

GEOGRAPHY

Chapter 6: Industries



INDUSTRIES

The word 'industry' refers to any economic activity concerned with the processing of raw materials into finished products with the help of machines in factories. This process of changing the shape, form, size, texture and appearance of all primary product or raw material into the final product is called 'manufacturing'. We will learn about such industries in this chapter.

INDUSTRIES

Our earth is rich in resources provided by nature. These resources include forest products agricultural products and minerals. Some of these resources can be used directly but others have to be processed by manufacturing industries into finished products. They play an important role in modern times and satisfy man's growing needs and provide employment to millions of people in the world.

TYPES OF INDUSTRIES

Industries can be divided into three main types: (i) primary industries, (ii) secondary industries and (iii) tertiary industries. Sometimes, secondary industries are called manufacturing industries and tertiary industries are called service industries. Recently, tertiary industries have been sub-divided to give a fourth type-quaternary industries

Primary Industries

Primary industries involve extracting resources from the sea or land. This includes forestry, farming, fishing, coal mining, oil drilling and hunting. They are located where the raw materials are available. These are particularly dependent on physical factors such as climate and geology.

Secondary Industries

Secondary or manufacturing industries produce things for people by processing raw materials or assembling components. The raw materials may be obtained from the primary industry or by the products of other secondary industries. A fruit juice can is one such example.

Tertiary Industries

These industries deal with services like teachers, doctors, lawyers, entertainers, professionals, etc. Health, administration, retailing, and transport are called service industries

Quaternary Industries

Quaternary industries are concerned with technological research and development. These help companies to function in a better way, such as Information Technology (IT) or Defense Research and Developmental Organization (DRDO). etc.

CLASSIFICATION OF INDUSTRIES

Industries can also be classified on the basis of: (i) Raw materials used, (ii) Size, and (iii) Ownership. Industries based on raw material Industries may be agro-based, mineral based, forest based or marine based depending on the raw materials used.



Cotton textile is agro based industry

Agro-based industries utilize agricultural and animal-based products as raw materials to make finished products. Cotton textile, sugar, vegetable oils, food processing, dairy products and leather industries are some of the examples. Mineral based industries depend on mineral ores for raw materials. The products of these industries feed other industries. Iron extracted from iron ore is the product of mineral based industry. Iron is used as raw material for the manufacture of various products such as railway coaches, heavy machinery, building material, etc. Another example of mineral based industry is cement and ship building industry. Industries which utilise forest products as raw materials are forest-based industries. Industries manufacturing paper, furniture, rubber and pharmaceuticals are examples of forest-based industries. Seas/Oceans provide raw materials to marine based industries. Industries processing seafood, manufacturing fish oil, etc. are marine based.

Industries based on size

Based on the size, industries can be cottage or household industries, small-scale industries and large-scale industries. This classification is based on the capital invested, number of people employed, and volume of goods produced.



iron and steel industry is mineral based industry

Cottage or household industries are a type of small-scale industries where products are manufactured manually, by the artisans. These are small self-help industries that are carried out in the home, community Centre or some other convenient place. Handicrafts, catering, tailoring, dressmaking, retailing of dry goods, pottery and furniture making on a small scale are some cottage industries. Only minimal investment is needed to start up such industries. These industries are unable to compete on equal terms with larger businesses because of their use of simple and cheap machinery and equipment.

Small-scale industries are set up with limited capital and hire skilled labour. They generate a great deal of employment. The amount of capital and technology used is less as compared to large-scale industries. They use machines and produce more in terms of volume as compared to cottage industries. Industries engaged in silk weaving, food processing and manufacturing garments are examples of small-scale industries.



Cottage industry Garment Industry



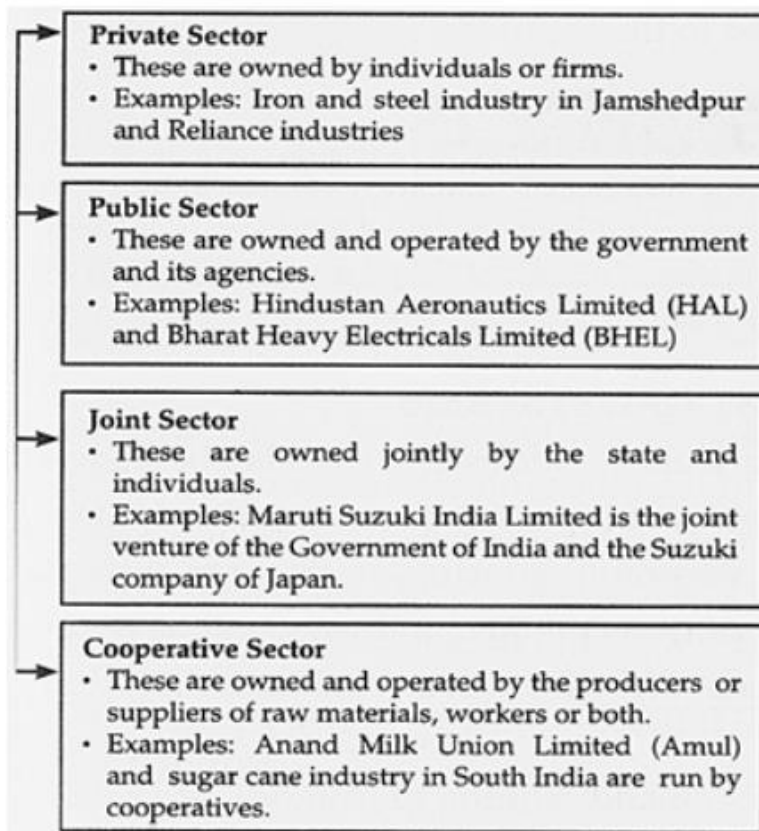
Small Scale industry carpet: manufacturir



Large scale industry car manufacturir

Large-scale industries run with the help of large machines and a huge labour force. The capital investment is huge and superior technology is used to manufacture goods. The production is on a mass scale and is voluminous. Goods are sold to distant markets. Some of the examples of these industries are automobiles, heavy machinery and petrochemicals industries.

