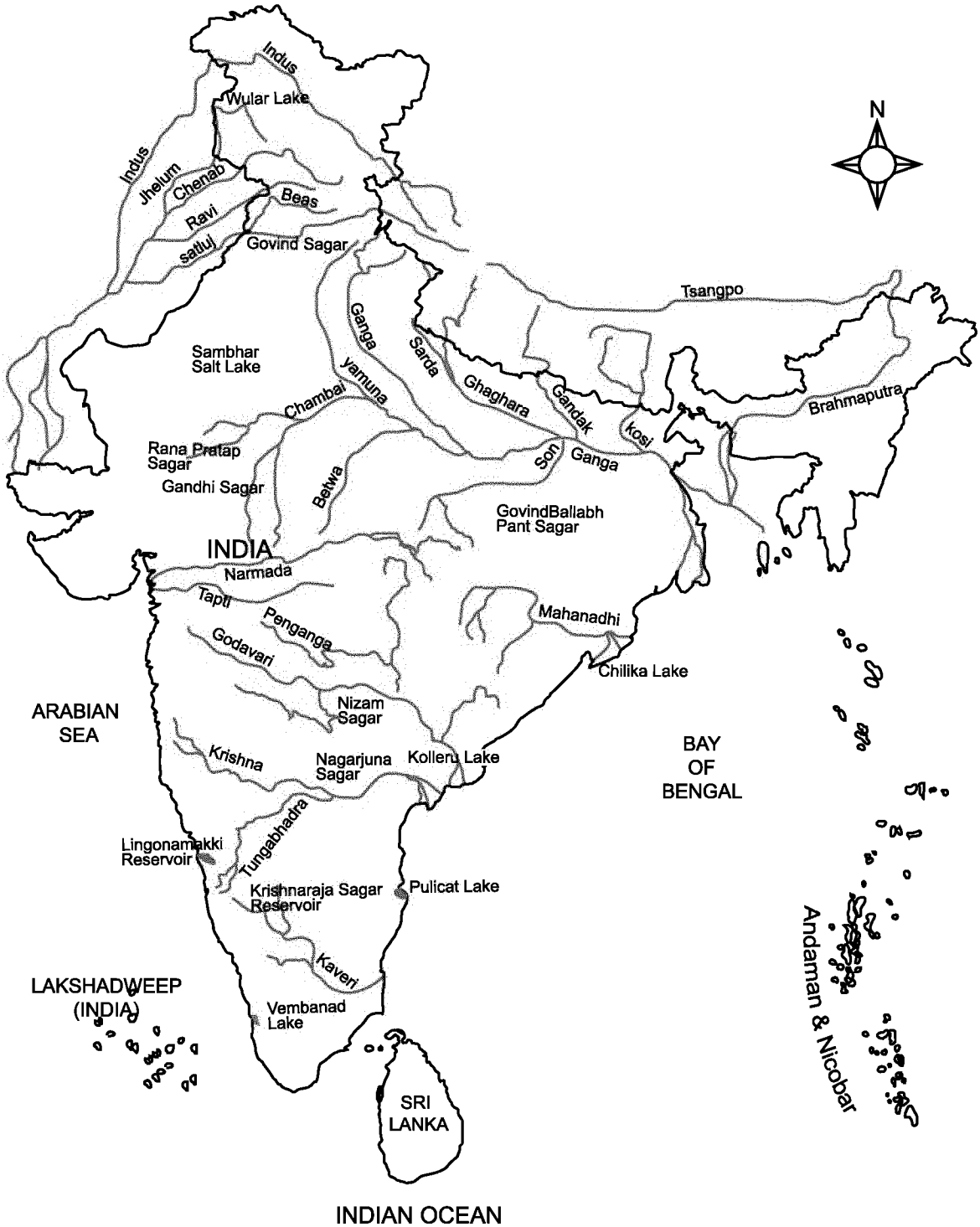
Inland Drainage

Inland drainage in found to the west of Aravallis in Rajasthan. Luni is the only river that flows through this region. The river rises to the south-west of Ajmer in the Aravallis. After passing Govindgarh it is joined by the Sarsuti, which has its sorce in lake of Pushkar from this point the river is known as Luni.

The Luni receives two major tributaries originating from the Aravallis. They are Sukri and the Jawai. After flowing for a distance of about 320km it is finally lost in the marshy ground at the head of the Rann of Kaatch. The river is a blessing to the arid parts of southern Rajasthan. As far as Balotra, the water of Luni is generally sweet, but at the Rann it is Saline.

The river system of India is tabulated as follows find the name of the rivers in India and their length, area, origin, end and the places benefitted.

Indian Rivers



River system of India

Name	Length (km)	Area	Originates from	Ends in	Places benifited
Indus	3100	3,21,290 Sq.Km.	In Tibet Kalish Range 5080 mts.	Arabian sea	India and Pakistan
Ganga (Bhagirati)	2480	3,37,000 Sq.Km	Gangothri	Bay of Bengal	Uttar Pradesh, Bihar, West Bengal
Yamuna (Jamuna)	1370	3,59,000 Sq.Km	Garhwall in Yamunotri	Bay of Bengal	Delhi, Haryana and UP
Brahmaputra	725	2,40,000 Sq.Km	Lake Manasarovar	Bay of Bengal	North Eastern state
Kaveri (Dakshina Ganga" or Ganges of the south)	805	87,900 Sq.Km	Hills of Coorg, Karnataka	Bay of Bengal	Karnataka and Tamilnadu
Godavari	1465	3,12,812 Sq.Km	Nasik Hills	Bay of Bengal	South-easterly part of Andhra Pradesh
Krishna	1400	2,59,000 Sq.Km	Near Mahabaleshwar in Maharashtra	Bay of Bengal	Mharastra & Andhrapradesh
Narmada	1312	98,796 Sq.Km	Amarkantak hill in Madhya Pradesh	Arabian Sea	Madhya pradesh and Maharastra
Tapti	724	65,145 Sq.Km	Bettul	Arabian Sea	Madhya Pradesh and Maharastra
Mahanadi	858	1,41,600 Sq.Km	Amarkantak Plateau	Bay of Bengal	Jharkhand, Chattisgarh, Orissa
Vaigai	240	7,000 Sq.Km	Cardaman Hills	Bay of Bengal	Madurai and Ramanathapuram in Tamil Nadu
Periyar	244	5,398 Sq.Km	Cardaman Hills	Bay of Bengal	Tamil Nadu and Kerala
Thamiraparani	123	4,400 Sq.Km	Agasthiyar Hils	Gulf of Mannar	Thirunelveli in Tamil Nadu

River features

Tributary	A river or stream which contributes its water to main river. For example the Bhavani and Amaravathy are tributaries of river Kaveri.
Distributary	A branch or outlet which leaves a main river and does not rejoin it, carrying its water to the sea or a lake. Ex: Hooghly
Delta	A triangular shaped alluvial tract, formed at the month of a river. For example Kaveri Delta, Ganga Delta. Delta of the Ganga is the largest delta in the world.
Estuary	The mouth of a river where tidal effects are felt and where fresh water and sea water mix; for instance, the Thames Estuary in London and Naramada and Tapti Estuaries in Peninsular India.

EXERCISE

I) Choose the correct answer.

1) The Bay of Bengal is located to the _____ of India

a) West b) South c) South-east d) South-west

2) Palk Strait separates India from _____.

a) Sri Lanka b) Myanmar c) Maldives d) Lakshadweep

3) The most centrally located meridian of India passes through _____.

a) Ahmadabad b) Allahabad

c) Hyderabad d) Auranghabad

4) The highest peak in India.

a) Mt.Everest b) Mt. Godwin Austin

c) Mt.Kanchenjunga d) Dhaulagiri

5) The Source of River Ganga

a) Yamonotri b) Siachen c) Gangotri d) Karakoram

6) The Himalayas are known as

a) Abode of snow b) Volcano c) Sahyadri d) Himadri

II) Match the following.

1)	Pilgrim centre	Sahyadri
2)	Terai Plain	Vembanad
3)	Western Ghats in Karnataka	Deccan
4)	Lava Plateau	Kedarnath
5)	Largest lake in Kerala	Marshy Land
		Chilka Lake
		Malwa Plateau.

III) Distinguish between.

1) GMT and IST
2) Western Ghats and Eastern Ghats
3) East Coast Plains and West Coast Plains

IV) Answer the following questions

1) What are the main physical divisions of India?
2) Write any two points on the Importance of the Himalayas.
3) Name a few well- known holy places in the Northern Mountains of India.
4) Name the rivers that do not form a delta on the west coast of India.
5) Name the Islands belonging to India.

V) Answer the following Questions in a Paragraph .

1) 'India is a sub-continent' - Justify.
2) 'Unity in Diversity' Explain.
3) Explain the origins of the Himalayas.
4) Mention the Importance of Himalayas.
5) Write short notes on Northern Plains of India.
6) Write in brief about Peninsular Plateau.

VI) On a Physical Map of India mark and name the following.

1) Main Physical Divisions of India.
2) Thar desert and Deccan Plateau.
3) Rivers: Ganga, Brahmaputra, Narmada, Godavari and Krishna
4) Hills/Mountains: Siwalik, Karakoram, Ladakh Range, Kailash Range, Patkai Hills, Nilgiri Hills, Western ghats, Satpura and Aravalli Ranges
5) Mt. Everest, Mt. K2, Palk Strait, Gulf of mannar, Northern circars Coromandal coast, Konkan Coast, Andaman and Nicobar Islands, Gulf of Khambhat,Gulf of kutch, Chotta Nagpur Plateau, Sunderbans, Rann of Kutch, Malwa Plateau and Pamir Knot

VII) Activity .

Find the answer with the help of the table:1

1) Which is the largest state ?
2) Which is the smallest state ?
3) Note down the densely populated and sparsely populated states.
4) List out the names of seven states in north eastern India called seven sisters.

2. INDIA - CLIMATE

Climate is one of the basic elements in the natural Environment. It determines the landforms, soil, vegetation and agriculture of a place. The kind of clothes that we wear, the food we eat and the house in which we live are intimately related to climate. But the climate differs from one place to another place. The sharply contrasting relief features of India create diverse climate. The climate of North India differs from South India in respect to temperature, rainfall etc. Let us have a look at these climatic variations of India with their determining factors.

Can you distinguish weather and climate?

Weather is a day to day conditions of atmosphere at any place in regard to temperature, pressure wind, humidity, and rainfall.

Climate is the average state of weather for a longer period of time at any place. Weather records of a minimum period of 35 years are found necessary to obtain reliable average.

Climate of a place is determined by the following factors such as

1. Latitude
2. Altitude
3. Distance from the sea
4. Wind
5. Position of Mountains

1. Latitude

India lies between $8^0 4$ N to 37^0 N Latitudes. $23^0 30'$ N latitude tropic of cancer passes across the country. The parts of the country to the south of tropic of cancer being closer to the Equator, experience high temperature throughout the year. The parts of the country to the north of tropic of cancer on the other hand lie in the warm temperature zone. Hence they experience low temperature particularly in winter. For example New Delhi which is located in 38^0N experiences 23^0C while Kanyakumari at 8^0N experiences 32^0C, during the month of November.

2. Altitude

Temperature decreases with increasing altitude from the earth surface at the rate of 1^0C for every 165 meters. Hence, the places situated at the higher altitudes are cooler as compared to places in plains. For example the mean temperature of New Delhi, which is situated in plain region at an altitude of 239 meters from the sea level, is 40.2^0C during the month of June, while the temperature of Simla, which is located in higher altitude of 2,205meters is 23.7^0C at the same month.

3. Distance from the sea

The places to the north of Tropic of cancer experience "continental climate", where the summer is extremely hot and the winter is extremely cold. The prevalence of the climate is due to the far off location from the sea.

The Tropical South, which is enclosed on three sides by Arabian Sea, Indian Ocean and Bay of Bengal, experiences 'Equable climate'.

4. Wind

When the winds blow from sea to the land bring warm temperature while the winds blow across the land bring dry temperature. For example,

1) The westerly winds originate in Mediterranean sea and blow in to the northwest India. They bring rain to Punjab and Haryana.

2) The Tropical cyclone wind originates in Bay of Bengal and blows along east coast of India. It causes heavy loss to life and property.

Jet Streams

Air currents in the upper layers of the atmosphere is known as Jet streams. It could determine the arrival and departure of monsoon winds in India.

5. Position of Mountains

Position of mountains plays a vital role in determining the climate of any place. For example,

a) The great Himalayan range in the North India obstructs the bitter cold winds from central Asia to India.

b) The Himalayan range intercepts the rain-bearing southwest monsoon winds, forcing them to shed their moisture, resulting in heavy rainfall in the northeast and Indo - Gangetic Plain.

c) The Aravalli range intercepts south west monsoon winds and so western side of this range is a desert and receives very less rainfall.

EL – Nino is a complex weather phenomena that appears once every five to ten years, bringing drought, floods and other weather extremes to different parts of the world. It is also a cause for the delay of south west monsoon onset in India.

Climate of India

Inspite of the great diversity and variation in Indian climate and topography, the most important factor that lends unity to the India is the fact of the monsoons. The word 'monsoon' owes its origin to an Arabic word 'Mausim' meaning 'season'. The term was used by seamen several centuries ago, to describe' system of alternating' winds over the Arabian Sea. These winds appear to blow from southwest for six months and from northeast for another six months. The winds which reverse their directions completely between the summer and the winter is known as Monsoon Winds. Due to these monsoon winds, India experiences Tropical monsoon climate.

The salient features of Tropical monsoon climate

1) The Monsoon winds are classified into Southwest Monsoon and Northeast Monsoon on the basis of the direction from where they blow.

2) They are caused due to the differential heating of land and sea.

3) The main feature of monsoon winds is alternation of seasons which determines the climate of the India.

Season

On the basis of the monsoon variation, the meteorologists recognize the four distinct seasons in India such as:

1) Winter (December to February)

2) Summer (March to May)

3) South west Monsoon. (June to September)

4) North East Monsoon
(October to November).

1. Winter (December to February)

During winter, the sun is overhead in the Tropic of Capricorn. The land Mass becomes cold in North India where the day mean temperature remains below 21°C. No obvious difference is found in the temperature during day and night.

In the meantime high pressure develops in the northwestern part of India due to the prevalence of low-temperature. In contrast to this, a low pressure area forms in South India, that is both in Arabian Sea and Bay of Bengal. Consequently the winds blow from the high pressure area of northwest India towards South India. These winds are called the 'Retreating monsoon winds' which blow from land to sea and do not cause much rain fall. But these winds absorb some moisture while crossing the Bay of Bengal and gives winter rainfall to Tamil Nadu and South Andhra Pradesh. This is the main characteristics feature of Retreating monsoon.

During this period, a low pressure depression originates over the Mediterranean Sea and travels eastwards across Iran and Pakistan and reaches India. This low pressure depression is called 'Western disturbance'. The Jet stream plays a dominant role in bringing this disturbance to India. This disturbances causes rainfall in Punjab, Hariyana and Himachal Pradesh which is very useful for the cultivation of wheat. It also brings snow fall in the hills of Jammu and Kashmir.

2. Summer (March-May)

The summer season starts in March and continues up to May. During this season the Sun's rays are vertical over the Tropic of Cancer. Therefore the temperature is very high in the northern parts of the India. At some places in northwest India the day temperature may be as high as 45° C. Due to this high temperature, low pressure conditions prevail over northern part of India.

Contrary to this the southern parts of India has moderate weather conditions because of its locations nearer to sea. The mean maximum temperature here varies from 26° C to 30° C. High pressure develops here due to low temperature comparatively to the north India.

Because of the atomospheric pressure conditions, the winds blow from south west to north east direction in Arabian Sea and Bay of Bengal. They bring pre monsoon showers to the west coastal areas during May. There are a few thunder showers called 'Mangoshowers' which helps in quick ripening of mangoes along the coast of Kerala and Karnataka. North Eastern part of India also experiences local storms called 'Norwesters'. These thunder storms are called as Kalbaisakhi (Calamity of the month of Baisakh) in Punjab.

Strong hot winds blow during day time over northern and northwest parts of India are called as 'Loo winds'.

3. South West Monsoon (June to September)

After the summer season, rainy season starts with the onset of south west monsoon. The high temperature gives rise to low pressure and by the end of May a large area of low pressure is formed over the north west part of the country. At the same time, the oceans become cool and a high

pressure area develops over the oceans. We know that wind always blows from high pressure to low pressure. Hence the winds blow from oceans towards the land of India. These winds blow from South East directions. When they cross the equator, they get deflected and blow as South West Monsoon. These winds are moisture laden winds because they originate from Indian Ocean. When they approach the Southern part of Kerala they give rain with violent thunderstorms indicating the onset of the monsoon and lightning. This phenomenon is often termed as the 'monsoon burst'.

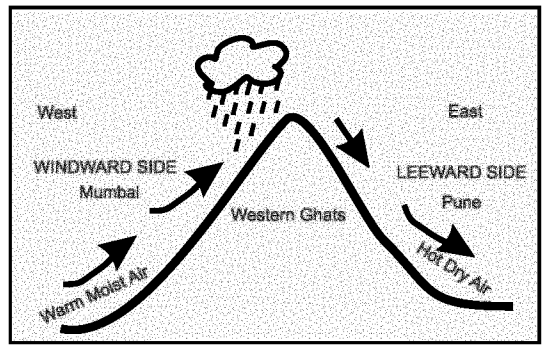
The south west Monsoon is normally divided into two branches because of the peninsular shape of the country. They are Arabian Sea branch and Bay of Bengal branch.

a. Arabian Sea Branch

The more powerful Arabian Sea branch of monsoon wind and brings heavier rainfall. Blowing from the Arabian Sea, the first part of the wind first strikes against the Western Ghats. This moisture laden wind is forced to ascend the slopes, condenses and gives heavy rainfall to western coastal region. Mumbai gets a heavy rainfall of over 150cms as it lies on the windward side of Western Ghats while Pune gets less than 50cms of rainfall as it lies on the leeward side (rain shadow) of the Western Ghats.

The second part of this wind blow through the Vindhya-Satpura ranges and strikes against the Rajmahal hills and cause heavy rainfall in the Chotanagpur Plateau region.

The third part of this wind moves towards Rajasthan where the Aravalli Mountains stand parallel to the direction of this wind. Hence it is not able to strike against the mountain and does not give any rain to Rajasthan. This is the reason why a part of Western Rajasthan remains to be a desert. This wind then reaches Himachal Pradesh and combines with the Bay of Bengal branch. It gets obstructed by the Shiwalik hills and gives a good rainfall to the foot hills of this region.



Wind ward side and Lee ward side of a mountain

Wind ward side

The wind striking side of the mountain is called windward side of a mountain, which receives heavy rainfall.

Lee ward side

The other side of the mountain which is sheltered from the wind is called Leeward side of the mountain. It receives very less rain fall.

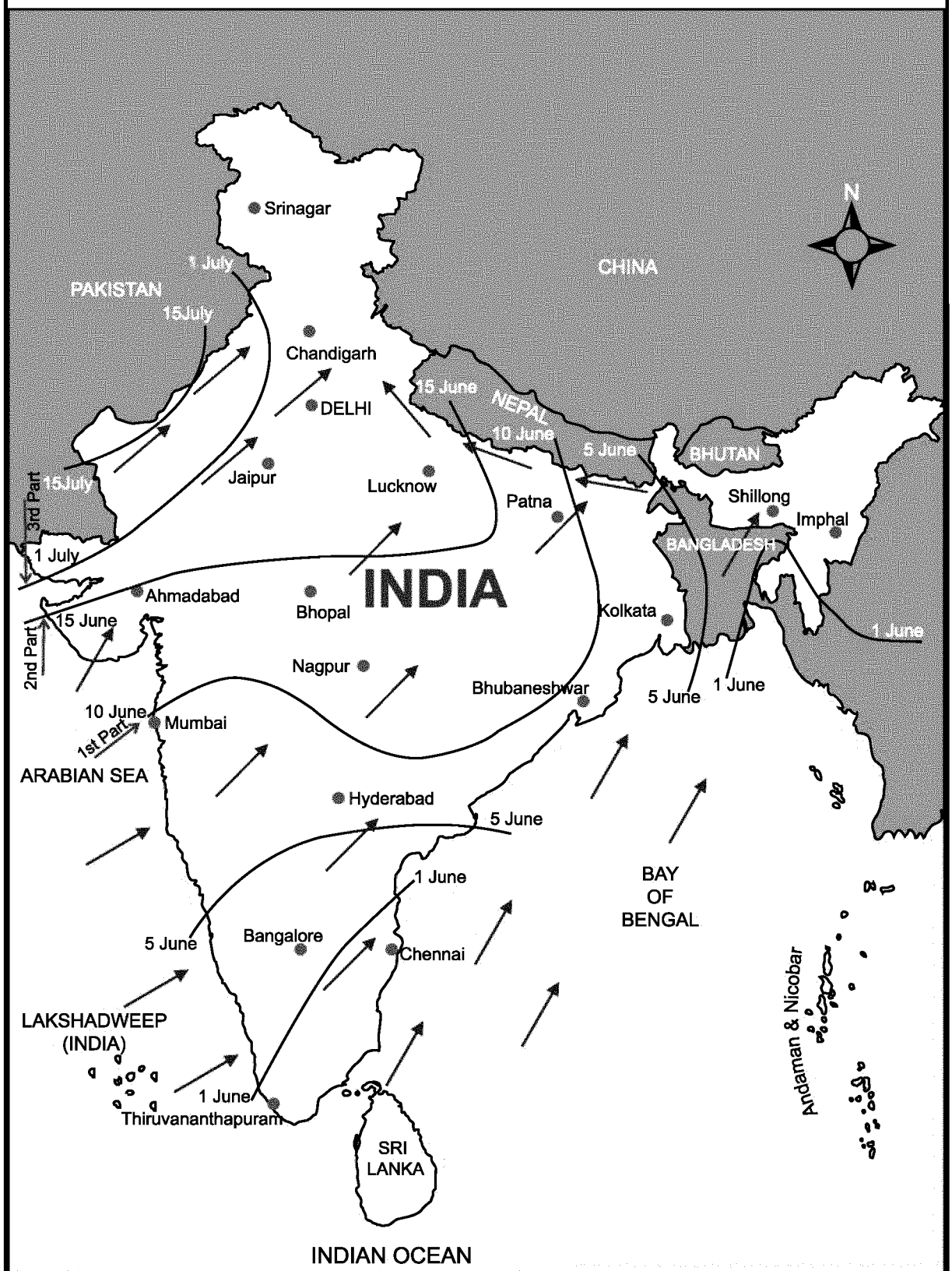
Rain shadow region

Rain shadow region is an area receiving relatively less rainfall due to the obstruction of mountains.

b. Bay of Bengal Branch

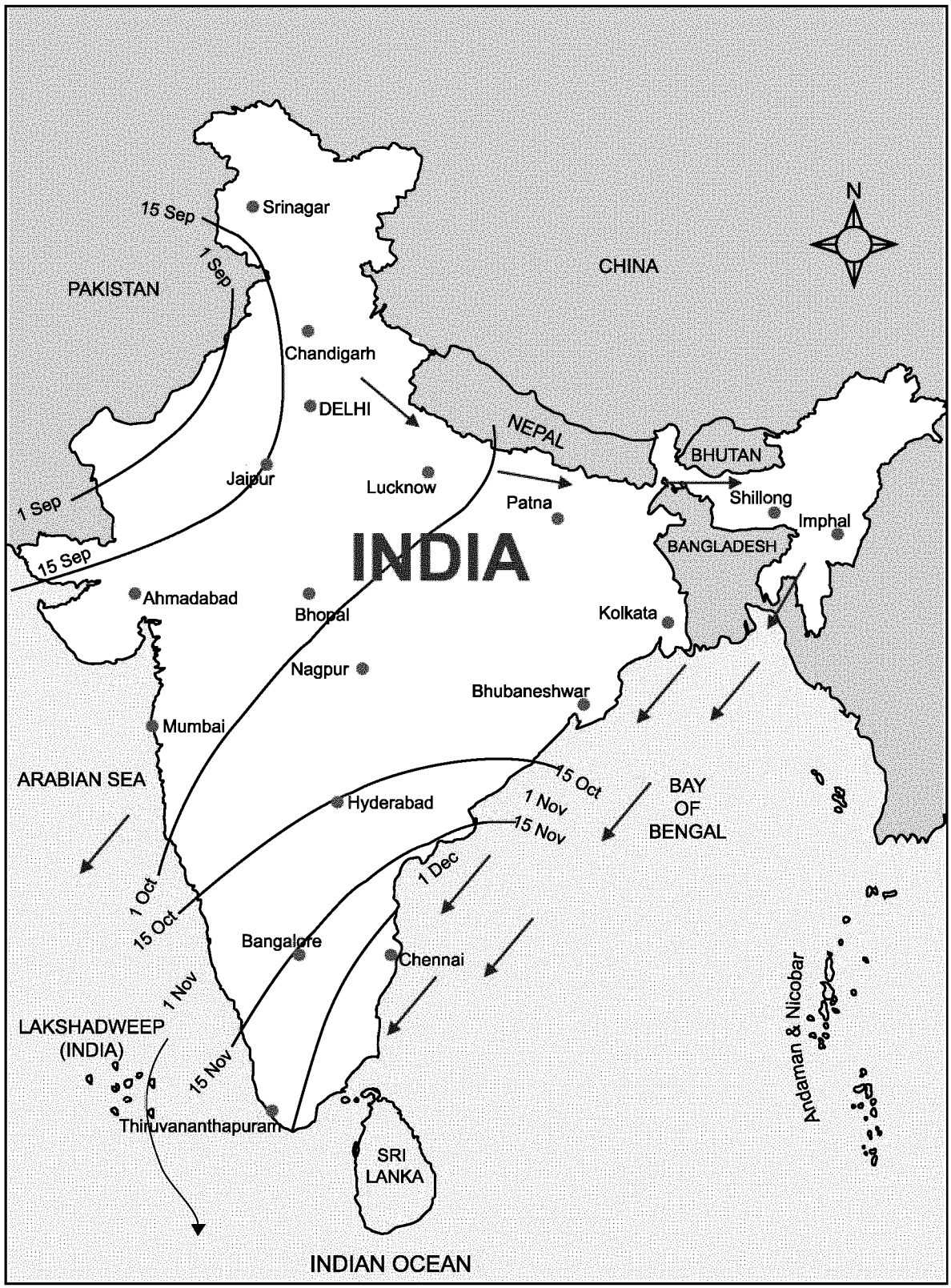
This branch of monsoon, blowing from the Bay of Bengal is 'moisture bearing wind'. It strikes against the Kasi, Garo, and Jaintia Hills. This moisture laden wind takes a sudden rise over the funnel shaped hills and

INDIA
ADVANCING SOUTH WEST MONSOON



The lines shown inside the map denote the advancement of monsoon in our country from 1st day of June to 15th day of July.

INDIA
RETREATING NORTHEAST MONSOON



causes heavy rainfall in Cherrapunji, which receives the highest rainfall in India. A part of this branch gets deflected by the Himalayas and moves towards the west giving rain to the Gangetic plains. As it moves further westwards, it loses its moisture content and gives scanty rainfall to Punjab and Haryana. Finally this Wind meets the Arabian Sea branch of monsoon wind at the foot hills of the Himalayas and gives heavy rainfall along the Siwaliks. Tamil Nadu remains dry during this period because it lies in the rain shadow area, of the Arabian Sea branch monsoon and it lies parallel to the Bay of Bengal branch.

4. North East Monsoon (October to November)

The South West Monsoon begins to retreat from the Northern India by second week of September because of the apparent movement of the sun towards tropic of Capricorn.

The landmass of India starts losing heat and there is a fall in the temperature. But the sea is still in warm condition. High Pressure develops over the land and low pressure over the sea. Therefore wind blows from high pressure to low pressure that is from land to sea. It is cold dry wind and gives no rainfall to land mass. But, when it crosses the Bay of Bengal, it absorbs moisture and gives heavy rain to the Coromandal coast. So Andhra Pradesh and Tamil Nadu get heavy rainfall during winter. There are frequent cyclones formed in the Bay of Bengal and they cause damage to life and property along the Coromandal coast.

FEATURES OF THE MONSOON

i) Uneven distribution of Rainfall during the year

The South West Monsoon causes over 80 per cent of the rainfall over the country during June to September. The normal duration of the Monsoon varies from two to four months. Normally it withdraws from the north-west by the beginning of September and from the remaining parts of the country by the end of October and in some parts by November.

ii) Influence of Mountains

The rainfall is very much influenced by orographic features. Though the wind passes over Gujarat and Rajasthan, it brings very little rainfall due to absence of mountains. Along the west coast, the winds strike the Western Ghats and bring heavy rainfall on the windward side. For example, The Shillong Plateau receives heavy rainfall (annual rainfall at Cherrapunji 1,270 cm) while the central part of the Assam Valley which is situated in the lee ward side receives less rainfall (annual rainfall at Guahati 163.7 cm).

iii) Tropical Cyclone

The intensity and distribution of rainfall are determined by a series of tropical depressions (low pressure systems) which have their origin near the northern part of Bay of Bengal and travel across the country in west and north-westerly direction. On an average eight such cyclonic depressions may pass from the Bay of Bengal into the land area between June and September.

Cyclone

A cyclone is a small but intense low-pressure system in Arabian sea or Bay of Bengal which produces violent winds and heavy rainfall.

iv) Erratic nature of the Rainfall

It is difficult to make any general statement describing the rainfall in any particular state. Because the same areas which received heavy rainfall in one season may experience drought conditions in the next season. Some times the beginning of the rain may be delayed. There may be breaks in the monsoon rain during July and August, some times the rain disappears for a week or more. The Monsoon may also withdraw earlier than usual or may persist longer than usual.

v) Monsoon rains have great effect on the country's economy

The prosperity of India depends on the success or failure of the Monsoon. Slight variations in the directions of rain-bearing winds may convert normally well-watered areas into deserts. For example, Gujarat and the Deccan plateau are particularly liable to drought. The Hydro electric power plants are affected severely in times of low rainfall. The supply of electricity to industries is rationed resulting in great loss in Economy.

Rainfall during summer

The annual rainfall varies from about 1187cm to less than 25 cm. At Mawsynram, a station 16 km west of Cherrapunji in the state of Meghalaya receives 1187 cm rainfall which is the highest in the world. Less than 25 cm of rainfall is found in Thar desert in Rajasthan. The erratic nature of monsoon creates havoc at times due to unprecedented rainfall.

WINTER RAINFALL

Winter rainfall which sets in over the Bay of Bengal in October and meets with the damp winds of the retreating summer monsoon. This current curves round over the Bay of Bengal and blows directly in to the TamilNadu coast giving that region the wettest and most disturbed weather of the whole year (mainly during October and November). Heavy rains accompanied by stormy winds sweep over the coastal regions causing widespread damage to standing crops and disorganizing means of transport.

Similarly, Nagapattinam receives an average of 100 cm out of its total rainfall of 140 cm in the cold season. The rainfall is higher along the coast than in the interior. It decreases rapidly on land so that over the Mysore Plateau in Karnataka receives only about 3 or 4cm.

Distribution of Rainfall

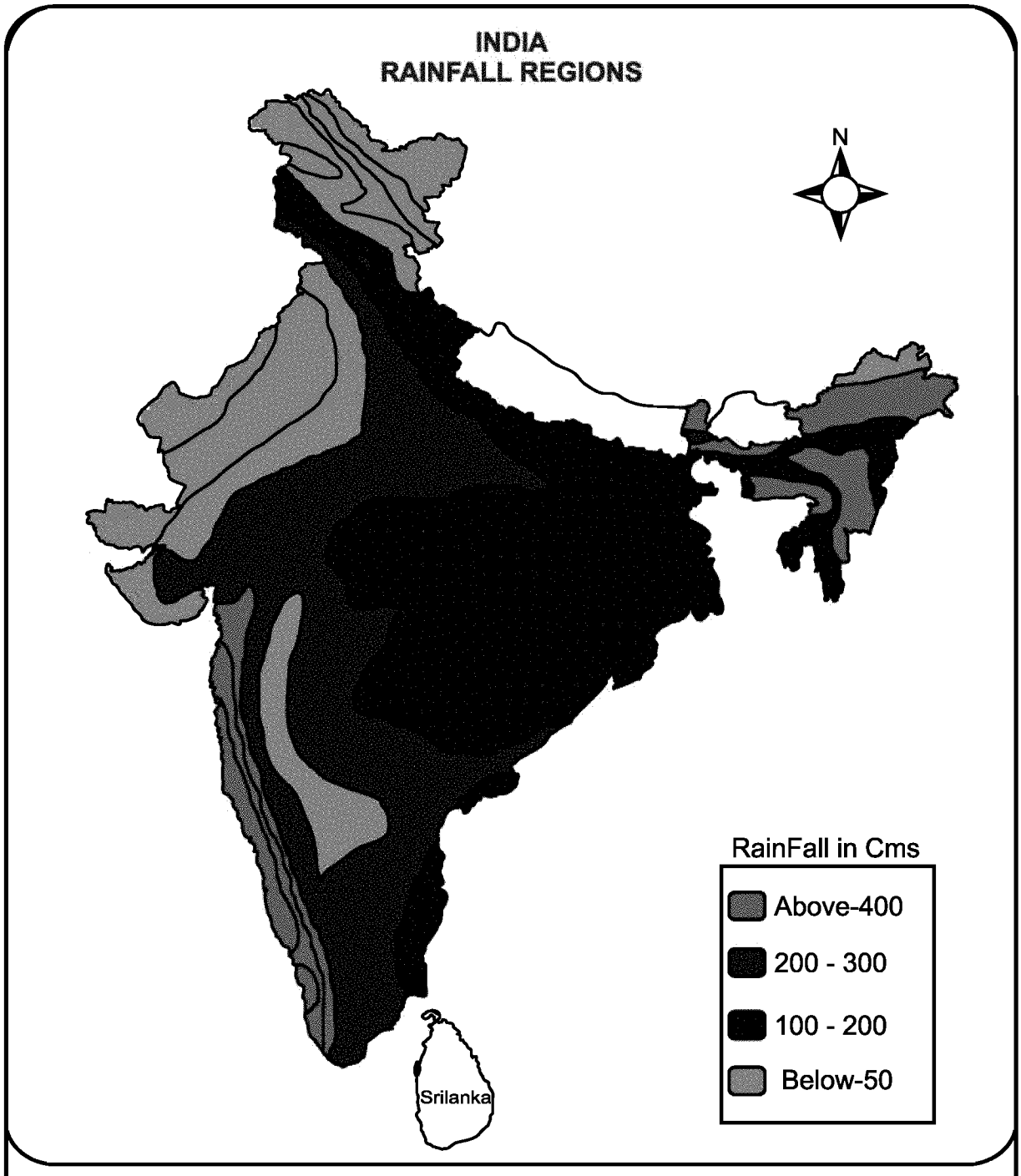
The distribution of rainfall over the country, as we have noted earlier, is determined by two main factors. These are: (1) the direction of the rain bearing winds and (2) the position of the mountain ranges.

Due to these factors about 30 per cent of the area of our country receives from 15 to 80 cm; 40 per cent receives from 80 to 120 cm; 20 percent gets from 120 to 180 cm and about 10 percent receives over 200 cm.

On the basis of the amount of rainfall our country can be divided into four rainfall regions as follows:

1. Region of very heavy

Areas with over 400 cm of rain are the southern slopes of the Eastern Himalayas, Assam, Bengal and the



West Coast Region comprising the Konkan and the Malabar Coast.

2. Regions of heavy rainfall

Areas with rainfall between 200 to 300 cm are the Middle Ganga Valley, Western Ghats, Eastern Maharashtra, Madhya Pradesh and Orissa.

3. Regions of moderate rainfall

Areas with100to 200 cm of rainfall are the Upper Ganga valley, Eastern Rajasthan and Punjab, Southern Deccan comprising the plateau regions of Karnataka, Andhra Pradesh and Tamil Nadu.

4. Regions of Scanty rainfall

Areas with less than 50 cm are the northern part of Kashmir, western Rajasthan, southern Punjab and regions of the Deccan in the rain shadow of the Western Ghats.

Water Management

Water management implies making the best use of available water resources for human benefit, while not only controlling its depletion and degradation, but also for our future needs.

Water is an indispensable resource and has multiple uses. Therefore, it becomes extremely important to manage our soil and water resources in an integrated manner. Water management must be under taken at all levels.

