GEOGRAPHY

1. TAMIL NADU - MANUFACTURING INDUSTRIES

Industry refers to the secondary type of occupation. It is the booming sector of Tamil Nadu. Tamil Nadu is ranked as third industrial state next to Maharastra and Gujarat. The act of converting the raw materials into finished and usable products is known as Manufacturing. A single manufacturing unit is termed as a Factory. Multiple units of same kind, which are spread over a larger area are termed as an Industry. Lakshmi Mills and Madura Coats are example of industrial units. About 34% of the state's income comes from the industrial sector.

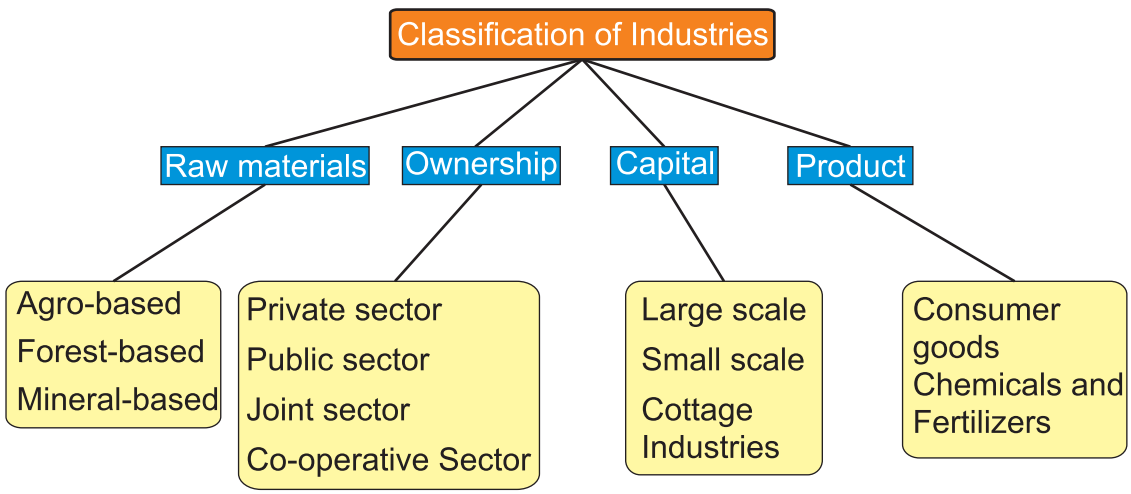
Activity

List the manufactured items you see in the classroom. For each item, try to find the raw materials used and try to classify and group the industries, accordingly (Blackboard, desk, chair, watch….)

Classification of Industries

Industries can be classified on the basis of :

a) Raw materials.
b) Ownership.
c) Capital involved and
d) Product.



Classification on industries based on raw materials

An industry that uses agricultural products for manufacturing is termed as Agro-based industry. Cotton textiles, sugar industry and food processing industries are Agro-based industries.

An industry that uses forest products as raw materials are known as Forest-based industry. Example: Paper and Pulp industry, Honey and Sandalwood product.

Industries using minerals for production are called as Mineral-based industry. Iron and steel industry, ceramics industry and cement industry are some of the mineral-based industries.

Classification of industries based on ownership

A Private industry is one which is owned by an individual or a group of people. TVS Motors is one of the notable private industries of Tamil Nadu.

All Government-owned industries come under the Public sector. Tamil Nadu Newsprint Paper Limited (TNPL) is state owned public sector industry.

Co-operative sector is one which is owned by a group of co-operative members who supply the raw materials for that industry. Most of the sugar factories in Tamil Nadu are in the co-operative sector.

When an industry is functioning under the partnership of two organizations it is said to be Joint sector. The nuclear power station at Kudangulam near Thirunelveli is a joint sector between Indian Government and the Russian Government.

Classification of industries based on investment

The industry which has huge investment in terms of capital and infrastructure, along with huge labour and production are known as large scale industries. Iron and steel industry is an example for a large scale industry. A medium-scale industry is one that runs with investment of Rs.10 million (1-crore) to Rs.100 million (10-crore). A small-scale industry has been defined as the unit that has investment up to Rs.10 million (1-crore).

Small scale industrial units are those which are engaged in the manufacturing, processing or preservation of goods. Goods such as clothes, toys, furnitures, edible oils and leather goods are produced by small scale industries.

A Cottage industry is one wherein very little investment is involved. The family as a whole works without any paid labourers. Locally available raw materials are used to produce the handicrafts. Volume of production and cost of production are low. Mats from grasses, (Pattamadai mat) toys from wood, Palm leaf containers are unique examples of goods from cottage industries of Tamil Nadu.

Classification of industries based on products

Consumer goods are those goods, which reach the consumers straight from the production unit. All perishable goods like food products and dairy products are examples of consumer goods.

Intermediate goods are products that are produced by another manufacturer. For instance, fabrics produced from cotton is an intermediate good, the clothing made from the fabric is a consumer good.

Basic goods are those goods which are produced on a large scale both for export and local consumption. For example : Iron and steel industry, chemicals and textiles.

Factors determining the location of Industries in Tamil Nadu

Location of industries in a particular place normally has many reasons for its localization. These reasons are the factors influencing the location of industries and are listed below:

- Raw materials
- Energy
- Capital
- Transport and
- Market
- Labour

Activity

Name a major industry in your area? List the reasons for its location.

Natural resources like water, minerals and energy resources determine the location of an industry. Textile industry, leather industry and paper industry require large quantities of water and so are located close to water sources. Industries like the cement industry, ceramic industry, and petro-chemical industry are located very near to the source of the raw materials. Aluminium industry highly relies on electricity and are located near the power stations or places with adequate supply of energy.

Distribution of Major industries in Tamil Nadu

The Major industries of Tamil Nadu are Textile industries, Sugar industries, Paper industries, Leather industries, Cement industries, Electrical equipments, Automobiles, Information Technology, Tourism industry and so on.

Textile industry of Tamil Nadu

Tamil Nadu plays a major role in the Indian textile industry in terms of production and export of yarn, fabrics, knitwear and garments. Tamil Nadu contributes nearly 25% of India's share in the export of cotton, yarns and fabric. Tropical climate, availability of raw materials, demand for cotton in market, power supply from numerous power projects and abundant cheap labour are favorable factors for widespread distribution of textile industries in Tamil Nadu.

Coimbatore, Pollachi, Udumalapettai, Thiruppur, Karamadai, Erode, Bhavani, Dindigul, Thirumangalam, Madurai, Palayamkottai, Papanasam and Theni are important centres for textile industry. Maximum units are concentrated in and around Coimbatore region. This is why Coimbatore region. is known as 'the Manchester of South India'.

Districts of Coimbatore, Thiruppur and Erode contribute much for the state's economy; therefore, they are referred to as 'Textile Valley of Tamil Nadu'. Thiruppur alone contributes 70% of export of knitwear of Tamil Nadu. Erode specializes in garments and bedspreads. The city of Karur is known as the Textile Capital of Tamil Nadu.

Silk Textiles

Tamil Nadu occupies the fourth place in silk textile production in our country. Kancheepuram silk is unique in its quality and is known for its traditional value all over the world. Arani, Rasipuram and Thirubuvanam are other silk centres of Tamil Nadu. Sericulture Training Institute in Hosur trains farmers to adopt sericulture along with farm work to accelerate rural industrialisation. Mettur, Madurai, and Ramanathapuram are specialized areas for manufacturing synthetic clothes.

Sugar Industry

Tamil Nadu produces about 10% of total sugar in India. Suitable climate and soil, for high yielding varieties, continuous irrigation facility, good transport, marketing facility and regularized co-operative sector are favourable factors for the widespread sugar mills in the state. A majority of sugar units in Tamil Nadu are functioning under the co-operative sector. At present Tamil Nadu has 42

Sugar Mills, out of which 16 are under the co-operative sector, 3 owned by public sector and 23 as private mills.

Sugar factories are concentrated in Villupuram, Cuddalore, Vellore, Erode, Coimbatore , Thiruvannamalai, Thiruchirappalli, Thanjavur and Madurai districts. Jaggery, kandasari, and sugar are products from the sugar industry. The by-product bagasse (the crushed stem of sugarcane after extracting juice) is used as a raw material for paper industry. Tamil Nadu government has set up new integrated sugar complexes with different options of co-ethanol production, tissue culture lab, soil testing lab, fuel energy and bio-composting. Names of such units are given in the table.

Table: Distribution of integrated sugar complexes

Name of the Mills	Taluk	District
Kothari-Sathamangalam	Ariyalur	Ariyalur
Rajshree- Semmedu Dharani- Kalaianallur	Gingee Sankarapuram	Villupuram
Sakthi-Modakurichi	Erode	Erode
Empee Sugars-Idaikal	Ambasamudram	Thirunelveli
Shree Ambika-Manjini	Attur	Salem
Dhanalakshmi Srinivasan-Udumbiyam	Veppanthattai	Perambalur
Bannariamman- Kolunthampattu	Thandarampattu	Thiruvannamalai

Activity

Find out the location of integrated sugar mills of the state, in your area and mark it in a map.