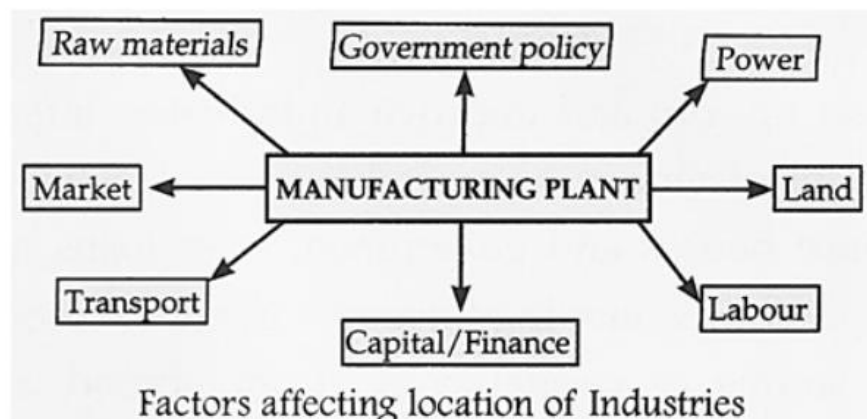
Industries based on ownership Based on ownership, industries can be (i) private sector (ii) public sector (iii) Joint sector (iv) Cooperative sector industries.



You must have heard about the Reliance industries. Prepare a short note on Reliance industries describing its organisation and working.

FACTORS AFFECTING THE LOCATION OF INDUSTRIES

The development of industries depends on the availability of raw materials, land, power, labour, capital, transport, and market for the finished goods. Industries tend to concentrate in certain areas where some or all of these factors are easily available. The government provides incentives such as low-cost transport and electricity, low taxes, paid holidays, etc., so that industries can be set up in backward areas



Raw Materials

Since beginning raw materials had been very important in determining the location of industry.

Some raw materials are very bulky or heavy and are expensive to transport. As a result, industries are located near the source of raw materials. This is true for the iron and steel industry where the raw materials, iron ore and coal, are bulky and used in large quantities. Cost is reduced if the iron and steel industry is located near to iron ore and coal deposit. The steel produced, though heavy, is less bulky and easier to transport than the raw materials. Similarly, several tonnes of limestone is used to manufacture one tonne of cement. As a result, the manufacturing plant is located next to the limestone quarry. These industries can be described as 'weight losing'.

Bakery and brewing products and soft drinks have weight or bulk. A bag of flour is compact but produces a much greater volume of bread. Soft drinks contain large quantities of water. The 'weight-gaining' industries are located near to their markets of final goods to reduce transport costs.

Power Industries need an uninterrupted power supply to operate their machinery. Earlier, industries were located close to coalfields. Today, electricity oil and petrol can be transmitted over long distances.

Land

For setting up a large industrial plant, flat land is preferred as it makes easier and less costly to build and operate the plant and there is always space for future expansion.

Capital or Finance

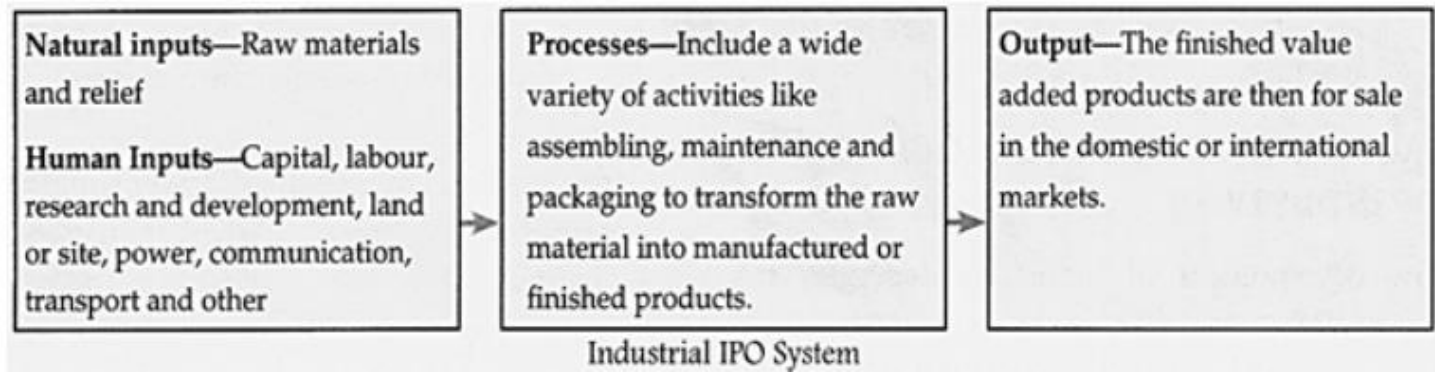
To set up, run and improve an industry; large amount of money or capital is needed. Banks, finance houses and government offer loans to people for developing business. In some cases, the source of capital come from abroad as foreign investment.

Labour

The availability, skill level, cost and working practices of the workforce; are all important factors in determining the location of industries. The textile industries, for example, need highly skilled labour so they are located near urban areas such as Mumbai, Ahmedabad, etc. Other industries need educated and skilled labour that can be easily trained for new technologies.

Transport

Transport is needed to bring raw materials or the products of other industries to the factory and to deliver finished products to the market or other factories. A good transport network helps deliver raw materials or products quickly. A site which is well connected to a motorway network, with a railway station and an airport nearby are more attractive.



Market

The goods produced are sold to meet the demand in the market. It is often an advantage to manufacture bulky goods like cement and paper and perishable goods closer to the Centre of consumption.