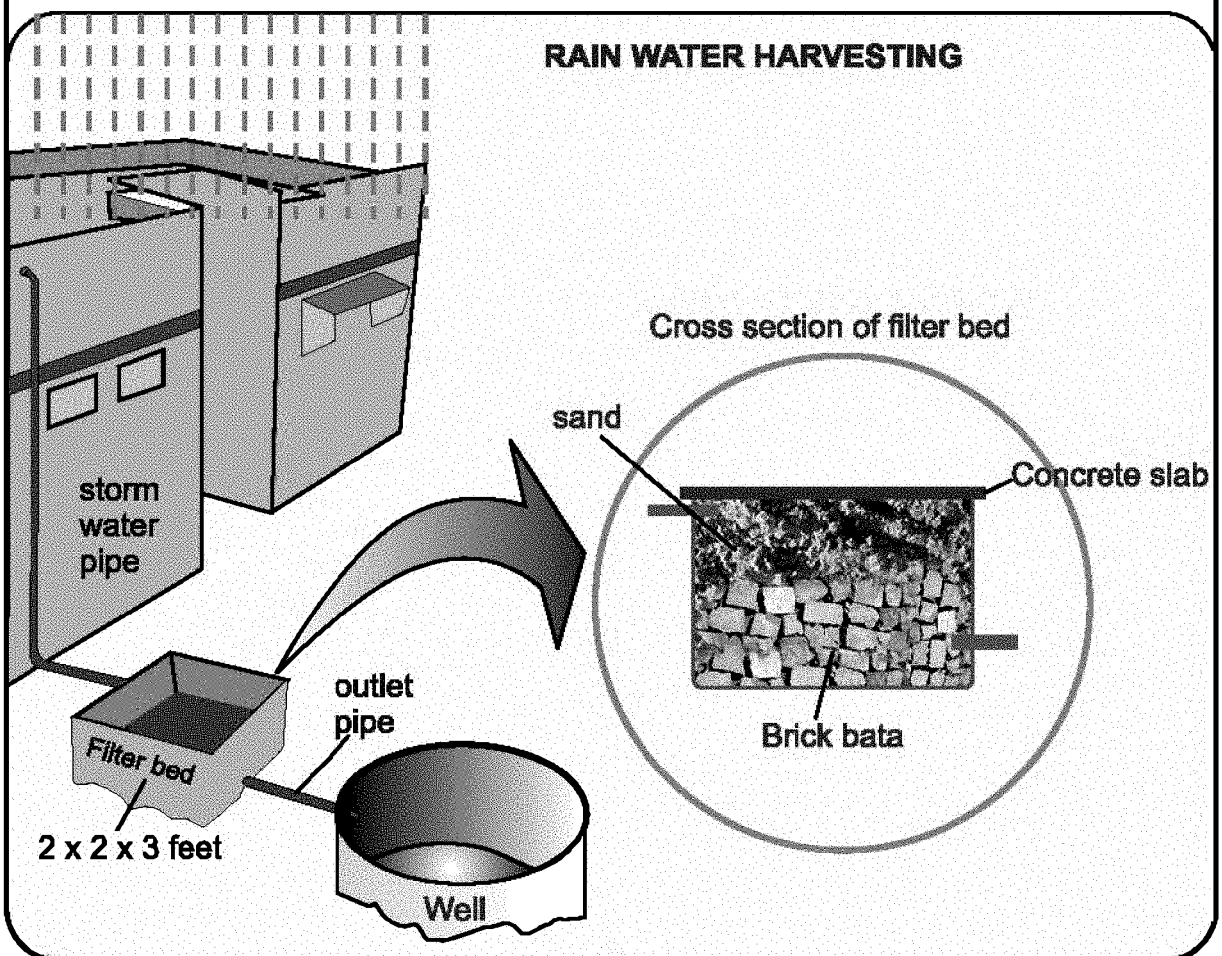
The basic requirements for water conservation activities are:

1) The total involvement, co-operation and participation of all local people
2) The role of women in managing house hold water needs.
3) The most important aspect in water management is to treat water resources an economic commodity to be used in the profitable and satisfying manner.
4) In the distribution of this economic (commodity) good both equity and quality must be ensured.

We can save the water through "rainwater harvesting" strategy.

Rain Water Harvesting

India experiences Tropical monsoon type of climate. It gives a



seasonal rainfall. It is not uniform and is highly erratic. Most of the time the rainfall is scanty, hence it is necessary to save available rain water. We must allow this water to penetrate into deep water table and tap this water when it is needed. In order to prevent surface run -off we must harvest the rain water for future domestic related and other activities.

Hence Rain harvesting is an activity of direct collection and storage of water for our purpose or it can be recharged into the ground for withdrawal later. Through rain harvesting we can understand the real value of rain and to make optimum use of it.

EXERCISE

I) Choose the correct answer.

1) India experiences_____

a) Temperate climate b) Tropical Monsoon Climate

c) Tropical Climate d) Cold Climate

2) The Coastal areas enjoy _____ climate

a) Continental b) Equable c) Humid d) Hot

3) The place that gets rain from Western disturbance is _____

a) Punjab b) Mumbai c) Allahabad d) Chennai

4) The mountains which lie parallel to the direction of the Southwest Monsoon wind is _____

a) Aravali b) Satpura c) Vindhya d) Maikala Range

5) The local storms in the northeastern part of India during hot weather season are called _____

a) Norwesters b) Loo c) Mango showers d) Monsoon

II) Match the Following.

1) Burst of Monsoon	December to February
2) Norwesters	October to November
3) Water conservation activities India	Northern and northwestern part of India
4) The North East Monsoon Season	Local storms in northeast India
5) Highest rainfall place	June to September
	Mawsynram in Cherrapunji
	Total involvement of local people

III) Distinguish Between.

1) Windward side and leeward side of the mountains
2) South west Monsoon and Northeast Monsoon
3) Western disturbances and Tropical cyclones
4) Weather and Climate
5) Loo and Norwesters

IV) Answer the following Questions.

1) Name the factors determining the climate of India
2) What do you mean by Monsoon?
3) What are the main features of tropical monsoon type of climate?
4) What are jet streams and how do they affect the climate of India?
5) Name the regions of heavy rainfall in India.
6) What do you mean by the 'burst of Monsoon'?

V) Answer the following in a paragraph each.

1) Analyse any two factors, determining the climate of India.
2) Explain any two characteristic features of monsoon winds.
3) Describe any one of the branch of south west monsoon.
4) Describe rain water harvesting.
5) What is water management? Give the basic requirement of water conservation?

VI) On the given map of India mark and name the following

1) Direction of southwest monsoon and northeast monsoon winds
2) Show areas receiving more than 200 cm of rainfall and less than 50 cm of rainfall.

3. INDIA - NATURAL RESOURCES

Resources form an essential requirement of our daily life. Any country can be developed shortly if it has rich and diverse resources. But a judicious use of resources only will help for a sustainable development of that country. Over exploitation of resources from nature will lead to an environmental issues and resource depletion. Let us learn some of the important resources of India and the need to conserve them.

NATURAL RESOURCE

"All materials obtained from the nature to satisfy the needs of our daily life" is known as Natural resources. Land, Air, Water, Sunlight, Soil, Minerals coal, Petroleum, Plants, Animals are some of the examples for natural resources. Human beings use these resources either directly or indirectly for their survival.

Natural Resources can be broadly classified into two types:

1. Renewable resources
2. Non-renewable resources

1. Renewable resources

Renewable resources are the resources that can be reproduced again and again. For example sun light, Air and Water are continuously available but their quantity is reduced by human consumption. The time taken to renew the resources may be different from one resource to another. For example agricultural crops, takes a short time for renewal. Others like water takes a comparatively longer time while still others like forests take even longer time.

2. Non – Renewable

"Non-Renewable resources are resources that cannot be replaced again after utilisation". They are formed over a very long geological periods. Minerals and fossil fuels are included in this category. Since their rate of formation is extremely slow, they can not be renewed easily for example coal and petroleum . That is why we are often advised to use these non-renewable resources judiciously.

Soil Resources

Soil is the most important renewable natural resource. It is the medium of plant growth and supports various types of living organisms on the earth.

Soil is the loose material which forms the upper layer of the earth. It has no definite and constant composition. It consists of

1. Decayed Plants
2. Animal substances
3. Minerals like Silica, Clay, Chalk and so on
4. Organic matter called Humus.

Soil Fertility

Soil fertility refers to the amount of nutrients in the soil, which is sufficient to support plant growth.

Soil fertility is determined by the presence of 'micro nutrients' and 'macro nutrients' in the soil.

Micro nutrients like sulphur, chlorine, copper, manganese, molybdenum, boron, Iron , cobalt, zinc. Macro nutrients like nitrogen, potassium and phosphorous should be

contained in the soil. The fertility of the soil increases with the increase of humus content.

Major Types of Soil

According to their areal extent and their agricultural importance, soils of India are classified into five major groups. They are as follows:

1. Alluvial Soil, 2. Black Soil, 3.Red Soil, 4. Laterite Soil, 5. Mountain Soil, 6. Arid and Desert Soil.

1. Alluvial Soil

Alluvial soil consists of sediments deposited by rivers along the river course, flood plains, delta and coastal plains . It contributes the largest share to the agricultural production of India.

Alluvial soil is divided into two types they are 1. Khadar 2.Bhangar. Khadar is the newer alluvium of sandy, light coloured soil, whereas Bhangar is the older alluvium of more clayey soil. The alluvial soil differs greatly in texture. It is suitable for the cultivation of rice, Wheat, sugarcane, cotton and oil-seeds. In the lower Ganga-Brahmaputra valley they are useful for jute cultivation. In this valley the alluvial soils are the brought by the Sutlej, Ganga, Yamuna, Gandak, Ghaghra and other rivers. The parts of Punjab, Haryana, U.P, Bihar and West Bengal are located in this Valley have alluvial soils.

In south India Kaveri river deposits alluvial soil along its course

2. Black Soil

Black soil is formed from the weathering of igneous rocks. It is found in the valleys of the Godavari, Krishna, Narmada and Tapti. The soil is deposited at about six meters depth. They vary in colour from deep black to chestnut brown. It is fine-grained and generally rich in lime, iron, potash, alumina, calcium and magnesium carbonates, but lack in phosphorus, nitrogen and organic matter. It has a special property of holding moisture. Hence it is suitable for the cultivation of Virginia tobacco, oilseeds like linseed, sunflower, fruits and vegetables.

Black soil is more suitable for the cultivation of cotton, rice, wheat, jowar, millets, sugarcane ,

Black soil is also found in the Deccan trap, comprising the greater part of Maharashtra, Gujarat, part of Madhya Pradesh, Andhra Pradesh and southern districts of Tamil Nadu.

3. Red Soil

Red soil is formed from the weathering of the ancient crystalline and metamorphic rocks. The red colour is due to its very high iron content. The colour varies, from brown to yellow. This soil is porous and not retentive of moisture. It is generally poor in lime, nitrogen, phosphorus and humus but when suitable fertilizers are added, it becomes rich in fertility. Wheat, rice, cotton, sugarcane and pulses are grown in this soil.

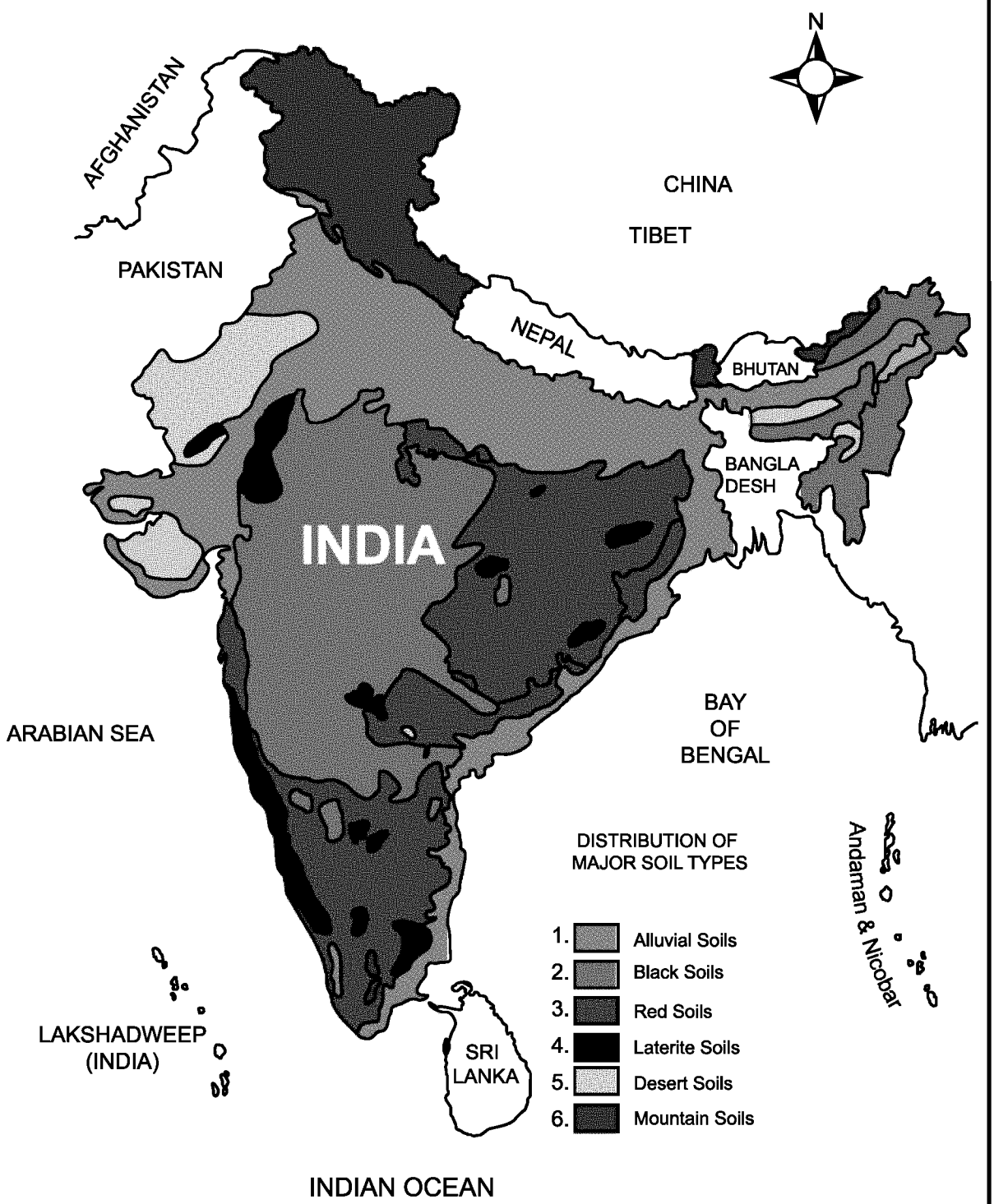
Red soil covers in most parts of Tamil Nadu, southern Karnataka, Goa, North-eastern Andhra Pradesh, Madhyapradesh and Orissa.

4. Laterite Soil

Laterite soil formation takes place under typical monsoon conditions. It is mostly found in peninsular plateau of India.

Laterite is a porous soil from which the silica has been removed by chemical action (leaching). It is coarse in texture and red in colour owing to the presence of iron oxides. The crops like coffee,

SOIL TYPES OF INDIA



Rubber, Cashew and tapioca are cultivated in this soil.

Laterite is found in Andhra Pradesh, Tamil Nadu, Karnataka, on the summits of Eastern Ghats and Parts of Orissa, Kerala and Assam.

5. Mountain Soil

This soil is found in the mountainous regions such as Western and Eastern Ghats, the Himachal and Siwalik regions. This soil is very rich in humus and Organic matter. Plantation crops such as tea, coffee and rubber grow well. Asam and West Bengal in Eastern Himalayas are principal growers of tea.

6. Desert Soil

Desert solil is found in arid zone of the north-western part of India, Rajasthan, Gujarat (Kutch region) and south Punjab.

It is sandy, alkaline and porous in nature. Though it is highly infertile, Crops are cultivated with the help of irrigation in some areas. Crops grown are wheat, rice, barley, grapes and melons.

Soil Erosion

Soil erosion means "removal of fertile content from the soil by nature and man". The proper use of soil resources has now become a matter of importance to all of us, because it directly affects our food production. Running water, wind, and human beings are the principal contributing factor of soil erosion. In many parts of our country, for instance, in UttarPradesh, Rajasthan and the Deccan vast areas have been devastated by soil erosion.

The nature of soil erosion depend much upon the texture and structure of the soil. It also depends on the conditions of climate, slope, methods of cultivation and several other factors.

Sustainable development

Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generation to meet their own needs". It means 'development should take place without damaging the environment, and development in the present time should not affect the needs of future generation'.

Soil Conservation

Soil conservation is an effort made by man to prevent soil erosion in order to retain the fertility of soil. It may not be possible to stop soil erosion entirely. But steps can be taken to reduce the rate of erosion by taking preventive measures.

The following are some of the preventive measures:

1) Construction of dams or check dams across the river course.
2) Step cultivation will prevent soil erosion.
3) Bunds should be constructed according to contours.
4) Excessive grazing should be avoided
5) Trees reduce the force of strong winds and prevents glowing away of soil particles.
6) Roots of trees plants and grasses hold soil particles and strengthen the soil. Hence deforestation should be avoided to increase forestation.
7) Plants, grass and shrubs control the speed of flowing water. Therefore such plants should not be removed. Steps should be taken to plant the trees wherever it doesn't exist.
8) Avoiding application of chemical fertilizer and applying natural manure successively to the field is one of the best methods of soil cons

NATURAL VEGETATION

Natural vegetation is the vegetation or plant cover naturally

grown on the earth's surface. It is a result of climate, soil and biotic influences. The forest is one of the greatest natural resources available to human beings. Yet they have declined through centuries. Vast areas of forest have been cleared for cultivation of crops due to over population. This phenomena should be controlled for sustainable development of forest resources.

Forest

India's Forest Resources

India's forest resources are unique in nature because there are a large number of species of plants, ranging from drought-resisting thorny shrub to tropical evergreen forests. The total forest area is around 63.72 million sq.km. The percentage of forests in total area of India is 19.39%, which is considered rather low when compared to the forest areas in most of the countries of the world. However, even this forest area is not evenly distributed; some states have 60 per cent area under forests while other states have only 3 per cent.

The fast shrinkage in forest area is mainly due to the growth in population which leads to increasing demands for agricultural land, urbanization, industrialisation and new town ships.

Types of Natural Vegetation

The geographical factors which control the growth of natural vegetation in India are temperature, rainfall, topography and soil. On the basis of the above factors, the natural vegetation of India can be divided into following six types. They are:

1) Tropical evergreen forests

2) Tropical Monsoon forests

3) Shrub and Thorn forests

4) Desert vegetation

5) Mangrove forests and

6) Mountain forests.

1. Tropical Evergreen Forests

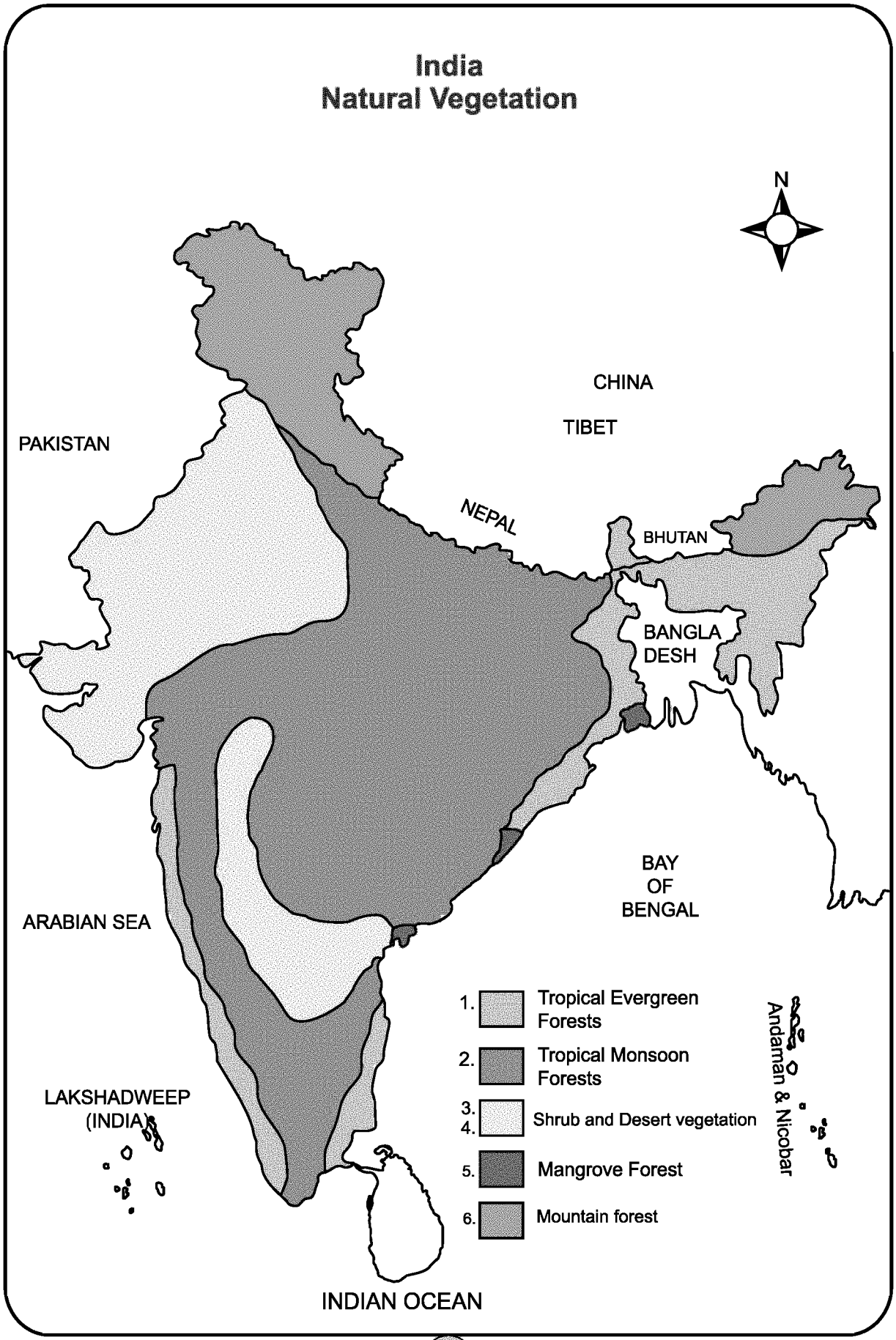
The tropical evergreen forest are found in the regions where the annual rainfall is more than 200 cm. The trees in these forests are evergreen and do not shed their leaves. These forests are very dense and composed of tall trees reaching up to the height of above 60 metres. Due to dense growth of trees, the sunlight cannot reach the ground. Thus, the under growth mainly consists of, bamboos, ferns and climbers.

The important trees of these forests are Rose wood, Ebony, Mahogany, Rubber, Cinchona, Bamboo and Lianas.

The evergreen forests are mostly found along the western side of the Western Ghats, Andaman and Nicobar Islands, lower slopes of Himalayas and some parts of Assam and Orissa.

2. Tropical Monsoon Forests

These are the typical monsoon forests and are found mainly in those areas where the average annual rainfall ranges between 70 cm and 200 cm. The trees in the deciduous


India
Natural Vegetation
N
CHINA
TIBET
PAKISTAN
NEPAL
BHUTAN
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DESH
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OF
BENGAL
ARABIAN SEA
LAKSHADWEEP
(INDIA)
Andaman & Nicobar
1. Tropical Evergreen Forests
2. Tropical Monsoon Forests
3. 4. Shrub and Desert vegetation
5. Mangrove Forest
6. Mountain forest
INDIAN OCEAN

forests shed their leaves due to dryness for about 6 to 8 weeks during the spring and early summer. Hence these forests are called deciduous forests.

The tropical deciduous forests are commercially most important as they yield valuable timber and variety of other forest products. The main trees are Teak, Sal, Sisam, Sandal Wood, Wattle and Neem.

The tropical monsoon forests are commercially most exploited. These forests have also suffered from severe biotic factors such as over - cutting, over grazing and fires. The moist monsoon forests are found mainly in the North - eastern states, along the foot hills of the Himalayan Mountains, Jharkhand, West Orissa, Chattisgarh and on the eastern slopes of the Western Ghats. The dry monsoon forests are found on the peninsular plateau, plains of Bihar and Uttar Pradesh.

3. Shrub and Thorn Forests

These forests are found mainly in those areas where the average annual rainfall is less than 75 cm with the long dry season. The trees are scattered in these forests. They have long roots to tap water in the underground. They have thick and small leaves which retards evaporation. They have thorny thick bark.

The main trees are Acacia, Palms and Cacti. Other important trees include Khair, Babul, Palas, Khagri, and Kajuri.

It is mainly found in the north western part of the country, including semi- arid areas of Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, South Western Punjab and Western Haryana. These forests are also grown on the leeward sides of the Western Ghats, covering large areas in Maharastra, Karnataka, Andhra Pradesh and Tamil Nadu.

4. Desert Vegetation

It is found in regions where the rainfall is less than 25 cm.

Desert Vegetation

The vegetation mostly consists of thorny bushes, acacias, wild berries and babul. These trees are 6 to 10 meters high but they have long roots and are armed with hard thorns to protect themselves from animals.

The babul yields gum and its bark provides material for tanning hides and skins. These are found in Rajasthan, Kutch and Saurashtra in Gujarat, south-western Punjab and parts of the Deccan.

5. Mangrove Forests

Mangrove forests are found in coastal areas flooded by the tides of the sea. Some of these forests are dense and impenetrable. The trunks of these trees are supported by a number of roots which are under water at high tide. At low tide, their roots can be seen. They are found in great abundance in the deltas of the Ganga, Mahanadhi, Godavari, Krishna, and Kaveri and along the coasts of the Andaman Islands.

Mangrove Forest

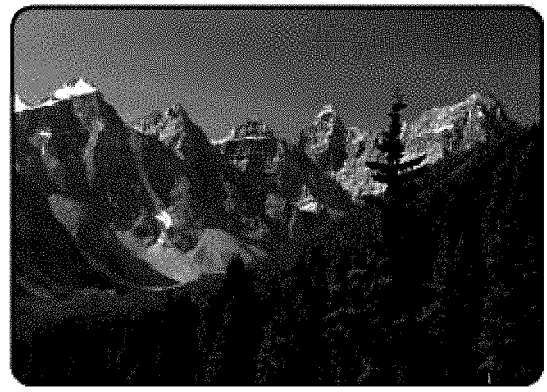
They are also found along the west coast in a few places. In West Bengal they are called Sundarbans. These woods are hard, strong and durable and are used for boat building. These forests are a valuable source of fuel.

6. Mountain Forests

The natural vegetation in the mountains is greatly influenced by the decrease of temperature with increase in height above sea level. The mountain forest can be broadly classified into two major categories:

1. The forests in the Himalayan ranges.
2. The forests in the Peninsular Plateau and hill ranges.

In the Himalayan mountains, the forests are found between the heights of 1,000 m and 2,000 m. The ever green broad leaf trees such as Oak, Chestnut predominate. Between the height of 1500 m and 3000 m, the coniferous trees such as Pine, Deodar, Silver fir, Spruce and Cedar are found. The coniferous forest cover the southern slopes of Himalayas and parts of North East India. At an altitude of above 3,600 m, Coniferous forest and grass lands give way to Alpine vegetation. Silver fir, Junipers, Pines, Birches are common varieties of trees. At higher altitudes, mosses and lichens form part of vegetation



Mountain forest

In the peninsular India, the mountain forests are found in three areas. They are:

1. Western Ghats
2. Vindhyas
3. Nilgiris

In Nilgiris, the tropical forests are locally called 'sholas'. Such forests are also found in the Satpura and Maikala ranges. The important trees in this region are Magnolia, Laurel, Cinchona and Wattle.

Grass Lands

Though the Indian grasslands are not comparable to the savanna or steppes grasslands, they do occur on wet soil ground and in the salt belt and some hilly areas. They are sub-divided into two categories.

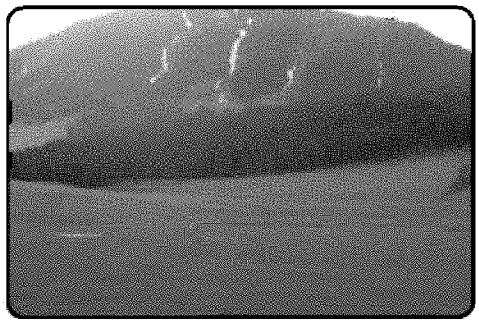
1. Low-Land Grasses

These are found in regions receiving 30 cm to 200 cm of average annual rainfall where the temperature is high during summer. These grasses are found on different soils and are suitable for cattle-breeding. They are found in the plains of northern India,

Punjab, Uttar Pradesh, Haryana, Bihar and Northwest Assam.

2. Upland Grasses

They are found at a height of over 1,000 m in the Himalayas and in the cleared forest areas of the Western Ghats in Karnataka region. They are found among small tracts of shola forests in the southern part of India too.



Upland Grasses

Importance of Forests

1) Forests provide valuable timber for domestic and commercial use and raw materials for industries.
2) It supplies a number of products such as Lac, Gum, Resins, Tanning materials, Medicines, Herbs, Honey and Spices.
3) Export of forest products earns valuable foreign exchange.
4) Grazing cattle in the forests helps in dairy farming.
5) Many forest reserves have been developed into tourist centres.
6) Forests absorb atmospheric carbon-di-oxides and help in controlling air pollution.
7) Forests help in controlling soil erosion, land reclamation and flood control.
8) Forests helps in water percolation and thus maintain underground water table.
9) Forests provide natural habitats to primitive tribes, animals and birds.
10) Forests are the moderators of climate and affect temperature, humidity and rainfall.
11) Forests meet nearly 40 % of the energy needs of the country.

In India, much of its forests and wild life resources are maintained by the Forest Department. They are classified into two types as follows :

Reserve Forests

About half of the total forest land has been declared as reserved forests. It is also known as permanent forests, It is regarded as the most valuable as far as the conservation of forests and wild life resources are concerned.

Protected Forests

Almost one-third of the total forest area is protected forest, as declared by the Forest Department. Here, felling trees are not allowed.

Forest Conservation and Management

The increasing destruction and degradation of forests have led to extensive soil erosion, uncertainity in rainfall and recurring floods. The Forests conservation Act of 1980 was formulated especially to check deforestation of forestlands for non-forestry purposes. In 1988, the act was amended by prescribing severe punishment to violators. The government should involve village communities and voluntary agencies for the regeneration of degraded forest land.

National Forest Policy

India is one of the very few countries in the world, where a policy to

conserve forests was developed in 1894. It was modified and updated in 1952 and 1988.

The main objectives of the policy

1. Bring 33 percent of the geographical area under forests (now it is 20 % only)
2. Maintain environmental stability where ecological balance was disturbed.
3. Conserve bio-diversity of the country.
4. Check soil erosion, extension of desert land and reduction of floods and drought.
5. Increase forest cover through social forestry and farm forestry.
6. Increase productivity of timber, fuel, and fodder from the forests.
7. Involve women to encourage planting trees and stop felling of trees.

Thus, it is our prime duty to conserve our country's natural vegetation.

MINERAL RESOURCES

The minerals are broadly classified into two. They are :

1. Metallic minerals
2. Non - metallic minerals.

Metallic minerals

The metallic minerals contain metals such as Iron, Copper, Manganese, Bauxite and Gold. They are further divided into ferrous minerals and non-ferrous minerals.

Ferrous minerals

Minerals having more iron content are called ferrous minerals. For example. Iron, Manganese, Nickel, Cobalt, and Tungsten.

Non - Ferrous Minerals

Minerals which do not have iron contents are called as non-ferrous minerals. For example Gold, Silver, Copper, Bauxite.

Non - Metallic Minerals

The non metallic minerals are minerals which do not contain metals, such as Mica, Lime Stone, Gypsum, Potash, Coal, etc. Example: Coal and Petroleum.

Some important minerals

Iron ore

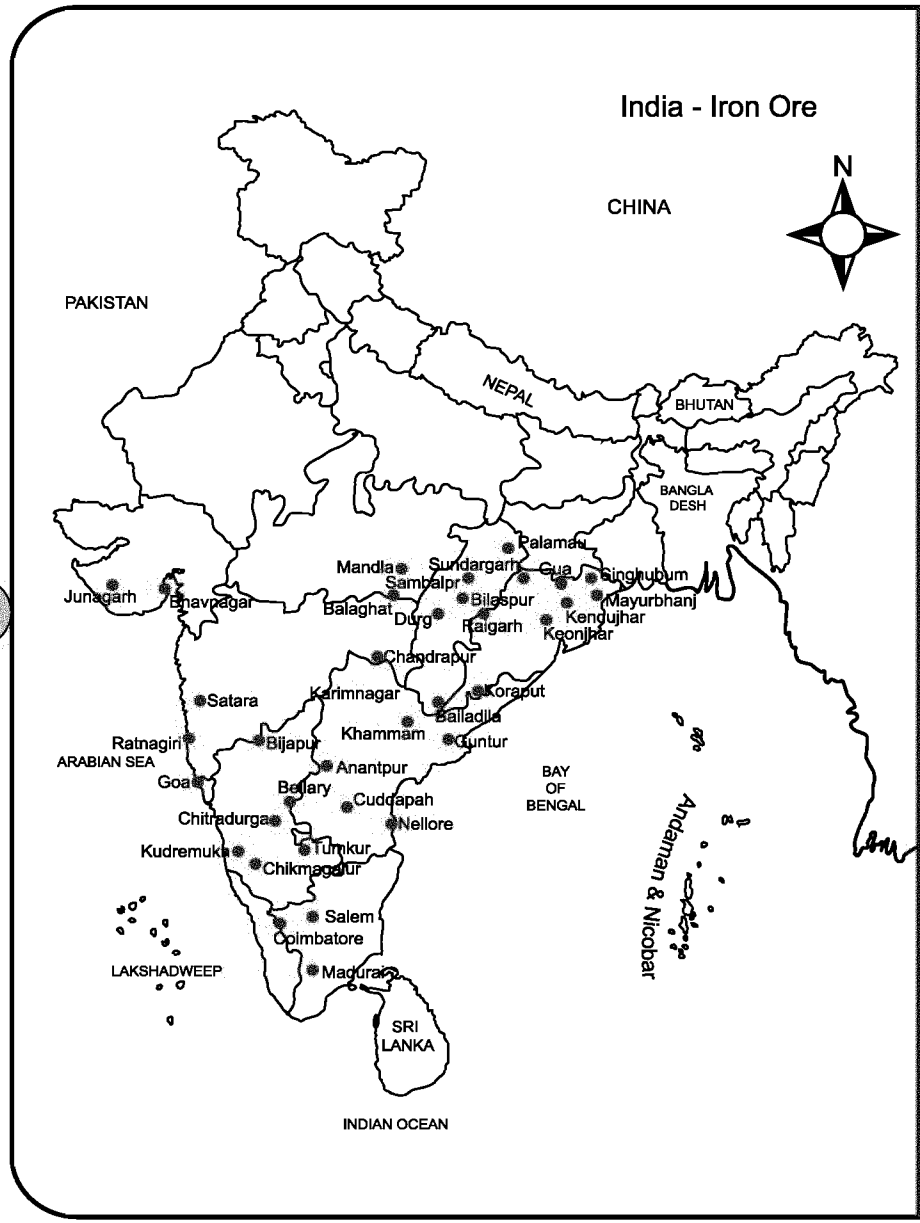
Iron ore is the basic resource for a nation's development. Iron is described as the back bone of civilization. India possesses 20% of the iron deposits of the world's total reserves.

Iron Ore

It is the second largest after the reserves of Russia. The quality of Indian ore is very high. Iron producing areas in India are Durg in Chattisgargh, singh bhum districts in Jharkhand, Mayurbhanj, keonjhar and Sundergarh district in Orissa and other areas are Goa, Karnataka and Tamil Nadu.

Manganese

India occupies fifth position in the production of manganese. It is estimated that about 20 % of the


India - Iron Ore
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CHINA
PAKISTAN
NEPAL
BHUTAN
BANGLA DESH
Palamau
Mandla
Sundargarh
Gua
Singhbhum
Sambalpr
Junagarh
Bhavnagar
Bilaspur
Mayurbhanj
Balaghat
Durg
Raigarh
Kendujhar
Keonjhar
Chandrapur
Satara
Karimnagar
Koraput
Balladila
Khammam
Ratnagiri
Bijapur
Guntur
ARABIAN SEA
Anantpur
Goa
Bellary
Cuddapah
BAY OF BENGAL
Chitradurga
Nellore
Kudremukh
Tumkur
Chikmagalur
Salem
Coimbatore
Andaman & Nicobar Is
LAKSHADWEEP
Madurai
SRI LANKA
INDIAN OCEAN


India - Manganese
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Chhindwara
Sundargarh
Balaghat
Mayurbhanj
Nagpur
Talcher
Keonjhar
Bhandara
Bolangir
Kalahandi
Srikakulam
Koraput
Vishakhapatnam
Ratnagiri
ARABIAN SEA
Belgaum
Goa
Bellary
BAY OF BENGAL
Chitradurga
Shimoga
Tumkur
Andaman & Nicobar Is
LAKSHADWEEP
SRI LANKA
INDIAN OCEAN

manganese deposits of the world are in India.