Food and Beverage Industry

Food and Beverage based industry flourish well in Tamil Nadu. Mango pulp is processed and exported. Instant food varieties and ingredients for cooking are manufactured and marketed locally as well as exported. Snacks items and biscuits are marketed on a large scale. Tamil Nadu with its long coastline offers opportunities for industries based on marine products.

Paper industry

Tamil Nadu stands second next to Andra Pradesh in paper production in our country. The state produces about 12% of the paper in our country. Bamboo, grass, and Bagasse from sugarcane are raw materials for paper industry. Soda, sodash, chlorine, sulphur, woodpulp, and plenty of water are other requirements for setting up of paper industries.

Pukkathurai in Kancheepuram district, Bhavanisagar, Pallipalyam, Pugalur, Paramathi, Vellore, Coimbatore, Udumaliapettai, Thoppampatti, Nillakkottai, and Cheranmadevi are centres of paper mills in Tamil Nadu.

Tamil Nadu Newsprint and Paper Limited (TNPL) was set up with aid of World Bank in 1979 in Kakithapuram near Pugalur in Karur district. It is the

largest producer of Bagasse based paper in the world with the annual consumption of bagasse terms 1 million tonnes per annum. It caters to the need of newsprint papers throughout Tamil Nadu. It produces 600 tonnes of newsprint paper per day. Other than newsprint, papers for telephone directory, computers, offset printing papers, copier machines are also produced and marketed by the TNPL.

Leather industry

Tamil Nadu accounts for 70% of national tanning factories and 60% export of India. Leather industry occupies an important place because of its wide dispersal, sizeable employment and export potential. Leather industry depends on cattle wealth. It is concerned with the treatment of raw pelt of animals to make them suitable for the manufacture of various articles.

Do you know?

The pelt of large animals and cattle are know as 'hide' and those of smaller ones like sheep and goats are called 'skin'.

Tanning is a process of making leather, from the skins of animals, with the use of tannin, an acidic chemical compound. Tanning makes the skin become flexible, less water-soluble and more resistant to bacterial attack. Tannery is the term given to place where animal skins are processed.

If tanning is done with vegetative matter, it is known as vegetable tanning process. Vegetable tanned hide is flexible and is used for making furniture. If tanning is done with chemicals like chromium and fatty matter, it is known as mineral tanning process or wet blur process. Chrome tanning is faster than vegetable tanning and it produces stretchable leather which is excellent material for making handbags and garments.

Tanning

Chennai, Vellore, Kancheepuram, Thiruvallur, Thiruchirapalli, Dindigul and Madurai districts have widespread centres for leather industry. Chennai, Vellore, Ambur, Ranipet, Vaniyambadi, Dindigul and Thiruchirappalli are the main centers' of leather industry.

Activity

List other leather products.

Cement industry

Tamil Nadu stands fourth in cement production. It accounts for 10% of the country's cement production. Tamil Nadu Cements Corporation Limited (TANCEM) is wholly owned by the Government of Tamil Nadu and manufactures Ordinary Portland Cement (OPC) and Super Star Cement exceeding the requirements prescribed under the Indian standards.

Tancem-Ariyalur

Activity

Name a few brands of cement produced in Tamil Nadu like Chettinad cement, Dalmia cement.

The new materials required for cement production are limestone, dolomite, gypsum, clay and coal. All of these are mined in Tamil Nadu. Major centres of cement industry are Sankari, Madukarai, Puliyur, Kunnam, Sendurai, Ariyalur, Dalmiapuram, Manamadurai, Thulukapatti, Allankulam, Sankarnagar and Thazhaiyuthu.

Automobile industry

Tamil Nadu earns 8% of its GDP from automobile industry. This industry contributes for about 21% of passenger cars, 33% of commercial vehicles produced in India. Chennai city is the base for 30% of India's automobile industry and 35% of its auto components. This industrial supremacy has resulted in Chennai being known as the "Detroit of Southern Asia".

Activity

Find out the model of the vehicles and name the manufacturer of the vehicle.







Major global automobile companies

BMW, Ford, Renault-Nissan, Caterpillar, Hyundai, Mitsubishi Motors, and Michelin.

National automobile companies

Ashok Leyland, Bajaj, Hindustan Motors, TVS Motors, Royal Enfield, MRF, Apollo Tyres and Hero Honda, TAFE Tractors, Mahendra Tractors, Atlas bicycle, Hero bicycle.

Chemical industry

Chemical industry includes, production of chemicals, drugs, fertilizers, petrochemicals, soaps, detergents, cosmetics, medicines, synthetic rubber and plastics. Most of the chemical industries are clustered around Chennai (Manali), Cuddalore, Panangudi (Nagapattinam) and Thuthukudi. The notable chemical industries of Tamil Nadu are SPIC (Southern Petrochemical Industries

Corporation Ltd) and Manali Petrochemicals Limited. SPIC is the largest producer of fertilizers in India and covers 12 states and caters to the customers through 4,000 outlets. It produces around 2 million tons of fertilizers annually.

Pfizer pharmaceutical company and Dow Chemicals are important chemical units which have research and development facility in Chennai.

Electrical and Electronics Industry

Electronics is a growing industry in Tamil Nadu. Many major global telecommunications like the Nokia, Flextronics, Motorola, Sony-Ericsson, Foxcon, Samsung, Cisco, Moser Baer and Dell have chosen Chennai as their South Asian manufacturing hub. Products manufactured include circuit boards and cellular phone handsets.

Bharat Heavy Electricals Limited located at Thiruchirppalli is one among the six large units of India. It produces boilers generators and turbines used in the production of hydro-electricity.

Software Industry Infosys' campus at Mahindra World City near Chennai

Tamil Nadu is the second largest software exporter (by value) in India. It has the leading BPO sector in the country next to Karnataka. Major national and global IT Companies such as Verizon, Hewlett-Packed, IBM, Accenture, Ramco Systems, Computer Sciences Corporation, Cognizant Technology Solutions, Tata Consultancy Services, Infosys, Wipro , HCL, Tech Mahindra, Polaris, Aricent, Mphasis Acme Technology Pvt Ltd., Covansys, Ford Information Technology, Xansa, iSoft, iNautix, Electronic Data Systems, Bally and many others have established their branches in Chennai.

Infosys-Chennai

India's largest IT Park is in Chennai, jointly constructed and maintained by Ascendas India Ltd, a Singapore-based company engaged in providing business space solutions, with Tamil Nadu Industrial Development Corporation.(TIDCO).

Other notable industries of Tamil Nadu

Perambur Integral Coach Factory (ICF) is the largest in Asia to produce railway coaches in Tamil Nadu. "Armoured Vechicles and Ammunition Depot of India" (Avadi) is about 23km northwest of Chennai. The Heavy Vehicles Factory produces battle tanks. Salem Steel Plant is a Public Sector company undertaken by the Government on India. Sivakasi is a big industrial centre in Virudhunagar district. It is world famous for its fireworks and safety match boxes. Sivakasi produces 90% of India's fireworks. It is also known for offset printing. Sivakasi is known as 'Little Japan". Neyveli, apart from the production of thermal power, has a fertilizer unit and a ceramic united attached to it. Thanjavur and Kumbakonam are specialized in the production of bronze statues and musical instruments.

"Tamil Nadu is the first State in the country to develop a well-defined Biotechnology Policy and to set up an All Women Biotechnology Park.

Chennai is second to Mumbai for its vibrant and innovative film industry.

Tourism industry

Tourism is considered as an industry because of its enormous potential in creating employment for a large number of people and for its substantial foreign exchange. Tamil Nadu's tourism industry is the second largest in India, with an annual growth rate of 16%. Presence of ancient monuments, pilgrim centres, hill stations, a variety of natural landscapes, long coastline, along with rich culture and heritage makes Tamil Nadu the best destination for tour lovers.

Recent attraction for Tourism

Tourism in Tamil Nadu is promoted by Tamil Nadu Tourism Development Corporation (TTDC), a Government of Tamil Nadu undertaking. Health/Medical tourism which is part of tourism industry is hosted by the leading health care centres in Chennai.