Government Policy

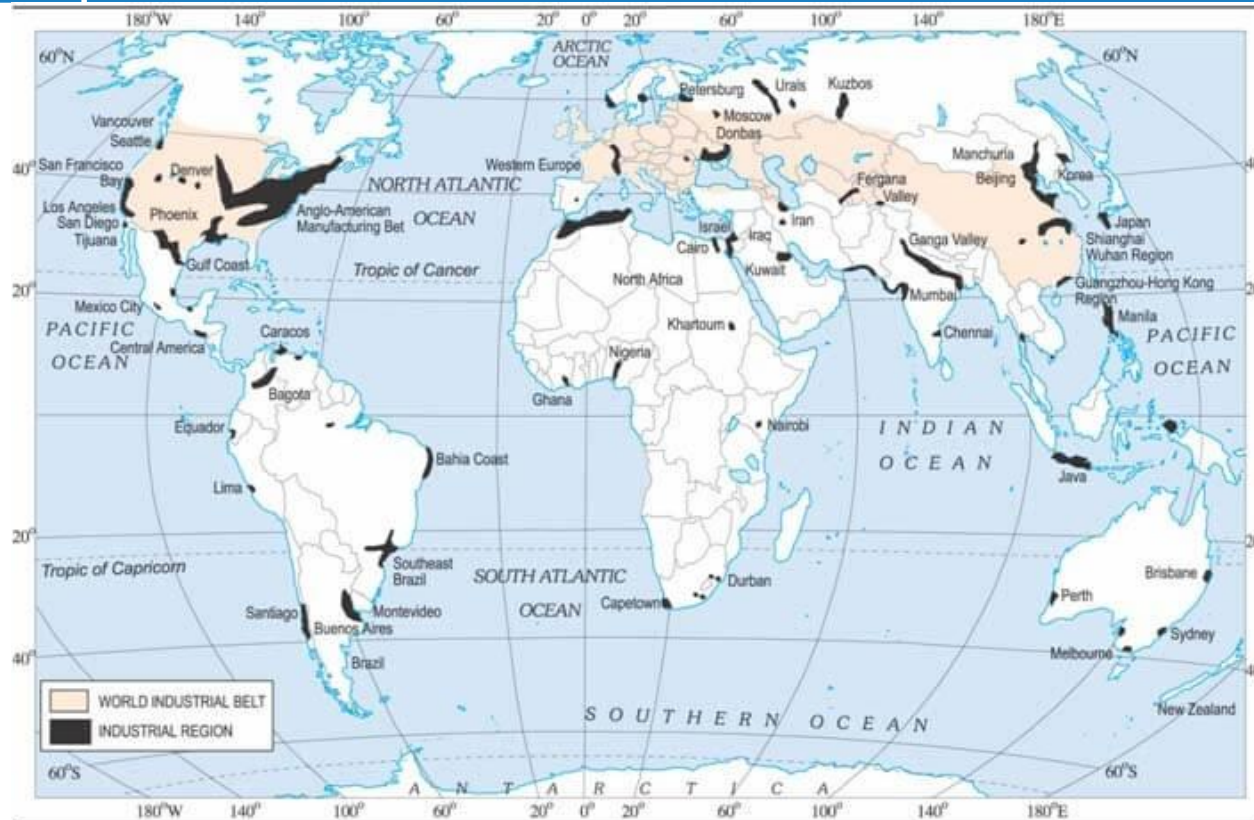
There are a number of ways in which the government may influence the location of industries such as: (i) Setting aside plots of land for industrial estates (ii) Shifting industries that cause pollution from residential areas to industrial areas, (iii) Offering loans, subsidies and tax exemptions to companies, (iv) Establishing a stable government so that overseas investors are attracted to the country.

Geography Reveals

A growing number of industries are free to locate in many locations. These are called footloose industries. They include many of the growing industries (e.g., IT industry).

INDUSTRIAL SYSTEMS

Like agriculture, industries can also be viewed as a system of inputs, processes and outputs. A simple version of a factory system for example in case of Iron and Steel industry will have raw materials like iron ore, coal and limestone along with capital, labour, etc., as inputs. Conversion and refining of iron ore into steel is a process and steel is the final output which is then marketed for various end products.



INDUSTRIAL REGIONS

The areas which have high concentration of industries are called industrial regions. Industries tend to develop in a few areas due to certain favourable factors. Gradually many industries related to each other and interdependent for raw materials and products cluster together, forming an industrial region.

THE MAJOR INDUSTRIAL REGIONS OF THE WORLD

- Eastern part of North America
- Western and Central Europe-UK, Italy, France, Sweden and Germany
- Eastern Europe-Russia and Ukraine
- Eastern Asia-Japan, South Korea, Malaysia, China, India and Taiwan

MAJOR INDUSTRIAL REGIONS OF INDIA

- The Western Region: Mumbai-Pune and Vadodara-Ahmedabad belts. This is the most important industrial region of India in terms of output.
- The Eastern Region: West Bengal, Jharkhand, Odisha.
- The Southern Region: Bengaluru, Hyderabad, Madurai, Coimbatore, Chennai (It is known as the Tamil Nadu-Karnataka belt).
- The Northern Region: Delhi, Uttar Pradesh, Punjab, Haryana belt.
- The Central Region: Chhattisgarh, Madhya Pradesh region.

DISTRIBUTION OF MAJOR INDUSTRIES

Few major industries of the world?

- (i) Iron and Steel Industry (ii) Textile Industry (iii) Chemical Industry and (iv) Engineering are discussed here. The textile and iron and steel industry are the older, basic industries while the chemical industry is a few decades old.