Manganese

Manganese plays a very important role in the iron and steel industry as it is necessary to make steel hard and rust proof. Manganese dioxide is used for the manufacture of dry batteries. It is also used in manufacturing bleaching powder and paints. Manganese produced areas are Balaghat in Madhya Pradesh, Keonjhar, Boonaigarh in Orissa, Bellary, Chitradurga, Shimoga in Karnataka, Tamil Nadu, Maharashtra, Gujarat and Bihar.

Bauxite

Bauxite

It is the ore of aluminum. Aluminum is a light metal formed by the decomposition of rocks rich in aluminum silicates. Due to good conducting, great malleability and extreme lightness it has got enormous industrial importance.

The major bauxite producing centers of India are Bilaspur in Chattisgarh, Ranchi in Jharkhand, Ratnagiri, Raigarh in Maharastra, Sambalpur, Kalahandi in Orissa, Goa, Gujarat, Karnataka and TamilNadu (Salem, Madurai, Nilgiri).

Copper

Copper is another metal found in nature as a good conductor of heat and electricity. It has an important role in the Electrical goods industry. Copper is mixed with other metals to form alloys.

Copper producing areas are Singhbhum in Jharkhand, Guntur and Nellore in Andhra Pradesh, Balaghat in Madhya Pradesh Rajasthan and Karnataka.

Mica

Mica is a bad conductor of electricity and so it is used in the manufacture of electrical goods. India contributes about 60% of the mica production in the world. Major mica producing states of India are Andhra Pradesh, Jharkhand, Bihar and Rajasthan.

Conservation of Mineral Resources

The total volume of usable mineral deposits is one percent of the earth's crust. We rapidly consuming mineral resources. But the geological processes of mineral formation are so slow and therefore they are non renewable.

A concerted effort has to be made in order to use our mineral resources in a planned and sustainable manner. New technologies need to be evolved

to use low grade ores at low costs, recycled metals, using scrap metals and other substitutes to conserve our mineral resources for the future.

ENERGY RESOURCES

Energy is an inevitable resource in our day-to-day life. It is an essential component in economical and technological development. Coal, Petroleum, natural gas solar energy and wind energy are some of the sources of energy. Energy Resources can be classified into Non-Renewable and Renewable energy resources.

Non - Renewable Energy Resources

Coal

Coal is the major energy resource in India. The 67% of the energy requirement of the country is met from coal. It is mainly used in Iron and steel industries. Coal is also known as 'Black Gold'. Coal is classified into many varieties based on its quality and the amount of carbon content in it. They are 1.Anthracite 2.Bituminous 3.Lignite 4.Charcoal.

Many coalfields are located in the northeastern India. About two thirds of the total production of coal is made from Jharkhand, Madhya Pradesh, Chhattisgarh and Orissa. One third of the total production is obtained from Andhra Pradesh, Maharashtra, West Bengal and Uttar Pradesh.

Petroleum

Petroleum, known as 'Mineral Oil', is mined from the layers of sedimentary rocks. India has a reserve of 4000 million tons, but only 25% of it is possible to be excavated. About 33 million tons of petroleum in mined in India annually. 63% of this is from Mumbai High, 18% from Gujarat and 16% from Assam. The remaining 3% is rigged from Arunachal Pradesh, Andhra Pradesh and Tamil Nadu.

Oil drilling in Mumbai High

Natural Gas

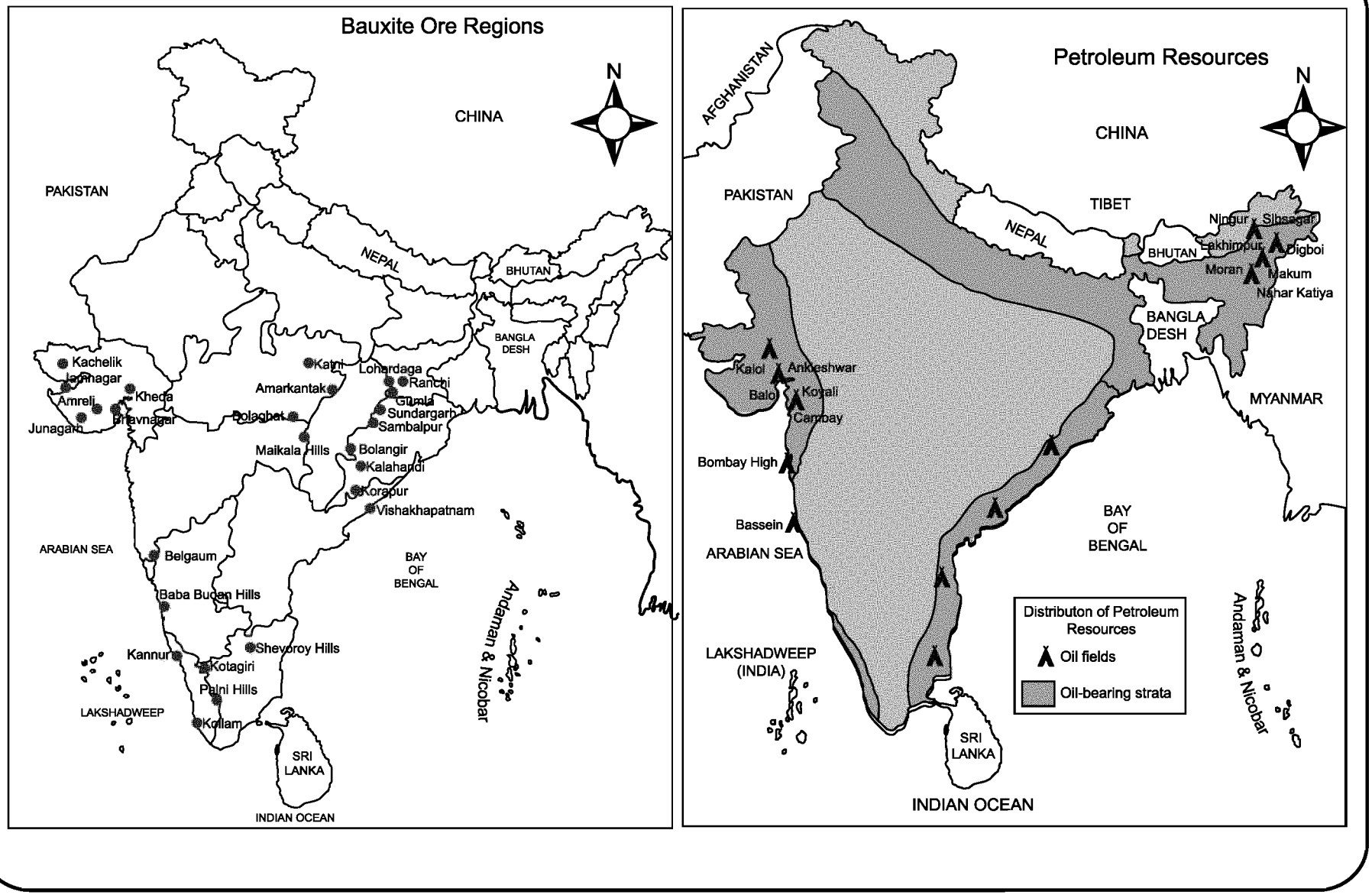
Deposits of natural gas are seen in the earth crust either independently or along with Petroleum. About 23 billion cubic meters of natural gas is used in India. India's natural gas reserve is only 700 billion cubic meters. Most of the deposits of natural gas is found in Andhra Pradesh, Maharashtra, Gujarat, Assam and Andaman-Nicobar islands. Andaman alone has about 47.6 million cubic meters of natural gas reserve. Recently it has been found out that Krishna - Godhavari delta has reserves of natural gas.

Electricity

The role of electricity in the growth and development of a nation is very large. Electricity is mainly produced in three ways. They are 1.Thermal electricity 2.Hydro electricity 3.Nuclear electricity.

1. Thermal Electricity

Thermal Electricity or thermal energy is produced using coal, petroleum, natural gas etc. The state of Assam, Jharkhand, Uttar Pradesh, West Bengal and Tamil Nadu depend mainly on thermal electricity. It is also


Bauxite Ore Regions
N
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Katni
Lohardaga
Ranchi
Amarkantak
Gumla
Sundargarh
Dolaghat
Sambalpur
Maikala Hills
Bolangir
Kalahandi
Koraput
Vishakhapatnam
ARABIAN SEA
Belgaum
BAY OF BENGAL
Baba Budan Hills
Andaman & Nicobar
Shevaroy Hills
Kannur
Kotagiri
Palni Hills
LAKSHADWEEP
Kollam
SRI LANKA
INDIAN OCEAN
Petroleum Resources
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AFGHANISTAN
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Lakhimpur
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Moran
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Nahar Katiya
BANGLA DESH
MYANMAR
Kalol
Ankleshwar
Balol
Kosali
Cambay
Bombay High
Bassein
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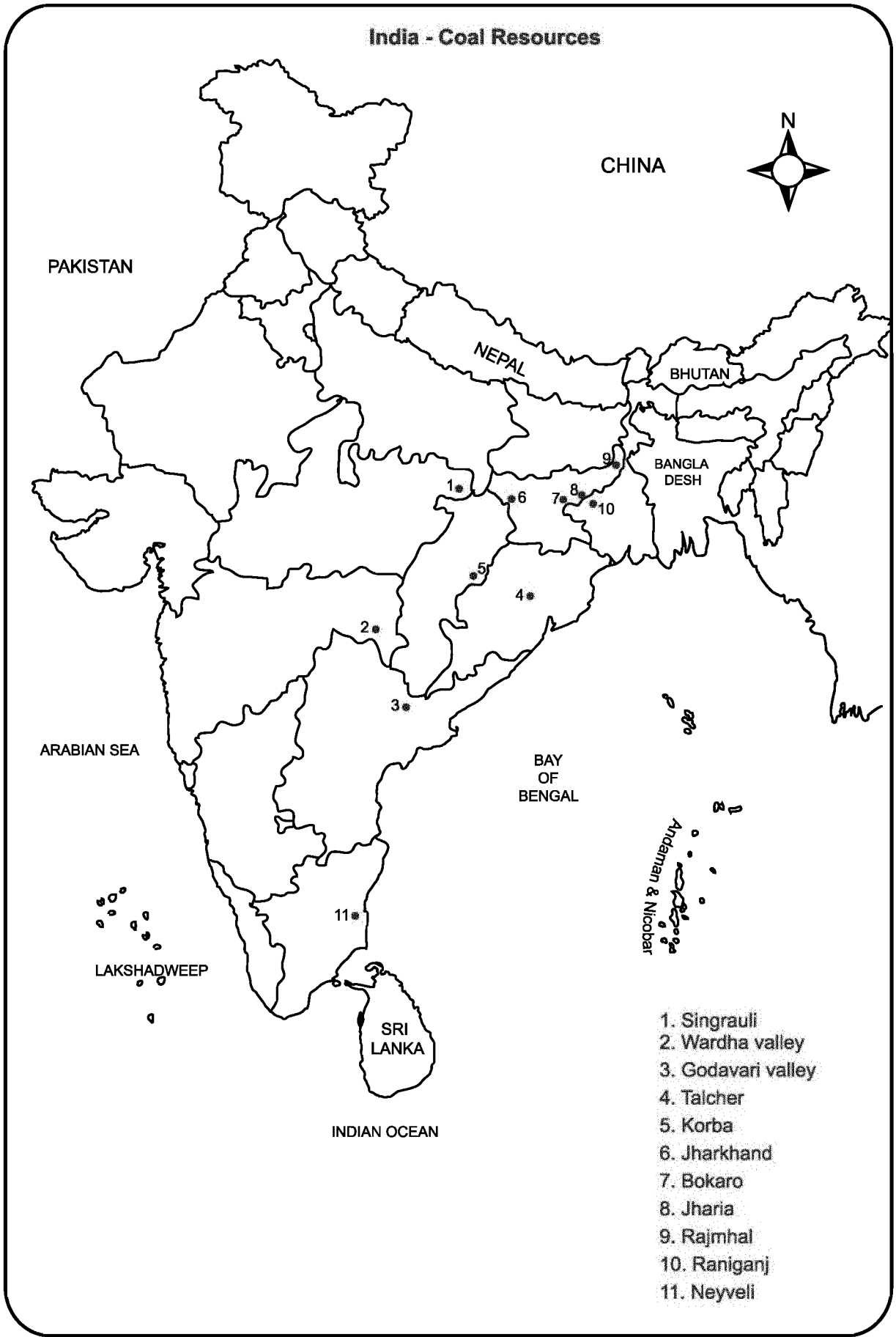
Oil fields
Oil-bearing strata
LAKSHADWEEP (INDIA)
Andaman & Nicobar
SRI LANKA
INDIAN OCEAN


India - Coal Resources
N
CHINA
PAKISTAN
NEPAL
BHUTAN
BANGLA DESH
ARABIAN SEA
BAY OF BENGAL
Andaman & Nicobar
LAKSHADWEEP
SRI LANKA
INDIAN OCEAN
1. Singrauli
2. Wardha valley
3. Godavari valley
4. Talcher
5. Korba
6. Jharkhand
7. Bokaro
8. Jharia
9. Rajmhal
10. Raniganj
11. Neyveli

produced in Punjab, Haryana, Rajasthan, Karnataka, Kerala, Orissa and Delhi. 70% of the total production of electricity in India is from thermal power station.

2. Hydro Electricity

In India the first hydro electricity power station was started 1897 in Darjeeling. In 1902 another power station was established at Sivasamudram waterfalls, in river Cauvery. At present twenty five percent of the electricity produced in India is from hydropower. It highly influences the economic development of India. Hydro electricity is mainly produced in Himachal Pradesh, Karnataka, Kerala, Jammu & Kashmir, Meghalaya, Tripura and Sikkim. Kerala depends mainly on hydro electricity projects for the generation of electricity.

3. Nuclear Electricity

Nuclear Electricity is produced from minerals such as uranium and thorium. They are mined mainly from the state of Jharkhand and the Aravalli ranges of Rajasthan. Uranium is separated from the monazite, coastal sands of Kerala. 50% of the world's thorium deposit is found in India, Tharapur (Maharashtra), Kalpakkam (TamilNadu), Rawath Bhatta (Kota-Rajasthan), Narora (Uttar Pradesh), Kakrapara (Gujarat) and Kaiga (Karnataka) are the nuclear power stations in India.India produces 272 megawatt of nuclear energy annually.

Renewable Energy Resources

As the demand for energy increases the importance for renewable resources of energy such as Sun, Wind, Tide, Biogas etc, are also increasing. The peculiarities of these energy sources are;

1. Easily available
2. Renewable
3. Environment friendly
4. Pollution free
5. Low production cost
6. Continuous availability

Solar Energy

India, located in the tropical region, has immense potential of solar energy. Sunlight can be directly converted to electricity through the 'photo voltaic technology'. It is possible to generate 20megawatt of electricity through this method from 1sq.km.area. Solar energy is most commonly used in Cooking and Lighting. The largest solar energy conversion centre in India is located at 'Madhapuri', near Bhuj in Gujarat.

Wind Energy

Wind energy

Wind energy producing centers are established in many parts of the country. The initial expenses for erecting the windmills are huge. Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Kerala, Madhya Pradesh, Maharashtra and Lakshadweep have wind energy producing centres.

Biogas

Bushes, wastes from crops, human and animal wastes are used to

produce biogas. These materials are allowed to decay in order to produce the gas. This gas is used for domestic purposes in rural areas. Biogas can give higher temperature compared with kerosene and charcoal.

Tidal Energy

India is estimated to possess 8000 to 9000 megawatt of tidal Energy potential. The Gulf of Khambat is the best suited with 7000 MW potential. This is followed by Katch (1000MW) and Sundarban (100MW).

Wave Energy

Wave energy potential in India is estimated of about 40,000MW. A wave energy power plant of 150 KW has been installed at Vihinjam near Thiruvanthapuram. Another 1MW wave energy plant is being setup in the Andaman and Nicobar Islands.

Conservation of Energy Resource

Energy is a basic requirement for economic development. Every sector of the national economy such as agriculture, industry, transport, commerce and domestic needs energy inputs. The developmental plans are being implemented since Independence in all sectors. As a result, consumption of energy in all forms has been steadily rising all over the country.

In this background, there is an urgent need to develop a "sustainable path of energy development". Promotion of energy conservation and increased use of renewable energy sources are the twin planks of sustainable conservation.

India is presently one of the least energy efficient countries in the world. We have to adopt a cautious approach for the judicious use of our limited energy resources.

We can conserve energy by:

a) using public transport systems instead of individual vehicles

b) Switching off electricity when it is not in use,

c) using power saving devices

d) using non-conventional sources of energy. Because "energy saved is energy produced".

Need for conservation of Natural Resources

We know that nature provides us all resources to satisfy our basic needs but we tend to overexploit it. If we go on exploiting the nature, there will be no more resources available in future. There is an urgent need to conserve the nature. Some of the needs are

1. To maintain ecological balance for supporting life.
2. To preserve different kind of species (biodiversity).
3. To make the resources available for present and future generation.
4. To ensure the survival of human race.

EXERCISE

I) Choose the correct answer.

1) The soil found in the Arid zone is known as _____.

a) Desert soil b) Laterite soil c) Black soil d) Alluvial Soil

2) The Monsoon forests are otherwise called as _____.

a) Tropical evergreen forest b) Deciduous forest

c) Mangrove forest d) Mountain forest

3) Which one of the following mineral is contained in the monazite sand _____.

a) Oil b) Uranium c) Thorium d) Coal

II) Match the following.

1) Black soil	Petroleum
2) Lignite	Cotton cultivation
3) Mangrove forest	A type of coal
4) Renewable resources	Sundarban
5) Non renewable resources	Sun

III) Distinguish between.

1) Tropical evergreen forest and Tropical monsoon forest

2) Renewable resource and Non renewable resource

3) Wind energy and thermal energy.

IV) Short answers.

1) What do you understand by the term natural resource ?

2) What are the properties of fertile soil ?

3) Name any four main characteristics of the tropical evergreen forest ?

4) Give the meaning of shrub and thorn forest ?

5) Name the mica producing areas of India ?

V) Answer the following in paragraph.

1) Write the importance of forest.

2) Describe the need for the conservation of natural resources ?

4. INDIA - AGRICULTURE

Agriculture plays a vital role in socio-economic development of India. It is a source of livelihood and food security for Indians. It constitutes large share of country's national income because more than half of India's workforce is employed in agriculture. The growth of industries and trade also depend on the growth of agriculture.

In India different agricultural patterns are practiced due to varied geographical factors. Now, we will deal about how geographical factors determine the agricultural activities and patterns of agriculture and how agriculture contributes to national economy.

Major determinant factors of agriculture:

1) Land form
2) Climate
3) Soil types
4) Water

1. Landform

India is a land of diverse landscape comprising of mountains, plateaus and plains. Among them the plains are more suitable for agriculture due to rich alluvial soil which enhance the agricultural productivity. For example plains of Ganga and Cauvery.

2. Climate

Most part of India lies within the tropics and enjoys tropical monsoon climate. The abundant solar energy, favours the growth of crops throughout the year. The seasonal rainfall added with the irrigational facilities also contributes for the cultivation of crops in all seasons. The amount of rainfall determines the cropping pattern. For example wheat requires moderate temperature whereas rice requires high temperature for its growth. That is why wheat is cultivated in Punjab and rice is cultivated in TamilNadu.

3. Soil types

In spite of the growth in technology soil still continues to be one of the most important geographical factors in determining the cropping pattern. Thus rich alluvial soil favours the growth of rice and sugarcane while black soil favours the growth of cotton.

4. Water

Another most important factor in determining agriculture is the availability of water. India is a monsoon country with uneven distribution of rainfall. Irrigation facilities cannot be given to all parts of the nation. So crops that require abundant water are grown in areas of high rainfall or in regions covered under irrigation. To meet the food requirement of the growing population in the areas of low rainfall dry crops are grown.

Types of agriculture

Four different types of farming are generally practiced in our country and they are:

1. Primitive agriculture
2. Subsistence agriculture
3. Commercial agriculture
4. Plantation agriculture.

1. Primitive agriculture

Primitive agriculture is practised in the forest areas where heavy rainfall occurs. A portion of forest is cleared for cultivation and crops are raised for two or three years. Then they abandon the land and shift to another part. This is still practised on a small scale in the North Eastern States, Madhya Pradesh, Orissa, Andhra Pradesh and Kerala.

Primitive agriculture is known by different names at different places such as "Jhum" in Assam," Podu" in Orissa and Andhra Pradesh, "Mashan" in Madhya Pradesh and "Ponam" in Kerala.

2. Subsistence Agriculture

The predominant type of Indian agriculture is subsistence farming. In this type nearly half of the production is used for family consumption and the rest is sold in the nearby markets. The farmers concentrate on staple food crops like rice and wheat.

Example: North Ganga plain and in the south Cauvery, Krishna, Godhavari and Mahanadhi plains.

Large scale improvement has been made in Indian agriculture after independence. The farmer tries to get the maximum possible output from the available land with high input of fertilizers, manures, hybrid variety of seeds, farm machineries and irrigation facilities wherever possible. This type of agriculture is also known as "intensive agriculture" and it is generally practised in alluvial plains.

Rice, the staple food of South India, occupies 44 million hectares. It is the largest rice grown area in the world. India achieved self sufficiency in rice in 1977 and regularly exports a small quantity of high-quality basmati rice.

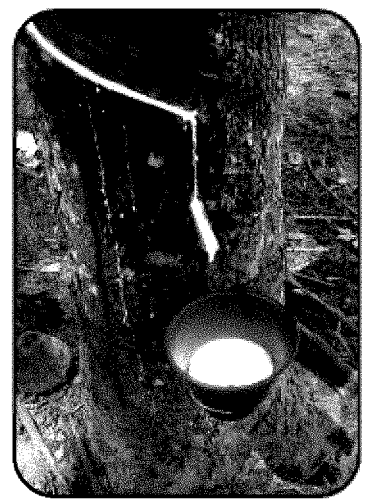
3. Commercial agriculture

Crops in great demand are grown in Commercial agriculture. In this type crops are raised on a large scale with the view of exporting them to other countries and for earning foreign exchange. This type of agriculture is otherwise called as "Extensive agriculture". It is practised in Gujarat, Punjab, Haryana, Maharastra and TamilNadu. Commercial agricultural products are used as raw materials in the agrobased industries. Example cereals, cotton, sugarcane, jute etc.

4. Plantation agriculture

In this type of agriculture, single crop is raised on a large area. The plantation has an interface of agriculture and industry. The plantations are mostly owned by the companies. Tea, Coffee and Rubber are plantation crops. These crops are grown on the hilly areas of North Eastern States of India, west Bengal,

The Nilgris, Anaimalai and Cardamom hills of South India.



Rubber Tree

Cropping Pattern

The farmers decide the cropping pattern. The following table shows the traditional way of cropping pattern based on the climate.

Method	Crops(e.g.)
One crop at one time (Monocorpping)	Paddy, Sugarcane, Oilseeds, Corn
Two Crops at a time	Paddy, Blackgram, Wheat, Mustard
More than two crops	Paddy, Blackgram, Wheat, Mustard Barly, Jowar, Groundnut, Bajra

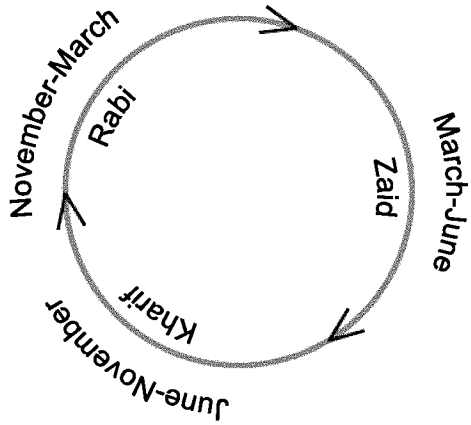
Cropping pattern

Agricultural Seasons of India

The agricultural activities begin with the onset of monsoon in the month of June. India have three major cropping seasons in a year, as shown in the following table

Agricultural seasons

Name	Sowing Period	Harvest period	Major Crops
Kharif	June(Beginning of monsoon)	Early days of November	Paddy, maize, cotton, millet, jute, sugarcane
Rabi	November (Beginning of winter)	March(Beginning of summer)	Wheat, Tobacco, Mustard, Pulses, Linseed, Grains
Zaid	March(Beginning of Summer)	June(Beginning of monsoon)	Fruits, Vegetables, Water melons, Cucumber



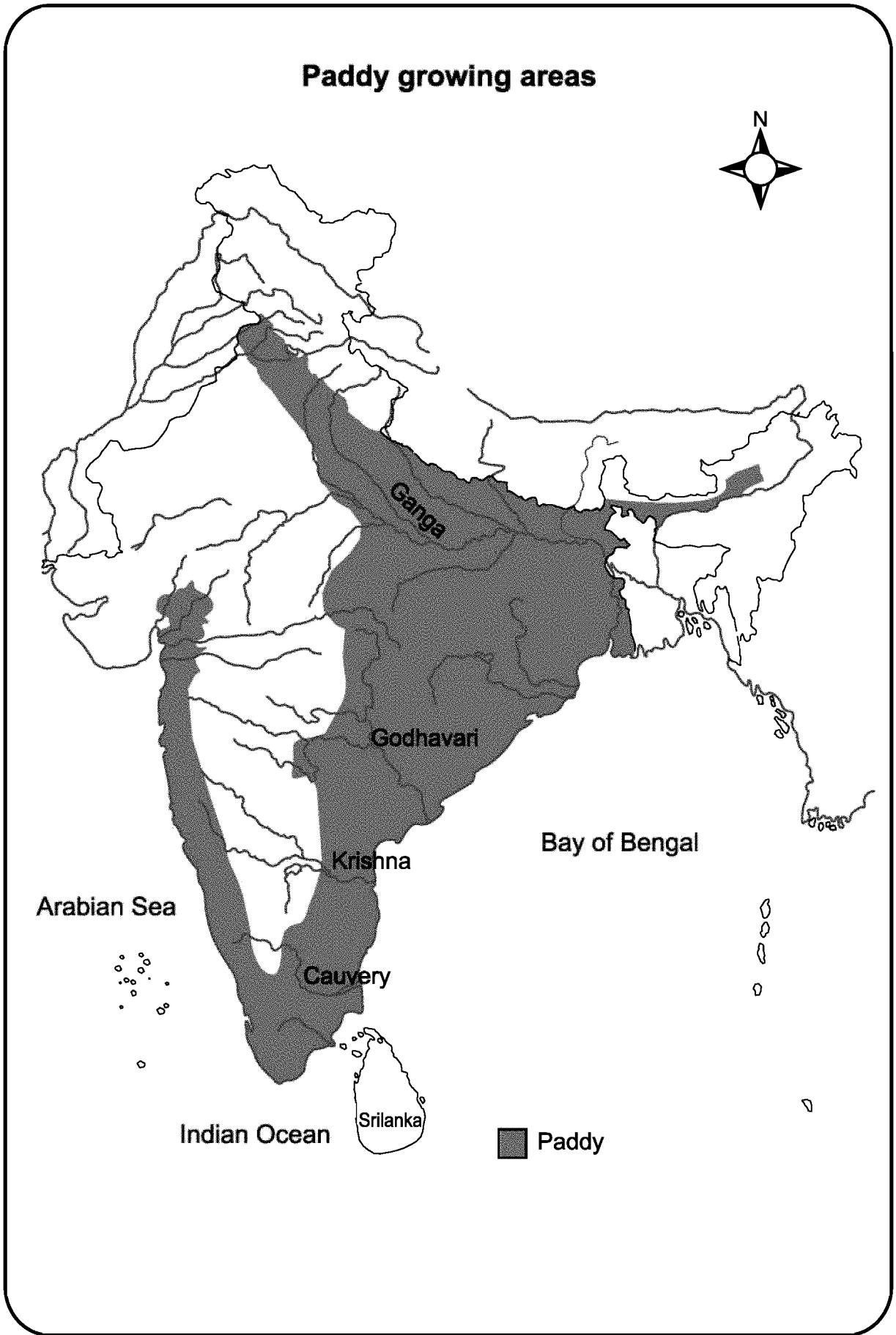
Agricultural seasons

Production of food crops

Diversity of food crops is ascertained according to the factors of temperature, rainfall and soil type. The major food crops of India are:

Paddy

Paddy is the most important food crop of India. India stands in second place in the production of paddy. India and China together produce about 90% of the total world production of


Paddy growing areas
N
Ganga
Godhavari
Krishna
Cauvery
Bay of Bengal
Arabian Sea
Indian Ocean
Srilanka
Paddy

Paddy. In areas of less rainfall particularly in Punjab and Haryana it is grown with the help of irrigation. Cheap labour is required for sowing, weeding, harvesting and other processes. Sugandh 5, Sukaradhara-1 are the hybrid variety seeds recommended for the cultivation in the areas of Haryana, Delhi, Jammu and Kashmir and uphills of Himachal Pradesh and Uttaranchal.

The other rice producing states are west Bengal, Punjab, Uttarpradesh, Bihar and Orissa in North India and Tamilnadu and Andhra Pradesh in South India. Most of the production is consumed locally due to dense population. Rice is cultivated two to three times in a year intensively in the deltas of Mahanadhi, Godavari, Krishna and Cauvery.

The Indian Council of Agricultural Research (ICAR), was established in 1929. India's transformation from a food deficit to a food surplus country is largely due to ICAR's smooth and rapid transfer of farm technology from the laboratory to the land.

Paddy cultivation in Tamil Nadu

Paddy Field

There is something special about paddy cultivation in Thanjavur District, the 'rice bowl' of Tamil Nadu. The paddy crops grown in this region are classified as Samba, Kuruvai and 'Thaladi' on the basis of the duration of paddy growth. Samba is a long term crop. It is grown for about five to six months. Kuruvai is a crop grown within three or four months. The paddy grown in the field ploughed with the stumps of the previous harvest is known colloquially as the Thaladi.

Although this way of cultivation of paddy is still in practice, it is now been changed with the impact of modern cropping. This has also led to great change even in harvest seasons.

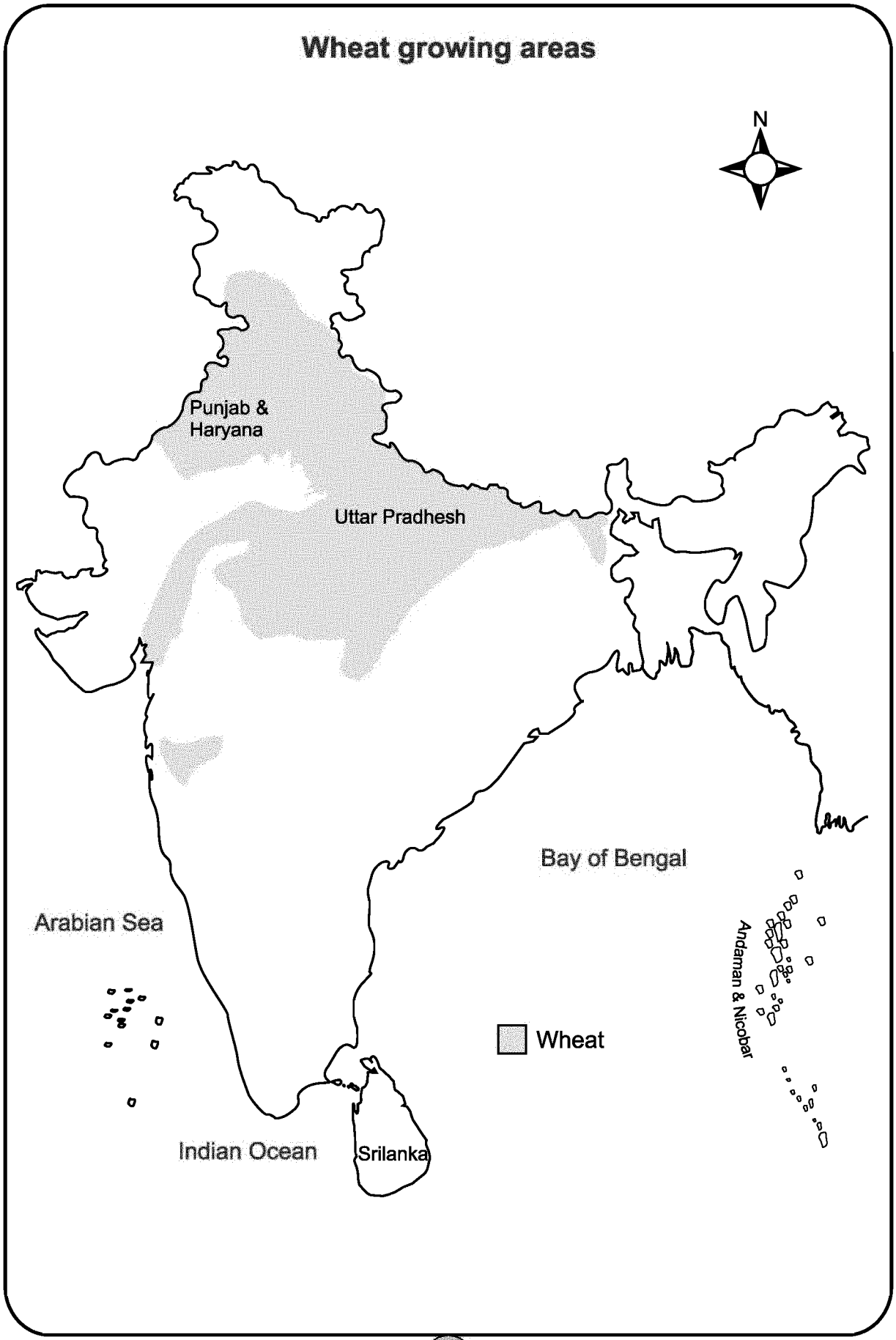
Wheat

Wheat is an important food Crop. It is the staple food for the northern and northwestern part of India. Wheat is cultivated both in winter and spring.

Wheat

Uttar Pradesh and Haryana are the major producers. Rajasthan, Madhyapradesh, Chattisgarh, Maharastra, Gujarat, and Andhrapradesh are the other wheat producing states. The production of wheat has been increased in Punjab and Haryana due to the impact of Green Revolution. Our country is now in a position to export wheat to other countries.

Besides, paddy and wheat, dry crops also play vital role in the food


Wheat growing areas
N
Punjab &
Haryana
Uttar Pradhesh
Bay of Bengal
Arabian Sea
Andaman & Nicobar
Wheat
Indian Ocean
Srilanka

RAINBOW OF REVOLUTIONS

Title	Associated with the production of
Green Revolution	Agricultural Crops
White Revolution	Milk and Milk Products
Grey Revolution	Eggs and Poultry
Golden Revolution	Horticulture
Yellow Revolution	Oil Seeds
Blue Revolution	Marine Products

grain production. They grow well even in the infertitle soil. They are drought resistant crops.

Millets as cereal crops are intermediate between rice and wheat. It includes jowar, bajra and ragi. Millets are coarse grain, and dry crops. They are cultivated in poor soils. They are rich in nutritional content higher than wheat or rice. They also provide fodder for cattle. Millets are grown in almost all the states in India, but the important producers are Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Uttar Pradesh, Karnataka, Orissa, Bihar, Maharastra and Gujarat.

Pulses

Pulse crops include a large number of crops which are mostly leguminous and rich in proteins. Pulses serve as an excellent fodder though grams are the most important pulses. Other pulses are black gram, greengram, lentile, horse gram, peas etc.

Pulses are grown in a wide range of climatic conditions mostly in drier areas with or without irrigation facilities. Pulses require a mild cool weather and a low to moderate rainfall.

The most important producers are Madya Pradesh, Rajasthan, Haryana, Punjab, Maharastra, Gujarat, Andhrapradesh and Tamilnadu.

Cash Crops

Many other crops are also cultivated in our country in addition to the above food crops. Sugarcane, Cotton, Jute, Tea, Coffee, Oil Seeds, Tobacco and Rubber are some among then. They are mainly produced as raw materials for industries. Besides, they form export material that can earn foreign exchange. So they are known as cash crops. They have great influence on the Indian economy also.

Sugarcane

Sugar Cane is a tropical crop. It grows well in the hot humid climate. India is the birth place of sugarcane.