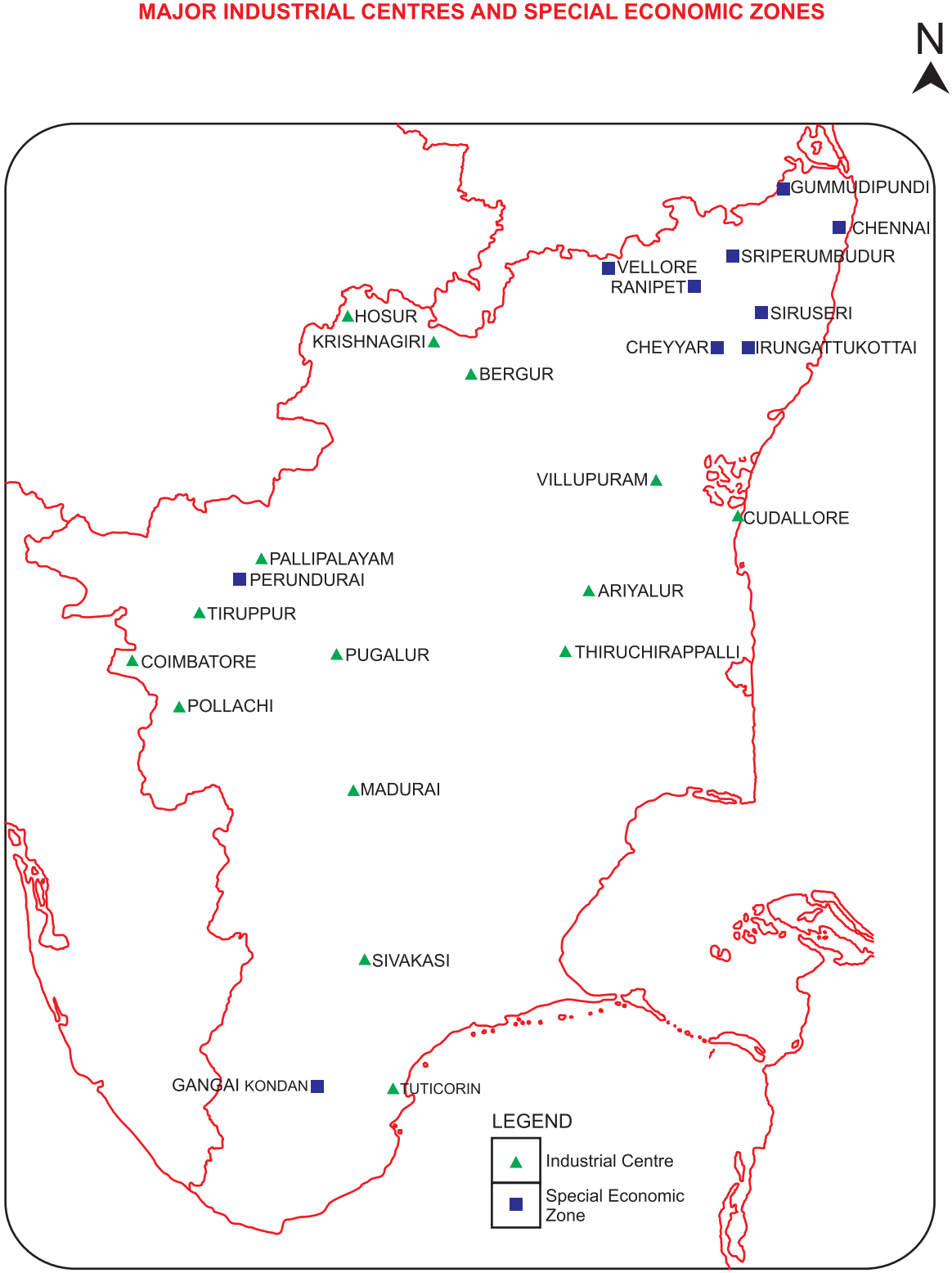
Do you know?

State Industries Promotion Corporation of Tamil Nadu (SIPCOT) Limited, a fully government owned premier institution, established in the year 1972, has been a catalyst in the development of small, medium and large scale industries in Tamil Nadu.

SIPCOT

In order to promote an industrial base for export, the state government has setup special regions as Special Economic Zones (SEZ). These regions have ample facilities for manufacturing. They are capable of attracting foreign investor, and aim at promoting trade at the international level. Tamil Nadu has set up SEZ in the following places: Sriperumpudur Industrial Park, Irungattukottai Footwear SEZ and Oragadam Industrial Growth Centre in Kancheepuram district, Ranipet Leather Sector SEZ, Perundurai Engineering products SEZ, Cheyyar Automobile/Auto Ancillary SEZ, and Gangaikondan Transport Engineering Goods SEZ.

TAMIL NADU
MAJOR INDUSTRIAL CENTRES AND SPECIAL ECONOMIC ZONES



EXERCISE

I) Choose the correct answer.

1. Tamil Nadu Newsprint Paper Limited (TNPL) is _____ Industry in Tamil Nadu.
   a) joint sector b) private sector c) public sector d) Co-operative sector
2. The by-product Bagasse is used as a raw material for _____ industry.
   a) sugar b) paper c) chemical d) Automobile industries.
3. SPIC is the largest producer of _____ in India.
   a) chemicals b) fertilizers c) petrol d) Sugar
4. _____ is one wherein very little investment is involved.
   a) Large industry b) small-scale industry c) Cottage industry
   d) Medium Scale industries
5. _____ silk is unique in its quality and is known for its traditional value all over the world.
   a) Kancheepuram b) Arani c) Salem d) Thirubuvanam

II) Match the following.

1. Chennai	The Manchester of south India
2. Sivakasi	Detroit of Southern Asia
3. Perambur	Textile Capital of Tamil Nadu
4. Karur	Little Japan
5. Coimbatore	Integral Coach Factory
	Chemical Industries
	Special Economic Zone

III) Answer in brief.

1. How are industries classified?
2. What are the factors determining the location of Industries?
3. Name the products and by-products of sugar industry?
4. List down the raw materials for paper industry?
5. What do you mean by consumer goods?
6. Write a short note on Cottage industry.
7. Give reasons for the widespread distribution of textile industry in Tamil Nadu.

8. Distinguish between Factory and Industry.
9. Distinguish between agro-based industry and mineral based Industry.
10. Distinguish between vegetable tanning and mineral tanning.

IV) Answer in a paragraph.

1. What do you understand by Classification of industries based on ownership?
2. Give an account for the distribution of Textile industry in Tamil Nadu.
3. Write about the paper industry in Tamil Nadu.
4. Write a note on the Sugar industry in Tamil Nadu.

V) Mark the following places on a given map of Tamil Nadu.

1. All centres of special Economic Zone in Tamil Nadu.
2. Mark one centre for each of the following.
   Textiles industry
   Sugar industry
   Iron industry
   Cement industry

FORMATIVE ASSESSMENT

1. Collect and paste pictures of the various products made by the industries of Tamil Nadu.
2. Prepare a travel brochure to increase the Tourism industry in Tamil Nadu.
3. Collect samples of the various types of paper made by TNPL and stick it in your scrap book.
4. Visit any industry in your locality and find our details like what it produces, reasons for its location, how many workers, any exports etc.

2. TAMIL NADU
TRANSPORT AND COMMUNICATIONS

Transport and Communications play a vital role in the economic development of Tamil Nadu. Transport system helps with the easy movement of human beings and materials. It acts as the arteries and veins of national development. The transport system is of four types. Roadways, Railways, Waterways and Airways.

Roadways

Of all the States of India, Tamil Nadu has a sound network of roads. All economic sectors of the State is inter connected and interlinked by roadways. The State Transport Corporations operate the public transport system along with private transport organizations. Compared to other States of India, Tamil Nadu State Transport Corporations operate bus services in a fullfledged, facilitating manner. Roadways may be classified into four types. They are:

- National Highways;
- State Highways;
- District roads; and
- Village Roads.

There are 24 National Highways covering a total distance of 4,500km. Golden Quadrilateral Project. To meet the ever increasing demand from public, there are seven transport corporations functioning in the State. They are given below with their area of operation:

1. Metropolitan Transport Corporation-Chennai and sub urban areas-Chennai as head quarters.

2. Tamil Nadu State Transport Corporation-Villupuram (Cuddalore, Vellore,Tiruvannamalai, Kanchipuram, and Tiruvallur districts with Villupuram as head quarters).

3. Tamil Nadu State Transport Corporation-Kumbakonnam (Thanjavur, Thiruvarur, Nagapattinam, Karaikal (Pudhucherry) Thiruchiapalli, Karur, Perambalur, Sivagangai, Ramnad and Pudhukottai districts with Kumbakonam as head quarters).

4. Tamil Nadu State Transport Corporation-Salem (Salem, Dharmapuri, Namakkal and Krishnagiri districts with Salem as head quarters).

5. Tamil Nadu State Transport Corporation-Coimbatore (Coimbatore, Tirupur, Erode and the Nilgiris districts with Coimbaotore as head quarters).