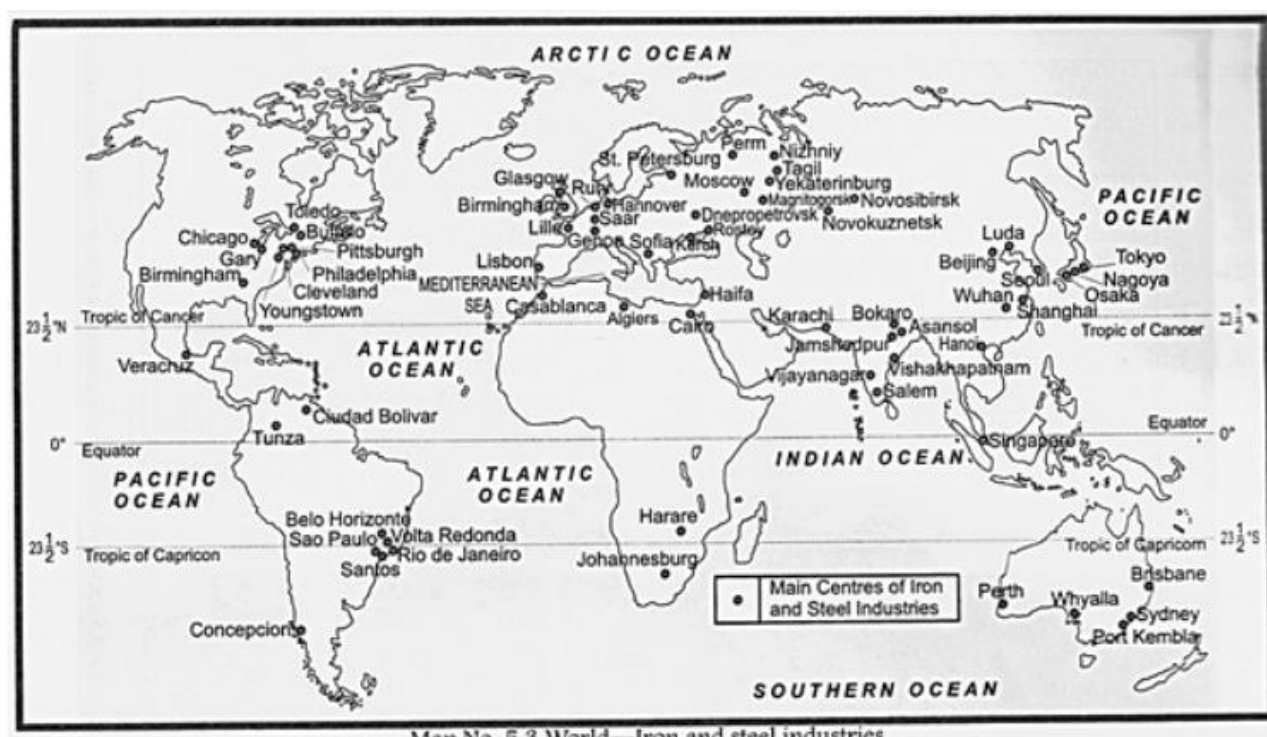


Map No. 5.2 india - industrial regions

IRON AND STEEL INDUSTRY

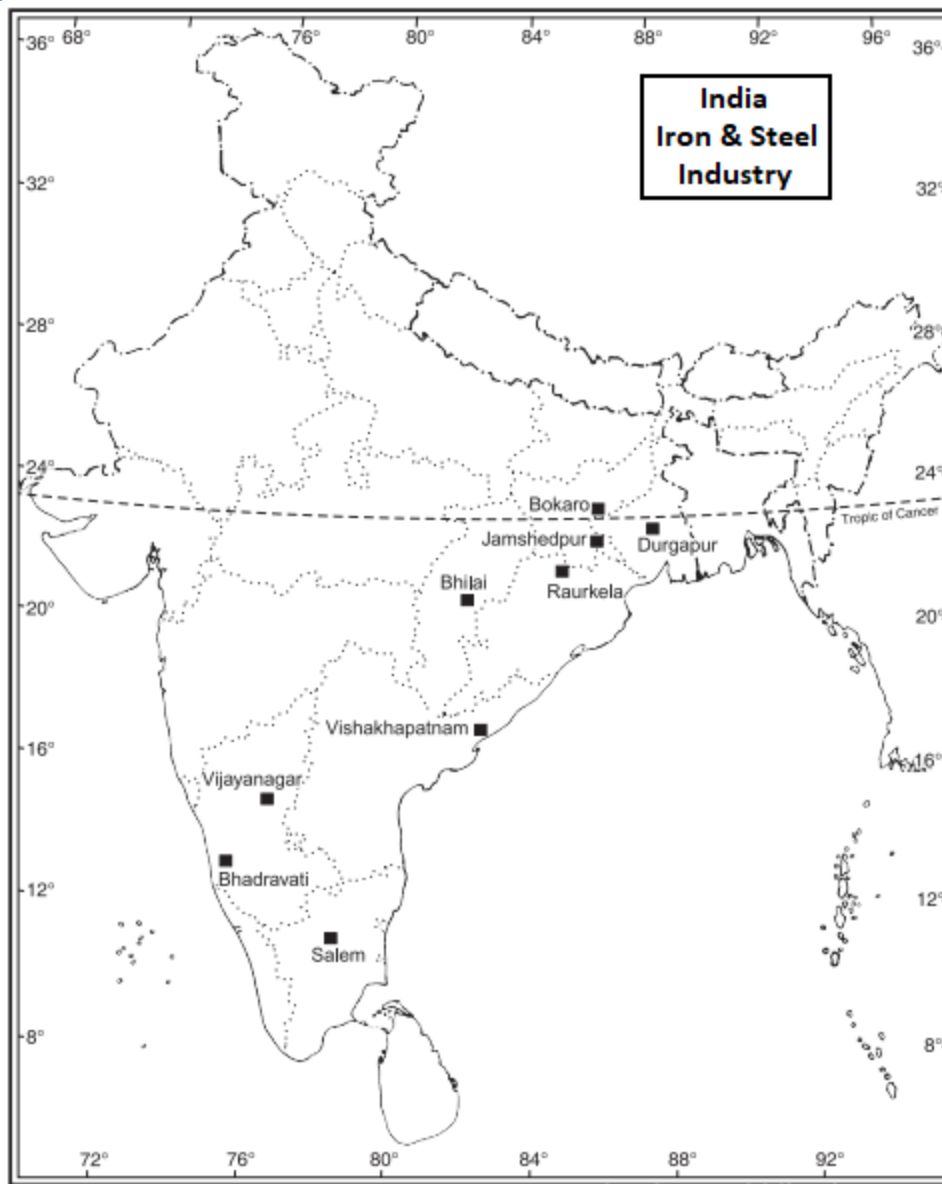
The iron and steel industry is one of the key industries in India and propels the industrial development of the nation. It has helped in generating several subsidiary and small-scale industries and also supports the power, transport, fuel and communication industries. It is a heavy industry. All its raw materials are heavy and massive. So this industry is located near to sources of raw materials, predominantly coal. The manufactured products are also heavy and need efficient transport system for their distribution. It is also a basic or key industry as it provides the base for heavy machines and the tools industry.