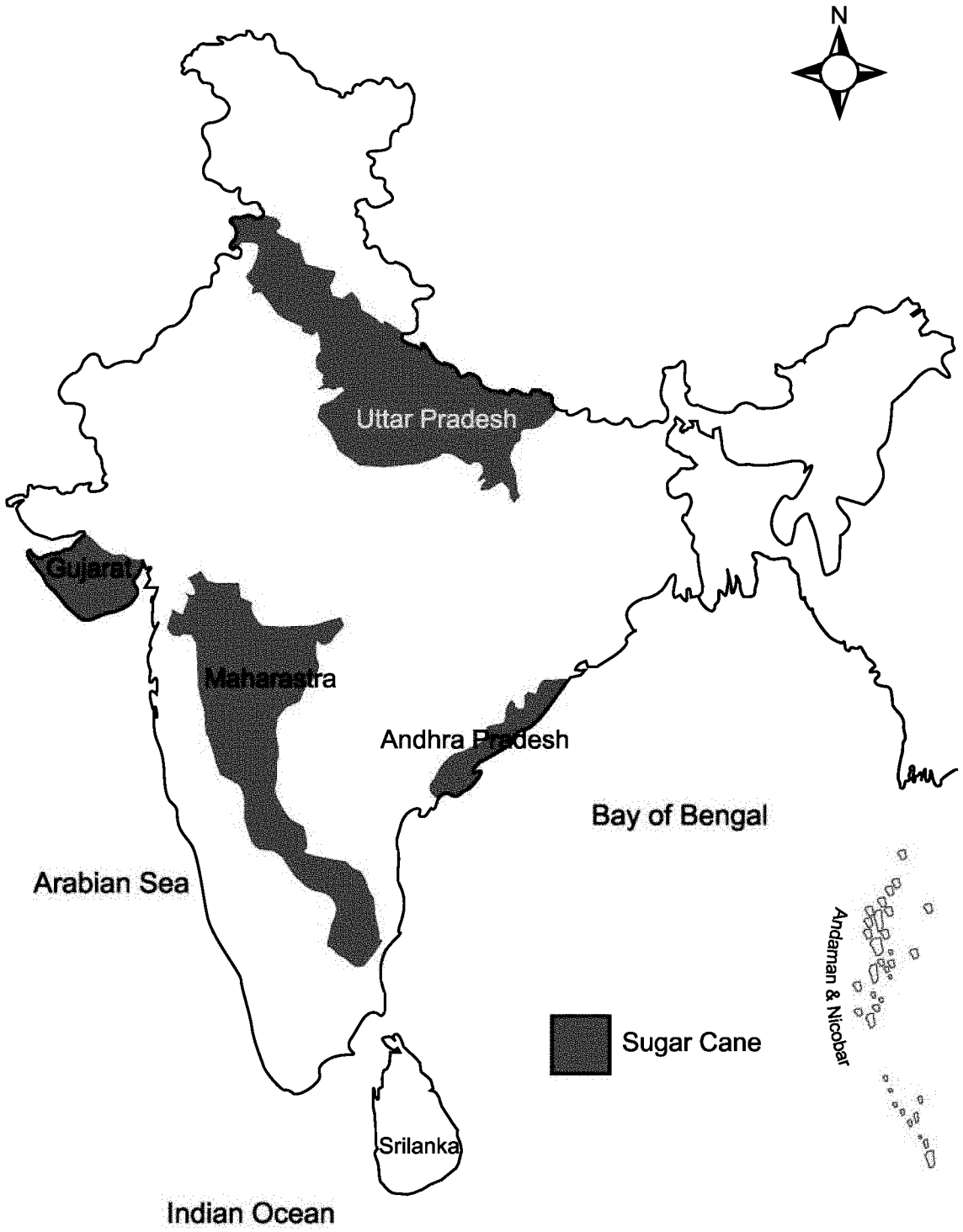
Sugarcane

It ranks second in production next to Brazil. The Major sugarcane producing states are Uttarpradesh, Tamil Nadu, Andhrapradesh, Karnataka, Gujarat and Maharastra, Bihar, Punjab and Haryana.

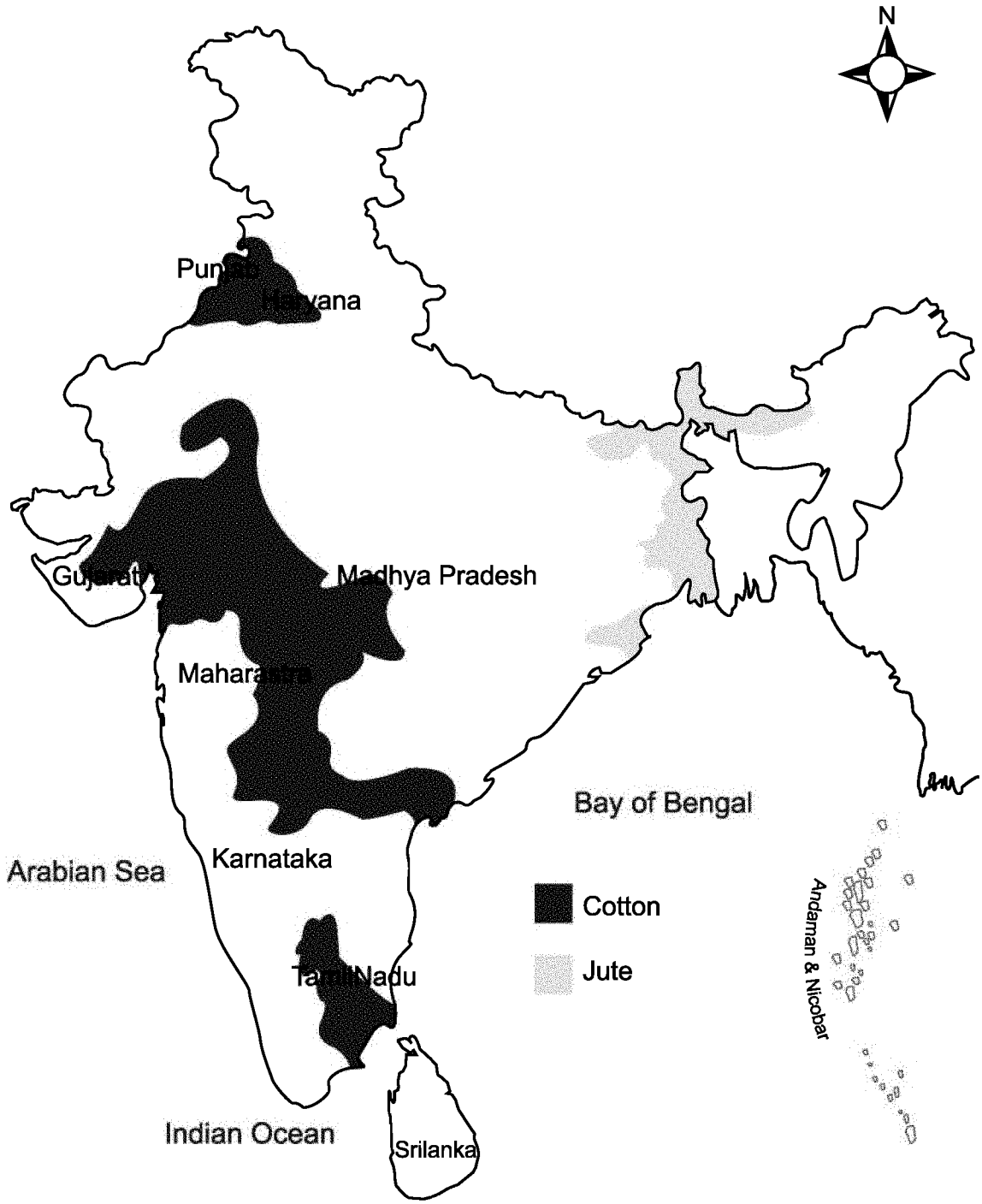
Cotton

Cotton is a major fibre crop of India. It provides raw material for cotton textile industry. Cotton grows well in tropical and subtropical climate. Black soil is the most suitable soil for cotton cultivation. India has fourth position in the world cotton production. The main cotton growing states are Gujarat, Maharastra, Andhra Pradesh, Karnataka, Tamilnadu, Madhya Pradesh, Punjab and Haryana.

Sugar Cane Growing Areas



Cotton and Jute Growing Areas



Jute

Jute is also the most important fibre crop next to cotton. The fibre is the cheapest and has a commercial demand because of its softness, strength, length and uniformity. It is demanded for the manufacture of gunny bags, hessain, carpets, ropes, strings, rugs and cloth, tarpaulins, uphoistry etc.

Jute Plant

Its cultivation is restricted mainly to the Ganga Brahamaputra delta in west Bengal, Bihar, Orissa, Assam and Meghalaya. Because this crop requires hot and damp climate. The soil should be well drained fertile soil in the flood plains where soils are renewed every year.

Tobacco

Tobacco

Tobacco is said to have been brought to India by the portuguese in 1508. Since then cultivation gradually spread to different parts of the country. India is the third largest producer followed by China and U.S.A. The major tobacco producing stales are TamilNadu, Andhra Pradesh and Karnataka

Oil Seeds

India is one of the oil seed producing countries of the world. India grows all types of oil seeds except olive and palmoil. Oil seeds are grown mainly in the tropical and substropical regions. Indian oil seeds are. groundnut, sesamum, rape seed, mustard, linseed, sunflower seed, castor seed, coconut, soyabean etc. Oil is an impartant item of Indian food. The oil seeds are used as raw materials for manufacturing a large number of products and form cattle feed and manure. The major oil seeds producing states are Gujarat, Maharashtra, Tamilnadu, Andhrapradesh, Madhyapradesh, Orissa and Karnataka.

Plantation Crops

Tea

Tea Estate

It is an important beverage crop. The tea plant grows well in tropical and subtropical climates endowed with deep and fertile soil. Well drained hill slopes between 3000- 4000 feet height are suitable for cultivation. Assam, West Bengal, Kerala and Tamil Nadu are the major producers.

Coffee

Coffee Berries

Coffee is the most important beverage crop. Indian coffee is known for its quality. Karnataka produces 60% of Indian coffee. Other coffee growing states are Kerala and Tamil Nadu.

Rubber

Rubber is obtained from latex of rubber tree. Though India occupies sixth position in the world in once of cultivation in production of natural rubber it stands fifth in the world. Rubber plantations cover large areas in southern part of India. About 95% of the areas is confined to the lower elevations of western ghats in Kerala State and 5% is spread over Tamil Nadu, Karnataka and Andaman Nicobar islands.

Fruits and vegetables

Fruits and vegetables are an important supplement to the human diet, as they provide essential minerals, vitamins and fibres required for maintaining health. India has the second position in the production of fruits and vegetables. Apple is mostly produced in Himachal Pradesh, Kashmir and Uttaranchal. Production of banana, is concentrated in Tamilnadu and Maharashtra. Orange is cultivated in Maharashtra, Uttaranchal, Himachal Pradesh, Tamil Nadu and Kerala. Grape is cultivated mainly in Uttaranchal, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka. India contributes about 13% of the worlds production of vegetables.

Animal husbandry and fisheries

Animal husbandry plays an important role in over all economy and in supplementing family income. It generates employment in the rural sector particularly among the landless, small and marginal farmers and women. Production of suitable cross breeds and their wider adoptions has contributed to increase in country's milk production. Poultry and eggs are increasing through genetic improvement and better management practices. The contribution of these sub sector is estimated to be about 25 percent of the total value of output agricultural sector.

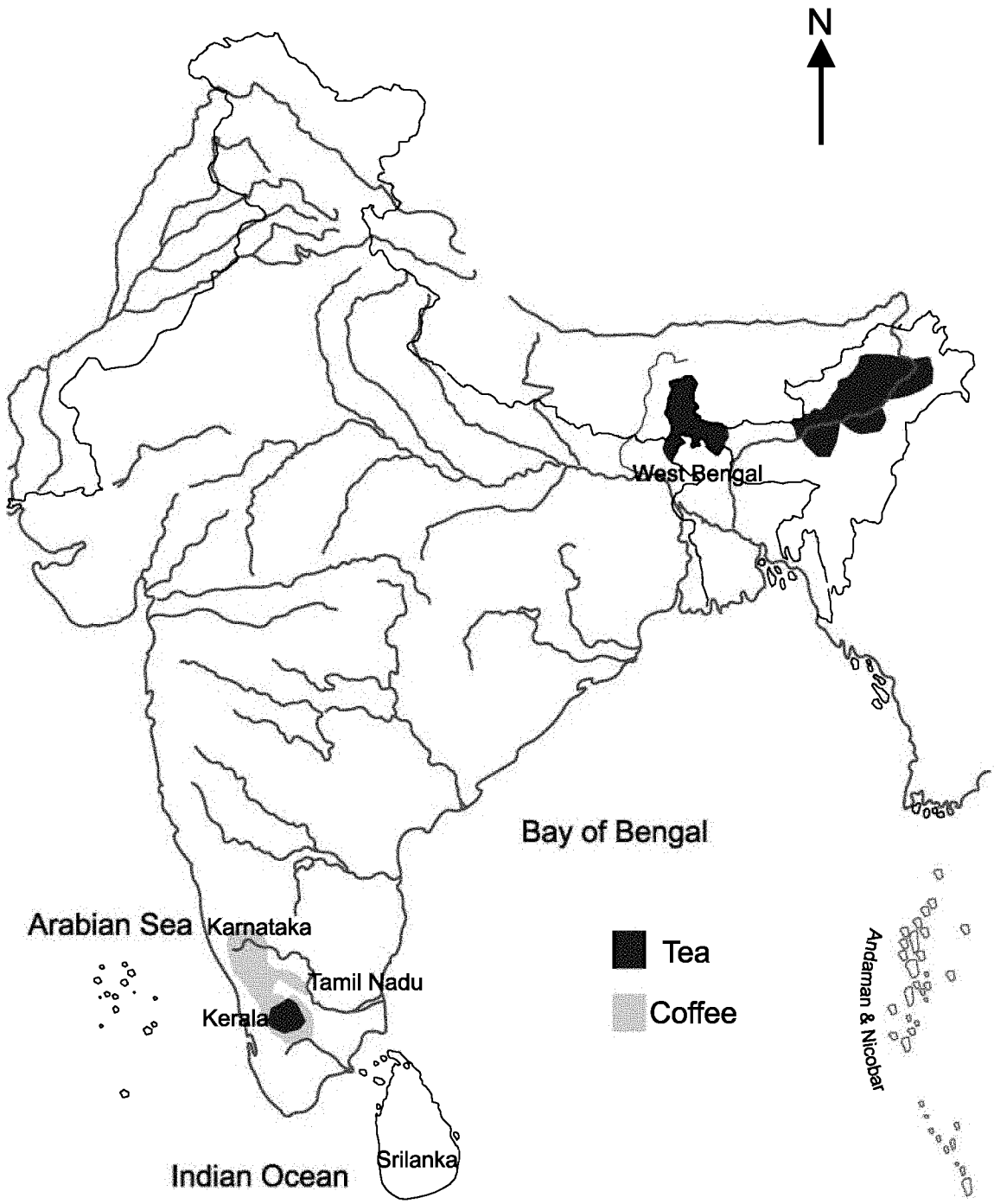
Dairy Farming

Though the overall contribution of fisheries is small, multilayer fish culture has resulted in a very high annual growth during the past decade.

Development in Bio-Technology

The National Research Centre on plant Biotechnology was established in 1985 to under take research, teaching

Tea and Coffee growing areas



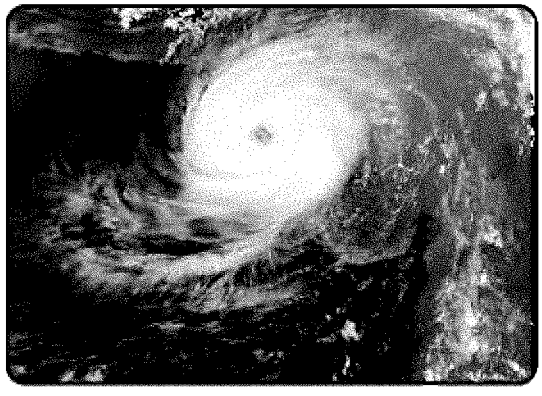
and training personnel in the modern areas of 'Molecular biology and Biotechnology'.

The benefits adopting biotechnology in agriculture are,

- Adopting Biotechnology is environmentally safe and sustainable.
- Cost of production of the farmers will be decreased.
- Water requirement for the crop is minimised.
- It makes crops more resistant to insects, pests and diseases.
- The yield of the crops per hectare can be increased.
- Farmers can get more income.

Challenges for Indian Agriculture

1. Indian agriculture is a gamble of monsoon. Monsoons are irregular unevenly distributed and uncertain. It exerts a very unfavourable influence on agriculture.



Cyclone

2. The serious drainage problem caused by the increased construction of roads, railways and canals disturbed the natural drainage system by checking normal flow of rain water and bringing heavy floods. This results i n large scale damage to kharif crop and considerable late sowing of rabi crop.

3. Rapid increase in the construction work of industries and residential buildings reduce the extent of cultivable lands.

4. Global climatic changes affect agriculture through their direct and indirect effects on the crops, soil, livestock and pests.

5. The previous strategies for more productivity cause serious problems of environmental and natural resource degradation. In future technologies must result not only in increased productivity level but also ensure the quality of natural resources. So it will lead to sustainable improvements in agricultural production.

At present we can say that India is in a comfortable position in food production.

In future India's population might increase to 1300 million approximately by the year 2020. At that time with efficient management of natural resources will meet increasing demand by adopting modern technology in farming, by increasing farmer's access to markets, improving agricultural productivity and public education.

EXERCISE

I) Choose the correct word.

1) Rice is grown well in the _____
   a) black soil b) laterite soil c) alluvial soil d) red soil
2) Tea and coffee crops are grown well on the _____
   a) mountain slopes b) Plain
   c) Coastal plain d) River Valleys
3) The crop that grows in drought is _____
   a) rice b) wheat c) jute d) millets
4) Cotton is a _____
   a) food crop b) cash crop c) plantation crop d) dry crop
5) The staple food crops are _____
   a) rice and wheat b) coffee and tea
   c) Cotton and jute d) fruits and vegetables

II) Match the following.

1) Wheat	West Bengal
2) Sugarcane	Kerala
3) Apple	Uttarpradesh
4) Rubber	Punjab
5) Jute	Himachal Pradesh
	Tamil nadu
	Karnataka

III) Distinguish between.

1) Commercial and subsistance agriculture.
2) Kharif and rabi crops
3) Unicropping and dual cropping

IV) Give Short Answers.

1) What are the major determinant factors of agriculture?
2) What are the types of agriculture?
3) Name the agricultural seasons in India?
4) Why dry crops are grown?

5) Name the cotton growing areas of India?

6) What are Plantation Crops?

V) Write a Paragraph answer.

1) What are the benefits of adopting bio-techonology in agriculture?

2) Discuss any three current challenges in Indian agriculture?

VI) Mark the following on the Outline maps of India.

1) Cotton growing areas

2) Jute growing areas

3) Rice growing areas

4) Tea and Coffee growing areas

5) Wheat growing areas

VII) Activities.

Visit a paddy field or tea plantation and make a report on the activities involved in the cultivation process.

5. INDIA – INDUSTRIES

A country becomes rich by converting the natural resources into usable products. So the key to prosperity of any country lies in increasing manufacturing industries. India is rich in natural resources. These resources include forest products, agricultural products and Minerals. Some of the resources can be used directly but some of them need processing. For example cotton has to be processed before it is brought into use in the form of finished product. So cotton is the raw material of agricultural origin. Similarly products like petrol, diesel, kerosene and gasoline are derived at different degrees of refinement of petroleum. Thus Petroleum is of mineral origin.

Though agriculture is the major occupation of the people in India, there has been a tremendous growth in Industries under five year plans and it has provided job opportunities for many people. This in turn has improved their status of living.

Factors Influencing Location of Industries

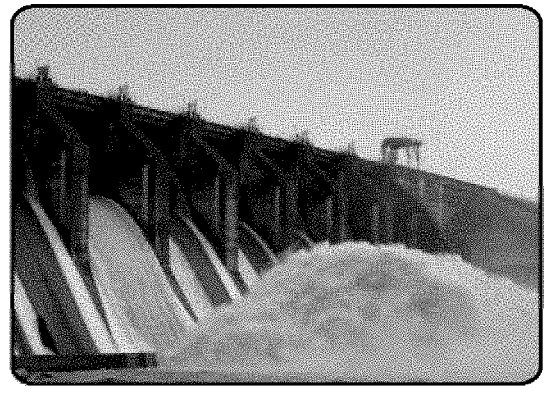
The location of an industry is determined by raw material, power, transport, man power, water, market and government policies.

Raw Material

Industries are located with respect to the availability of raw materials. For example, Sugar industry is located near the raw material region (sugarcane field) because sugarcane is a weight losing material and when it is processed, the weight of sugar becomes 10 per cent of the weight of sugarcane.

Power

Most of the industries tend to be located near the source of power. The power is needed to process raw materials. For example Iron and steel industries are generally located near the coal fields because it requires about 5 tons of coking coal to melt 1 ton of iron ore.



Damodar Valley Project

Transport

Cochin Oil refinery

Transport is an important factor for carrying raw materials to manufacturing units and finished products to the market. For example Iron and steel industries and oil refineries are located near railway stations or near the port as these industries involve a high cost of transportation.

Man Power

Availability of skilled and unskilled or technically qualified manpower is an important factor for the location of industries. Adequate supply of unskilled labour in urban locations is due to rural-urban migration. For example Mumbai gets manpower from all over the country.

Water

Water is very essential for industries like iron and steel, textiles, rayon, paper etc. For example 1 ton of steel needs 300 tons of water for cooling and 1 ton of rayon needs 100 tons of water for bleaching. Hence the above industries are located near the rivers, canals or lakes.

Market

High demand and purchasing power determine the market. So most of the industries are located close to the centers of consumption because it reduces the cost of transportation and enables the consumers to get things at comparatively cheaper rates.

Government Policy

In almost every country, the government policies play an important role in determining the location of industries. In order to avoid regional disparities, the State government has marked out certain areas as industrial zones. These industrial zones and government concessions have helped in the growth of industries in the backward areas.

Nowadays due to scientific and technological development, geographical factors, man power and energy are considered as negligible factors. Therefore new factors have come to play major roles which include skilled managerial services, availability of capital and export potential of products.

Classification of Industries

On the basis of the source of raw materials, industries are classified into Agro based industries, Forest based industries and Mineral based industries.

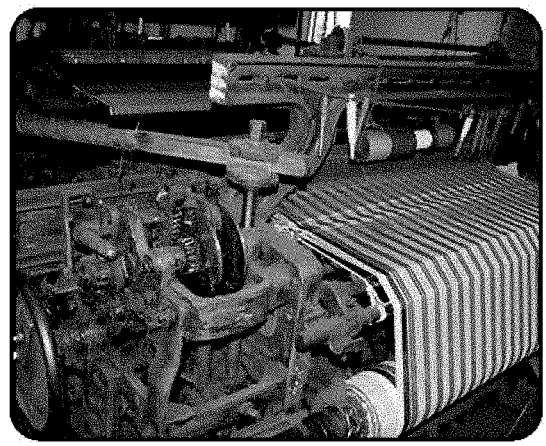
Agro based industries

These industries use agricultural products as their basic raw material. For example. Cotton textile industry, jute industry, sugar industry etc.

Cotton Textile Industry

Cotton textile industry is based on indigenous raw materials, cotton. It contributes about 14% industrial production, provides employment to 35 million persons and 4% towards GDP.

Mumbai in Maharashtra is the leading cotton textile centre and it is called as the "Manchester of India". The following factors favour the cotton textile industries in Mumbai;



Cotton Textile Industry

- Location of port facilities for the export of finished goods.
- Well connected through rail and road links with cotton growing areas.

- Humid coastal climate favours yarning.
- Availability of Capital goods and finance.
- Availability of man power.

The Major Cotton textile producing states of India are Maharashtra, Gujarat, West Bengal, Uttar Pradesh, and Tamil Nadu.

In Tamil Nadu, Coimbatore, Chennai, Tirunelveli, Madurai, Tuticorin. Salem, Virudhunagar and Pollachi are the major cotton textile centers.

India's cotton textile industry holds third place among cloth producing countries in the world. India ranks second in the world in Cotton textile Trade and stands first amongst the industries in our country.

Jute Industry

The Jute sector has been playing an important role in the economy of the country. It provides sizeable employment in the agricultural and industrial sectors. About 4 million farmers are engaged in the cultivation of jute. India tops in the production of raw jute and jute goods and second in the export of jute goods next to Bangladesh.

Jute Industry

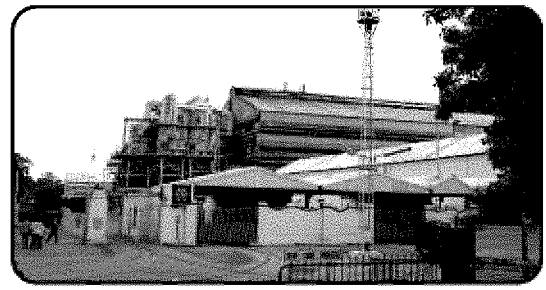
Jute products include gunny bags, canvas, pack sheets, jute webs, Hessians, carpets, cordage and twines. Now jute is also being used in plastic furniture insulation, bleached fibers to blend with wool. It is also mixed with cotton to make carpets and blankets.

Nearly 90% jute industries are located in West Bengal mainly along the Hooghly River. Recently there has been dispersal of jute industries in Uttar Pradesh, Bihar, Orissa and Andhra Pradesh.

Sugar Industry

- Indian Sugar Industry is the second largest agro based industry in India. Sugar factories are located near the areas of cultivation due to the following factors:

Sugar Industry



- Sugarcane is a weight losing material
- It cannot be stored for long time, as it loses sucrose content.
- It cannot be transported for long distances.

Since the sugarcane harvesting is done in a particular season and the crushing continued to a limited period and the sugar factories do not function throughout the year.

Uttar Pradesh and Bihar alone account for 70% of the sugar produ ction. So this belt is known as 'sugar bowl of India'. Punjab, Haryana, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu are the other sugar producing states of India.

Major Cotton Textile Industries in India

Nellikupam, Pugalur, Coimbatore and Pandyarajapuram are the famous centres for sugar production in Tamil Nadu.

The Government of India has developed a dual price system for internal sugar trade. Every sugar mill has to sell 40% of its production to the government at a fixed price. The government sells this sugar through public Distribution System. Rest of the 60% is sold in the open market at a higher price.

India is the fourth major sugar producing country in the world. Top three countries are Cuba, Brazil and Russia. India exports some of its surplus sugar to USA, UK, Indonesia, Malaysia, Iran and Sri Lanka.

Forest Based Industries

India has a rich diversity of forest resources which are capable of supporting a wide variety of industries. The most important is the paper industry.

Paper industry

Paper Industry

Paper industry is a vital and core industry for any country. The Raw materials for paper industry include woodpulp, bamboo, salai and sabai grasses, waste paper and bagasse. Location of the industry is greatly influenced by bulky raw materials and to a lesser extent by market.

The Indian paper industry is ranked one among the fifteen top global paper industries in the world. The leading states in paper production in our country are West Bengal, Maharashtra, Madhya Pradesh, Karnataka and Andhra Pradesh.

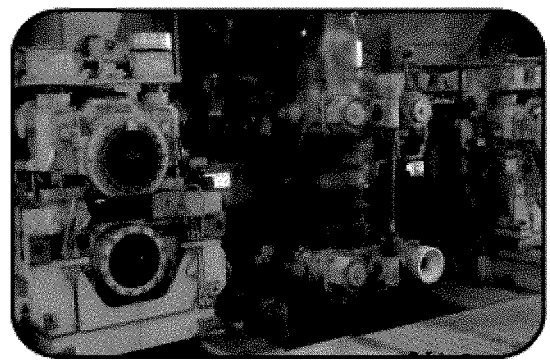
Mineral Based Industries

Mineral based industries use both metallic and non-metallic minerals as raw materials. The Major mineral based industry of our country is the iron and steel industry.

Location of Iron and Steel Industries in India

India's major iron and steel industries are located either near the coal fields or iron ore mines or midway between the coal and iron ore fields. Most of our country's major iron and steel industries are located in the Chota Nagpur Plateau region due to the following reasons:

* High grade haematite and magnetite ironore are available from the mines of Jharkhand, Bihar, Orissa, Madhya Pradesh and Chattisgarh.



Iron Industry

* Jharia and Singbhum in Jharkhand, Raniganj in west

Bengal have abundant coking coal suited for the manufacture of high grade steel.

* West Bengal and Jharkhand states are rich in flux materials needed for purifying.

* Limestone from Ranchi, Silica from Jabalpur and Dhanbad, Dolamite from Madhya Pradesh, Quartz from Bihar are available in close proximity.

Distribution of Iron and Steel Industries

India has 11 integrated steel plants and 150 mini steel plants and a large number of rolling and re rolling mills.

1. Tata Iron and Steel Company (TISCO)

In 1907 Tata Iron and Steel Company was setup at Jamshedpur now it is called Tata Steel limited. It is the oldest and the largest integrated iron and steel plant in India. It is the 10th largest producer of Iron and Steel in the World. The company produces pig iron and steel.

Iron and Steel Industry

2. Indian Iron and Steel Company (IISCO)

The steel plants at Kulti, Burnpur and Hirapur were integrated and the Indian iron and steel company was setup at Burnpur in 1919.

The control and management of IISCO were taken over by SAIL(Steel Authority of India) in 1972. The company produces pig iron and crude steel.

3. Visveshwaraya Iron and Steel Limited (VISL)

Visveshwaraya Iron and Steel Limited were set up in 1923 at Bhadravati in Karnataka. Its major products are alloy and special steel.

4.a. Hindustan Steel Limited (HSL)-Bhilai

The HSL- Bhilai is located in the Durg district of Chattisgarh, started its production in 1965 Bhilai's rail and structural mill are one of the most modern and largest in the world. It has also started making plates for ship building industry.

4.b. Hindustan Steel Limited (HSL)-Rourkela

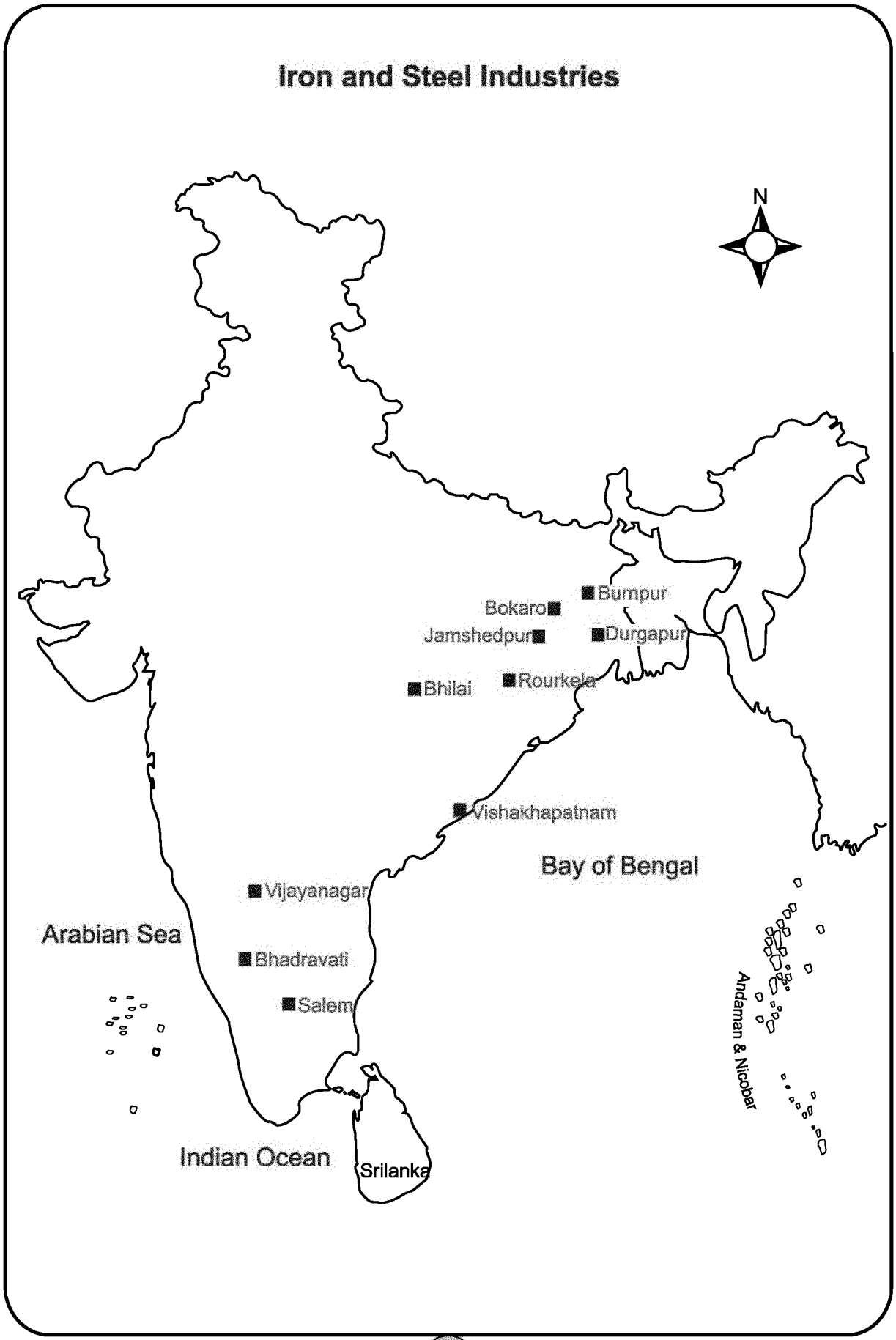
The Rourkela plant was started in 1959 in the Sundargarh district of Orissa. Its major products include hot and cold rolled sheets, galvanized sheets and electrical steel plates.

4.c. Hindustan Steel Limited(HSL)-Durgapur

The Durgapur steel plant is located at Bardhaman district of West Bengal. It was setup in 1965. This plant specializes in the manufacture fo alloy steel, construction material and railway items like wheel axles and sleepers.

4.d. Hindustan Steel Limited(HSL)-Bokaro

The Bokaro steel plant is situated in the Hazaribagh district of Jharkhand. It started its operation in 1972. The sludge and slog of the plant are used in making fertilizer at Sindri.


Iron and Steel Industries
N
Burnpur
Bokaro
Jamshedpur
Durgapur
Bhilai
Rourkela
Vishakhapatnam
Bay of Bengal
Vijayanagar
Arabian Sea
Bhadravati
Salem
Andaman & Nicobar
Indian Ocean
Srilanka

5. The Salem Steel plant

The Salem steel plant is located at Salem in Tamilnadu and started its production in 1982. This plant is the major producer of the world class stainless steel which is exported to many advanced countries in the world.

6. The Vijayanagar Steel Plant

The Vijayanagar steel plant has been setup at Tornagal in Karnataka.

7. The Vishakhapatnam Steel Plant

The Vishakhapatnam steel plant came into operation in 1992. This is the first plant in the shore region. This is the most sophisticated and modern integrated steel plant in the country. It is a major export oriented steel plant.

Mini Steel Plants

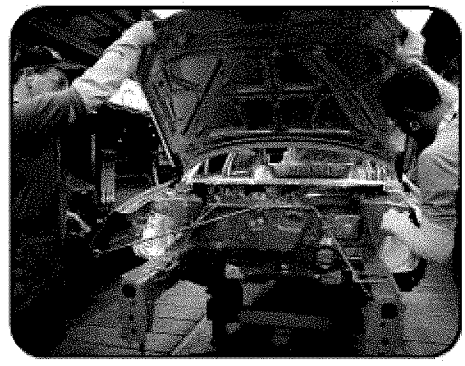
Mini steel plants are decentralized secondary units with capacity ranging from 10,000 tonnes to 5 lakh tonnes per year. It operates through electric furnaces and generally use ferrous scrap, pig iron or sponge iron as raw materials. They help in recycling of iron and make the scrap useful and profitable. They produce mild steel, alloy steel and stainless steel.

There are more than 150 Mini Steel plants with an installed capacity of about 120 lakhs tonnes of crude steel per annum. Most of the mini steel plants are located in areas far away from the major steel plants, so that they can meet the local demands.

They suit the Indian economy because they require less investment. As these units are smaller in size they can be conveniently located in the industrial towns.

Automobile Industry

The growth of automobile industry in India is only after the independence, The first automobile industry was started at Kurla (Mumbai) in 1947 under the name of Premier Automobile limited. In 1948 Hindustan motors limited setup the automobile industry at Uttarpara, (Kolkota). In the last 30 years, India has made a tremendous progress in this industry by manufacturing commercial vehicles, passenger cars, jeeps, scooters, motorcycles, mopeds and three wheelers.