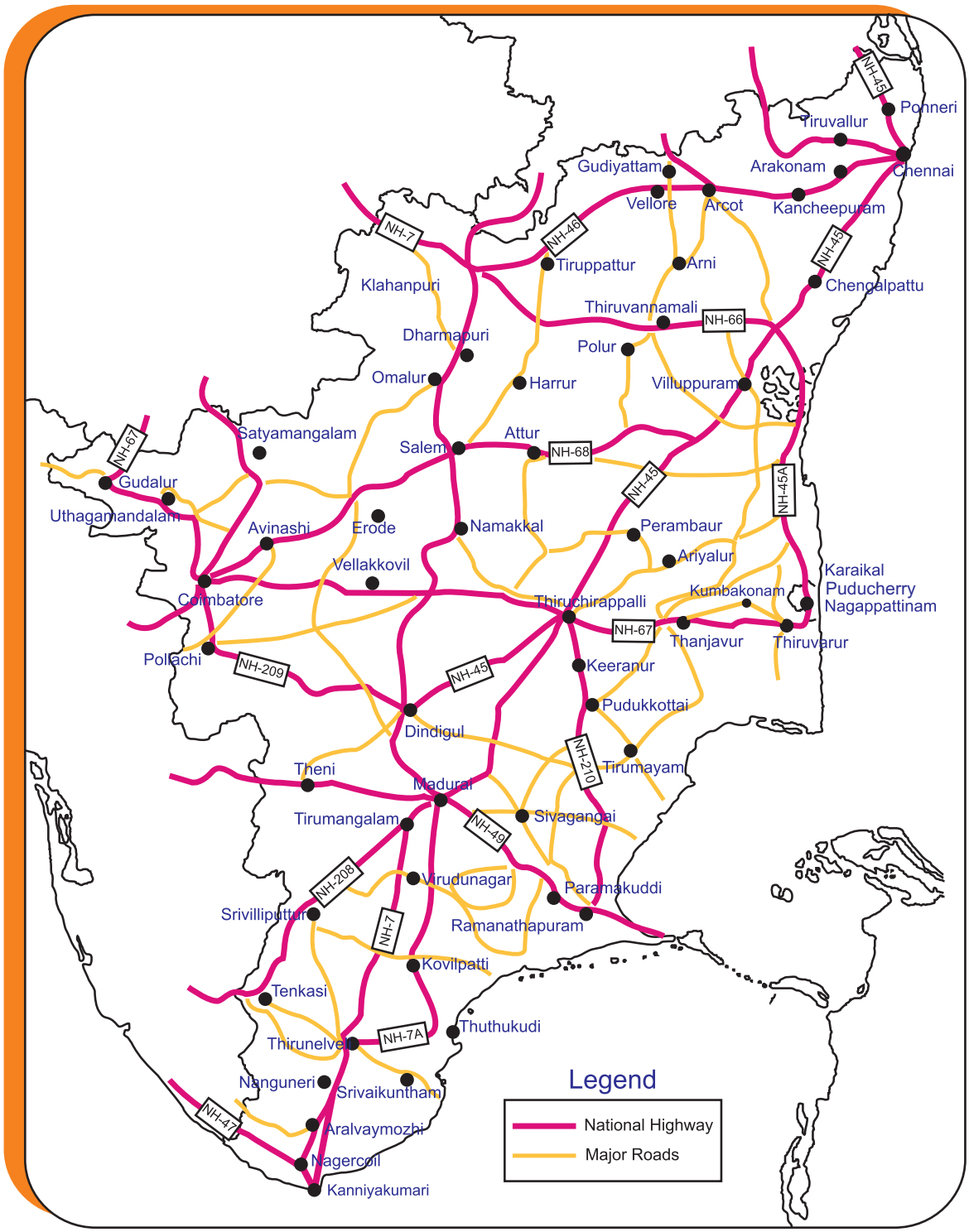
6. Tamil Nadu State Transport Corporation-Madurai (Madurai, Viridhunagar, Dindigul and Theni districts with Madurai as head quarters).

7. Tamil Nadu State Transport Corporation-Thirunelveli (Thirunelveli, Thuthukudi, Kanyakumari districts with Thirunelveli as head quarters).

Table: Length of roads in km

Length of roads	(in km.)
1) National Highways	4,500
2) State Highways	5,525
3) Corporation and Municipalities	17,161
4) Town Panchayat Roads	15,591
5) Village Panchayat Roads	63,538
6) Panchayat Union roads	32,791
7) Forest Roads	3,930

Tamil Nadu Roadways



Apart from these the State has vehicular transport in the form of two and three wheeler vehicles which constitute about 83.9%.The number of registered vehicle population in Tamil Nadu had increased to 10.064 million in 2007-08. There are 64 vehicular zones in the States. Among the Regional Transport Offices, Chennai is the largest one which has – 61 centres.

Activity

Answer the following on the road map of Tamil Nadu.

1. Find the districts through which NH 45 runs.
2. NH 208 passes through _____,_____,_____ centres.
3. Name two districts through which NH 68 runs.
4. Which NH goes through your native district?

Recent Developments in Road Transport

- Conversion of single lane of State Highways into double lane and multilane.

- The widening and improvement of road from Madhyakailash in Adyar to Siruseri on Old Mahabalipuram Road (OMR) for about 24 km was laid. This is referred to as IT Expressway and it serves as connectivity to all IT companies.

- The East Coast Road (ECR) that is built along the coast of the Bay of Bengal connects Chennai and Cuddalore via Pondicherry. It gives rise to spectacular scenic views with beaches and fishermen hamlets. Presently, the East Coast Road has been extended to Thuthukudi via Chidambaram, Nagapattinam and Ramanathapuram.

- The Golden Quadrilateral Project of the National Highway Development that runs for about 1,232 km in Tamil Nadu has been completed.

- Most of the mofussil traffic had been diverted on to the byepass roads to avoid traffic congestion.

- CMBT (Chennai Mofussil Bus Terminus), which is the largest modern bus terminus in Asia, Koyambedu, Chennai has been established.

- Bridges and flyovers have been constructed in many districts of Tamil Nadu along the National Highways. Some of the notable ones may be found in Chennai City-Chennai Airport Flyover, Perambur Flyover, Anna Flyover and Kathipara junction Flyover. In Vellore, Tindivanam and Ulundurpet flyovers have been constructed to ease vehicular traffic congestion.

- Ring roads that encircle urban areas to divert vehicular traffic to avoid traffic passing through the centre have been implemented.

- SETC operates a variety of buses, namely, semi-deluxe, super-deluxe, video coach, ultra-deluxe, Volvo and air suspension buses within Tamil Nadu an adjacent States.