The inputs for this industry are raw material, labour, capital, land and other infrastructure. The raw materials needed are iron ore, coal and limestone. The process of converting iron ore into steel involves many stages. Much of the world's iron ore is extracted through open pit mining. The mined ore is crushed and sorted. The best grades of ore contain over 60% iron. Lesser grades are refined to remove various contaminants. The refined iron ore along with coke and limestone are charged through the top of the blast furnace while heated air is blown through nozzles at the bottom. The iron tapped from the furnace may be cast into solid pieces known as pig iron.



Either the pig iron or iron/steel scrap or a mixture of both is the main raw material for any steel furnace. After the molten steel has been tapped from the steel furnace, it is cast into special castings or directly into slabs or billets by the continuous casting process. Semi-finished cast steel from the steel making plant is formed in rolling mills into products for the market. Steel is subjected to a variety of finishing processes to meet market demands such as acid pickling, painting, tinning, galvanising, etc.

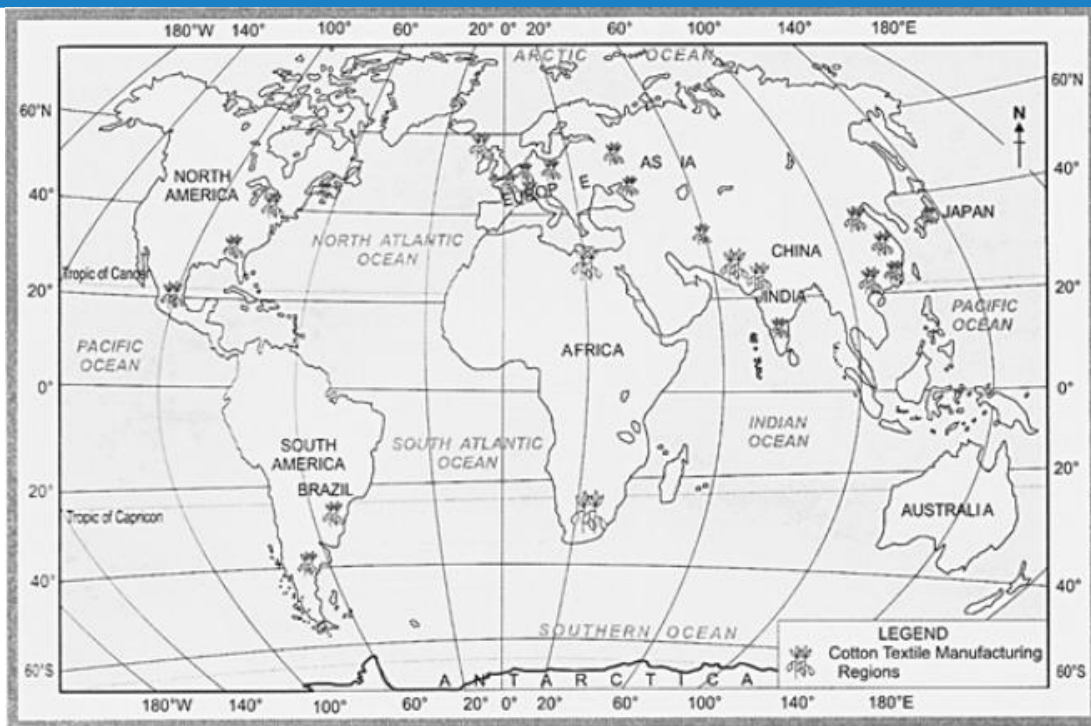
The iron and steel industries are located in Pittsburgh, USA, Ruhr valley of Germany, Japan, China, Russia and Jamshedpur, Bhilai, Bokaro and Durgapur in India.