Automobile Industry

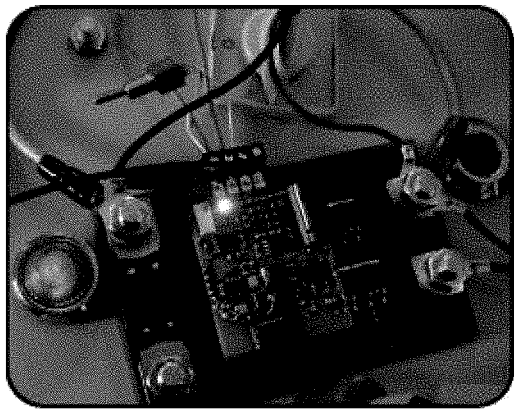
The major centres are Mumbai, Chennai, Kolkata, New Delhi, Pune, Ahmedabad, Lucknow, Satara and Mysore.

With Liberalization of the economy there are several foreign collaborations in the automobile sector and well known world leaders have entered the market – Suzuki, General motors, Ford, Mitsubishi, Honda, Mercedes, Nissan, Mahindra & Mahindra and Millennium Motors.

Electronic Industries

The electronic industry in India started with radio manufacturing in the 1850s. The setting up of Indian Telephone Industry in 1950 at Bangalore gave a boost to this industry. The industry now meets the

needs of posts and telegraph, defence, railways, electricity boards, meteorological department etc. Bangalore is the leading producer of electronic goods and it is referred as Electronic Capital of India. The other important centres are Hyderabad, Delhi, Mumbai, Chennai, Kolkata, Kanpur, Pune, Lucknow, Jaipur and Coimbatore.



Electronic Equipment

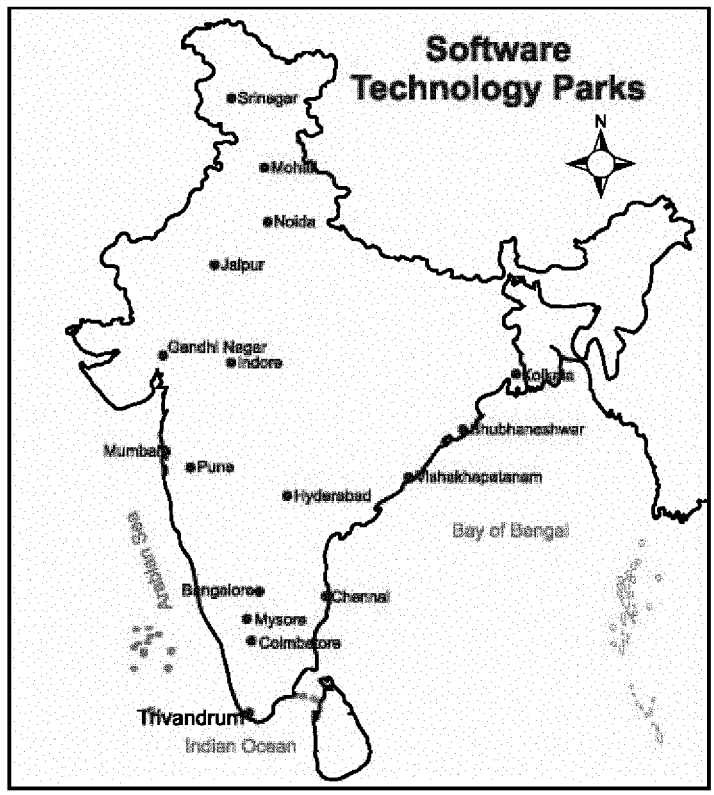
The Revolution in electronic industry has changed the lifestyle of the people to a greater extent. The most popular products of the industry are Television, Transistor, Telephone, Cellular Phones, Computers, CD players, ipod, Pendrive etc.

Software Industry

Software Industry

The Software Industry has emerged as a major industry in the Indian economy.

The main reason for its rapid growth is due to the availability of cheap and skilled young software professionals in our country.



The Department of Electronics has established "Electronic Parks" in different parts of our country. The main centers are Chennai, Coimbatore, Thiruvananthapuram, Bangalore, Mysore, Hyderabad, Vishakapatnam, Mumbai, Pune, Bhubsneshwar, Indore, Gandhinagar, Jaipur, Kolkata, Noida, Mohali and Srinagar.

At present there are more than 500 Software firms in the country. It is expected that the Indian software industry will generate a total employment of around six million people which accounts for 9% of India's total GDP in the year 2011. Today the software industry in India exports software and services to nearly 95 countries around the world.

The Government has also played a vital role in the development of software industry.

Industrialization, Urbanization and growing population along with increasing consumption of Resources have by far crossed the carrying capacity of the earth. Industrialization has undoubtedly made life more comfortable for modern man, but it has led to extreme stresses and degradation on the environment and its resources. Indiscriminate use of substances has a detrimental effect on environment. These have made the world realize the importance of preserving our environment by changing harmful technologies into more eco-friendly technology.

EXERCISE

I) Choose the correct answer.

1) Cotton textile industry is _____

a) mineral based b) agrobased

c) forest based industry, d) Software industry

2) Manchester of India is _____

a) Delhi b) Chennai c) Mumbai d) Kolkata

3) Tata iron and steel industry is located at _____

a) Durgapur b) Bhilai c) Jamshadpur d) Burnpur.

4) Chotta Nagpur Plateau is noted for _____

a) Natural Vegetation b) Mineral resource

c) Alluvial Soil d) Cotton Cultivation

5) The city known as Electronic Captial is _____

a) Kanpur b) Delhi c) Bangalore d) Madurai

II) Match the Following.

1) Jute Industry	Jamshedpur
2) Cotton Industry	Karnataka
3) Software Industry	Mumbai
4) Tata Iron and Steel Industry	West Bengal
5) Sugar bowl of India	Chotta Nagpur region
	Bangalore
	Uttar Pradesh and Bihar

III)Distinguish Between.

1) Mineral baesd and agrobased industires.

2) Iron and steel industry and software industry.

IV) Give short answers.

1) Define manufacturing.

2) Name the factors that determine location of an Industry.

3) What are agrobased industries? Give examples.

4) Name any five software centres.

5) What are the byproducts of Jute Industry?

V) Give Paragraph answers.

1) Write an account of iron and steel industries of India.

2) Describe the factors encouraging cotton textile industry in mumbai.

3) Give an account of software industry in India.

VI) Mark the following on the outline map of India.

1) Major iron and steel Plants.

2) Software technology parks

3) Cotton textile

4) Jute textile industries

5) Sugarmills of India

VII) Activities.

Select any agrobased industry and list the materials and factors required for establishing that Industry.

6. ENVIRONMENTAL ISSUES

The word environment is most commonly used to describe Natural Environment which means the sum of all living and non-living things that surrounded us.

Whose Environment is it?

Natural Environment

It is everyone's. Nature has enough to satisfy everyone's need but has not enough to satisfy every man's greed. Our expanding greed has put us in a tough situation of various environmental problems. The problems are due to rapidly growing population from 300 million in 1947 to 1210 million at present and industrialisation. They have direct impact on environmental degradation, pollution and climatic changes. The whole world is now anxious to repair the damage. Let us discuss important environmental issues which are threatening environmental sustainability.

Environmental Pollution

Environmental pollution is the contamination of environment which causes discomfort, instability, disorder harmful impact on physical system and on living organism.

Pollution can take the form of chemical substance, or energy, such as noise, heat or light energy. This in turn affects the ecology of the environment. There are many types of pollution degrading the environment. They are given below.

1) Air Pollution
2) Water Pollution
3) Land Pollution
4) Noise pollution
5) Pollution due to biomedical wastes.
6) Pollution due to e- wastes
7) Pollution due to mining

1. Air Pollution

It is contamination of air by the discharge of harmful substances. Air pollution has been a problem throughout the history. This can have serious effect on the health of the human beings. We breath about 2200 times a day inhaling around 16 kg of air. Every time when we breathe in we inhale dangerous substances. These dangerous substances or pollutants can be either in the form of gases or particles.

The source of pollutants is both natural and man-made.

Volcanic eruptions, wind erosion, pollen disposal, evaporation of organic compounds and natural radio activity are the natural causes of air pollution. Natural air pollution does not occur in abundance and also possesses little threat to the health of the people and ecosystems.

"Gigantic Explosion of Mt. Helens

released only about what one coal power plant emits in a year"

The man-made reasons for air pollution are vehicular emission, thermal power plants, industries and refineries.

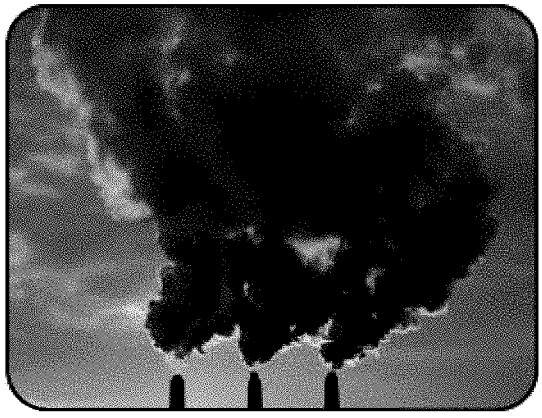
Vehicular emissions are responsible for 70 % of the country's air pollution. Vehicles which are eco- friendly are certified BHARATH II and III.

Bharat Stage I - IV emission norms are emissions standards that focus on regulating pollutants released by automobiles (motor cars) and other powered vehicles.

Most sulphur dioxide comes from power plants that use coal as their fuel. Automobiles produce about half of the nitrogen oxide.

Listed here are the major air pollutants: sulphur oxide, nitrogen oxide, carbonmono oxide and organic compounds that can evaporate and enter the atmosphere. India emits the fifth most carbon of any country in the world.

"The Bhopal gas tragedy is one of the world's worst industrial disasters that killed almost 8,000 people in December 1984."



Air pollution

Air pollution can adversely affect human health not only by direct inhalation but indirectly by other routes through water, food and skin infections. Most common air pollution directly affects the cardio-vascular systems of humans and cause diseases like asthma, bronchitis, allergies, lung and heart diseases .

Consequences of Air Pollution

1. Ozone layer depletion

The atmosphere contains a thin layer of ozone about 24 to 40 km above earth's surface which protects life from the harmful ultraviolet rays of the sun. The release of chemicals such as CFC widely used in refrigerators has damaged the ozone layers.

Ozone monitoring stations in Antarctica have already detected average losses of 30% to 40 % of total ozone over the region. Each one percent loss of ozone is to cause an increase of about 2 % in UV Radiation. This will reduce the immunity of the body and cause eye cataracts and skin cancer.

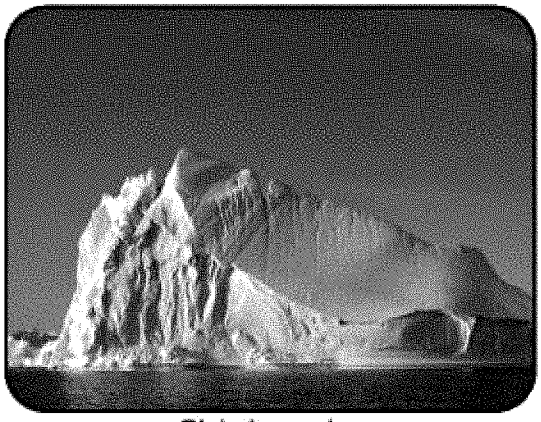
2. Global Warming (green house effect)

Global warming is caused by the increases of green house gases such as carbon-di-oxide, methane, water vapour, CFCs which are responsible for the heat retention ability of the atmosphere. The rapid increase in average temperature of the earth will cause major changes in weather patterns all over the world.

Rise in global temperature, will also result in the melting of polar ice caps and glaciers. This in turn will raise the sea level. Land use changes will occur in coastal areas due to sea level rise. It will cause damage to coastal

structures, post facilities and water management systems.

Global temperature rises will also affect the agricultural patterns.



Global warming

3. Acid Rain

Acid rain was first discovered in 1852. This is one of the most important environmental problems, caused by indivisible gases given out by automobiles or coal burning by power plants.

The gases that cause the acid rain is sulphur-di-oxide and nitrogen oxides. Fire and bacterial decomposition are the natural causes which increases a nitrogen oxide in the air.

These pollutants combine with water vapour in the presence of sun light and oxygen and form dilute sulphuric and nitric acids. When these mixture precipitates from the atmosphere, it is called as acid rain.

Acid rain falls down to the earth in all forms of precipitation. Acidity in the rain can harm and even destroy both natural ecosystems and man-made products.

Acid rains, when falling on oceans, reach the coral reefs. This has killed more than 70% of corals in Lakshadweep and Andaman islands.

The acid rain affects the eco systems by the following ways:

- The most basic microscopic organisms such as plankton may not be able to survive. So the sea animals, depending on planktons will die and the food chain will be affected.

If ocean temperature increases, growth of coral reefs will be affected. The corals control the proportion of carbon dioxide by turning Co_2 in the water to limestone shell. Moreover, coral reefs grows in temperature just above 10° Celsius.

Other ecosystems such as forests and desert will also be harmed. Loss of bio-diversity and extinction of rare species will occur.

- They also change the acidity level of the soil by leaching crucial nutrients. Thus it affects forest vegetation.

"For the protection of the ozone layer, Montreal Protocol and Vienna meet of 30 nations world wide agreed to reduce the usage of CFC's"

Steps to be taken to control Acid rain

Environmentalists advocate the installation of sulphur cleaning scrubbers in factories, finding new methods of burning coal and shifting to non - polluting renewable forms of energy production.

Smog

The word smog is a combination of the words smoke and fog. Smog causes a smoky dark atmosphere, especially over cities. It decreases visibility, and creates gaze throughout the area.

What can you do to reduce air pollution

Encourage your family to use neighbourhood market

Whenever possible take your bicycle.

As far as possible use public forms of transport.

Don't let your father drop you to school, take the school bus.

Encourage your family to form a car pool to office and back.

Reduce the use of aerosols in the household.

Look after the trees in your neighbourhood.

Switch-off all the lights and fans when not required.

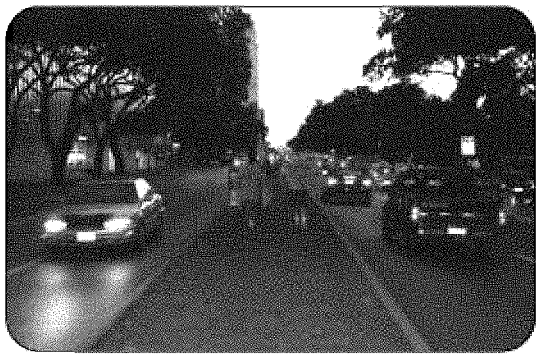
If possible share your room with others when the air conditioner, cooler or fan is on.

Do not burn leaves in your garden, put them in a compost pit.

Make sure that the pollution check for your family car is done at regular intervals

Cars should, as far as possible, be fitted with catalytic converters.

Use only unleaded petrol.



Smog

Smog is caused by many factors, Major producers of smog include automobiles, fires, waste treatment, oil production, industrial solutions, paints and coatings. The articulates present in smog include carbon monoxide, dirt, dust and ozone. The smog effect is created when sunlight, hydrocarbons and nitrogen oxide are mixed together Smog creates harmful health hazards like lung failure and pneumonia.

Smog is not only a city problem. As smog level increases, wind carry smog away from urban areas and harm other areas too. Agriculture is also affected by smog.

2. Water Pollution

Water pollution is any chemical, physical or biological change in the quality of water that has a harmful effect on any living thing that drinks or uses or lives in it.

Major water pollutants

There are several causes of water pollution. The first are disease-causing agents. These are bacteria, viruses, protozoa and parasitic worms that enter sewage-systems and untreated waste.

Waste Material

Second pollutant is oxygen demanding bacteria; that is, wastes that can be decomposed by oxygen requiring bacteria. Large proportion of such bacteria in water can deplete oxygen levels in it. This causes other organisms in the water such as fish to die.

The third class of water pollutants is water soluble inorganic pollutants

such as acids, salts and toxic metals.

Water can also be polluted by a number of organic compounds such as oil, plastics and pesticides in the water which are harmful to humans and animals.

Water is able to transport pollution from one location to another easily. Every year 6,356,000 tonnes of sewage, sludge and garbage are dumped into the world oceans. "400 million people live along the Ganges river. Further, 2,000,000 persons ritually take bath daily in the river. It is filled with chemical wastes, sewage and even the remains of human and animals.

The National Ganga River Basin Authority is allocated Rs 5,000 million by National Clean Energy Fund (NCEF) for its innovative project, of cleaning of river Ganga."

Water pollution mainly affects the water based ecosystems. It also disrupts the natural food chain. Pollutants such as lead and cadmium are eaten by tiny animals. These animals are later consumed by fish and shellfish. So, the food chain continues to be disrupted at all higher levels. People can get diseases such as hepatitis by eating sea foods.

Toxic substances entering into lakes, streams, oceans, dissolve in water and get deposited on the bed. This affects aquatic ecosystems. This can also seep down and affects the ground water.

Eutrophication

Eutrophication means natural nutrient enrichment of streams and lakes. The enrichment is often increased by human activities such as agriculture which will make lakes eutrophic due to increase in nutrients. Due to this, algae will grow extensively. As a result, water will allow less light and bacteria will become more active. This will deplete oxygen levels in the water. This will destroy aquatic life and also its reproductive ability.

3. Land Pollution

Land pollution is contaminating the land surface of the earth through dumping of urban waste matter and it arises from the breakage of underground storage tanks, application of pesticides and percolation of contaminated surface water, oil and fuel dumping, leaching of wastes from landfills or direct discharge of industrial wastes to the soil.

Land pollution

How can land pollution be prevented

Things used for domestic purpose can be reused and recycled.

Organic waste matter should be disposed off far away from the residential places.

Inorganic wastes can be separated, reclaimed and recycled.

4. Noise Pollution

Human or machine created sound that disrupts the activity or balance of

human or animal life is known as noise pollution

The unwanted sound can damage physiological and psychological health.

Noise pollution can cause hypertension, high stress levels, hearing loss, sleep disturbances and other harmful effects.

Control measures of noise pollution

Development of a green belt vegetation to reduce noise.

Installation of decibel meters along highways and in places of public gatherings.

Development of plantations - A strip of wide plantation inside the compound wall effectively protects houses, school and hospitals.

5. Pollution due to biomedical waste

Pollution due to biomedical waste is likely to spread diseases dangerous to life. In early April 2010, a machine from Delhi University containing cobalt-60-a radio active metal used for radiotherapy in hospitals, sent to a scrap yard in the city. The death from radiation of a scrap yard worker revealed the reasons. as the biomedical wastes.

6. Pollution due to e-Waste

E waste

India produces about 380,000 tonnes of e-waste generated out of television sets, mobile phones, computers, refrigerators and printers. This is one of major threats of environmental degradation and worst radiation incident worldwide.

7. Pollution due to Mining

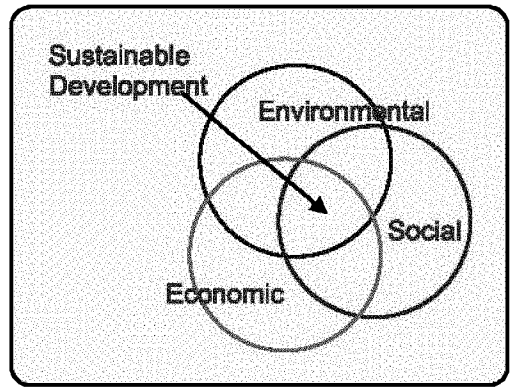
Mining is one of the important factors for the pollution of the environment.

The mines of the Mahanadi coal fields and NTPC draws about 250 million litres of water per day from river Brahmani and, in return, they release thousands of gallons of waste water which contains harmful substances like ash, oil, heavy metals, grease, fluorides, phosphorous, ammonia, urea and sulphuric acid into the river Nadir.

Due to large scale mining in the Aravalli hills in Rajasthan and Haryana, the forest cover has been depleted 90 per cent and drying up wells and affecting agriculture.

Biodiversity

Acquired land for mining affects biodiversity. Biodiversity is the degree of variation of life forms within a given ecosystem. On the entire planet, rapid



environmental changes due to mining and dam constructions cause extinctions.

Many of India's environmental problems are a result of the high density of population. So, it is everyone's responsibility to preserve our environment and also keep it healthy and sustainable.

☞It is possible by using efficient and eco-friendly technology.

☞Adoption of Indigenous agricultural practices, soil and water conservation practices.

☞community participation for ecological sustenance is indispensible for conservation of environment.

EXERCISE

I) Choose the correct answer.

1) Natural nutrient enrichment of streams and lakes is

a) water pollution b) eutrophication

c) air pollution

2) The main cause for natural air pollution

a)vehicular emission b)Volcanic eruption

c)thermal power plants

3) Contamination of air is called

a) noise pollution b) air pollution

c) land pollution

II) Answer the following questions.

1) What is water pollution?

2) List out the major Air pollutants

3) What is Noise pollution?

4) What are the major causes of water pollution?

5) What is bio diversity?

6) How pollution is caused due to bio medical waste?

7) What is meant by pollution due to e-waste?

III) Answer the following in paragraph.

1) What are the effects of acid rain?

2) What is smog ?What are the effects of smog?

3) Give a brief note on Acid rain.

7. INDIA - TRADE, TRANSPORT AND COMMUNICATION

India is a vast land with beautiful landscape and rich abundant resources. But, the resources are not uniformly spread, and so, there are regions of surplus resources and regions of deficit. This leads to movement of goods from the surplus region to the deficit region through trade. Hence, trade is an act or process of buying, selling or exchanging goods and services. Growth of trade leads to economic prosperity of a nation. But, trade growth depends on well developed market, advanced transport and communication system. Thus trade, transport and communication stand complementary to each other and their overall development is essential for the country's economic growth.

Trade in general is of two types. They are Internal trade and International trade. Internal trade, also known as local trade, is carried within the domestic territory of a country. Land transport plays a major role in the movement of goods and this trade is mostly based on the nation's currency. It helps to promote a balanced regional growth in the country. For example tea from Assam, coffee from Karnataka, spices from Kerala, minerals from Jharkhand, West Bengal, Orissa belt are supplied to different parts of our country.

International trade also known as external trade, is a trade carried on between two or more countries. Ocean transport plays a major role in the movement of goods and the trade is carried on foreign currency. It leads to rapid economic progress of a country. For example, India supplies iron ore to Japan. International trade is sub divided into two types such as 1.Bilateral trade 2.Multilateral trade.

1) Bilateral trade is a trade carried out between two countries based on the agreement deal of not using currency for payment. In this trade a country sells its surplus goods to a needy country and in return buys an equally valuable required goods from the same country.

2) Multilateral trade is a trade carried out between many countries. In this trade a country sells its surplus goods to the needy country by getting revenue and buys the required goods from another country by using the same revenue. This trade is very complicate to negotiate, but stands very powerful when all the countries sign the agreement. All member countries are treated equally in the multilateral trade. The Trade Blocs like APEC (Asian Pacific Economic Community), ASEAN (Association of South East Asian Nations) and SAPTA (South Asian Preferential Trade Aggrement) are created to make the trade easier.

Components of Trade

"Export" and "Import" are two components of trade. 'Export' means goods and services sold for foreign currency. India exports nearly 7,500 goods to nearly 190 countries of the world. Import refers to goods and services bought from overseas producers. India imports nearly 6,000 goods from 140 countries.

The difference between the values of export and import is called Balance of trade.

If the value of export in a country is higher than the value of import, then the trade in that country will be called as favourable balance of trade. For example Japan.

If the value of import in a country is higher than the value of export then the trade in that country will be called as unfavourable balance of trade in that country. For example India

The value of currency of a country depends upon the balance of trade of that country.

Major Exports from India

i) Agriculture Products

Cereals, pulses, tea, coffee, spices, nuts and seeds, sugar and molasses, processed food, meat and meat products.

ii) Ores and minerals

Iron ore, Coal, Manganese, Mica, Bauxite.

iii) Leather products

Wallets, purses, pouches, handbags, belts, foot wear, gloves.

iv) Gems and jewellery

Precious stones, gold jewellery, decorations and antiques.

v) Chemicals and related products
Pharmaceuticals, cosmetics, rubber and glass.

vi) Engineering goods

Machinery, iron and steel, electronic goods, computer software.

vii) Textiles and handicrafts

Ready made garments, cotton, yarn and zari goods.

Major imports of India

Machineries like transport equipment, machine tools, non-electrical machineries, electrical machineries. Wheat, medicinal and pharmaceutical products, Petroleum, fertilizers and newsprint.

India's value of exports in 1950-51 was only Rs.6,070 millions, whereas the value of export during 2008-09 was 7,66,9350 millions. India's value of imports in 1950-51 was Rs.5810 milliions, whereas the value of imports during 2008-09 was Rs.13,05,5030 millions.

This clearly indicates the significant growth of both exports and imports in India.

India's International trade reflects the growing prominence of Indian economy in the global market. Since 2004, a liberal trade policy has been followed by the Government of India to promote International trade.

Highlights of India's International Trade Policy

Merchandise trade has been doubled

Thrust is given for employment generation, especially in semi-urban and rural areas.

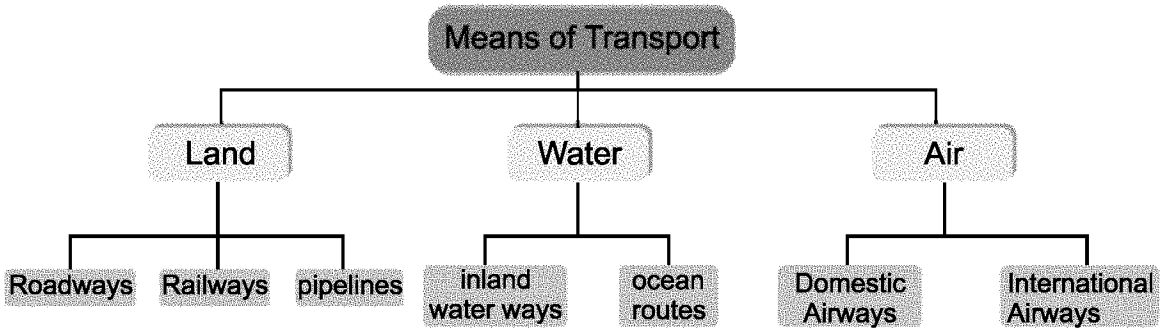
Trade procedure is simplified and transaction cost is reduced.

Special focus is given to make India a global hub.

A new scheme called Vishesh Krishi Upaj Yojna has been introduced to boost exports of fruits, vegetables, flowers and minor forest products.

Transport System Of India

Development of a country not only depends upon the production of goods



and services but also on an efficient means of transport. It helps to move the materials to the point of production and goods to the point of consumption (market). A dense and efficient network of transport is essential to promote social cohesion and to accelerate economic prosperity. It also ensures security and territorial integrity. India is closely connected with the world countries by means of fast moving transport and an equally developed communication system.

Roadways

The Indian Roads are cost efficient and the most popular dominant mode of transport linking different parts of our country. Roads stretch across the length and breadth of our country. It is used by all sections of people in the society. Road network in India is the second longest in the world accounting for 3.314 million km. The roads are classified into Village roads, District roads, State Highway, National Highway, Golden Quadrilateral Super Highways, Expressways, Border Roads and International Highways.

Village Roads link different villages with towns. They are maintained by village panchayats. In India villages roads run to a length of 26,50,000.Kms.

District Roads links the towns with the district headquarters. They are maintained by the Corporations and Municipalities. in India run to a total length of 4,67,763 kms of district roads.

State Highways links the state capitals with the different district headquarters. The roads are constructed and maintained by the State Public Works Department (SPWD). The State Highways runs to a length of 1,31,899 kms. Cuddalore–Chittor Road is an example for State Highways.

National Highways links the state capitals with national capital. They are the primary road system of our country and are maintained by the Central Public Works Department. (CPWD) It runs to a length of 70,548 kms.

For example, NH 47 is a National Highway which connects Tamilnadu and Kerala. The total length of the road is 650 km out of which 224 km runs in the state of Tamil Nadu.

Do you know?

The shortest National Highway is NH 47A. It runs from Ernakulam to Kochi port covering a distance of 5.9km.

The longest National Highway Nh7, it runs from Varanasi in Uttar Pradesh to Kanyakumari in Tamil Nadu covering the distance of 2369 km. It passes through some of the important

metros like Jabalpur, Nagpur, Hydrabad and Bangalore.

National Highway -7

"Golden Quadrilateral Super Highways" is a major road development project launched by the Government of India. It runs to a length of 14,846 km connecting the major cities of India. It includes:

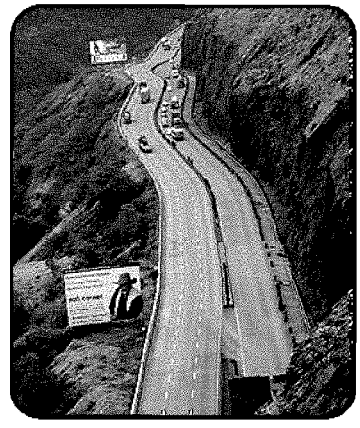
Chennai – Bangalore Golden Quadrilateral

- Six lanes super highways running to a length of 5,846 km connecting the four metropolitan cities - Chennai, Mumbai, Delhi and Kolkata.
- North-South corridor linking Srinagar-Kanyakumari, East-West corridor connecting Silchar-Porbander, run to a total length of 7,300 Km.
- The roads that connect the major ports with Golden Quadrilateral and the corridors run to a length of 363km.

The main objective of the Golden Quadrilateral Super Highways is providing 'Connectivity' 'speed' and 'safety. They are meant to reduce the travel time and link the metropolitans closer. These projects are implemented by the NHAI (National Highway Authority of India).

As this Project involves huge investment, the government has entrusted private sector companies to invest, develop and maintain these highways. The agreement for the construction of roads is based on the concept of Build, Operate and Transfer (BOT). After the private companies realize their cost and profits over an agreed period, the responsibilities will be transferred to the government.

Expressways are the technologically improved high class roads in the Indian Road Network. They are six lane roads. They run to a length of more than 200 kms. New Mumbai-Pune Road is an example for Expressway.

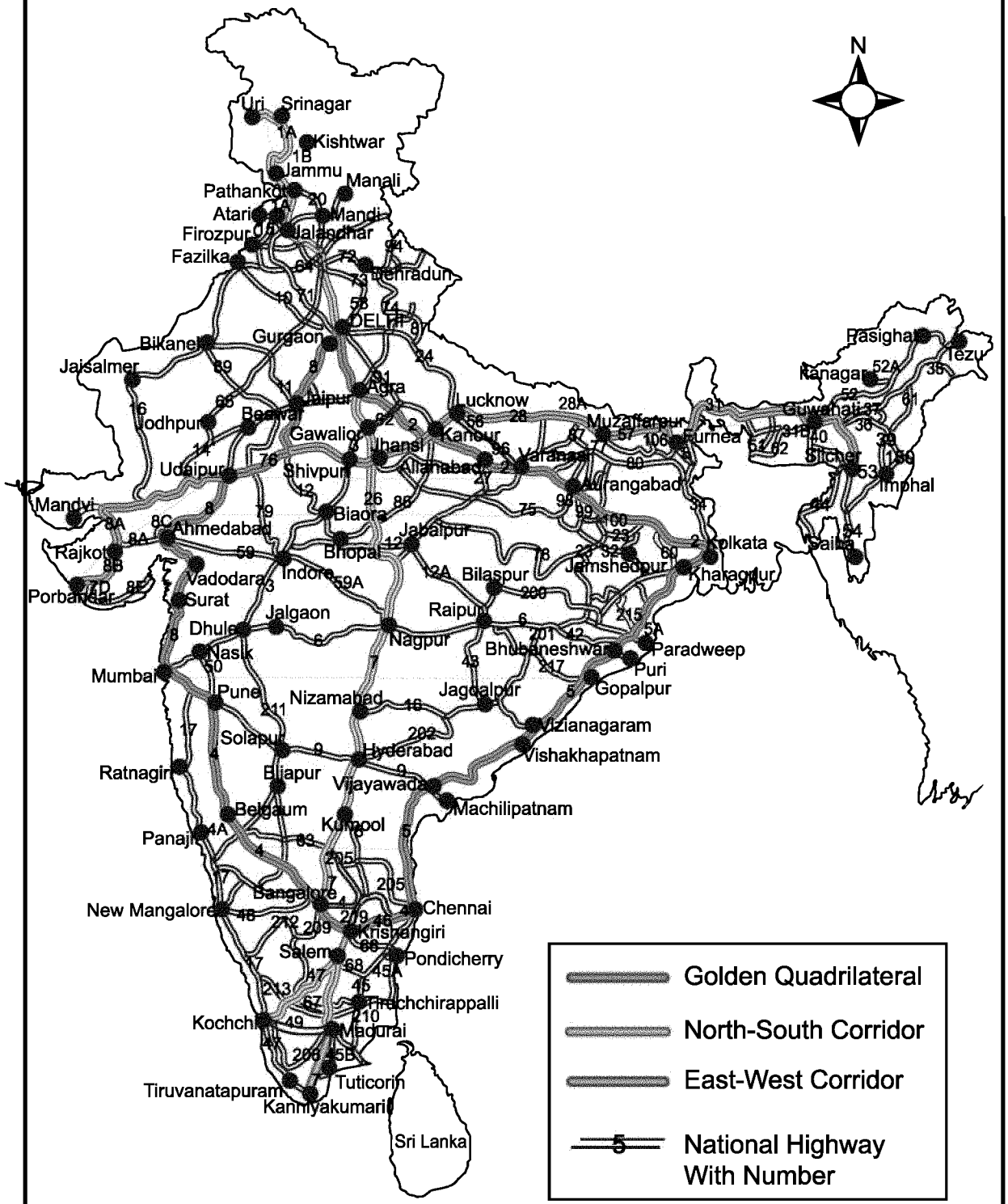


Mumbai – Pune Expressway

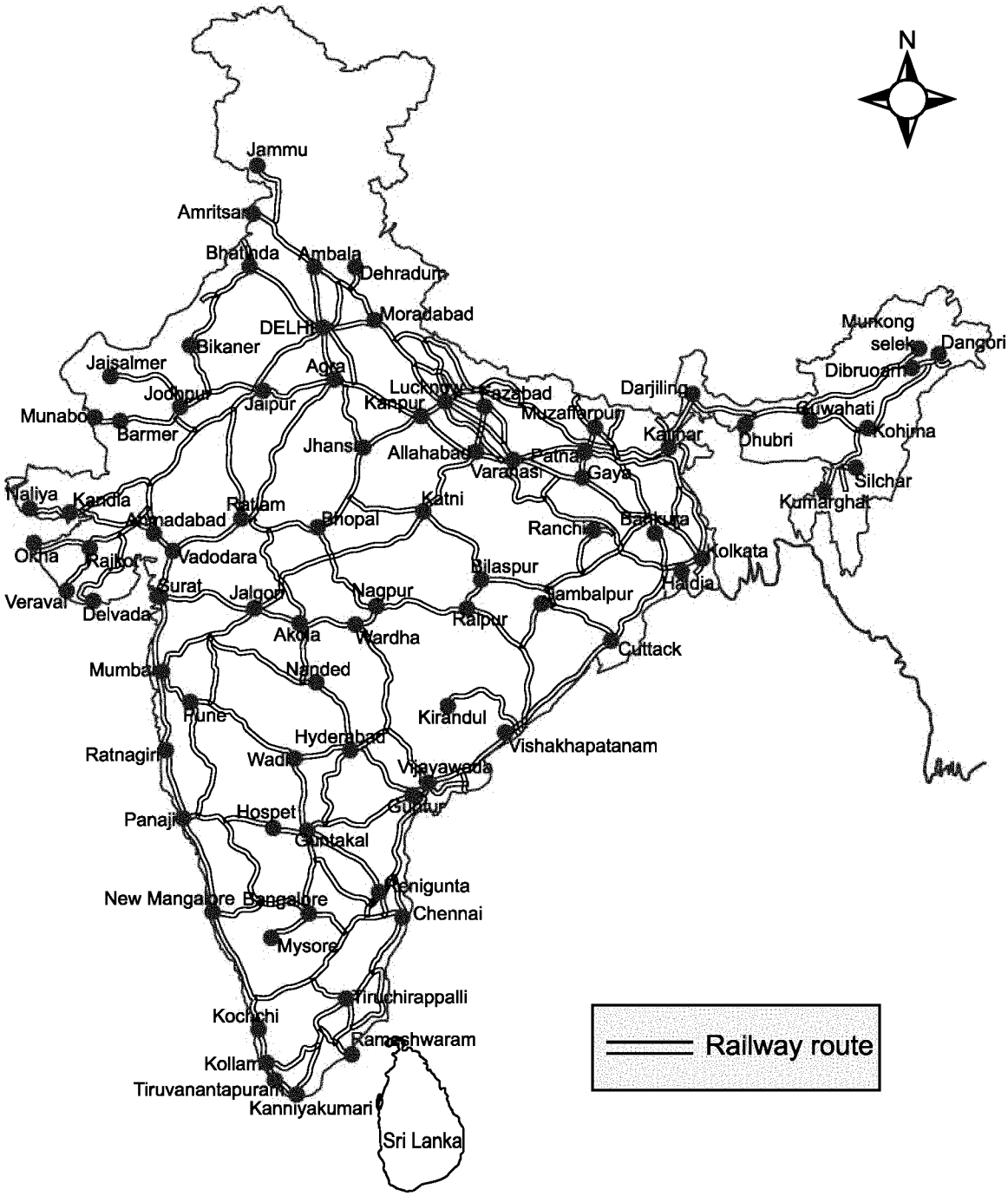
Border Roads

Border Roads are the roads constructed along the northern and north eastern borders of our country.