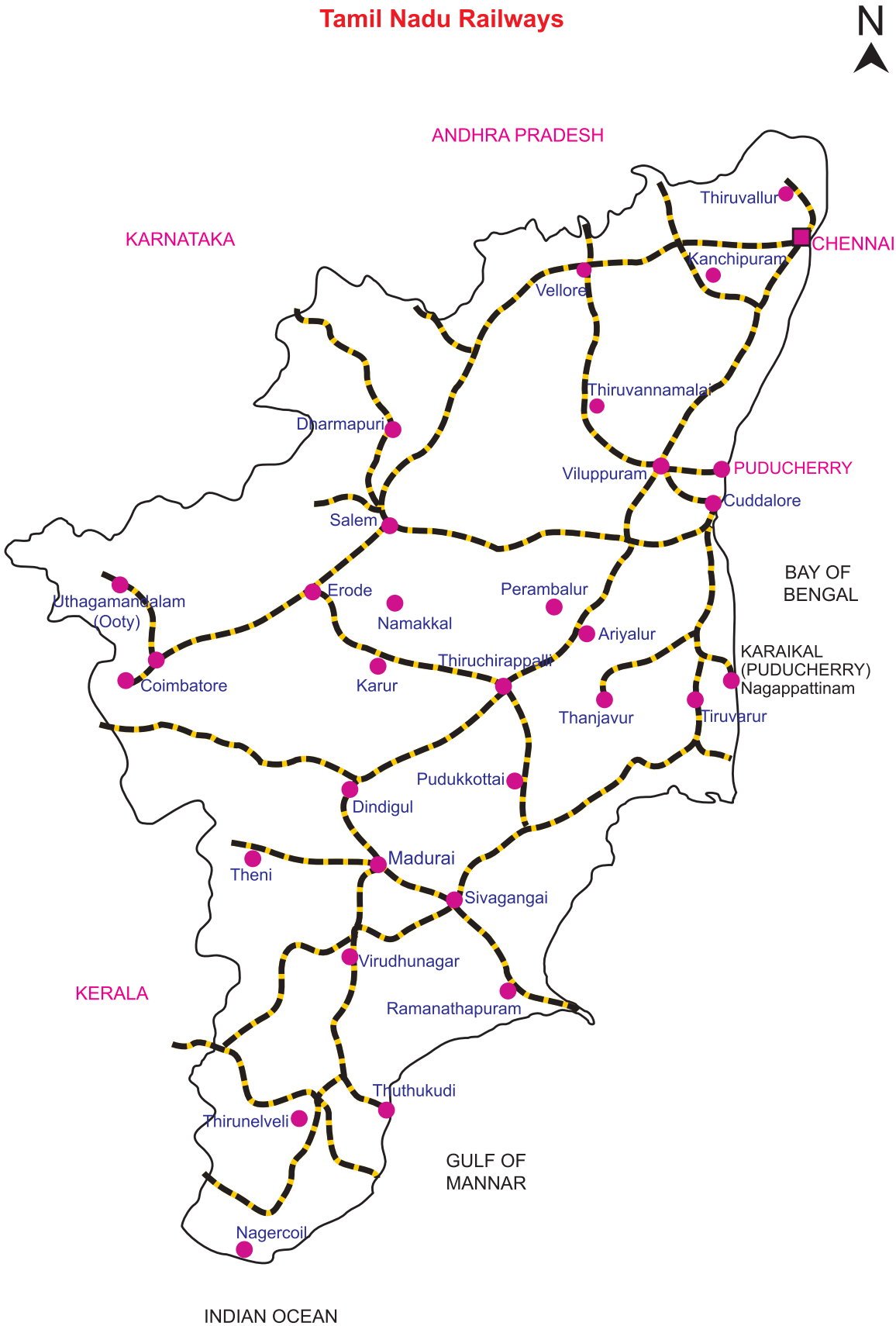
Railways

Tamil Nadu is well served with a good network of railways as part of the southern Railways with headquarters at Chennai. Rail tracks are classified into:

- Broad gauge;
- Metre gauge;
- Narrow gauge; and
- Suburban Railway.

In Tamil Nadu the total length of railway tracks is about 5,952 km and total number of railway stations is 532

Tamil Nadu Railways



to connect all the major cities of Tamil Nadu. The Southern Railways zones have been demarcated into six divisions, namely, Chennai, Madurai, Salem, Palakkad, Thiruvanathapuram and Thiruchirappalli. Main rail junctions in the State are:

Chennai, Erode, Coimbatore, Thirunelveli, Madurai, Thiruchirappalli and Salem.

Chennai has a well established suburban railway network, with three different lines connecting Chennai with Arakkonam, Gummidipoondi and Chengalpattu, MRTS Railway line connects Chennai Beach to Velachery.

Chennai Suburban Railway

Activity

Here, names of a few express trains are given. Find out the places connected by these trains. Find our whether they are weekly or daily trains.

1. From Chennai Central or Chennai Egmore Station to your native place.
2. Tamil Nadu Express.
3. Chennai-vijayawada Jan Sathabdi Express.
4. Chennai-Hubli Express.
5. Chennai-Howrah Mail
6. Chennai-Tuticorin Pearl City Express.
   Chennai-Guruvayur Express.

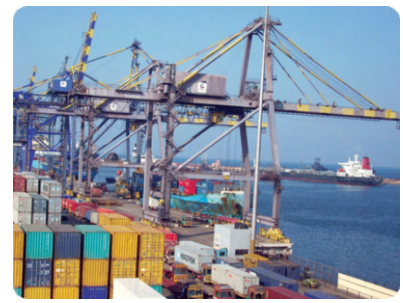
Recent developments in railways

The metre gauge rails are being converted into broad gauge of which 26% of the length had been electrified.

Gauge conversion project has also been taken up from Chennai Beach to Tambaram, Chengalpattu and other suburban areas.

Waterways

Waterways are the cheapest means of transport. It may be divided into inland waterways and seaways. The State has 1,000 km of coastline. The three major ports of Tamil Nadu are Chennai, Thuthukudi and Ennore. They play a crucial role in the provision of infrastructural support in the State. Minor Ports are anchorage ports where cargo is transshipped from the vessel to the shore. Some of the minor ports are Cuddalore, Nagapattinam, Kolachal and Rameswaram.



Chennai Port Trust

Cargo handled by major ports

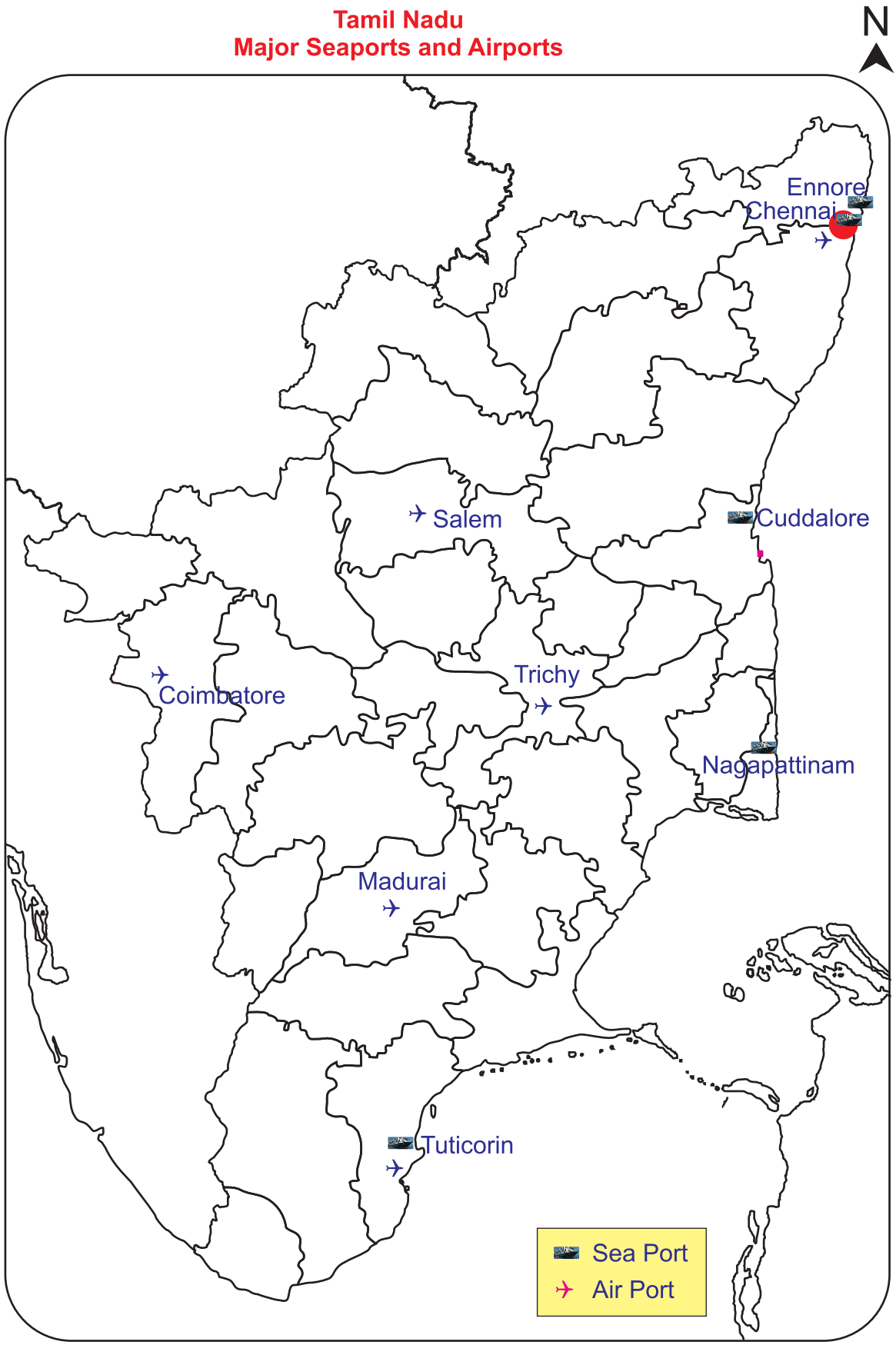
	(in million tonnes)
1.Chennai	57.15
2.Tuticorin	21.62
3.Ennore	11.56

Projects Under Progress

Sethusamudram Shipping Canal Project (SSCP)

It aims at creating a navigation channel from the Indian ocean to the Bay of Bengal through Gulf of Mannar,

Tamil Nadu
Major Seaports and Airports



Adam's Bridge, Palk Bay and Palk Strait within the Indian Border. This project is of strategic importance as it connects the neighbouring continents and countries. It also acts as a catalyst for industrial development, super trade and commerce advance coastal shipping and generate employment.

Do you know?

1) Buckingham canel that once connected Marakkanam in villupuram with Vijayawada in Andhra Pradesh has lost its importance.

2) Vedaranyam canal that connects Vedaranyam and Nagapattinam and has also lost its importance.