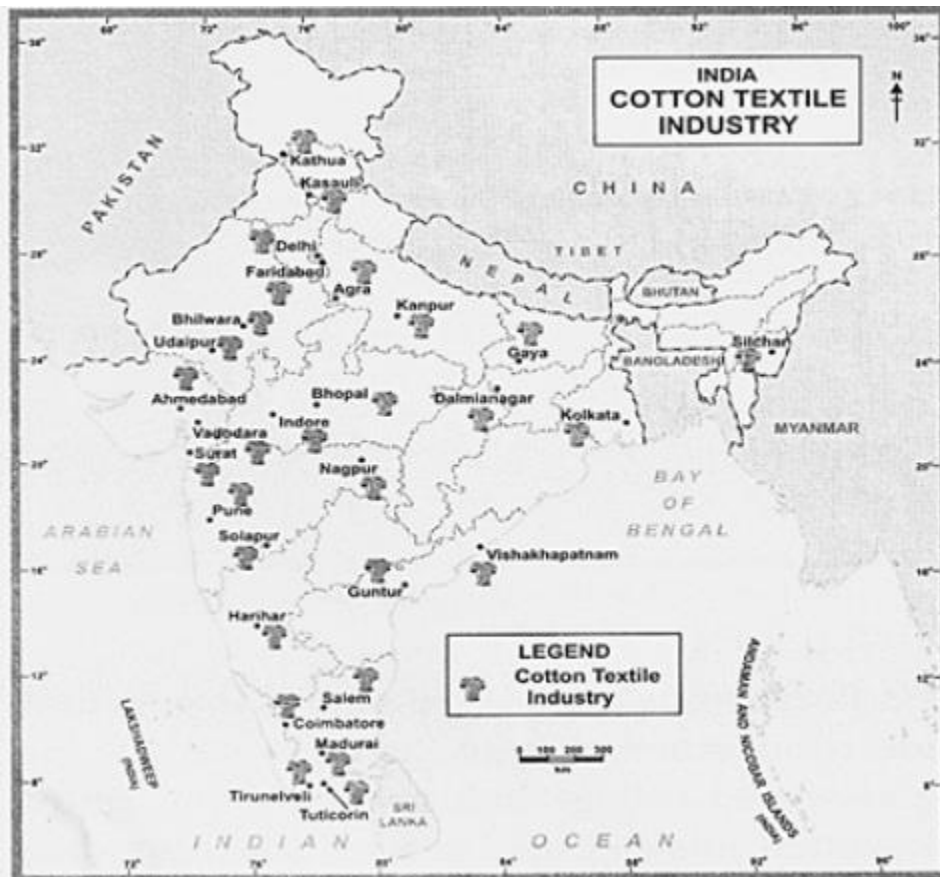
India - Iron & Steel Industry

TEXTILE INDUSTRY

The textile industry is one of the largest and oldest industries in India. India is famous for hand woven cottage industries. Natural fibres like cotton, jute and wool and artificial fibres like rayon, polyester, etc. are used to make clothes.



Indian textile industry can be divided into several segments, some of which are cotton textiles, silk textiles, woollen textiles, jute textiles, handcrafted textiles, etc. Some of the major players in the Indian textile industry are Arvind mills, Raymonds, Reliance textiles, Bombay Dyeing Ltd., Welspun India, etc.



The main centers of the textiles industry in the world are USA, China, Japan and India. Germany,

UK, France and Spain are the leading manufactures of synthetic clothes. In India, textile industries have been set up in Jaipur, Jodhpur (Rajasthan), Ludhiana (Punjab), Delhi, Kanpur (UP), Solapur (Maharashtra), Bengaluru (Karnataka), Coimbatore, Erode, Salem and Tiruchirappalli (Tamil Nadu).

CHEMICAL INDUSTRY

Chemical industry comprises the companies that produce industrial chemicals and other inputs for agriculture, manufacturing, construction, and service industries. Polymers and plastics comprise about 80% of the industry's output worldwide. Chemical industries are concentrated in Western Europe, North America and Japan. In India, chemical industries have been set up in Delhi, Kolkata, Mumbai and Bengaluru.

ENGINEERING INDUSTRY

The engineering industry is the largest in the industrial sectors in India. It is a diverse industry with a number of segments which can be broadly classified into heavy engineering and light engineering. Heavy engineering sector involves the manufacturing of machines tools, cement, sugar, rubber, metallurgical, material handling, mining and dairy machinery. Light engineering sector is involved in the manufacturing of anti-friction roller bearing, process control instruments, welded steel pipes and tubes, medical and surgical instruments.

Major players in the engineering industry in India are Bharat Heavy Electrical Ltd. (BHEL), Engineers India Ltd. (EIL), Hindustan Aeronautics Ltd. (HAL), Crompton Greaves (CG), HMT and Larsen & Tourbo Ltd (L&T USA, Japan, Russia and Germany are the leading producers in the world. In India, engineering industries have been set up in Bhopal, Bengaluru, Pinjore and Haridwar.



Thermal power plant in india

INDUSTRIAL DISASTER

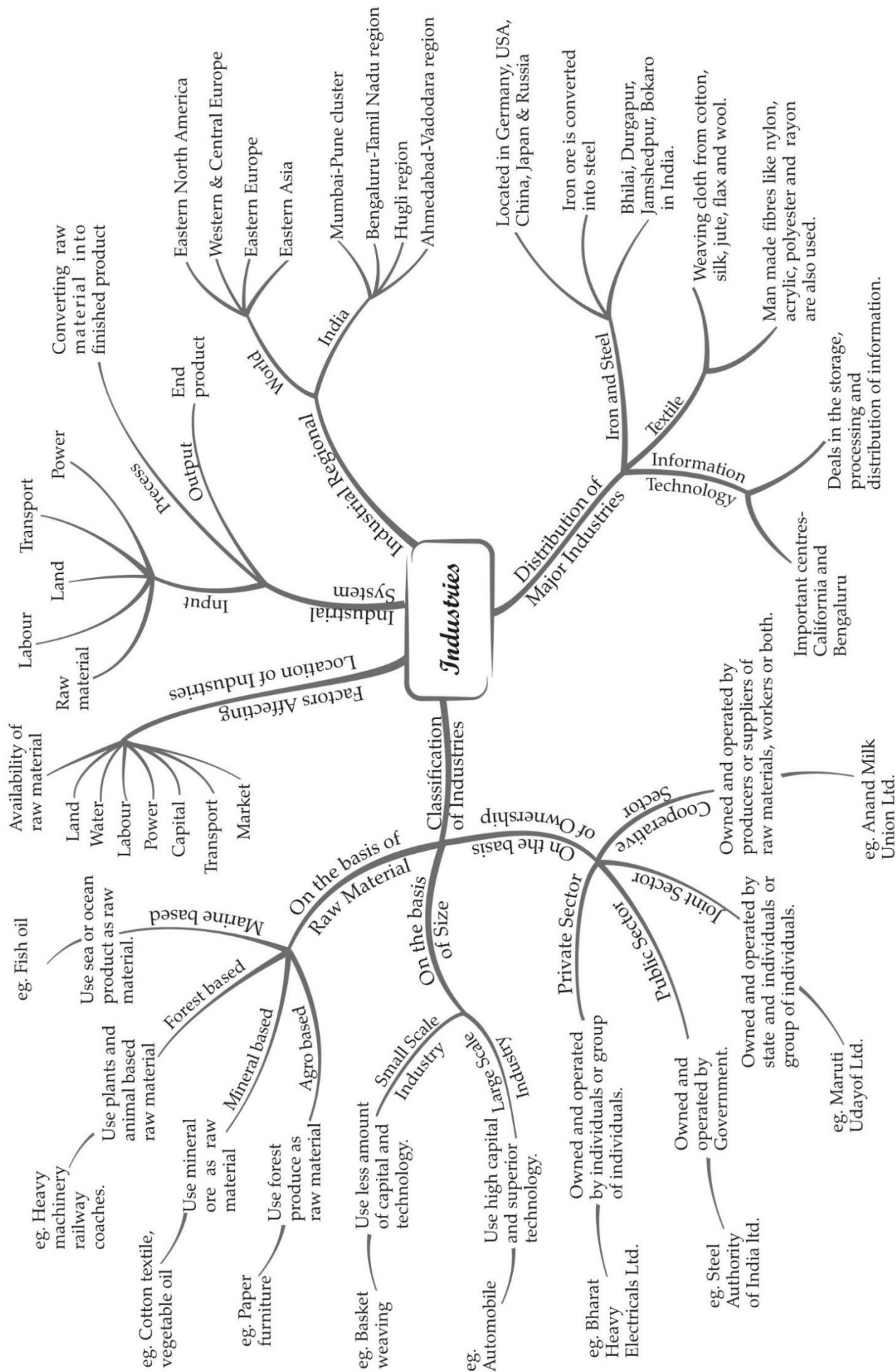
In industries, accidents and disasters occur mainly due to the technical failure or irresponsible handling of hazardous material. Take the case of the Bhopal Gas Tragedy. It occurred in the early hours of 3rd December 1984. It still haunts us today, even after 32 years! It happened at the