INDIA
NATIONAL HIGHWAYS



INDIA
RAILWAYS



These roads are constructed and maintained by Border Roads Organisation (BRO) which was set up in 1960 by the Government of India. BRO is regarded as a symbol of nation building, national integration and an inseparable component in maintaining the security of the country. The organisation has constructed 46,780 Km of roads in difficult terrain.

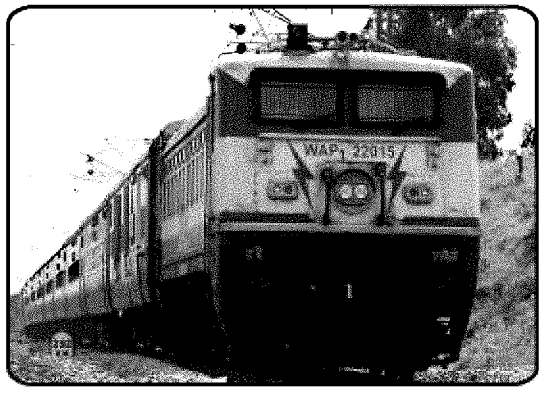
Do you know?

Border Road Organisation has constructed the world's highest road connecting Manali (H.P.) to Leh (Kashmir) at an altitude of 4270 mts.

International Highways are the roads that link India with neighbouring countries for promoting harmonious relationship with them.

Railways

The Railways in India provide the principal mode of transportation for freight and passengers. It brings people together from the farthest corner of the country and promotes trade, tourism, education and national integration.



Let us know

The First train steamed off from Mumbai to Thane in 1853, covering a distance of 34km.

Bhopal Shatabdi is the fastest train in India. It runs at a speed of 150 km/hr. between Bhopal Junction and New Delhi.

Railway made a modest beginning in India in 1853. By 1947, they had grown to 42 rail systems managed by 37 companies. In 1951, the systems were nationalised as one unit-"The Indian Railways".

Indian Railways is the largest rail net work in Asia and the second largest in the world. It traverses across the length and breadth of the country for over 63,273 km connecting 7,025 stations.

Railways help in commuting 20-million passengers and more than 2 million tonnes of freight daily. 'Delhi' is the headquarters of the Indian Railways and it is the main focal point from where the railway lines radiate in all directions connecting the seaports, airports and metropolitan cities of India. The network runs on the multigauge operation. They are:

1. Broad Guage
2. Meter Guage
3. Narrow Guage

The Indian Railways is divided into 17 zones

ZONES	HEADQUARTERS
Central Railway	Mumbai
Eastern Railway	Kolkata
East Central Railway	Patna
East Coast Railway	Bhubaneswar
Konkan Railway	Navi Mumbai
Northern Railway	Delhi
North Central Railway	Allahabad
Northwestern Railway	Jaipur
Northeastern Railway	Gorakhpur
Northeast Frontier Railway	Maligaon (Guwahati)
Southern Railway	Chennai
South Central Railway	Secunderabad
Southeastern Railway	Kolkata
Southeast Central Railway	Bilaspur, CG
Southwestern Railway	Hubli
Western Railway	Mumbai
West Central Railway	Jabalpur

The Role of Physiography in Railway System

The physiography of India has played a major role in the distribution of Railway network.

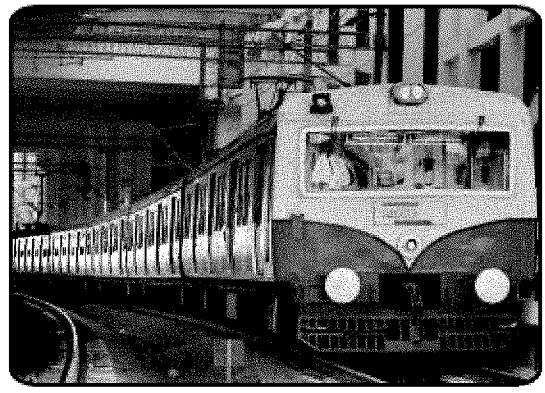
- The Himalayan region has rugged terrain and so it is very difficult to lay railway tracks along the steep stopes. Hence, this region has only three railway lines.
- Further, the condition in west Rajasthan, frequent flood in Brahmaputra valley thick forest and rough terrain in Northeast India has led to a few railway lines in these region.
- The northern plains of India is a flat land with rich alluvial soil. It has highly developed agricultural and industrial sectors with high population. Hence, it has a dense network of railways.
- Peninsular India is a plateau region with an undulated terrain, hence it has a moderate railway network.

Sub Urban Railway

Cities in India such as Mumbai, Chennai, Kolkata and Delhi have separate tracks for the sub urban network, whereas Lucknow, Kanpur, Hyderabad and Pune do not have separate suburban tracks but share the track of long distance trains. The sub urban trains connect the commuters of sub urban areas to the urban centres. They are mostly Electric Multiple Units (EMU). These trains usually have nine coaches but to avoid overcrowd, during peak hours they attach extra coaches.

MRTS – Chennai

The Mass Rapid Transit system (MRTS) is an elevated line of the suburban railway in Chennai. This railway line currently runs from Chennai beach to Velachery, covering 17 stations for a distance of 25 km. The MRTS is operated by the state owned Southern Railway.



Role of Railways in Indian Economy

- Railways help in bulk Movement of goods (iron and steel, mineral oil, building stone coal, metal ores etc) at large.
- Railways help in the commercialization of the agriculture sector by facilitating quick movement of perishable items like milk, vegetables, fruits etc.
- Railways help in developing a unified national market, equalisation of prices and also in the growth of internal and foreign trade.
- Railways help in controlling famines by quick movement of essential commodities.
- Railways play a greater role in administration and in national integration.

Pipe Lines

Pipelines were used for transporting water to cities in earlier days, but now they are also used for transporting crude oil and natural gas from oil and natural gas fields to oil refineries, fertilizer factories and big thermal power plants.

Advantages of Pipeline Transport

- Pipeline can be laid through difficult terrain as well as under water.
- Initial cost of laying pipeline is high but subsequent cost for maintenance and operation is low.
- It ensures steady supply and minimizes transshipment losses and delays.
- Pipeline operation involves very low consumption of energy.

There are three important pipeline network in our country.

1. From oil fields in upper Assam to Kanpur in Uttarpradesh via Guwahati, Barauni and Allahabad.
2. From Salaya in Gujarat to Jalandhar in Punjab Via. Viramgam, Mathura, Delhi and Sonipat.
3. Gas pipeline from Hazira in Gujarat connects Jagdishpur in Uttarpradesh Via. Vijaipur in Madhya Pradesh.

Apart from the above, pipelines are also laid connecting, Mumbai high and Mumbai; Mumbai and Pune.

Waterways

Waterways are the cheapest means of transport. They are most suitable for carrying heavy and bulky goods at low cost. It is a fuel efficient and environment friendly mode of transport. Waterways are classified into Inland waterways and Ocean routes.

Inland Waterways

India has an extensive network of inland waterways in the form of rivers, canals and backwaters. The total navigable length is 14,500km. Out of which 5,685 km of rivers and 400 km of canals are used by mechanized crafts. The "Waterways Authority" of India has identified five National Waterways They are:

National waterway 1: Allahabad-Haldia stretch of Ganga.

National waterway 2: Saidiya-Dhubri stretch of the the Brahmaputra.

National waterway 3: Kollam-Kottapuram stretch of the west coast canal, Champakara canal and Udyogmandal canal.

National waterway 3

National water way 4: Bhadrachalam-Rajahmundry and Wazirabad Vijayawada stretch of the Krishna Godavari river system along with Kakinad Puducherry canal network.

National water way 5: Mangalgadi-Paradeep and Talcher- Dhamara Stretch of the Mahanadi, Brahmani river along with the east coast canal.

Ocean Routes

India has a long coast line of 7516km with 13 major and 187 medium and minor ports located along the coast. These ports handle 95 percent of the country's foreign trade. The major ports are managed and controlled by 'Port Trust' under the Government of India.

The medium and minor ports are controlled by the State Governments. The major ports along the west coast are Kandla, Mumbai, Jawaharlal

Nehru, Marmagao, New Mangalore and Cochin. The major ports along the east coast are Tuticorin, Chennai, Ennore, Vishakapatnam, Paradip, Haldia and Kolkata.

Chennai Port

India is the second largest ship owning country in Asia and ranks sixteenth in the world. India has four major ship building yards. They are:

1) Hindustan shipyard at Vishakapatnam.

2) Garden reach workshop at Kolkata.

3) Mazagaon Dock at Mumbai.

4) Kochi shipyard at Kochi.

Government of India has issued guidelines for private investment in the port sectors. Indian ports Act 1908 and major port Trust Act 1963 have been made flexible to allow private investment in ports.

Airways

Airways is the quickest, costliest, most modern and comfortable means of transport. They carry passengers, freight and mail. They link local, regional, national and international cities. Air transport has made accessibility easier by connecting difficult terrains like high mountains and sandy deserts .

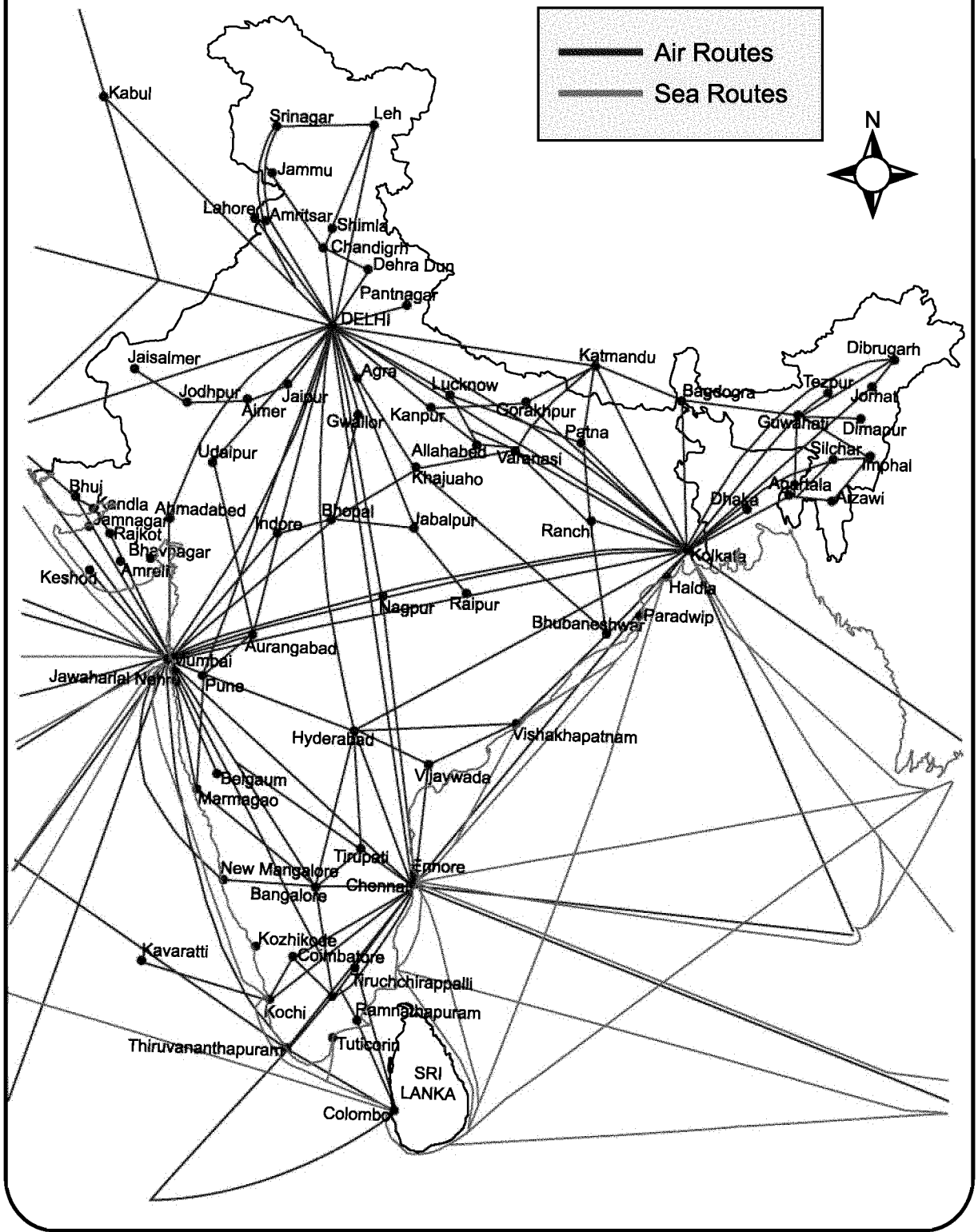
The air transport in India made its beginning in 1911, but the real initiation was made in 1932 by JRD. Tata, when he started the Tata Airline. In 1946 it was renamed as Air India and in 1953 air transport was nationalized. Indian Airlines was set up to cater the needs of domestic market while Air India was set up to take care of the international sector. Both enjoyed monopoly over Indian skies until 1986 later, due to liberalisation policy, many privately owned airlines joined the air transport system.

In 2007, the Government of India merged the Air India and Indian Airlines under National Aviation Corporation of India Limited (NACIL). NACIL(A) provides international services, NACIL(I) provides domestic services and services to neighbouring countries in South East Asia and Middle East.

Chennai Airport

NACIL operates 159 Airbuses and Boeing aircrafts. It plays a major role in connecting Indian cities with the major cities of the world. Apart from NACIL there are private operators namely, Jet

Major Sea and Air Routes



Airways, Kingfisher Airlines, Spice jet, Inter Globe Aviation (INDIGO) to provide domestic services.

Airport Authority of India (AAI) was constituted in 1995 and it has instituted international standards of safety to Indian Airports. At present, AAI maintains and operates 129 airports out of which 17 are International Airports.

Pawan-Hans Helicopter Ltd. is a public sector company. It is engaged in providing helicopter services to ONGC for its offshore operations. It also provides services to various state Governments, especially in the North East to link the inaccessible areas.

Pawan-Hans

Communication

Communication system contributes to the development of economy and social relationships. It helps in promoting cultural unity.

Communication is a process that involves exchange of information, thoughts and ideas. There are various ways of sharing information with each other and it is termed as the 'Means of Communication'.

Means of Communication

Personal Communication	Mass Communication
Postal services	Radio
Telegrams	Television
Telephones	Newspaper
Mobile Phones	Internet
Fax	

I) Personal Communication refers to exchanging of information between two persons'.

Indian Postal Service made its beginning in 1857 and it is the largest network in the world. It enables people to send parcels and mails to foreign lands and to the remotest villages. The mails are classified into first class mail and second class mail. First class mail includes postcards, inland letters and envelopes. They are airlifted without any surcharge between stations. The second class mail includes book packets, registered newspaper and periodicals. They are carried by land transport. They also provide Value Payable by Post service, Electronic Money Order service, Instant Money Order service, e-Post and e-Bill Post service, Express parcel post and Speed post services.

Do you know?

India has the largest postal network in the world with 1,55,618 post offices.

Telegram is a form of written communication by which messages can be sent quickly to distant places.

Telephone is a form of oral communication. It is considered very essential for the growth of commerce. People at distant places within a country can communicate using STD (Subscriber's Trunk Dialing), while international communication can be made through ISD (International Subscriber Dialing). A sophisticated telephone not only enables voice messages but also written messages,

drawings, photographs and video images. Telephone is the most preferred form because it provides instant communication.

Mobile Phones are very popular in today's world as it provides an access to the user and receiver at anytime, at anywhere. A mobile phone allows its user to make and receive telephone calls to and from the public telephone network across the world. A key feature of the cellular phones is that it enables seamless telephone calls even when the user is moving around wide area.

Short Message Services(SMS) is a method by which message can be sent to a mobile phone via another mobile phone. SMS may be sent from one cell phone to another, or may be sent to all cell phones within a specific geographical region.

Fax is an electronic device that enables instant transmission of any matter, which may be handwritten or printed like letters, diagrams, graphs and sketches by using telephone lines. A fax machine, sends the exact copy of the document to another fax machine at the receiving end. Internet fax is a form for sending documents using internet with the help of a fax machine.

II) Mass communication enables millions of people to get the information at the same time. It helps in creating awareness among the people regarding various national policies and programme.

Radio broadcast in India was started in 1927. In 1936 it was named as All India Radio (AIR) and from 1957, it came to be called as Akashvani. It serves as an effective medium to educate people on health, environment protection, family planning, science and technology.

Television in India is known as Doordarshan and it is one of the largest terrestrial networks in the world. It offers three-tier program services (national, regional, local) for various categories of people. It brings its viewers all the major programmes of national and international importance through live telecast. It broadcasts a variety of programmes from entertainment, education, sports, and health hazards for people of different age groups and regions.

Newspapers are a most common but powerful means of communication which provides information about national and international events to the people. In a democratic country like India, they serve as a very effective tool for knowing public views and opinions.

Internet is a vast network of computers. It connects many of the world's business institutions and individuals. Internet means inter connected network of net works, which links thousands of smaller computer networks. It enables computer users throughout the world to send and receive messages and information in a variety of form. It was first started as a purely text based system to send and receive message (e-mail). But now, it is fully a multi media based system with capacity to deliver picture images, video and audio. The basic services of internet are e- mail, The World Wide Web (www) and Internet Phone.

Advantages of Communication Network

- Communication network has enhanced the efficiency of communication. Because it enables quick exchange of information with people anywhere in the world.

- Leads to enormous growth of trade.
- Helps the government to tackle various socio - economic problems in the society.
- Improves the quality of human life.
- Opens the door to the information age.
- Promotes Edusat programs.

In recent decades, the world has taken giant strides into the information age. The diversity and the capabilities of various media-(print and electronics) have increased enormously and they play a significant role in the economic and social growth of our country.

EXERCISE

I) Choose the correct word.

1. Trade carried on within the domestic territory of a country is known as _____ trade.
   a) External b) Foreign c) Internal d) International
2. Trade blocs are created to make the _____ trade easier.
   a) Multi Lateral b) Bilateral c) Unilateral d) Local
3. Cost efficient and most popular mode of transport in our country is _____.
   a) Airways b) Roadways c) Waterways d) Railways
4. The headquarters of Indian Railways is _____.
   a) Mumbai b) Delhi c) Nagpur d) Chennai
5. The costliest and most modern means of transport is _____.
   a) Air Transport b) Road Transport
   c) Water Transport d) Rail Transport

II) Match the following.

1. Village Roads	Delhi
2. District Roads	Mumbai
3. Central Railways	Chennai
4. Soutern Railways	(Village) Panchayat
5. Northern Railways	Municipalities
	Corporations
	Hyderabad

III) Distinguish between.

1. National highways and state highways.
2. Exports and imports.

3. Internal trade and International trade.
4. Roadways and railways.
5. Airways and waterways.

III) Short Answers.

1. What is trade? What are the types of trade?
2. State the highlights of India's foreign trade policy since 2004.
3. Trade, Transport and communication stand complementary to each other. How?
4. What is the significance of border roads?
5. Brief how physiography play a role in the distribution of Railway networks in India?
6. Write a note on sub urban railway.
7. State the merits of pipeline transport.
8. Mention the important pipeline networks in our country
9. What are the advantages of communication network

IV) Answer in Paragraph.

1. Explain India's trade with reference to her major exports and imports
2. Classify the Indian roads and Explain.
3. Explain the means of Personal Communication in India.

V) Map work.

Mark the following in the out line map of India.

1. Northern Terminal of North south corridor.
2. Major Ports in Kerala and Orissa.
3. Mark the road route linking Mumbai and Delhi.
4. Mark the longest National Highways with two Inter mediates.
5. Mark the headquarters of konkan railways.
6. Mark the International Airports in the four metropolitan cities.
7. Link Chennai and Delhi by rail route.
8. Link Mumbai and Kolkata by rail route.

VI) Activity.

Use Atlas and locate

1) The Headquarters of the "Indian railways". 2) Major sea ports of India.
3) International airports of India.

8. REMOTE SENSING

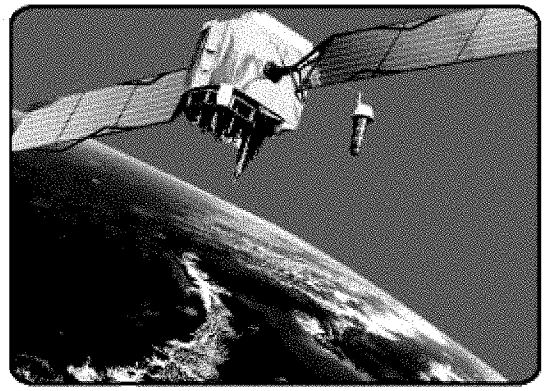
Geography is the study of the Earth focusing on its surface, the atmosphere, oceans, plants, animals, and people. Most people think that geography is a study of maps. This thinking is only partially correct because Geography is also the study of man's natural environment and its influence on cultural environment. To learn and know about our environment, we use our senses of seeing, touching, smelling and hearing. These senses help us to learn about an object from close proximity. But in geography the subject matter encompasses spatial distribution and so it takes many months, to study about resources of a region by means of ground survey. Ground survey of resources is hindered by dense forests, rugged terrain, sandy deserts and unpredictable weather. In spite of this, continuous monitoring of the earth surface has become very essential due to recent increase in natural disasters, large scale climatic changes, desertification and reduction in biodiversity. Hence, the most effective technology to gather information on any part of the earth within a short span of time without footing the region is the Remote Sensing Technology.

What is Remote Sensing?

Remote = far away

Sensing= getting information

Remote sensing can be defined as the collection of data about an object from a distance. Humans and many other animals accomplish this task with their eyes or by their sense of smell or hearing. Geographers use the remote sensing as a tool to monitor or measure phenomena on the Earth's lithosphere, hydrosphere, atmosphere and biosphere. Remote sensing of the environment by geographers is usually done with the help of mechanical devices known as sensors. These

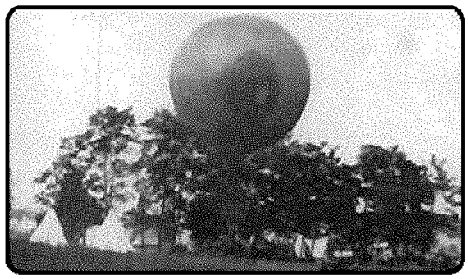


sensors have a greatly improved ability to receive and record information about an Earth object without any physical contact. Often, these sensors are positioned in helicopters, planes, and satellites. The sensors record information about an object by measuring the electromagnetic energy that is reflected back and radiated from the object on the earth surface.

History of Remote Sensing

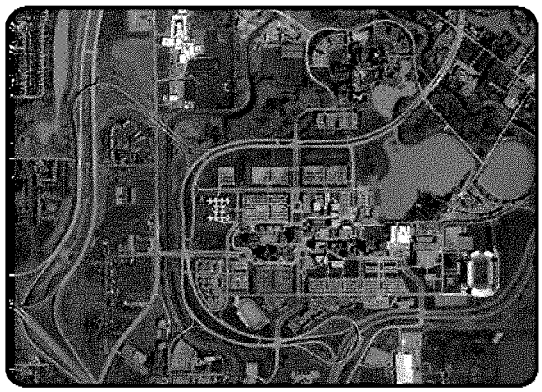
Aerial photographs were the first results of remote sensing utilized by cartographers, or map-makers. In 1858, French map-makers used a hot air balloon and primitive cameras to take oblique (inclined) aerial photographs of the landscape. Later during World War I, air planes were used to take systematic aerial images of much of the terrain in the war zone. These photographs helped in gathering information about the

position and movement of enemy troops. After the war, systematic vertical images were taken for civilian use .By comparing photographs taken at different angles; cartographers were able to create accurate and detailed maps of different territories.



Air Balloon

The process of comparing different aerial photographs and computing accurate measurements is called photogrammetry. Maps created using aerial photographs are called orthophoto maps.



TIROS-1 satellite

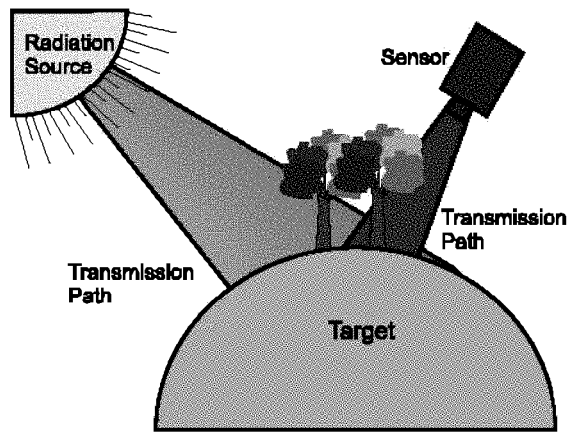
In the 1960s, a revolution in remote sensing technology began with the deployment of space satellites. From their high vantage-point, satellites have a greatly extended view of the Earth's surface. The first meteorological satellite, TIROS-1 (Television and Infrared Observation Satellite) was launched by the United States.

In the 1970s, the second revolution in remote sensing technology began with the launch of Earth Resource Technology Satellite (ERTS). This series was renamed LANDSAT in 1975. The usefulness of satellites for remote sensing has resulted in several other organizations launching their own devices. In 1986, the SPOT (*Satellite Pour l'Observation de la Terre*) program of France began. They launched five satellites and have produced more than 10 million images.

TIROS-1 Satellite

Components of Remote Sensing

The four basic components of a remote sensing system are target,



energy source, transmission path, and a sensor. The target is an object or material that is being imaged. The components in the system work together to measure and record

information about the target without actually coming into physical contact with it. The energy source provides electromagnetic energy to the target. Normally, the energy source can be classified in to two. 1. Passive System (that is sun, irradiance from earth's materials) 2. Active System (that is irradiance from artificially generated energy sources such as radar). Remote sensing technology makes use of a wide range electromagnetic spectrum from a very short wave Gamma ray to a very long radio wave. The electromagnetic radiation interacts with the target, depending on the properties of the target and the radiation; transmit information from the target to sensor. Sensor is a device to detect the Electro Magnetic Radiation (EMR). Sensors can be classified on the basis of energy received into Passive sensors and Active Sensors. Passive sensors detect natural radiation that is emitted or reflected by the object or surrounding area being observed. For example Cameras used for taking favourite pictures during daylight. Active sensors transmit their own signal and measure the energy that is reflected (or scattered back) from the target for example Radar.

Processes Involved In Remote Sensing

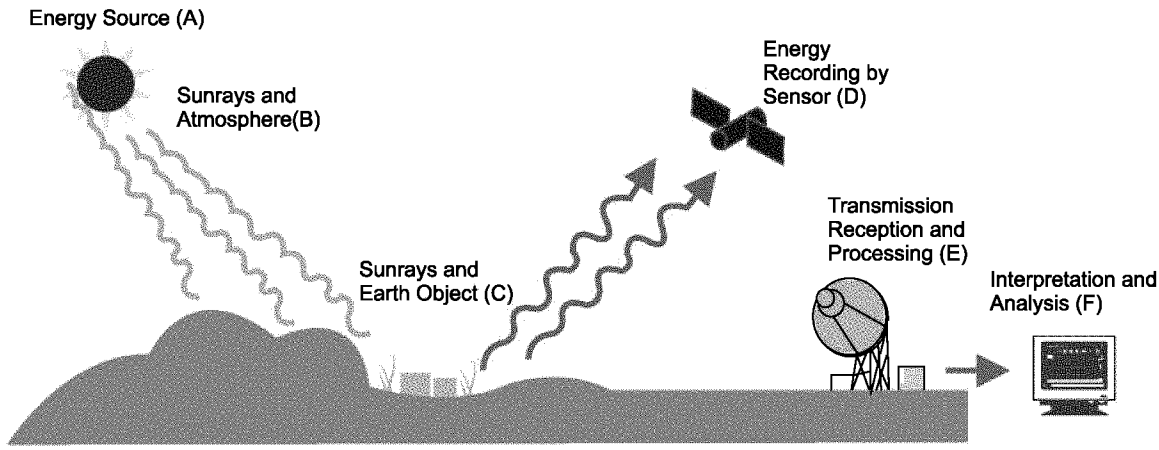
1.Sun is a Energy Source (A) - the first requirement for remote sensing is energy source which illuminates or provides electromagnetic energy to the target of things.

2. Sunrays and Atmosphere (B) - as the energy travels from its source to the target, it will come into contact with, and also interact with, the atmosphere it passes through. This interaction may take place a second time as the energy travels from the target to the sensor.

3. Sunrays and Objects on Earth (C) - once energy makes its way to the target through atmosphere, it interacts with the target, depending on the propoerties such as tone, texture, size, shape and patterns of both the target and the radiation.

4. Recording of Energy by the Sensor (D) - after energy has been scattered or emitted from the target,

Processes involved in Remote Sensing



the sensor (remote - not in contact with the target) collects and records the electromagnetic radiation.

5. Transmission, Reception and Processing (E) - the energy recorded by the sensor has to be transmitted, often in electronic form, to a receiving and processing station where the data are processed into an image (hardcopy and/or digital).

6. Interpretation and Analysis (F)-the processed image is interpreted, visually or digitally or electronically, to extract information about the target which was illuminated.

7. Application (G) - the final element of the remote sensing process is achieved by applying the extracted information for better understanding and to reveal some new information, or assist in solving a particular problem.

Advantages of Remote Sensing

1. This system has the ability to provide a synoptic view of a wide area in a single frame.

2. Remote sensing systems detect features of inaccessible areas that cannot be reached by human vision: For example Equatorial forest in

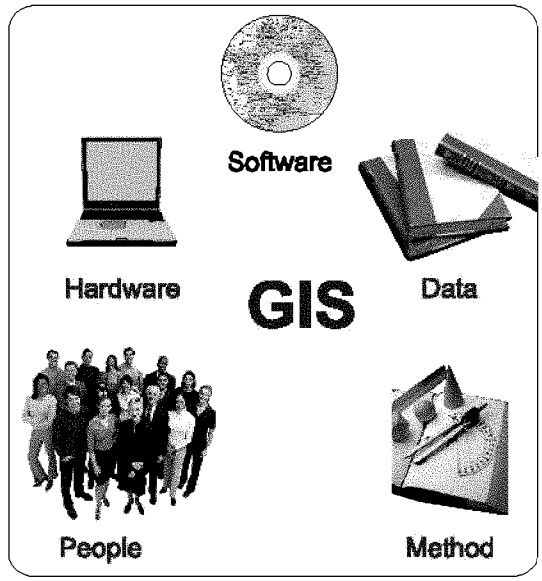
the congo basin, Africa.

3. Cheaper and rapid method of acquiring up to-date and continuous information over a geographical area For example . It helps agriculturists to identify the areas affected by pests, crop related diseases etc.

4. Helps the planners for formulating policies and programs to achieve the holistic functioning of the environment.
For example. Spots the areas of natural disasters such as tsunami, drought prone, flood affected and cyclone hit areas and helps in providing relief and rehabilitation program in the affected areas.

5. Enable the cartographers to prepare thematic maps like geological maps, soil maps, population maps etc. with great speed and accuracy.

Geographical Information System (GIS) is a systematic integration of Computer Hardware, Software and Spatial Data, for capturing, storing, displaying, updating, manipulating and analysing all forms of geographically referenced data.



Components of GIS

A Geographic Information System combines computer drawn maps with a database management system. This

diagram suggests that GIS consists of three subsystems:
(1) an input system that allows for the collected data to be used and analyzed for some purpose; (2) computer hardware and software systems that store the data, allow for data management and analysis, and can be used to display products of data manipulation on a computer monitor; and (3) an output system that generates hard copy of maps, images, and other types of output.

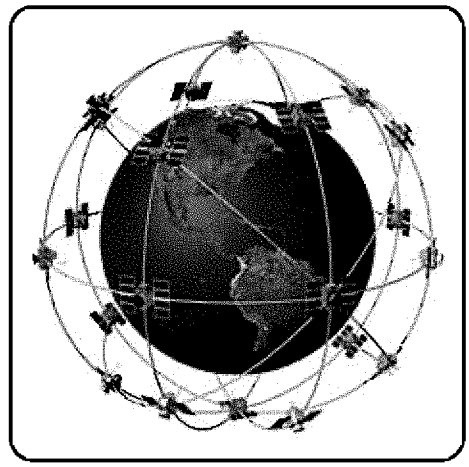
Application of GIS

GIS is used by people of various fields.

- Exploration and mining companies use GIS to find prospective areas for exploration and mining.
- Power companies use GIS to monitor and analyse the electricity load on the grid network for a particular area.
- Transport companies use GIS to locate shortest routes for delivering goods and to save time.
- Law enforcement agencies use GIS to map, visualize, and analyse crime incident patterns.
- Ecologists use GIS to understand relationships between species distribution and habitats.

Global Positioning Systems (GPS)

GPS is a space-based global navigation satellite system that provides reliable location and time information in all weather and at all times. GPS was created and realized by the U.S. Department of Defence (DOD) and was originally run with 24 satellites. It was established in 1973 to overcome the limitations of previous navigation systems. GPS consists of three parts: the space segment, the control segment, and the user segment. The space segment is composed of 24 to 32 satellites in medium Earth orbit and also includes the boosters required to launch them into orbit. The control segment is composed of a master control station, an alternate master control station, and a host of dedicated and shared ground antennas and monitor stations. The user segment is composed of hundreds of thousands of U.S. and allied military users of the secure GPS Precise Positioning Service, and tens of millions of civil, commercial, and scientific users of the Standard Positioning Service.



GPS Satellite system

Basic concept of GPS

A GPS receiver calculates its position by precisely timing the signals sent by GPS satellites high above the Earth. Each satellite continually transmits messages that include,
the time the message was transmitted and precise orbital information

Three satellites might seem enough to solve for position, since space has three dimensions and a

position near the Earth's surface can be assumed. However, even a very small clock error multiplied by the very large speed of light, the speed at which satellite signals propagate, results in a large positional error. Therefore, receivers use four or more satellites to solve their location and time.

Application of GPS

GPS is considered a *dual-use* technology, meaning it has significant military and civilian applications.

- Surveying, Map-making, Navigation, Cellular Telephony, and Geofencing are the main civilian use of GPS.
- Navigation, Target tracking, Missile and projectile guidance, Search and Rescue, and Reconnaissance are the main military use of GPS.
- GPS has become a widely used and a useful tool for commerce, scientific uses, tracking and surveillance. GPS' accurate timing facilitates everyday activities such as banking, mobile phone operations, and even the control of power grids.

Farmers, surveyors, geologists and countless others perform their work more efficiently, safely, economically, and accurately, because GPS helps them with information.

EXERCISE

I) Choose the correct word.

1. Maps created by using aerial photographs are called _____Maps
   a) Ortho photo b) Aerial Photo c) Physical d) Political
2. The Object under study is known as _____.
   a) target b) source c) sensor d) Image
3. The device to detect the Electro Magnetic Radiation is _____.
   a) target b) Sensor c) Object d) camera

II) Match the following.

1. Ground Survey	USA
2. Remote Sensing	Many Months
3. Hot air balloon	systematic aerial images
4. Airplanes	French map makers
5. TIROS	short span of time
	Geographical Information System
	Global Positioning System

III) Short Answers.

1. What is meant by remote sensing?
2. What are the dis advantages of ground survey?
3. Mention the basic components of remote sensing?
4. Define GIS.
5. Mention any two applications of GIS.
6. Write any two applications of GPS?

IV) Answer in Paragraph.

1. Write about Remote sensing Techonology.
2. Explain the various components of remote sensing.
3. Explain the process involves in remote sensing Techonology.
4. What are the advantages of remote sensing?