Airways

Airways is the fastest and costliest means of transport which can carry passengers, freight and mail. They connect local, regional, national and International cities. Tamil Nadu has a major international airport, which is named as Anna international Airport. It is connected to 19 countries and operating more than 169 direct flights every week. This is currently the third largest airport in India after Mumbai and Delhi.

Chennai has direct air services to Sri Lanka, Dubai, Germany, Indonesia, Malaysia, England, Maldives, Saudi Arabia and Singapore. The air services that operate between Chennai and Coimbatore through Salem promote the industrial development of Salem and Mettur.

International Airports

1. Chennai (Anna)
2. Coimbatore
3. Thiruchirappalli

Domestic Airports

1. Chennai (Kamarajar)
2. Madurai
3. Salem
4. Tuticorin

Airports	Cargo handled (in tonnes)
1) Anna International(Chennai)	2,27,704
2) Kamarajar Domestic (Chennai)	42,905
3) Coimbatore	1,858
4) Madurai	375
5) Thiruchirappalli	238

Communications

The means through which ideas and information are exchanged are called "means of Communication". They are Personal Communication and Mass Communication Networks Personal Communication includes Postal Services, Telegram, Telephone, Internets, E-mail and Fax

Mass Communication Network is carried on by the Government agencies. They are:

Print Media (books, Journals, magazines and newspapers) and Electronic Media (Radio, Television, Telecommunications, Mobile phone, E-mails, E-Commerce and Teleprinter).

Postal Network and Telegraph

Tamil Nadu has four postal districts, namely:

Zone / Districts	Headquarters
Chennai	Chennai
Western	Coimbatore
Central	Thiruchirappalli
Southern	Madurai

The postal Department has allocated the Postal Index Number (PIN) to facilitate faster delivery of letters in the form of Air Mail Service, Railway Mail Service and Speed Post.

PIN code of Chennai Nungambakkam is 600034.

Find out the PIN code of your area.

Postal and Telegraph offices in Tamil Nadu

Number of Post Offices alone: 12,115 Number of Post and telegraph offices: 3,504.

In India the BSNL is a major service provider. Direct calls can be made across the country and the world with STD (Subscriber Trunk Dialing), PCO (Public call office) and ISD

(International Subscriber Dialing) facilities respectively. Today, Tamil Nadu has:

Telephone exchanges- 2,408
Telephone subscribers- 33,46,906
There is no Telegram service at present.

The private basic telecom services are provided by Bharati Infotel, TATA, Reliance, Airtel, Aircel, Vodafone, Uninor.

VSNL vodafone airtel

Telecommunications

Telecom growth has intimate relationship with the IT sector. The State has witnessed a boom in the number of PCOs and the landline segment. Rapid expansion in the telecom sector is accompanied by simultaneous significant technological

changes. Cell phones are one such advancement in the field of technology. Even the internet can be accessed using cell phones. The world is shrinking with increasing spread of the communication network. The following are the services provided by the BSNL:

BSNL
Connecting India

CELLULAR SUBSCRIBERS (CUMULATIVE IN LAKHS)

Year	Tamil Nadu	All India	Percentage share to All India
2002-03	6.15	126.88	4.85
2003-04	16.28	261.5	6.2
2004-05	33.53	410.2	8.17
The total number of cellular phones in use in Tamil Nadu: **3337087**			

Internet is provided to subscribers in the name of Data One Broadband.

Both postpaid and prepaid cell phone services are offered through public as well as private service providers.

All India Radio (AIR)

Indian radio broadcasting, which was started in 1927, became All India Radio(AIR) in 1936. AIR has 15 Radio Stations in Tamil Nadu. Private Broadcasters have set up FM Radio Stations and broadcast a variety of programmes on education, agriculture and entertainment.

Doordharshan

It is one of the largest terrestrial networks in the world. All the major live telecasts of national and international programmes bring the viewers under one roof. It transmits education all progreammes for Schools and Universities through "Edusat".

Internet and Intranet

The present world is networked with the World Wide Web, known simply as the internet and Intranet. Of the two, internet plays an important role in the field of education and transfer on

knowledge. Internet can be accessed by any individual from any part of the world.

An Internet is a private computer network. Intranets are websites that can only be accessed within a company through their internal network.

Satellite

It is the latest means of communication which has brought revolution in communication all over the world. India's communication network is operated through two satellites, namely, Indian National Satellite (INSAT) and Indian Remote

Sensing Satellite (IRS). These two, apart from communications, assist in the prediction of meteorological events and natural resources management.

Print Media

It is another powerful medium to convey information through various news agencies of India that are operating under the umbrella- Press Trust of India, United News of India and Press Information Bureau.

Communication Technology and its advantages

It plays a vital part not only in personal life but also important role in business and education through satellites.

People can send and receive mails using e-mail to get information on job vacancies, admission to Universities and to obtain birth and death certificates.

Shopping via internet (e-commerce) is a trend now-a-days.

Telemedicine makes it possible for people in remote areas to get correct treatment at appropriate times.

Global Village

Online payment of phone bills, electricity bills and online ticket booking can also be made.

D-Mat form of shares for share broking and video conferencing using video chat through webcam are also done using internet.

Communication technology has developed to such an extent that even remote villages are connected to any part of the world, making the world a global village. GPRS (General Packet Radio Service) is a way of sending data through radio waves which is currently being used to transmit voice. GPS (Global Positioning System) looks like a Mobile phone which captures signals from multiple satellites and provides information on the location of a place.

EXERCISE

I) Choose the correct answer.

1. Postal and Telegraph services belong to _____ communication.

a) personal b) professional c) public d) private

2. _____acts as arteries and veins for national development.

a) communication b) Transport system c) print media

d) Remote sensing

3. The East Coast Road is built along the coast of _____.

a) Arabian sea b) Bay of Bengal c) Indian Ocean d) Andaman Sea

4. The largest terrestrial network in the world is _____.

a) All India Radio b) Doordharshan c) edusat d) internet

5. Minor ports are known as _____ ports.

a) Entrep port b) Tidal port c) Anchorage port d) free port

II) Match the following.

1. Golden Quadrilateral	Minor port
2. Cudddalore	Private telecom
3. GPS	Print media
4. Magazine	Location of place
5. Aircel	National Highway
	Major Port
	Public Telecom Service

III) Answer in brief.

1. Name the different types of roads found in Tamil Nadu.
2. Name some of the private telecom services.
3. Name the three major ports of Tamil Nadu.
4. What are minor Ports? Give examples.
5. Name the major international airports of Tamil Nadu.
6. Expand STD.
7. Distinguish between internet and intranet.

IV) Give paragraph answer.

1. What are the advantages of communication technology?
2. What are the recent prospective developments made in road transport in Tamil Nadu?

V) Mark the following on a given map of Tamil Nadu.

1. Rail route from Chennai to Thuthukudi.
2. Roadways connecting Chennai to Thiruchirappalli.
3. Mark the Major Sea Ports.

FORMATIVE ASSESSMENT

1. With the help of pictures trace the development of communication form ancient to modern times.

2. Creative skill

   Conduct a traffic survey during the peak hours in an important junction/in front of your school and get solutions for the existing problems.

3. Group Activity

   Collect pictures and prepare an album on the topic " Transport Versus Pollution".

3. DISASTER MANAGEMENT

The Earth we live is a dynamic self regulatory system. In the modern world with the best available communication facilities we are informed of extreme events that occur in any part of the world. In many circumstances events like the volcanic eruption, the earthquake and flood become harmful to human society.

Hazard is a dangerous event, natural or human induced that cause injury, loss of life and damage to property.

A **Disaster** is an event which causes enormous physical damage to property, huge loss of life and drastic change in the environment. The economic, social and cultural life of the people is affected and they need external help for food, shelter, medicine, financial and social support to overcome the disaster. Disaster is classified according to the origin as natural and man-made Disaster.

FORCES RESPONSIBLE FOR DISASTER

Type of Disaster	Forces	Events
Geophysical disaster.	Earth's internal force.	Earthquakes, landslides, tsunami and volcano.
Hydrological disaster.	Surface water/glacier flow.	Avalanches, flood.
Climatological disaster.	Atmospheric events, Interaction of atmosphere and ocean.	Extreme temperatures, drought, wild fires, Cyclones, storms, surges, waves.
Man-made disaster.	Human negligence.	Industrial accidents, pollution, acid rain, road accidents, leakage of toxic waste, war.

Disaster Management: Disaster Management involves a continuous process of planning, organizing, coordinating and implementing measures to avoid loss of life and property. The role of the authority is to frame safe disaster management methods to protect people and property. Disaster Management cycle includes four stages namely preparation, response, recovery and mitigation.