pesticide factory of Union Carbide in Bhopal, located in a very congested area. Due to technical failure, highly poisonous Methyl Isocyanate (MIC) gas along with hydrogen cyanide and other reactive products; leaked out of the factory, when the city was asleep. The official death toll was 3,598 but thousands who survived; continue to suffer from blindness, gastrointestinal disorder and impaired immune system.



View of union carbide factory after disaster

MIND MAP : LEARNING MADE SIMPLE CHAPTER-17



Important Questions

Multiple Choice Questions-

Question 1. Industries which use plant and animal based products as their raw materials.

- (a) Mineral based
- (b) Marine based
- (c) Agro based
- (d) Mining based

Question 2. What is referred to as an economic activity that is concerned with production of goods, extraction of minerals or the provision of services?

- (a) Industry
- (b) Agriculture
- (c) Private industry
- (d) None of the above

Question 3. Industries that are owned by and operated by the state and individuals or a group of individuals is called as

- (a) Joint sector industries
- (b) Public sector industries
- (c) Private sector industries
- (d) Cooperative sector industries

Question 4. On which date the Bhopal industrial disaster took place?

- (a) 3 December 1984
- (b) 2 December 1984
- (c) 1 December 1984
- (d) 5 December 1984

Question 5. TISCO was started in 1907 at

- (a) Sakchi
- (b) Mandakni
- (c) Godavari
- (d) Nagpur

Question 6. The first successful mechanised textile mill was established in Mumbai in

- (a) 1856
- (b) 1857

(c) 1854

(d) 1852

Question 7. Major IT hub of India is

(a) Mumbai

(b) Nagpur

(c) Patna

(d) Bengaluru

Question 8. Which one of the following is a Joint Sector Industry?

(a) Tata Iron and Steel Industry

(b) Basket weaving

(c) Maruti Udyog Limited

(d) Hindustan Aeronautics Limited

Question 9. Which one of the following is a Private Sector Industry?

(a) Maruti Udyog Limited

(b) Anand Milk Union Limited

(c) Hindustan Aeronautics Limited

(d) Tata Iron and Steel Industry

Question 10. Name the man-made fibers used in the textile industry?

(a) Nylon

(b) Rayon

(c) Both a and b

(d) None of these

Question 11. Which one of the following is a natural fiber?

(a) Nylon

(b) Jute

(c) Acrylics

(d) Rayon

Question 12. Where is the Silicon Valley located?

(a) Bengaluru

(b) California

(c) Ahmedabad

(d) Pune

Question 13. Why do industrial accidents usually happen?

- (a) Due to technical failure
- (b) Due to irresponsible handling of materials
- (c) Due to negligence
- (d) All of the above

Question 14. What does the term 'industry' mean?

- (a) Economic activity concerned with goods and minerals
- (b) Economic activity concerned with finance
- (c) Economic activity concerned with company balance sheet
- (d) None of these

Question 15. Where were the iron and steel industry located before 1850?

- (a) Availability of raw material
- (b) Availability of power supply
- (c) Availability of running water
- (d) All of the above

Very Short:

1. What is the basic function of secondary activities or manufacturing?
2. Of what is the paper made up from?
3. Name the classification of industries on the basis of raw material used by them.
4. By whom are the private sector industries owned and operated?
5. What does an industrial system consist of?
6. How does an industrial region emerge?
7. What is meant by industrial disaster?
8. Define Sunrise Industries.
9. Define the process 'smelting'.
10. What is the full form of TISCO?
11. On what basis are industries classified?

Short Questions:

1. Why was Sakchi chosen to set up the steel plant? Give reasons.
2. What was the ideal location for iron and steel industry before 1800 A.D and after 1950 how did the concept for ideal location of iron and steel industries change?
3. How is the steel used by other industries as raw materials?

4. Define the concept of industrial system briefly.
5. What does the concept of information technology industry deals in and which are the major hubs of the IT industry?
6. Give a reason why did the cotton textile industry in India could not compete with the industries in the west initially?
7. Name some important steel producing centres in India.

Long Questions:

1. How is the classification of industries done on the basis of raw materials size and ownership? Explain.
2. Give two examples of the following in the space provided.
3. What are the inputs processes and outputs of the iron and steel industry?
4. Discuss the Bhopal disaster.
5. Explain the factors favourable for the development of the IT industry in California.

Map Question:

1. With the help of an atlas identify some Iron and Steel Industries in India and mark their location on an outline map of India.