CIVICS

1. INDIA AND WORLD PEACE

India was a dependent country till August 15,1947. So it could not play any important role in the world affairs. After its Independence, it has been taking an active and independent part in the world affairs. Within a short period, India had won a great name for itself in the Modern World. India, is a country with an unbounded faith in peace. It declared her determination to pursue the path of peace and take effective measures for the promotion of international peace, security and co-operation.

world peace

Promoter of world peace

India played a great role in settling many world disputes and thereby maintained peace and security. In Korea and in Indo-China peace has been established by the great efforts of India. Similarly when Israel, England and France attacked Egypt, there was a danger of a World War. But due to timely intervention of India, the war was averted.

Pancha sheel

India is called by the name of 'A Great Peace Maker'. It followed five principles which are popularly known as 'Pancha sheel'. Jawaharlal Nehru laid stress on these five principles.

1.Each country should respect the territorial integrity and sovereignty of others.

2.No country should attack any other country.

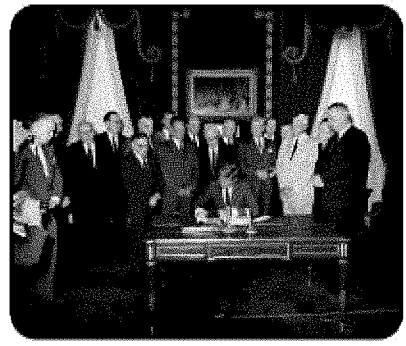
3.No one should try to interfere in the internal affairs of others.

4.All country shall strive for equality and mutual benefit.

5.Every country should try to follow the policy of peaceful coexistence.

These Pancha sheel greatly added to the international status of India.

Dis-Armament and Nuclear Weapons



Nuclear Test Ban Treaty

Economic development of the nations can be achieved only through world peace. World peace is essential not only for the economic development of India but also for all the developing countries of the world.

Some Countries of the world have invented such dangerous weapons like the Atom Bomb, Hydrogen Bomb etc. If no restrictions are imposed on them, the Modern World would be wiped out. India is very much against the production of such Nuclear weapons and began to condemn it throughout the World. India is the first nation to bring a resolution in the UN General Assembly in favour of disarmament in1956. It took a great part in signing Nuclear Test Ban Treaty in 1963.

Policy of Non-allgnment

After second world war the world was divided into two hostile blocs - the American Bloc and the Russian Bloc and both of them trying to increase their influence at the cost of the other. But India has not joined either of these two blocs. Whenever any difference arises between these blocs, India tries to remove that difference thereby contributing substantially towards the World Peace.

A Great Helper

India is basically against Colonization and wants to see all the countries of the world free from the foreign domination. It played a great role in freeing Indonesia from the domination of Holland. In the same way it has supported the Freedom movements started by Egypt, Sudan, Indo-China, Ghana, Morocco and Bangladesh.

Against Military Alliances

The modern countries of the world are busy in making military alliances and counter alliances. At present there are many pacts like NATO, SEATO, Baghdad and Warsaw etc. But India kept away from such military pacts and also vehemently condemned these pacts.

India – a dead enemy of oppression and Injustice

When France acted as an aggressor against Algiers, England against Cyprus and Russia against Hungary, India condemned them.

Similarly India voted in favour of China becoming the member of UNO. So that India acted against the injustice.

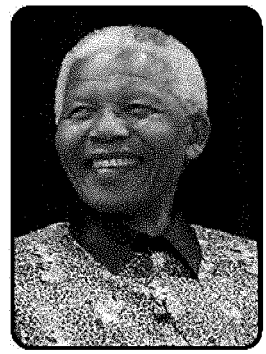
A Great Supporter of the UNO

India has rendered whole-hearted support to the United Nations to bring World Peace and making the policies of the UNO a great success. It tried to solve many problems by giving full support to UNO.

Ending of Apartheid

Apartheid – Policy of racial discrimination followed in South Africa.

The recognition of sovereign equality of all people living in various parts of the world is the fundamental factor in India's foreign policy.



Nelson Mandela

In South Africa the whites, did not give equal rights to the native Africans. India had raised this issue for the first time in the UN General Assembly in 1946. It was due to the constant moral support of India and the continuous struggle of Dr. Nelson Mandela, the

policy of Apartheid has been abolished in 1990.

Dr. Nelson Mandela

Leader of African National Congress. Mandela fought against all traces of racial injustice in South Africa including laws denying the Africans the Right to vote. He was imprisoned for 26 years. Later he became the President of the Republic of South Africa in 1994.

Regional Co-operation

India took the initiative to form SAARC to maintain peace in the regional level. (The South Asian Association for Regional co-operation). SAARC'S first meeting was held at Dacca in Bangladesh on Dec 7, 1985. Ashan of Bangladesh was the first Secretary General of SAARC. The member countries are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Afghanistan and Srilanka. On April 3, 2007 the SAARC has opened its Annual summit in New Delhi, where with Afghan President Hamid Karzai in attendance, Afghanistan became its 8th member.

16th SAARC summit took place on 28th and 29th of April 2010 at Thimpu, the capital of Bhutan.

The SAARC countries identified mutual co-operation in the following areas, transportation, postal service, tourism, shipping, meteorology, health, agriculture, rural reconstruction and telecommunication.

Cordial Relationship with Neighbouring Countries

India and Pakistan

In spite of past conflicts both India and Pakistan are trying to come closer. The Delhi – Lahore bus service was launched on March 16th 1999 to bring the people of the two countries closer. Negotiations for setting up Iran –Pakistan–India gas pipeline are taking place.

Wagha Border

India and China

When China became republic in 1949, India was the first country to recognize it. Both the countries have successfully attempted to restore the economic lines. China has formally declared that she will back India's claim for becoming a permanent member of United Nation's Security Council.

India and Srilanka

Srilanka is a Buddhist country. The Mauryan emperor Ashoka spread Buddhism there by sending his son and daughter. We have good trade relation with Srilanka. India always support Srilanka on just and reasonable grounds. The relationship between India and Srilanka is very smooth. It will be continued for ever.

India and Bangladesh

It is due to the effort and support of Smt. Indira Gandhi, the then Prime Minister of India, Bangladesh got freedom from Pakistan in 1971. In 1972, a 25 years treaty of friendship, Co-operation and peace was signed in Dacca by India and Bangladesh.

The Farakka Barrage issue regarding the distribution of Ganga water was settled amicably. India is a very good friend of Bangladesh. Our friendship with Bangladesh will go on for ever.

Suez Canal

When Egypt nationalized Suez Canal in 1956, France, Britain and Israel invaded Egypt. It is due to India's effort an emergency force was sent to Egypt and peace was restored.

Suez Canal

Congo

In the South African country, Congo, civil war broke out in 1960. The task of bringing peace was given to India by UNO. India restored peace in Congo by sending her peace keeping force under the Brigadier K.A.S. Raja.

Cyprus

During the civil war in Cyprus between Orthodox Christians and Turkish Muslims, UNO sent its peace keeping force under Timmaia, the Indian Commander in Chief. It is due to his hard and firm effort, peace was restored in the island.

India got its independence through Non-violence and Ahimsa under the leadership of Mahatma Gandhi. Even after independence India is working hard to ensure peace and stability among the countries of the world.

EXERCISE

I) Choose the correct answer.

1. India is a country with an unbounded faith in

   a) War b) Peace c) Love d) Enemity

2. Pt. Jawaharlal Nehru's five principles of peace are named as

   a) Swadeshi b) New Deal c) Pancha sheel d) Apartheid

3. Nuclear Test Ban Treaty was signed in

   a) 1963 b) 1993 c) 1936 d) 1998

4. India brought a resolution in the UN General Assembly in favour of disarmament in

   a) 1965 b) 1956 c) 1995 d) 1976

5. Apartheid was abolished in

   a) 1990 b) 1991 c) 1890 d) 1989

6. The first Secretary General of SAARC was

   a) Jinnah b) Ashan c) Kofi Annan d) Gandhiji

II) Answer the following in brief.

1. Mention the important aspects of India's policy for promoting peace.
2. Why is world peace an essential one?
3. What are the five principles of the Pancha sheel?
4. Write a note on the policy of Apartheid.
5. Name the areas identified by the SAARC Countries for mutual Co-operation.
6. India has rendered whole hearted support to the UNO –Justify.

III) Answer the following in a paragraph.

1. Write a paragraph about Pancha sheel and the policy of Non-Alignment .
2. Write a short note on SAARC.

2. Democracy

Democracy is the most popular form of government in modern times. But the transition from autocracy to democracy has not been simple. Many struggles have shaped this transition. The phenomenal rise of democracy has not been overnight. Many great revolutions took place before the people got the rights to exercise their power.

Meaning of Democracy

Democracy means many thing to many people. The term Democracy was first used by Herodutus nearly 2500 years ago. Democracy is a term derived from two the Greek words "Demos" and "Cratia".

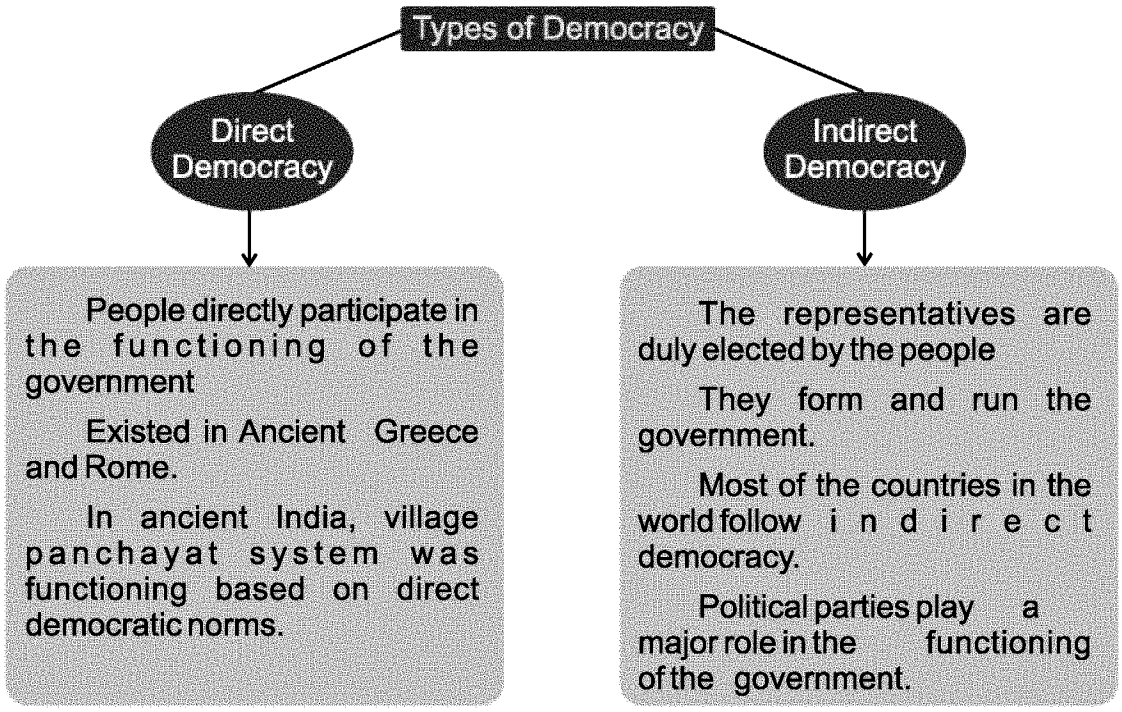
Demo - The People.

Cratia - The power or rule.

So Democracy means the power of the people. In short, democracy may be described as a system of government under which people exercise the governing power either directly or through representatives periodically elected by themselves. According to Abraham Lincoln, 'Democracy is a government of the people, by the people and for the people'. According to Prof. Seeley 'Democracy is a government in which everyone has a share'.

Kinds of Democracy

Democracy can be classified into two 1)Direct Democracy and 2)Indirect Democracy.



Merits

Democracy is the most popular government in modern world. It has various merits. It provided efficient government, guaranteed the rights of the people, provided equality, educate the people, promote national character, bring peaceful change of government, believes not in battle axe, but in ballot box. In democracy there is no place for rebellion and revolutions.

Demerits

It resulted the mob government. Democracy gave important not to quality. Most of the representatives elected by the people were ignorant, incompetent and inexperience. Democracy provided costly government. No importance for individual or minorities. It leads party government and create class wars.

Importance of Democracy

People have the freedom to choose their representatives. It ensures treating people with dignity. People are guaranteed fundamental rights like the right to life and liberty by the Constitution. 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.

Political Parties

Party is a pre-requisite for democratic system of government. They provide smooth functioning of government because the majority party controls the government, while the opposition party would try to check the abuse of power by the ruling party. As the ruling party has a right to govern the state, the opposition party enjoy the right to oppose the government, unearth its lapses and criticize the policies of the ruling party. A political party is an organized association of people who come together on a common platform with the objective of winning political power.

Functions of the Political Parties

The Political parties perform varied functions in a democratic polity. These functions are of immense value for stability as well as orderly functioning of the democratic system.

Formulation of General policies.

Contesting elections.

Educating the masses.

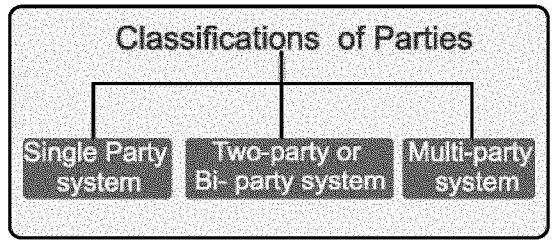
To conduct and criticize the government.

Playing the role of an intermediary body between the government and the people.

Integrative agency.

Classification of the Party System

The Political parties may be classified in to three kinds



Single Party System

In this system, only one party exists and it is officially recognized by the constitution and the people. It maintains and exercises political power without any opposition. It does not allow the existence of other parties within the state.

E.g.: China and Cuba.

Advantages of The Single Party Rule

✓ During the periods of emergency or external danger the one party rule could function more efficiently, independently and quickly to set matters right.

✓ Decisions could be taken quickly under the single party rule. Expenditure could also be controlled.

✓ It promotes greater national identity.

Disadvantages

✓ Deliberations could not take place at the national level in the single party system.

✓ Under the single party system sometimes political, fundamental rights and even ordinary freedom are denied to the people.

✓ If the single party government happens to be inefficient, the growth of the country and developmental activities will suffer.

✓ It paves way for totalitarianism and dictatorship.

Bi-Party System

In this system, there exist one ruling party and the other as the opposition. One party controls the government while the opposition effectively checks the government of its omissions and commissions.

Example:

1. USA (The Republican Party and the Democratic Party).

2. England (The Labour Party and the Conservative Party).

Advantages

Since there are only two parties it is easy for the people to choose one of them.

The party in opposition makes the ruling party function effectively.

Disadvantages

In a Bi- Party system if both of them proved to be inefficient or bad there is no hope of electing a third party to power.

If both the parties come to an understanding with each other then people could be fooled. The mistakes of the parties as well as the corruption in the party could be hidden.

Multi-Party System

In this pattern there exist more than two political parties with contending ideologies and objectives. France and India come under this category.

Advantages

Since there are many parties each one will monitor the other and offer good plans to the people to capture the government.

New leaders who may come to power could give us fresh ideas and look at things in a different perspective to solve the problems.

Disadvantages

There is a possibility of the ruling party caring more for the welfare of the party members than the good of the common people.

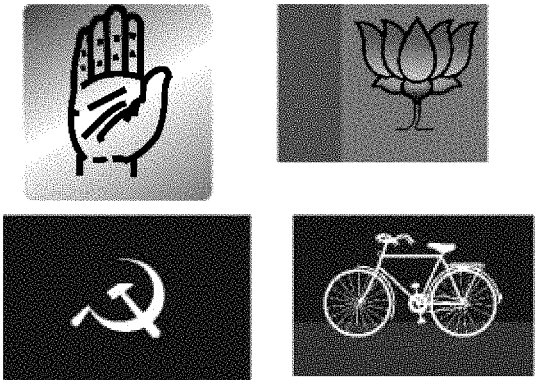
There could be inability of the government on account of members deserting one party and joining the other.

On account of defection there by, people might lose faith in the government leading to general deterioration in conduct and character.

Political Parties in India

a) National Parties

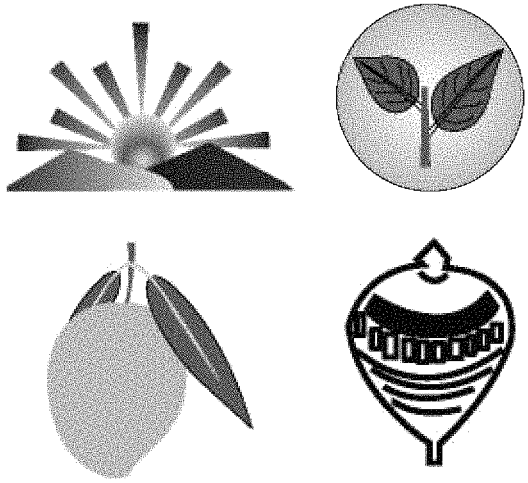
A party recognized by the Election Commission, that secures at least six percent of the total votes in Lok Sabha election in four or more states, then it is called National Party. Eg: Congress, BJP.



National Parties

Regional Parties

A party that secures at least six percent of the total votes in an election to the Legislative Assembly of a state and wins at least two seats is recognized as State or Regional party. Eg: DMK, AIADMK, Telugu Desam.

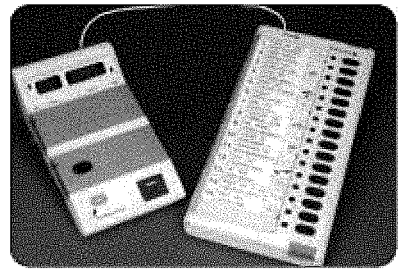


Regional Parties

Point out the National and Regional parties in our country.

Election

The success of democracy depends upon conducting periodical elections. It is only through election people judge the functioning of the ruling party and ignore corrupt politicians by not voting them. To ensure this, the democratic countries in the world follow Universal Adult Franchise. In India, all the citizens above the age of eighteen have been given the right to vote in elections. People above the age of 25 can contest in the elections.



Electronic Voting Machine

Types of Elections in India

In India, people elect their representatives through direct and indirect elections.

I) Direct Election

The citizens themselves elect the representatives through votes. Members of the Lok Sabha and State Legislative Assemblies are elected in this manner.

II) Indirect Election

The citizens do not directly take part in the election. The elected representatives are the voters here. The members of the Rajya Sabha, the President and Vice- President are elected in this manner.

By-Elections

By-elections held when an elected candidate from a constituency dies or resigns from the parliament or the state

legislatures. Under these circumstances elections will be held only in those constituencies. Such elections are called by-elections.

Mid-term polls

Some times it happens that the Parliament or the state legislatures do not function for the whole period of five years for various reasons. Then they are dissolved, elections are held. These elections are called the mid-term polls.

Role of opposition parties

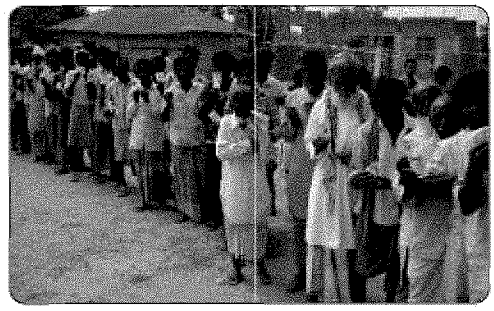
The Success of the democracy depends to a great extend on the constructive role of the opposition parties. In every democracy all the parties cannot get majority seats all the time in the parliament. The parties which do not get majority seats are called opposition parties. The party which gets majority seats in the Lok Sabha next to the ruling party is called the recognised opposition party. The leader of the opposition party enjoys some privileges equivalent to that of a cabinet minister.

The work of the ruling party is very important. All the powers mentioned in the constitution are exercised by the ruling party. The opposition party also functions in an effective manner, and their work is no less important than that of the ruling parties.

To check the government from becoming authoritarian and to restrict its powers, the opposition parties keep a watch over them. The main duty of the opposition party is to criticize the policies of the government. Outside the legislature the opposition parties attract the attention of the press and report their criticism of the government policy in the news papers.

The opposition parties have the right to check the expenditure of the government also. During the question hour, the opposition parties criticize the government generally. The criticisms of these parties make the ruling party correct its actions. Thus the opposition parties try to restrain the government from abusing its power.

How does democracy help a Nation?



Election Voting

Constitution of India is based on the democratic principles. India has Parliamentary democracy. Constitution of India has provided two types of government. One at the Union (Central) level and other at the State level. The elected representatives of the parliament are known as MPs (Member of Parliament) and the body of the elected representatives at the state level are known as State Legislature (MLA - Member of the Legislative Assembly). Apart from this the Local Self Government also enjoys power in villages and towns.

The Election Commission

The Indian constitution has provided for an election commission to conduct elections, to elect the peoples 'representatives to the state legislatures' and the parliament. The election commission is an independent constitutional body. It is situated at New Delhi. It is also known as "Nirvachan sadan".

The election commission of India consist three member with Chief Election Commissioner and two other election commissioners. They are all appointed by the President of India. The election commissioners hold office for a term of six years. The status of election commissioner is equivalent to that of the Supreme Court judges.

Mention the name of the Chief election Commissioner of India.

The Chief Electoral Officer

Every state has a chief electoral officer. They are appointed by the president in consultation with the state government. The chief electoral officer is authorized to supervise the election work in the state.

Who is the present Chief Electoral Officer of Tamil Nadu?

Functions of the Election Commission

The election commission has the following important functions.

1. It gives recognition to the political parties.

2. It allots symbols for the parties as well as independent candidates who stand for the election.

3. It announces the dates of election and the dates on which the votes will be counted and the declaration of the final results.

Our country is the largest democratic country in the world with a large density of population. In spite of several hardships India had succeeded in preserving the democratic functioning in all spheres of life and government. For the effective functioning of democracy, all political parties, citizens should play a major role. More over, the citizens of our country should judiciously use their political rights i.e., the Right to Vote to make democracy more effective. We should not forget that it is our fundamental duty.

EXERCISE

I) Choose the correct answer.

1. The most popular form of Government in modern days

   a) Monarchy b) Oligarchy c) Democracy d) Hirarchy

2. Direct democracy existed in ancient

   a) Greece b) Italy c)Sardinia d) Cyprus

3. Telugu Desam is a

   a) Regional Party b) National Party

   c) International Party d)Cultural Party

4. If two parties exist in a country, it is called

a) Single party system b) Bi-party system

c) Multi party system d) Regional party system

5. The opposition party leader will be given the status of a

a) Cabinet Minister b) Deputy Minister

c) Minister of State d) Council of Ministers

6. To contest an election a person should be above the age of

a) 20 b) 18 c) 25 d) 35

7. The body of the elected representative at the Central level is known as

a) Legislature b) Supreme Court

c) House of Common d) Parliament

8. The status of election commissioner is equivalent to that of the

a) High court judge b) Supreme court judge

c) District court judge d) Magistrate

9. The election process in the state level is supervised by

a) Chief Election Commissioner b) Chief Electoral officer

c) Supreme court judge d) High court judge

10. Election Commission is situated at

a) Madras b) Mumbai c) Moradabad d) New Delhi

II. Answer the following in brief.

1. Give Abraham Lincoln's definition of Democracy.
2. What are National Parties?
3. What is a Political Party?
4. Mention the functions of the Political Parties.
5. Write the advantages of Single Party System.
6. Give a brief note on the functions of the Election Commission.

III. Answer the following in a paragraph.

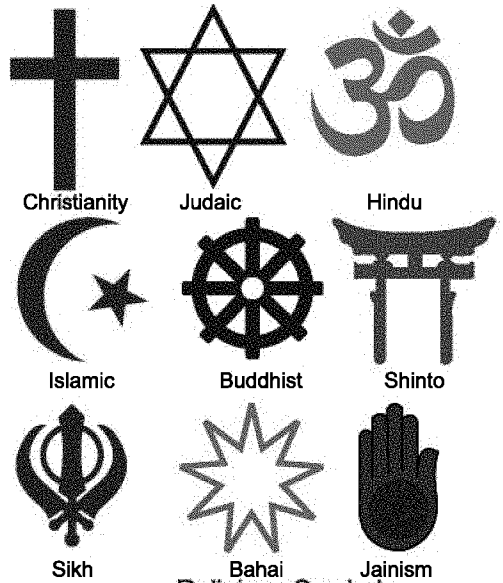
1. Explain the types and importance of democracy.
2. Mention the types of election and explain them.
3. Explain the role of Opposition Party in a democracy.

3. Unity in Diversity

India is a vast country with extreme diversity in geographical, religious linguistic, racial, cultural aspects. There are high mountains, low coastal plains, fertile plains, desert, evergreen forests, and dry scrub vegetation, variety of flora and fauna and cultures. In spite of diversities we maintain unity. The unity in diversity of India is because of our long history and rich heritage.

Religion

India has a population of more than hundred Crores made up of diverse ethnic groups, divided in number of castes, professing different religions, speaking hundreds of languages and dialects. It is this marvelous diversity of people in India which has made it both a museum and a laboratory for the study of man. Hence India is rightly called the "Museum of human race".



Religious Symbols

India is the birth place of many religions and has become the home of many others. Vedic religion is an ancient religion of our country. Christianity was first brought to India by St. Thomas, an apostle of Christ in the first century A.D. The Persians who were driven into India brought to us their religion Zoroastrianism. Muslim conquest of India brought Islam into the land. Buddhism, Jainism and Sikhism had their origin in India. In spite of all the religious diversity we have developed a spirit of religious tolerance and never give room for religious fanaticism.

Language

People of India speak different languages like Tamil, Telugu, Kannada, Malayalam, Hindi, Urdu, Sanskrit, Gujarathi and Bengali, besides many foreign languages and dialects are spoken by its people.

Almost, in India about 845 languages are spoken. Out of these 22 are recognized as the official languages by our government. Hindi in Devanagari Script has been chosen as the national language of India. English is being used as the concurrent – language. Language is the means of communication, now it has become an instrument of division rather than unity. If we realize all other languages are as good and special as our own language, they would become the instruments of growth, development and common brotherhood.

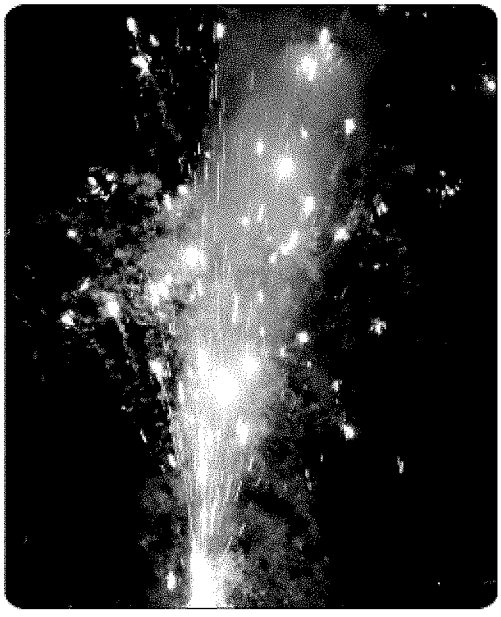
Literature

The growth of Indian languages led to Indian literature to reach its zenith. Sanskrit and other languages have helped the growth of thoughts and philosophy.

The Ramayana and Mahabharata are the two great epics of India. Thirukkural by Thiruvalluvar is the greatest literary work in Tamil. The Bhagavad-Gita is the holy book of Hindus Umaruppulavar's Seerappuram tells the life history of Prophet Mohammad. Thembavani written by Veereamamunivar is related to Christianity.

Festivals

The Hindu festivals of Deepavali, Navarathri, Vinayaka Chatthurthi, Pongal, Chittirai Thiruvizha, Aadi Velli, and Vaikunta Ekadesi, Sri Rama Navami and Kumbamela are important festivals celebrated by all.



Deepavali

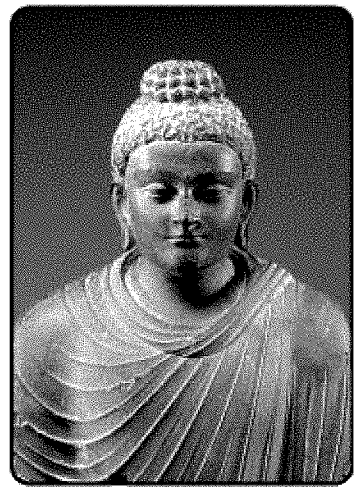
The Christians celebrate X-mas and New year day. The Muslims celebrate Meeladi-Nabi and the Ramzan. The Buddhist celebrate the Buddha poornima while the Jains celebrate Mahavir Jayanthi. The Sikhs celebrate Guru Nanak Jayanthi. In spite of all these different festivals celebrated by different people, and they advocate and practice religious tolerance. Yet all the religious people believe that Godhood could be attained by devotion and tolerance.

Pongal

Our customs, Habits and Heritage

The Indian heritage advocates hospitality, charity, friendship, love, unselfishness, dharma, proper conduct, humility, truth, peace, mercy, spiritual feelings, respect for parents and elders and tolerance. All these help the Indian people live in unity forgetting their difference in other respects.

Art and Architecture



Statue of Buddha

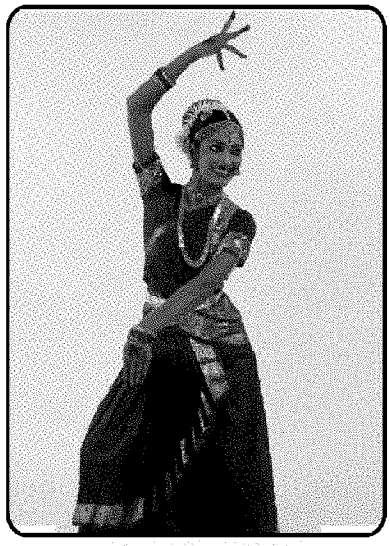
Even from ancient days, India was famous for its architectural unique. Still they are growing to suit the modern tasks.

The paintings at Ajantha and Ellora are world famous. The Gandhara Art and Sculpture speaks the excellence of India's greatness in this field. Temple architecture is the best among Indian building architecture.

The North Indians go on a Pilgrimage to the South Indian temples, Churches and Dharkas In the same way the South Indians go on pilgrimage to the North Indian places like Kasi, Mathura, Haridwar and Rishikesh. Thus the Holy centres bring the unity among Indians.

Music and Dance

The Carnatic style and Hindustani style of music is originated in India which is loved and learned by many. Bharathanatiya, Kuchipudi, Kathak, Manipur and Oddissi are some of the famous dances in India. In addition to this there are various folk dances which are loved and patronized by the people. In many respects the rich and varied Indian Music and Dance play an important part in fostering unity and integration.



Bharathanatiyam

National integration

In spite of diversity in physical features, its influences on person's living, their varied habits, religious faiths, language, food and dress habits make the people look different but the heritage of India binds them together; Humanism, spiritual urge, brotherhood, friendship, love for all and religious tolerance make the Indians live in unity and harmony.

The feeling and thought that all are the sons of Bharath, all are Indians and brothers and sisters help towards the growth of National Integration along with national symbols. National flag, and National anthem. United we live, divided we fall is the spirit with which the Indians live and safeguard National Integration. This unity of India which we have achieved is basically the result of cultural heritage which has developed through the ages right from the days of the Indus culture.

EXERCISE

I) Choose the correct answer.

1. The ancient religion of our country is

   a) Vedic religion b) Christianity c) Islam d) Zorastrianism

2. Recognised official languages of India

   a) 25 b) 23 c) 22 d) 27

3. Language is, the means of

a) Transport b) Irrigation c) Communication d) Spirituality

4. Thembavani is related to

a) Hinduism b) Sikhism c) Christianity d) Islam

5. Buddha Poornima is celebrated by the

a) Hindus b) Muslims c) Jains d) Buddhist

6. They play an important part in fostering unity and integration

a) Music and Dance b) Art and Architecture

c) Food and Customs d) Dress and Habits.

II) Answer the following in brief.

1. Why is India called the "Museum of human race"?
2. Name some of the religions of India.
3. How do our customs, habits and heritage help to maintain unity?
4. What do you know about art and architecture of India?
5. Give a brief note on Indian Music and Dance.

III. Answer the following in a paragraph.

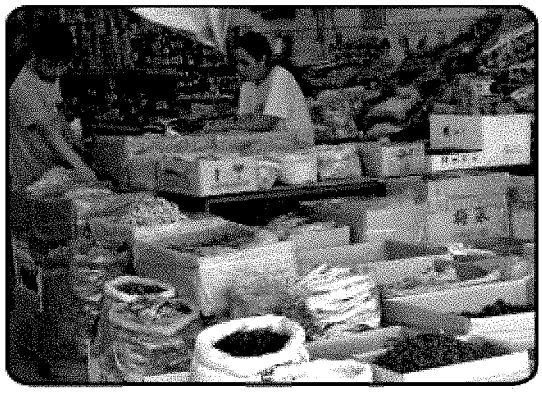
1. Explain how do language and literature help to maintain unity in diversity.
2. Write a paragraph on National Integration.

4. Consumer Rights

Consumer is a person one who gives final utility to a commodity. When we pay a price for a commodity or service and use it, we become consumers. Sometimes the shopkeeper cheats us as he or she gives poor quality goods, or charges more for a commodity or service.

Forms of Consumer Exploitation

Due to the expansion of business activities in an economy, we have a variety of goods available in the market. We also have a number of services including insurance, transport, electricity, finance and banking. Our demand for goods and services is influenced by the advertisement.



Grocery Shop

The companies spend a considerable amount on advertisements alone to attract consumers and feed information that they want us to know, but not the information that we as consumers need about the products. When the consumers, do not have sufficient information about the products, normally they get exploited and are sometimes even harassed by the business community.

The consumers are exploited by manufacturers and traders in different ways.

Electronic Shop

The goods being sold in the market are sometimes not measured or weighed correctly. The goods sold are sometimes of sub-standard quality. Selling of medicines beyond their expiry dates and supply of deficient or defective home appliances are generally the regular grievances of consumers. Very often the traders charge a price higher than the prescribed retail price. In the name of genuine parts, duplicate items are being sold to the consumers.

Rights of Consumers

The following are the rights of consumers as codified in the Indian laws, which the business community has to keep in mind:

Rights

The consumers have the right to be protected against marketing of goods and services, which are hazardous to life and property. The quality, quantity, potency, purity, standard and price of goods; should be properly informed. assurance of access to variety of goods and

services at competitive price. In case of single supplier, the consumer has the right to be assured of satisfactory quality and service at a fair price. The consumer's interests should receive due consideration at appropriate forums relating to consumer welfare. They seek redressal against unfair trade practices or exploitation of consumers and right to fair settlement of the genuine grievances and the knowledge about goods and issues relating to consumer welfare. The Right to Information Act was passed by the Parliament on 12th Oct 2005 to enable all citizens to use their fundamental rights to access information from public bodies.

The main objectives of the RTI Act

To promote transparency and accountability in the working of every public authority and to setup a practical regime for giving citizens access to information that is under the control of public authorities.

The Right to Information Act (RTI) will cover all levels of government Centre, State, district and the local self governing bodies like Panchayats and Municipal bodies. It will also cover non-governmental organizations- i.e. NGOs, VOs, and other private bodies- that are financed substantially with public funds provided by the government. This means every citizen has the right to put in an application requesting information or copies of records held by these bodies and such information should be given by the concerned body. The citizens' right to information is not explicitly mentioned in the fundamental rights chapter of the Constitution. Parliament passes the Act to enable all the citizens' fundamental right to access information from public bodies.

Consumer Protection Measures

In order to protect the interests of the consumers, the government adopted three strategies:

(1) Legislative measure- Enactment of Consumer Production Act (2) Administrative measure- Distributing essential commodities through Public Distribution System (PDS) (3)Technical measure- Standardization of the product

a) Legislations Concerning Consumer Rights

The Government enacted a specific law called the consumer Protection Act in 1986. The Act has led to setting up of separate Departments of Consumer Affairs in Central and State governments, which focus exclusively on the rights of the consumers as enshrined in the Act.

Legal formalities for filing a complaint

There are no legal formalities for filing the complaint. Suppose, you find yourself cheated by a trader or a manufacturer and wish to make a complaint to consumer court, you can write the details on a plain paper. Attach the supporting documents, that is, guarantee or warranty card and cash memo with the complaint and submit it in the district consumer court. You do not have to go to any lawyer or professional for legal assistance. You yourself can plead the case in the consumer court.

Most important feature of the Act is the provision for setting up a three-tier system, popularly known as Consumer Courts at national, state and district levels.

National Level- National Consumer Commission (Delhi) Apex court under the Act.