Disaster Management cycle

Hierarchy of Disaster Management in India

- National Disaster Management Authority. (NDMA)
  - Headed by the Prime Minister
- State Disaster Management Authority
  - Headed by the respective Chief Ministers
- District Disaster Management Authority
  - Headed by the District Collectore or District Magistrate
- Block Disaster Management Committee
  - Head by BDO and NGO's
- Village Committee for Disaster Management
  - Panchayat raj and Committee

Did You Know?

The Tsunami of 2004 occurred in the Indian Ocean and the earth quake, China 2008 are the examples of the disaster.

The Bopal Gas (Methyl Isocyanate) tragedy of 1984 in a Carbide plant is also an instance of disaster.

Did You Know? India is prone to natural disasters due to its geological set up.The Indo-Australian plate is still moving at an average of 2 cm every year toward Eurasia, still pushing Tibet upwards. Thus Himalayan zone is vulnerable for earthquakes and landslide. Apart from this, floods and avalanches are also common here. The northern plains are affected by devasting floods during monsoon due to flat terrain and torrential rainfall. On the other hand North western part of India and central part of Deccan are mostly affected by drought, famine, at times flash floods and desertification.

The coastal regions of course are affected by cyclones, storm surge and rarely tsunami.

Preparation

1. First step is to strengthen the basic information about the area like landform, slope, climatic features, population, etc.

2. To list out the types of disaster the area is prone to like earthquake affecting zone, cyclone affecting area and so on
3. To identify the local area which is most vulnerable to such disaster, for instance, the either side of Adyar river and Velachery are flood prone area within Chennai city.
4. Prepare schemes to deal with the disaster. Example
   a) Identify safe place for the people to be shifted to in case of disaster.
   b) Form a volunteer group involving local people with their contact number to coordinate at the time of emergency.
   c) Have a list of phone numbers of the nearest Police station, Fire service and Government hospital for immediate correspondence.

Response

1. Alert people before the occurrence of disaster.
2. Respond to the grave situation at the time of disaster, example, search, rescue and evacuate all the people from the site of incidence.
3. Arrange the essential items for the people; example food, shelter, medicine and others.
4. Assess the severity of disaster.

Recovery

1. Providing temporary housing facility, medical care, counseling, reuniting people with their kin and kith, financial support, etc.
2. Rehabilitation and reconstruction of the damaged property.

Mitigation

1. All activities that reduce the impact of the event is said to be mitigation.

Warning systems in India

The Department of Ocean Development in association with Department of Science and Technology (DST), Department of Space (DOS) and CSIR Laboratories, has set up an Early Warning System for Tsunami and Storm Surges in the Indian Ocean. Generation of disaster warning is a multi-institutional effort.

The table gives the Departments responsible for warning the public of the disaster through proper media.

The following are the agencies of disaster management:

AGENCIES - DISASTER MANAGEMENT

Disaster	Agency
Heat wave/ Cold wave / Cyclone / Earthquake	Indian Meteorological Department (IMD)
Tsunami	Indian National Centre for Oceanic Information System (INCOIS)
Land slides	Geological Survey of India (GSI)
Flood	Central Water Commission (CWC)
Avalanches	Defence Research and Development Organization (DRDO)

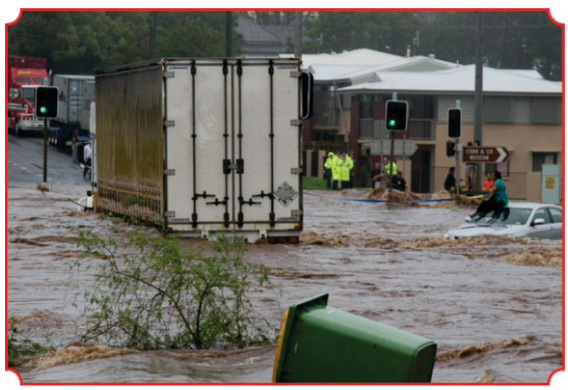
Warning systems in Tamilnadu

Hotline between Indian Meteorological Department and the State Emergency Operation Centre (EOC) is established. Dissemination to the districts is done through telephone and fax. IP phones are also available, which connect the State with the district headquarters, taluks and blocks of the State. Wireless radio network; both high Frequency and very high frequency are available in the State.

Flood : Sudden overflow of large amount of water caused by heavy rainfall, cyclones, melting of ice, tsunami, etc., is called as flood. Low lying flood plains, coastal plains and river confluences are prone to flood.

Effects of Flood:

1. Loss of life and property.
2. Displacement of people.
3. Spread of contagious diseases such as cholera, malaria, etc.,



Did You Know?

From 14 to 17 June 2013, the Indian state of Uttarakhand and adjoining areas received about 375% more than the normal rainfall during a normal monsoon. This caused the melting of Chorabari Glacier at the height of 3800 metres, and overflow of the Mandakini River which led to heavy floods near Gobindghat, Kedar Dome, Rudraprayag district, Uttarakhand. The heavy rains resulted in large flash floods and massive landslide. Unscientific developmental activities undertaken in recent decades have resulted in high level of loss of property and lives. Roads constructed in haphazard style, new resorts and hotels built on fragile river banks and more than 70 hydroelectric projects in the watersheds of the state led to this disaster.

Flood, June 2013, Uttarkhand

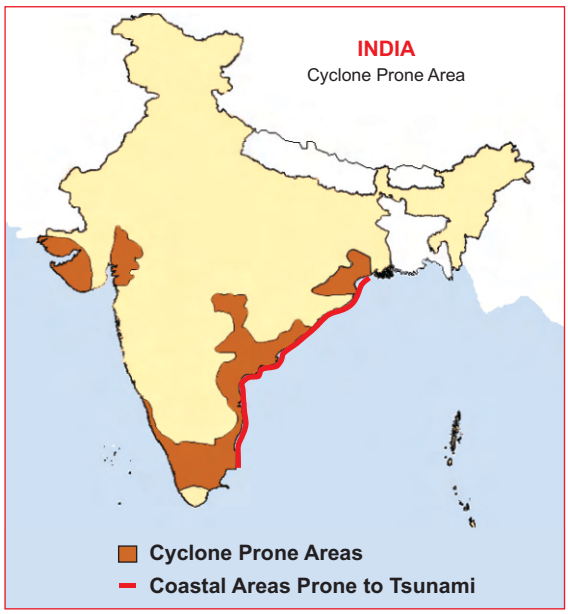
Cyclone:

Areas of low pressure surrounded by high pressure is called as cyclone. It is anticlockwise in Northern hemisphere and clockwise in southern hemisphere.

- The centre of the cyclone called the eye of the storm is calm and clear without clouds.
- The condensation of vapour releases more latent heat and that gives the energy for the cyclones to enhance further evaporation and formation of clouds.

India with a coast line of 7516 km is affected by 10% of world tropical cyclone. 13 coastal districts of our

state are prone to cyclones. Cyclones occur in the month of May-June and in October-November. Cyclones are associated with strong squall , torrential rain, flood and storm surge. The damage by cyclones can be mitigated by growing shelter belts and restoring the mangrove forests where ever possible.



Drought

Long period of rainless weather condition is termed as drought. The severity of the drought depends upon the degree of moisture deficiency, the duration, and the size and location of the affected area.

Crop Damage by Drought

Water Shortage

Did You Know?

IMD has taken initiatives to cover all blocks in Tamilnadu with Automatic Weather Stations Network.

Techniques of conservation of water like sprinkle irrigation, fertigation, pot hole irrigation, precise farming, and selection of suitable variety of crop that can with stand drought are some of the remedies that may reduce the impact of drought when it is possible to predict drought.

Earthquake

An earthquake is a sudden vibration or shake of the earth's crust. It is caused by the circulation of the convection cells and the plate movements.

An earth quake may cause the landslide, avalanche, fire, soil liquefaction and Tsunami.