Answer Key:

MCQ:

1. (c) Agro based
2. (d) Industry
3. (d) Cooperative sector industries
4. (a) 3 December 1984
5. (a) Sakchi
6. (c) 1854
7. (d) Bengaluru
8. (c) Maruti Udyog Limited
9. (d) Tata Iron and Steel Industry
- 10.(c) Both a and b
- 11.(b) Jute
- 12.(b) California
- 13.(d) All of the above
- 14.(a) Economic activity concerned with goods and minerals

15.(d) All of the above

Very Short Answer:

1. The basic function of secondary activities or manufacturing is to change raw materials into products of more value to people.
2. The paper is made up from pulp.
3. The industries classified on the basis of raw materials used by them are:
 - Agro-based industries
 - Mineral-based industries
 - Marine based industries
 - Forest-based industries
4. Private-sector industries are owned and operated by individuals or a group of individuals.
5. An industrial system consists of input, processes and outputs.
6. Industrial region emerges when a number of industries are located close to each other and share the benefits of their closeness
7. In industries, accidents/disasters mainly occur due to technical failure or irresponsible handling of hazardous material. This is known as industrial disaster.
8. Emerging industries are also known as 'Sunrise Industries'. These include Information technology, Wellness, Hospitality and Knowledge.
9. It is the process in which metals are extracted from their ores by heating beyond the melting point.
10. TISCO: Tata Iron and Steel Company Limited
11. Industries are classified on the basis of raw materials, size and ownership.

Short Answer:

Ans: 1. The three types of economic activities are primary, secondary and tertiary.

Primary Activities. Activities which involve direct extraction and production of natural resources are called primary activities. Examples: agriculture, fishing, mining.

Secondary Activities. Activities which are concerned with the processing of natural resources are called secondary activities. Examples: manufacturing of finished products.

Tertiary Activities. Activities which fall neither in the primary category nor the secondary category are called tertiary activities. They form a support to primary and secondary activities. Examples: selling goods, advertising and banking.

Ans: 2. The inputs in agriculture are seeds, fertilisers, machinery, labour, etc. The operations involved in agriculture are ploughing, sowing, irrigation, weeding and harvesting. As outputs of the farming activity, a farmer gets crops, wool, dairy products and poultry products.

Ans: 3. Shifting cultivation is a class of primitive subsistence agriculture. In this, a plot of land is cleared by the farmer. This is done by felling the trees and burning them. The ashes are then mixed with soil and crops are grown. After some time, the land is abandoned and the farmer moves to a different place. This type of farming is common in the thickly forested areas of the Amazon basin, tropical Africa, parts of south-east Asia and north-east India. It is also called “slash and burn” agriculture, because of the process of felling and burning the trees is involved.

Ans: 4. Rice is a major food crop in tropical and sub-tropical parts of the world. Its cultivation needs high temperature, high humidity and rainfall. Its growth is best in alluvial clayey soils, since they have water retention capacity. China and India are the leading producers in the world. In favourable climatic conditions, even two to three crops are grown in a year.

Ans: 5. Agricultural development refers to efforts made to increase production in farms so as to meet the ever growing demand of the population. The activities that come under this development are increasing the cropped area, growing more crops, improving irrigation, using fertilisers, sowing HYV (high-yielding variety) of seeds and by promoting mechanisation. Mechanization ensures that little labour is done by the farmers; instead machines are used to provide efficiency

Ans: 6. The production of hand woven cotton textile was expensive and time consuming. Hence, traditional cotton textile industry could not face the competition from the new textile mills of the West, which produced cheap and good quality fabrics.

Ans: 7. Important steel producing centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, Bokaro are situated in a region that spreads over four states — West Bengal, Jharkhand, Orissa and Chhattisgarh. Bhadravati and Vijay Nagar in Karnataka, Vishakhapatnam in Andhra Pradesh, Salem in Tamil Nadu are other important steel centers utilising local resources..

Long Answer:

Ans: 1. Industries are classified on the basis of raw materials, size and ownership:

1. **Raw materials:** Industries may be agro-based, mineral-based, marine-based and forest-based depending on the type of raw materials used by them.
 - **Agro-based industries:** These industries use plant and animal-based products as their raw materials.
 - **Mineral-based industries:** These industries use mineral ores as their raw materials, and the products of these industries feed other industries.
 - **Marine based industries:** They use the products from the sea and oceans as raw materials.
 - **Forest-based industries:** It utilises forest produce as raw materials.
2. **Size:** It refers to the amount of capital invested, number of people employed and the volume of production. Based on size, industries can be classified into small scale and large scale industries.

- Small scale industry: Cottage or household industries are a type of small scale industry where the products are manufactured by hand, by the artisans. These industries use lesser amount of capital and technology as compared to large scale industry.
- Large scale industry: These are industries that produce large volumes of products. Investment of capital is higher and the technology used is superior in large scale industries.

3. **Ownership:** Industries can be classified into private sector, state-owned or public sector, joint sector and cooperative sector.

- Private-sector industries: These are owned and operated by individuals or a group of individuals.
- Public sector industries: These are owned and operated by the government.
- Joint sector industries: These are owned and operated by the state and individuals or a group of individuals.
- Cooperative sector industries: These are owned and operated by the producers or suppliers of raw materials, workers or both.

Ans: 2. (i) Raw Materials: cotton and iron

(ii) End product: shirt and car

(iii) Tertiary Activities: banking and transport

(iv) Agro-based Industries: Food processing and leather industries

(v) Cottage Industries: Basket weaving and pottery

(vi) Co-operatives: Anand Milk Union Limited and Sudha Dairy

Ans: 3. The inputs for the industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure. The process of converting iron ore into steel involves many stages. The raw material is put in the blast furnace where it undergoes smelting. It is then refined. The output obtained is steel which may be used by other industries as raw material.

Ans: 4. One of the worst industrial disasters of all time occurred in Bhopal on 3 December 1984 around 00:30 a.m. It was a technological accident in which highly poisonous Methyl Isocyanate (MIC) gas along with Hydrogen Cyanide and other reaction products leaked out of the pesticide factory of Union Carbide. The official death toll was 3,598 in 1989. Thousands, who survived still suffer from one or many ailments like blindness, impaired immune system, gastrointestinal disorders etc.

Ans: 5. Locational advantages of Silicon Valley – California

- Close to some of the most advanced scientific and technological centres in the world.
- Pleasant climate with an attractive and a clean environment. Plenty of space for development and future expansion.

- Located close to major roads and airports.
- Good access to markets and skilled work force.

Map Answer:

1.