State Level-State Consumer Commission

District Level - District Forum

b) Public Distribution System

Apart from ensuring food security to the poor as a part of certain administrative measures, Public Distribution system is also expected to be strengthened. Measures to prevent hoarding, black-marketing and over-charging by traders need to be enforced.

c) Standardization of Products

Another important measure taken by the government to protect the consumers from lack of quality and varying standards of goods is creation of institutions for setting up the standards for making and producing various products and enforcing them. In India, this has been achieved through Bureau of Indian Standards (BIS) and Agmark. While BIS caters to the industrial and consumer goods, the Agmark is meant for the agricultural products.

Just as we have standardization of products in India, at the International level also, an institution called International Organization for Standardization (ISO), located in Geneva, serves to provide such a common reference standard. It is a non-governmental organization established in 1947. ISO's work results in international agreements, which are published as international standards.

For setting international food standards, there is a similar body called Codex Alimentations Commission. This commission was created in 1963 by the Food and Agriculture Organisation (FAO) and World Health Organisation (WHO), located in Rome, Italy. It develops food standards, guidelines and codes of practices for production and international trade in food products.

India has been observing 24th December as the National Consumers' Day. It was on this day that the Indian Parliament enacted the Consumer Protection Act in 1986. March 15 is observed as 'the World Consumers' day'. This day has a historic importance as it was on this day in 1962, when the Bill for Consumer Rights was moved in the US Congress.

Ralph Nadar, a consumer activist was considered as the Father of Consumer Movement.

Birth of 'Copra'

The right to redress lead to the passing of the Consumer Protection Act (COPRA) in 1986 in India which has been defined as the Magna Carta of consumers.

Measures taken by the Government of Tamil Nadu to protect-the consumers

Establishment of Citizen Consumer clubs in every educational institution. Providing consumer education to rural masses through Women Self Help Groups/ Panchayat level federations and through Residents Welfare associations in urban areas. Generating awareness through sectoral workshops/ seminars. Publication and distribution of monthly magazine under the caption. "Tamil Nadu Nugarvor Kavasam". Propagating consumer awareness messages through Radio/ Television Media and short video films.

With the motive of developing citizen as a "Valuable Consumer" various consumer organisations are serving together with Government of Tamil Nadu in providing consumer education to general public.

Ration Shop

Consumer Rights in Different Nations

United States

In the United States a variety of laws are passed at both the federal or state levels to regulate consumer affairs. Among them are the Federal Fair Debt Collection Practices Act, the Fair Credit Reporting Act, Truth in Lending Act etc.

At the state level, many states have a Department of Consumer Affairs devoted to regulating certain industries and protecting Consumers.

United Kingdom

The United Kingdom, as member state of the European Union, is bound by the consumer protection directives of the EU.

It also acts as the UK's official consumer and competition watchdog.

Germany

A minister of the federal cabinet is responsible for consumer rights and protection.

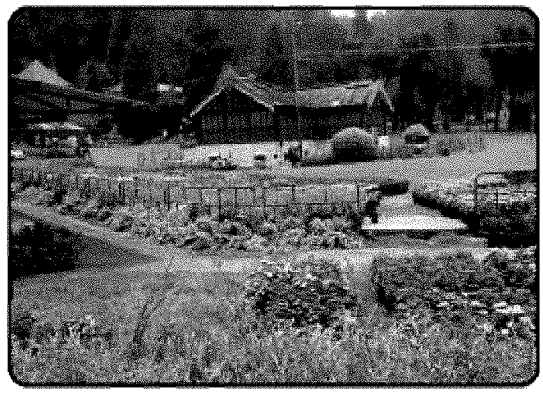
Advantages and Disadvantages

Advantages

1.Create Awareness – The responsibility to be alert and questioning the price and quality of the goods and services we buy and use.

2. Social Concern – We need to make sure that the product and services that we use or not produced in a situation that harms others.

3. Environmental concern – We should understand the environmental and other consequences of our consumption.



Social Awarness

Environmental Awarness

Disadvantages

1. In many cases consumers are exploited by attractive advertisements through media.

2. The sellers take full advantage of weakness of consumers to mould it

in their favour whether it is scheme of exchange, gifts, lotteries, etc., if there is any problem arise most of the people cannot move to consumer court.

3. The Government in most of the countries has found that, though consumer is the king, he is exploited.

4. The People had no awareness of the consumer rights and products.

Current Planning to create consumer awareness

Planning for Elders staff and leaders participate in core activities, discussions, and popular education activities.

Other Plans

- Trade Fair
- Consumer Fest
- Consumer Awareness Training to self help group / Panchayat level
- Federation members
- Seminar or Orientation to Residents Welfare Associations on Consumer Rights
- Workshop on Unfair Trade Practices
- Seminar on "Credit Cards"
- Seminar on "Mobile phones"

By creating consumer awareness among the people the Government can uplift the standard of living of the people.

EXERCISE

I) Choose the correct answer.

1. A person one who gives final utility to a commodity is

   a) Producer b) Consumer c) Shop keeper d. farmer

2. The customer are exploited by the

   a) Carpenters b) Farmers c) Tailors d) Traders

3. The Right to Information Act was passed by the parliament on

   a) 12th Oct. 2005 b) 21st Oct. 2005

   c) 12th Oct 2006 d) 21st Oct .2006

4. World consumer day is celebrated on

   a) March 15 b) March 16 c) March 14 d) March 11

5. The Magnacarta of consumers

   a) WHO b) COPRA c) EXNORA d) FAO

6. One of the planning schemes to create awareness among the consumers

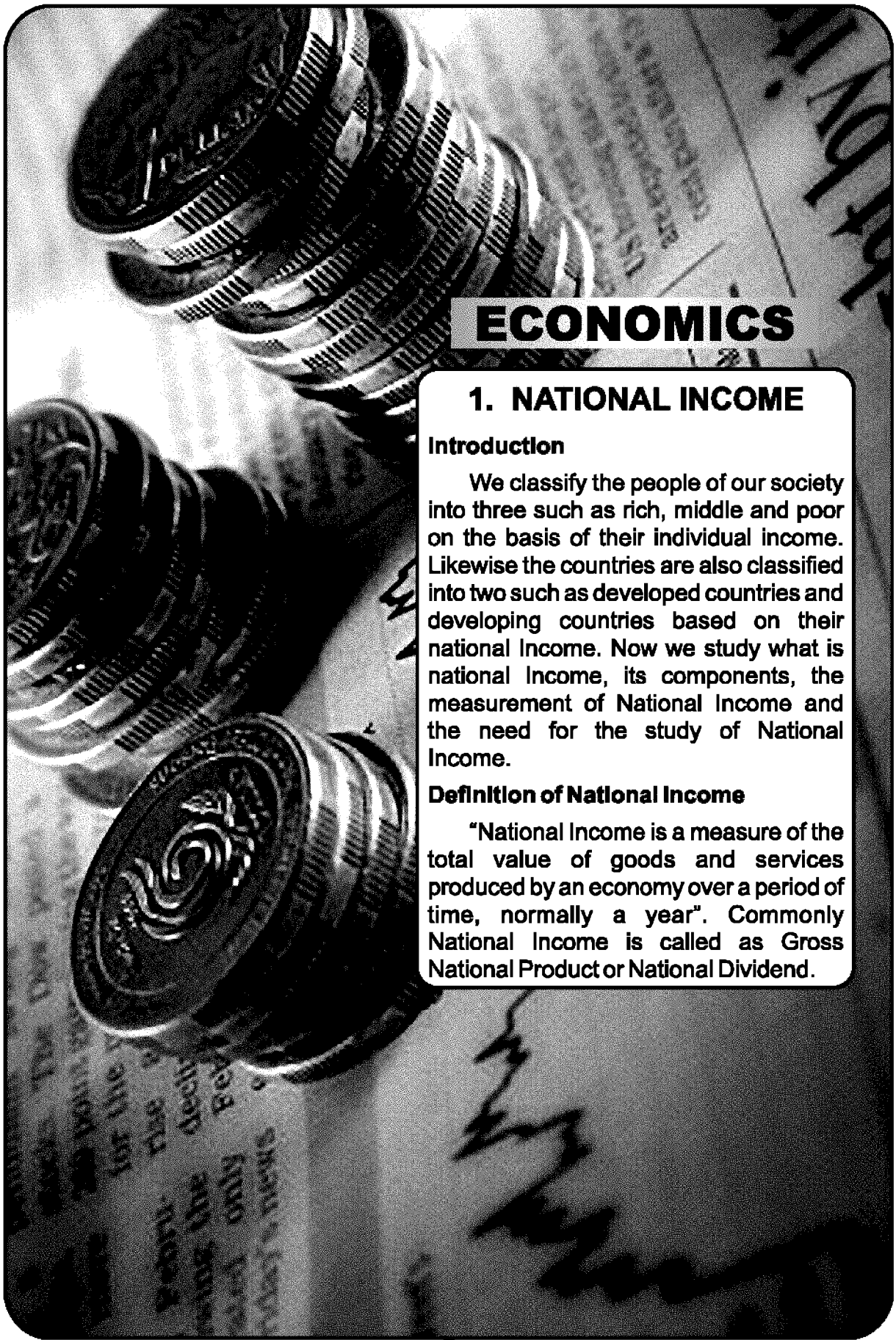
   a) Vana Mahotsava b) Operation 21 c) Trade fair d) Rajarajan 1000

II) Answer the following in brief.

1. How are the customers exploited? Mention any two forms.
2. Write a brief note on the birth of COPRA.
3. Write any two measures taken by the Government of TamilNadu to protects the consumers against exploitation.

III) Answer the following in a paragraph.

1. Write a paragraph on the rights of consumers.
2. What are the measures taken by the Government of TamilNadu to protect the consumers?



ECONOMICS

1. NATIONAL INCOME

Introduction

We classify the people of our society into three such as rich, middle and poor on the basis of their individual income. Likewise the countries are also classified into two such as developed countries and developing countries based on their national Income. Now we study what is national Income, its components, the measurement of National Income and the need for the study of National Income.

Definition of National Income

"National Income is a measure of the total value of goods and services produced by an economy over a period of time, normally a year". Commonly National Income is called as Gross National Product or National Dividend.

Basic concepts of National Income

Gross National Product (GNP)

Gross National Product is the total value of output (goods and services) produced and income received in a year by domestic residents of a country. It includes profits earned from capital invested abroad.

Gross Domestic Product(GDP)

Gross Domestic Product is the total value of output (goods and services) produced by the factors of production within the geographical boundaries of the country.

"Goods include the total number of cars, motorcycles, ships, rail engines, pens, pencils, rice, wheat, edible oils etc. The services include the services of doctors, engineers, teachers, artists etc."

Net National Product (NNP)

Net National product is arrived by making some adjustment with regard to depreciation. That is we arrive the NNP by deducting the value of depreciation from Gross National Products (GNP)

NNP = GNP(-)Depreciation

Depreciation

Decline in the value of capital assets (machineries) due to tear and wear is measured as depreciation.

Net Domestic Product (NDP)

Net Domestic Product is part of Gross Domestic product. Net Domestic Product is obtained from the Gross Domestic Product by deducting the quantum of tear and wear expenses (depreciation).

NDP = GDP(-)Depreciation

Percapita Income (PCI)

Percapita Income or output per person is an indicator to show the living standard of people in a country. It is obtained by dividing the national Income by the population of a country.

$$\text{Percapita Income} = \frac{\text{National Income}}{\text{Population}}$$

International Comparison of Percapita Income

Name of the Country	Percapita income (in us dollars)
Japan	47490
United States of America	46040
United Kingdom	42740
Germany	38860
France	38500
Italy	33540
Brazil	4870
China	2360
Srilanka	1540
India	950
Pakistan	870
Bangladesh	470

Source: World Bank Report

Factors of production are land, labour, capital and organization.

Method of calculating National Income

The National Income of a country can be calculated by the following three Methods.

1.Product Method

2.Income Method

3.Expenditure Method

1. Product Method

In this method the total value of all goods and services produced in a country is taken into account.

2. Income Method

In this method, the Income and Payments received by all the people in the country are calculated.

3. Expenditure Method

In this method we add up the expenditure of all people on consumer goods, investment and saving.

Generally in India we use the product method and the Income method to arrive at National Income.

Difficulties in the calculation of National Income

1.Black money: Black money is nothing but unaccounted money. That is money earned by illegal activities, illegal business and money through corruption. This unreported money affecting the economy as well as the society. This black money under estimates the national income

2. Non-monetization: In most of the rural economy, considerable portion of transaction occurs informally and they are called non-monetized economy. This presence of such non-monetary economy keeps the National Income estimates at lower level than the actual.

3. Double counting: Double counting is a difficulty associated in the calculation of National Income. The error of double counting may occur in calculating raw materials first and then the finished products.

E.g. Tyre is the final output of Tyre manufacturers. Its value is accounted under output method. But the same tyre value is added again in a car manufacturing industry.

4. Unscientific and unreliable data: The data collected in the agriculture sector is unreliable and the estimates are unscientific too.

5.Household services: The National Income analysis ignores domestic work, house keeping and social services. Most of such valuable work rendered by our women at home does not enter our national counting

6.Social Services: It ignores volunteer and unpaid social services. For example the wonderful services of Mother Teresa to destitute orphans and the diseased are not included in our National Income.

Need for the study of National Income

1.To measure the size of the economy and level of country's economic performance.

2.To measure the production of goods and services.

3.To trace the trend or speed of the economic growth of our country in relation to previous years and that of other countries.

4.To know the contribution of primary, secondary and tertiary sector in the National Income.

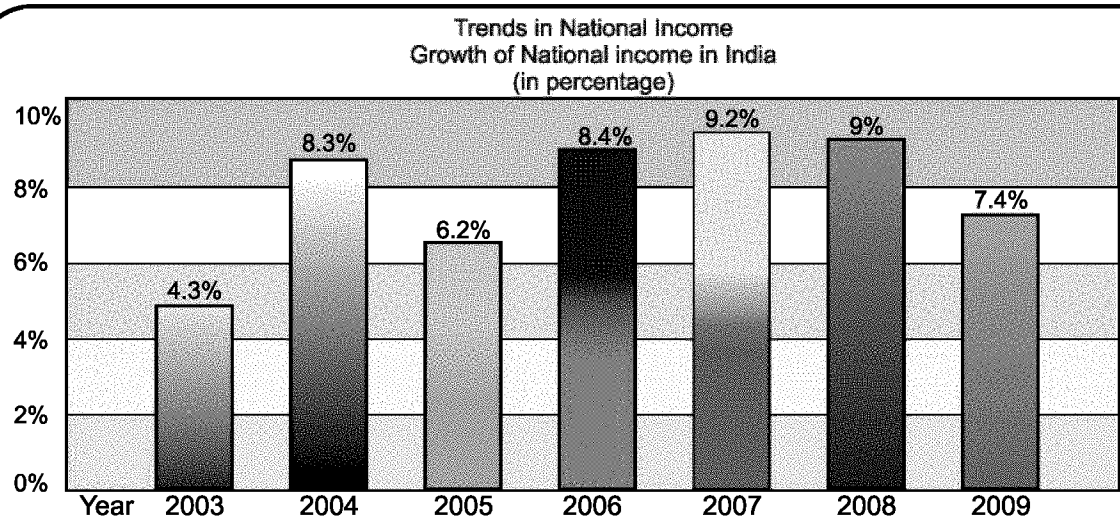
5.To help government, to formulate development plans and policies to increase economic growth.

Economic activities are classified into three sectors namely Primary Sector, Secondary Sector and Tertiary Sector.

Primary sector consists of agriculture, forestry, fishing, mining and quarrying.

Secondary sector includes manufacturing industries, electricity, gas, water supply and construction.

Tertiary sector includes trade, hotel industry, transport, storage, communication, finance, insurance, real estate and social services.



Source : central statistical ogranisation

Sectoral Growth rate of National Income in India (2009).

Sector	Percentage
Primary sector	15.8
Secondary sector	25.8
Tertiary sector	58.4

Source : central statistical ogranisation

Role of Government in economic development

In modern days, the role of government has totally changed. In olden days, the Laissez-faire doctrine was very much prevalent. The government was more or less a police state confining their activities to maintain law and order, rendering justice and protecting the country from external aggression.

Laissez-faire means non-intervention by the government.

In recent times the role of government has expanded. Government functions as a welfare state catering to the needs and aspirations of the people.

Functions of Modern welfare state

1.Protective functions

Economic development can be achieved only if there is peace in the state. So the primary function of the government is to maintain law and order besides protecting the people from external aggression and internal disorder.

2.The Administrative function

The three important wings of the state are legislature, Executive and Judiciary

3.Social Security functions

The government undertakes social security measures by offering relief to the poor, sick and the unemployed.

4.Economic Functions

The government takes various measures to improve agriculture and develop trade and industry.

Eg. Grant of subsidies loans at lower rate of interest, administered and support prices etc.,

Conclusion

Thus the Government performs a wide range of functions in order to accelerate economic development.

EXERCISE

I) Choose the correct answer.

1. National Income is otherwise called

   a) Real Income b) Money Income

   b) Nominal Income d) Gross National Product

2. National Income of a country can be calculated by

   a) 2 methods b) 3 methods c) 4 methods d) 5 methods

3. Net National Product

   a) GNP (-) Depreciation b) Net domestic product (-) Depreciation

   c) Percapita Income (-) Depreciation

   d) Gross domestic product (-) Depreciation

4. India's percapita Income is

   a) 220 dollars b) 950 dollars c) 2930 dollars d) 600 dollars

5. Primary sector consists of

   a) Trade b) Construction c) Agriculture d) telecommunication

6. National Income is a measure of

   a) Total value of money b) Total value of food grains

   c) Total value of Industrial products d) Total value of goods & services

7. Expenditure method estimates national income from the

   a) Output side b) Income side

   c) Expenditure side d) Savings side

8. Income method sums all forms of

   a) Expenditure b) Income c) Savings d) Investment

9. Percapita Income is an Indicator of

   a) Richness of People b) Poverty of people

   c) Living Standard of people d) Literacy of people

10. Primary sector Contribution to national Income in India is

    a) 15.8 % b) 25.8% c) 58.4% d) 12.8%

II) Write Short Notes on the Following.

1. Define National Income
2. How you arrive at NNP?
3. Write a note on Income method?
4. What is Percapita Income?
5. Write any two needs for the study of National Income.
6. What is tertiary Sector?
7. What is Laissez-faire?
8. Write a note on the Productive functions of modern welfare State.
9. Define Gross Domestic Product?
10. What is net Domestic Product?

III) Write in a Paragraph.

1. Explain two basic concepts of National Income.
2. Explain the need for the study of National Income.
3. Explain the methods of calculating National income
4. Write about the Functions of Modern Welfare State.

Activity

1.Find out the Percapita income of Tamilnadu

2. INDIAN ECONOMY AFTER INDEPENDENCE

INTRODUCTION

This lesson explains the basic features of the Indian economy, its status during the British rule and after Independence. Now we study the Indian economy before the Independence.

Indian Economy during the British Rule

Indian economy in the early days was a village economy. Agriculture was the primary occupation and nearly 70 percentage of the population engaged in Agriculture. The community of the village produced the necessary requirements and rarely the products went beyond the local market. The relationship with neighbouring village is very much limited.

More over India had a well established industries in the nature of handicrafts. The chief among them is textile industry. Trade and commerce flourished only in urban centres.

Bengal was famous for calicos, Benares for silk, Tamilnadu for Handlooms, Kashmir for shawls and Ludhiana for woolen products.

When the British conquered India they disintegrate the village economy. The British rule coincided with the industrial revolution in England. This Industrial revolution exploited India to serve the economic interests of Great Britian. India was considered as the repository of raw materials intended for supplying the industrial needs of England. All the expansions in the fields of transport, communication, irrigation, education etc were mainly aimed at accelerating the process of economic drain from India.

The important consequences of British rule in India are as follows:

1.Decline of the rural economy

2.Decline of Indian handicrafts

3.Introduction of new land system.

We conclude, though the British policy was aimed at exploiting the natural resources for the benefit of England, their administration ensured unified India, security and safety but not prosperity.

After Independence the leaders and the planners aimed at improving the economy of the nation. The then Prime Minister Jawaharlal Nehru wanted strengthening the rural base. He gave high priority to agriculture, irrigation and power projects. To achieve progress Nehru decided that India would be a mixed economy in which public and private sectors would co exists. Hence Nehru recommended five year plans to improve the National Economy.

Five Year Plans in India

Five Year plan concept was borrowed from former Soviet Russia. In Russia it was a seven year plan. To execute Five Year plan, the planning commission was set up in India in the year 1950. The Prime Minister of India is the chairman of planning commission of India. Its activities are coordinated by a full time Vice-Chairman.

Objectives of Five Year plans

The important objectives of five year plans in India are as follows:

1.Increasing the National Income .

2.Reducing the inequalities in the distribution of income and wealth.

3.Elimination of poverty.

4.Providing additional employment.

5.Removing the bottlenecks in agriculture production and in manufacturing sector.

National development council is formed to ensure the cooperation of states in the implementation of five year plans. Chief Ministers of the states are its members.

Ten five year plans have already been completed. Now, Eleventh Five year plan is in progress.

Eleventh five year plan (2007-2012)

The eleventh five year plan commenced in April 2007. It covers a period of five years i.e., 2007-2012.

Objectives of Eleventh five year plan

1.Increasing the public investment in irrigation, rural electrification and rural roads.

2.To reduce the subsidies in power, fertilizer.

3.Promoting agricultural research.

4.To ensure environmental protection.

5.Larger employment opportunities.

6.To develop rural infrastructure.

7.To abolish poverty.

8.To reduce the dropout rate in primary schools.

Now, let us discuss the agricultural and industrial development which are the key factors for our national Economy.

Agricultural Development and food production

In India, agriculture is the backbone of the economy. Nearly 40% of the National Income of India is derived from agriculture.

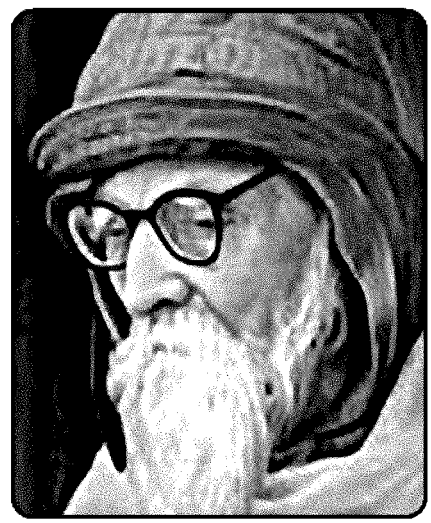
Green revolution

Green revolution was introduced in the year 1967. The Indian Council of Agricultural Research (ICAR) introduced this new strategy through land reforms, promoting the use of High Yielding Variety (HYV) seeds and improved irrigation facilities, to increase the agricultural production.

Impact of Green Revolution

Land reforms

The government initiated speedy land reform measures like land ceiling legislation, abolition of intermediaries and tenancy legislation. In this regard the Bhoodhan movement started by Vinobhavbhave deserves a mention.



Acharya Vinobabhave

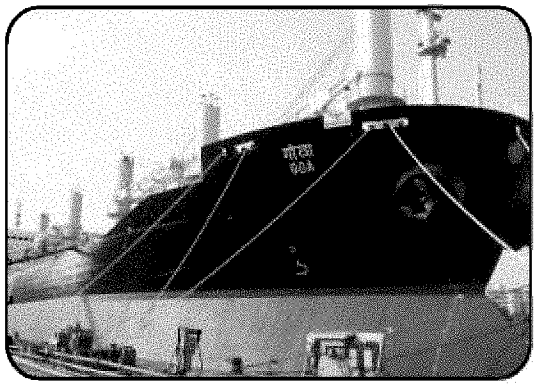
Through the Bhoodhan movement millions of acres of land were received from the landlords and distributed to the landless poor.

High Yielding Variety seeds programme

The green revolution largely means increasing production of food grains by using High Yielding Variety seeds especially of wheat and rice. The use of High Yielding Variety seeds requires regular supply of water, fertilizer, pesticides and financial resources.

As a result of green revolution large number of states benefited by producing more crops. This enabled India to achieve self-sufficiency in food grain production. The credit of introducing the High Yielding Variety seeds goes to Indian Council of Agriculture Research and many agricultural universities in India particularly Ludhiana, Pantnagar (UP) and Coimbatore.

Industries



Hindustan ship yard-vizakapattinam

A number of public sector industries were started. The important public sector industries are Hindustan machine tools, Hindustan Shipyard, Sindhri Fertilizer factory, Integral Coach Factory and newsprint mills.

Public sector units refer to industries run by government e.g. Neyveli Lignite Corporation, Bharath Heavy Electricals Limited, BSNL and Air India.

Private sector industries refer to industries run by private like Asokh Leyland, TVS group of companies, Godrej and TI cycles.

High priority was given to heavy engineering and machine building industries, castings and forgings, fertilizer and petroleum products.

Economic reforms of 1991

The year 1991 has a special significance in the Indian economy. Many economic measures were introduced to achieve the objectives of new economic policies of government.

The economic reforms aimed at rapid industrialization. For this, abolition of industrial licensing, allowing foreign investment, encouragement to private sector and coexistence of public sector and private sector were taken by the government.

Because of the economic reforms foreign investment in India is increased many fold. Multi national companies like Nokia, Ford, Hyundai and L&T have made investment in India.

Multi National corporations (MNC) are business firms operating in several countries but centrally managed from one (home) country.

More over small scale industries and cottage industries were allowed to expand by providing them concessions.

Cottage industries are household industries depending on local market and production is of primitive methods. Example-handlooms, Coir industries.

Cottage industries

Small scale industries are more are less mini factories. They depend on large scale industries:

Example: Industrial units in and around BHEL of Trichy and Ranipet.

The notable aspects of economic reforms are as follows 1.Liberalisation, 2.Privatisation 3.Globalisation.

1. Liberalisation

Liberalisation means movement towards a free market system. Liberailisation otherwise known as withdrawal of regulation and restrictions for private sectors.

Private sectors are encouraged to enter into core industries which are reserved for public sector.

2. Privatisation

Privatisation generally means transforming all economic activities from public sector to private sector. It also refers to the setting up of private units in public utility services.

3. Globalisation

Globalisation refers where a country draw raw materials from any source of the world and manufacture goods and sevices. The finished goods also find a place in the global market. Thus globalisation is the linkage of nation's markets with global markets.

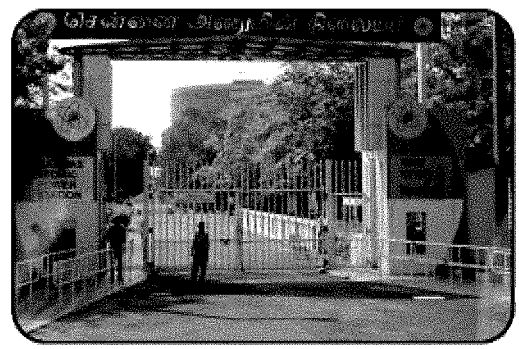
The Ultimate benefits of Liberalisation, Privatisation and Globalisation in India are the sizable increase in foreign exchange reserves.

Science and technology

The another important aspect in Indian Economy is the science and technology. India occupies a unique position in the fields of nuclear programmes, space research, astronomy and Astro physics, oceanography, bio-technology and organic chemistry.

Nuclear power programme

The importance of nuclear energy to meet the long term energy needs of the country was felt quite early in 1954. The primary objective of India's nuclear energy programme is the development and use of nuclear technology for peaceful purposes such as power generation, application in agriculture, medicine and industry. The first atomic power station in Trombay was started in the year 1956. At present there are 17 atomic power stations in India.



Atomic power station-kalpakkakm

Space research

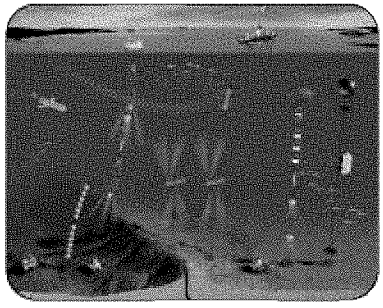
India is one of the six nations in the world, capable of launching satellites. The Indian space research organization (ISRO) under the department of space is responsible for research and development in the area of satellite communications and remote

sensing. In the year 1975 the first satellite Aryabhatta was launched. So far in the last 40 years 50 satellites were launched. An Indian mission to moon-Chandrayan 1 was launched in 2008. It discovered presence of water in the moon.

Rocket launching

Oceanography

The department of ocean development has projects for exploration of marine living and non-living resources and conservation of its environment.



Marine Resources

Bio-technology

Through several research and development projects significant developments in the field of agriculture, health care, animal sciences, environment and industry have been achieved. (e.g. oral vaccine for cholera)

Telecommunication

India has the tenth largest telecom network in the world. The network comprises of 77.93 million telephone connections and over 1.79 million public call offices. There are 65.2 crores cellular subscribers in the country and the cellular base is growing at the rate of one million per month.

Tele Communication Antenna

Information technology

Information technology refers to the use of computers and software to manage information. Bangalore, Hyderabad and Chennai are the main information technology centres in India. It earns millions of crores of rupees as foreign exchange. Tata Consultancy Services, Infosys, Wipro, HCL and Cognizant technologies are the major players in the information technology sector. IT sector provides massive employment opportunities to the Indian youth.

Educational achievement in India

In 2011 census the literacy rate increased to 74.04 percent. The male literacy rate increased to 82.14 percent. The female literacy rate was 65.46 percent. The number of literate persons increased to 778.45 millions in 2011.

Among the states Kerala has the highest literacy rate exceeding 93.9

percent while the lowest literacy rate has been Bihar with 63.8 percent. Literacy rate of Tamilnadu is 80.3 percent.

Primary education

The Indian government takes serious efforts for the enrolment of children up to the age of 14 years. It has also banned child labour. In India 80% of all recognized schools at the elementary stage are government run or supported. Education has been made free and compulsory upto the age of 14 under the Right of children to Free and Compulsory Education Act of 2009.

Because of the quality enhancement programs through the agencies of District primary education programme and Sarva Sikhsha Abhiyan enrolment has been enhanced. Now the right to education gives impetus to primary education.

Secondary education

The Secondary education covers children of 14 – 18 years which covers 88.5 million children. A significant feature of India's secondary school system is inclusion of vocational stream at the higher secondary level. Another new feature of secondary education is the implementation of Rashtriya Madhyamik Shiksha Abhiyan (RMSA).

Higher education

India's higher education system is the third largest in the world after China and the United states. The main governing body at the tertiary level is the University Grants Commission. As on 2009, India has 20 central Universities, 215 state Universities, 100 Deemed Universities and 13 institutes which are of national importance. Other institutions include 16000 colleges including exclusive 1800 women colleges. The emphasis in the tertiary level education lies on science and technology. Some institutions of India such as the Indian Institute of Technology (IIT) and Indian Institute of Management (IIM) have been globally acclaimed for their standard of education.

The Union and the state governments in India have been earmarking substantial financial outlays for the development of education. The spread of education across different sections of society should be ensured so as to attain economic growth.

Socio-Economic Development in Tamilnadu

Tamilnadu stands third among the Indian states in the achievement of socio-economic development.

Education

Primary Education

The primary education in Tamil Nadu had a remarkable expansion during the period of Thiru. K.Kamaraj, the then Chief Minister of Tamilnadu. In the field of primary education, access to primary schools is almost totally achieved. All the villages and habitations have been provided with a primary school. To ensure Universal enrolment, universal retention, universal achievement the government provides welfare schemes such as the noon meal and free bus pass. Under the noon meal scheme food is prepared in every school daily and five eggs per week are served to the students. More over the state collaborates with centrally sponsored scheme Sarva Shiksha Abhiyan (SSA) to achieve the objectives of elementary education for all.

Secondary Education

Secondary education serves a bridge between primary and higher education. With the aim of encouraging the students the government distributes free cycles to the XI Standard Students. Laptop computer were provided to X Std students who get ranks. The government is also providing computer education and vocational education to the students for gainful employments. The Rashtriya Madhyamik Shiksha Abhiyan (RMSA). scheme is implemented with the central government to promote talent among students to enable them to become socially and economically active citizens.

Teacher Education

There are 30 District Institute of Education and Training to produce efficient teachers and to impart skills in modern teaching techniques.

Higher Education

Tamilnadu is one of the most advanced states in the country in the field of Higher Education. The government makes higher education more accessible to the economically weaker sections and rural students. The aim of the government is to increase the gross enrolment rate in higher education from the present level of 11.72% to 25% by 2020.

Agriculture

Agriculture has been the major source of livelihood for the people of Tamilnadu. The major food crops of Tamilnadu are paddy, cholam, cumbu and ragi. Sugarcane, cotton, sunflower, coconut, cashew, chilli, gingelly and groundnut are the commercial crops. The plantation crops of Tamilnadu are coffee, Tea, cardamom and rubber. Agricultural production in Tamilnadu has increased due to land reforms and improved methods of agriculture.

Industrial development

The Tamilnadu government encourages industrial development. The major industries in Tamilnadu are cement, Textiles, petro chemicals, sugar and information technology.

Electricity

Neyveli lignite corparation

The important power stations in Tamilnadu are listed below:

1. Thermal Power

Thermal power stations are in Ennore, Tuticorin, Mettur, Basin Bridge and Neyveli.

2.Hydel Power

Hydel power stations are in Mettur, Kundah, Periyar Dam, Kothayar Dam, Pykara, Singara and Moyar.

3.Atomic Energy

Atomic power stations are in Kalpakkam and Koodankulam.

4.Wind Energy

It is a non-conventional form of energy. The windmills are situated in Coimbatore, Kanyakumari, Tuticorin, Ramanathapuram and Tirunelveli.

Wind mill

5.Biomass Energy

This is another kind of non-conventional energy. This kind of electricity is produced in Namakkal and Dharmapuri Districts.

Biomass energy is a non conventional form of energy made from agricultural waste.

To cope with the increasing demands 8315 MW Production capacity thermal Stations are being started in Tamilnadu. In a joint venture the National Thermal Power Corporation and Tamilnadu Electricity Board have established a thermal station in Valloor of Thiruvallur District. These will definitely augment the increasin

Transport

The efficient road system in Tamilnadu is the reason for rapid industrialization. The rail transport has connectivity throughout India. Surveys are conducted to lay new railway lines. Mass rapid transit systems and Chennai metro rail project provides a rail network to Chennai city. There are three major ports in Tamilnadu- Chennai, Ennore and Tuticorin. The minor ports are Cuddalore and Nagapattinam. The airports in Tamilnadu are Chennai, Coimbatore, Madurai, Trichy, Salem and Tuticorin.

Chennai Port

Conclusion

Because of the efforts of the union and state governments agricultural development and industrialisation are taking place in India. In the near future India is to be a major economic power in the World.

EXERCISE

I) Choose the correct answer.

1. Five year plan in India was borrowed from

   a) Soviet Russia b) United States of America

   c) United Kingdom d) United Arab Emirates

2. Eleventh Five Year Plan Period is

   a) 1956-1961 b) 1997-2002 c) 2002-2007 d) 2007-2012

3. Chairman of Planning commission of India is

a) President of India b) Prime Minister of India

c) Finance Minister of India d) Vice President of India.

4. Planning Commission of India was setup in the year

a) 1962 b) 1950 c) 1956 d) 1949

5. Nehru decided that India would be a

a) Mixed economy b) Socialist Economy

c) Capitalist Economy d) Money economy

6. Green revolution was introduced in the year

a) 1967 b) 1977 c) 1987 d) 1957

7. Bhoodan Movement was started by

a) Jayaprakash Narayan b) Jawaharlal Nehru

c) Acharya Vinobhabhave d) Dr. Rajendra Prasad

8. Which year has a special Significance in Indian Economy.

a) 1981 b) 1991 c) 2001 d) 2010

9. The Organization which is responsible for research and development in the area of Satellite and Communication is

a) ICAR b) ICMR c) ISRO d) CSIR

10. As per 2001 census the literacy rate in India is

a) 64.8% b) 65.8% c) 66.8% d) 67.8%

II) Write Short notes on the Following.

1. Write any three Objectives of Eleventh Five year plan.
2. Write a note on Green revolution?
3. What is Mixed Economy?
4. What is Multi National Corporation?
5. Write a note on cottage Industries.
6. Write a note on Liberalization
7. What is Privatisation?
8. What do you mean by Globalization?
9. List down any four welfare measures implemented by the Tamil Nadu Government.
10. Write a note on Transport System in Tamil Nadu.

III) Write in a Paragraph.

1. Write down the Objectives of Eleventh Five Year Plan.
2. Explain Green Revolution.
3. Explain Economic Reforms of 1991.
4. List down the various welfare measures implemented by the Tamil Nadu Government.
5. Explain the Various Power Programs in Tamil Nadu.

Activity

1. Find out the major agricultural crops in your area.