Effects of Earth Quake:

1. Changes in the shape of the earth's surface.
2. Loss of life and property.

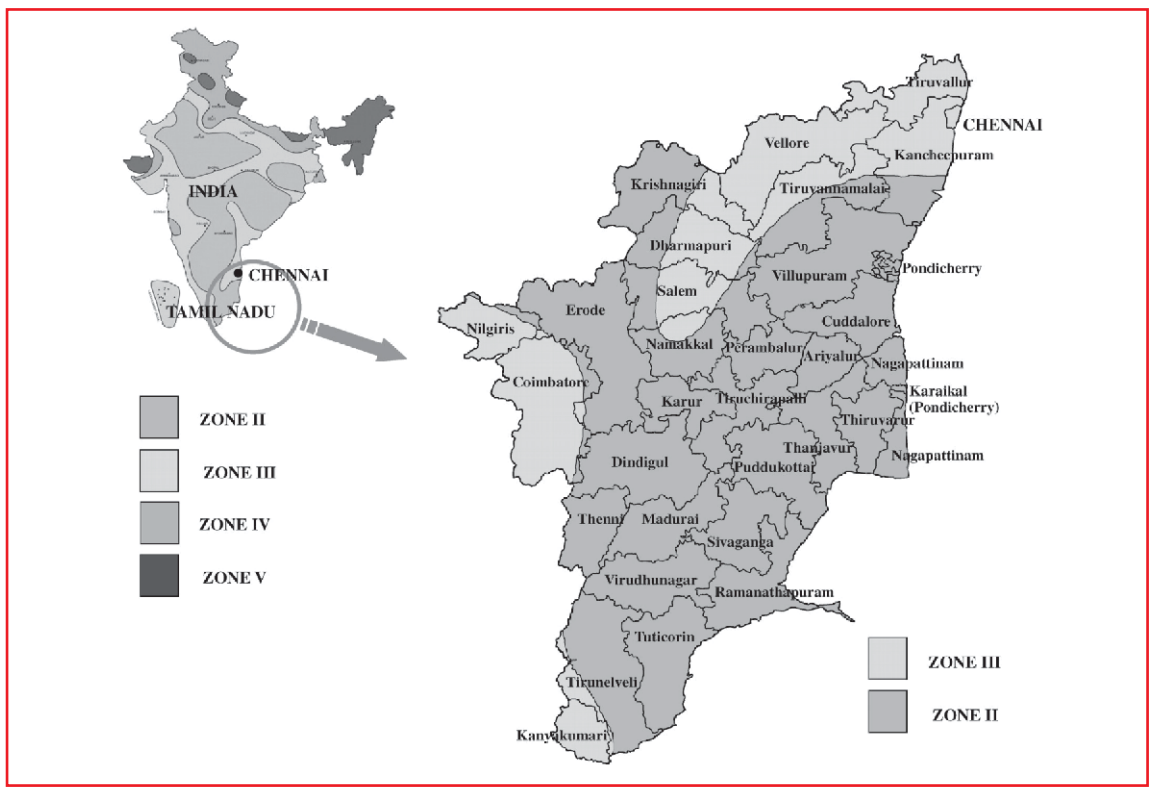
Seismic Zones of Tamilnadu

India is divided into four seismic zones, namely II, III, IV and V; Zone V is the high risk zone. TamilNadu falls under moderate and low risk zones. (Zone III and II).

The distsricts of Nilgiris, Coimbatore, Kanyakumari, Vellore, Thiruvallur , Chennai , Kanchipuram, Thiruvannamalai, Dharampuri, Salem and parts of Thirunelveli districts are classified as moderate risk Zone III. The rest of the districts in TamilNadu comes under low risk zones II.

Did you know?

The place of the origin of an earthquake is called "**FOCUS**". The deepest earthquake may have its focus at a depth of even 700km below the ground surface. The place on the ground surface which is perpendicular to the 'focus' is called '**EPICENTRE**'. The seismic waves move away from the source of the earthquake in the form of Primary waves (P Waves) Secondary waves (S Waves) and Long waves or surface waves (L waves).



Seismic Zones of Tamilnadu

Tsunami: An extremely large wave in the sea caused by the earth quake occurring under the ocean floor. Apart from huge loss of life and property the environmental impact of tsunami is tremendous. It affects the quality of fresh water in the coastal aquifers. The salt is deposited on the arable land by sea water and it takes long time to restore the quality of soil.

Facts about tsunami

- An underwater earthquake, a volcano eruption or a landslide mostly causes a tsunami.
- Tsunami can travel as fast as 500 miles per hour, without being noticed and can cross the entire ocean in less than a day.
- When stuck in Tsunami, it is recommended to grab a floating object and allow the current to carry you.
- The tsunami that occurred in December 2004 in the Indian Ocean is known to be the most powerful tsunami that has occurred till date.
- Scientists can estimate an almost accurate time as to when and which part is tsunami most likely to occur.

Life threatening tsunami

Man Made Disaster

Fire, industrial, technological, transportation, nuclear accidents, biological disaster and war are all man-made disasters.

Fire

Fire is a disaster caused due to electrical short circuit, accidents in chemical factory, match and crackers factory. handling fire by the side of inflammable materials and near gas cylinders are also causing fire. Forest wild fires are a major disaster all over the world.

Wild Forest Fire

The environmental impact of forest fire includes emission of large amount of carbon dioxide leading to global warming, loss of bio diversity, affecting hydrological cycle, reducing photo synthetic activity, and health hazards to human beings. Safeguarding life and property from fire and forest fire involves three basic

aspects: 1. Prevention 2. Detection and 3. Extinguishing. Public awareness of what to do before fire, during fire and after fire is of critical importance.

Industrial and Technological disasters

These disasters result from accidents, failures, mishap or misuse of some kind of technology.

The Industrial Disaster: The storage and transportation of various hazardous materials used in industries may result in industrial hazard accidents. Recently, major disaster threats have emerged in the chemical and nuclear industries.

Chemical industry faces multiple risks involved with its production, transportation, storage, usage and disposal off the effluents containing residual chemicals.

Did you Know?

Chernobyl nuclear disaster 1986 (former USSR) and Japan, 2011 had experienced the most hazardous nuclear disaster.

General survival techniques

- During flood forecast it is important to stock up on first aid items, non-perishable foods, 3 gallons of water per person for 3 days, battery operated radio for weather reports, extra batteries, personal hygiene necessities. Secure the cattle's in an elevated place and store their fodder and potable water. Listen to the local Radio/ TV for instructions. Cut off all the electrical supply during flood and earthquake.

- During drought period arrange fodder and drinking water for cattle in drought regions. Form hazard and risk management service groups and function effectively as per the advice of scientific community in each village.

- During the earthquake be under the table, chair, kneel to the floor and protect yourself. Go near a sturdy wall, sit on the floor and hold the floor strongly and protect yourself. Use only torch lights, avoid candles and oil lamps because of fire risk, where earthquake occurred. Wear sandals while walking on rubbles.

- In case of fire accident Call the nearby police station, (No.100) or the fire service (No.101) as soon as the firebreak. If caught in a fire or smoke, escape by crawling low to the floor. If clothes are on fire, “Don't Run; Stop, Drop and Roll”.
- In case of Industrial hazards previous knowledge of every aspect of the chemical involved will help us to act promptly to mitigate the disaster. Know the safety measures and follow the rules strictly. Handle the chemicals with care.
- Road accidents can be avoided if only legal licensed person above 18 is allowed to drive. Learn, preach, and practise safety rules during driving and walking along the road.
- At railway crossings pay attention to signal and the swing barrier. In case of unmanned crossing, get down from the vehicle and look at both the sides of the track before crossing the track. Don't touch objects which are suspicious. Never jump from a moving train.
- On boarding the aircraft pay attention to the flight crew safety demonstration. Carefully read the safety briefing card available in the seat pocket.

Source :

1.Disaster Management And Disaster Mitigation Department Chennai – 600 005. Tamilnadu

2.Central Board of Secondary School Education.

Together, Towards a Safer India-I

EXERCISE

I. Choose the correct answer:

1. Geophysical hazards are formed due to _____ force
   a) Earth's internal
   b) Earth's external
   c) Microbes
   d) Interaction of ocean and atmosphere.
2. National Disaster Management Authority is headed by_____
   a) Governor
   b) President
   c) Prime Minister
   d) Chief Minister
3. All activities which reduce the impact of the event is said to be _____.
   a) Preparedness
   b) Response
   c) Recovery
   d) Mitigation.

II.Match the following:

1. Human negligence	–	Sudden movement of glaciers
2. Warning for Landslides	–	Meterological hazard
3. Tamilnadu	–	Central water commission
4. Extreme temperature	–	Medium risk earthquake zone
5. Avalanches	–	Manmade disaster
	–	Geological survey of India

III. Write brief answers:

1. Define Disaster Management
2. Write two methods to mitigate the damage by cyclones
3. What are the measures to reduce the impact of drought?
4. Distinguish between hazard and disaster.
5. Mention the environmental impacts of tsunami.
6. Mention the environmental impacts of forest fire.

IV.Answer in a paragraph

1. Describe the Disaster Management cycle.
2. Name the agencies in India responsible for warning Natural disasters.
3. Write about the cyclones.

FORMATIVE ASSESSMENT

1. Name a few tropical cyclones which you have come across so far and find out the Northern Indian Ocean Cyclone names given by World Meteorological Organisation for Tropical Cyclone.
2. Organize a mock drill for earthquake at your classroom.
3. Prepare a chart for emergency service numbers (Fire, Traffic, etc.,)
4. Map Skill.

Mark the following on Tamilnadu map:

1. The cyclone prone area of Tamilnadu
2. A region prone to frequent landslides
3. A district prone to drought
4. Region of formation of tropical cyclone
5. Earthquake prone area in Tamilnadu