Class 10 Geography Chapter 6: Manufacturing Industries - Notes, Important Questions and MCQs (2026-27)

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These Manufacturing Industries Class 10 notes cover Class 10 Geography Chapter 6 completely as per the 2026-27 NCERT book: the meaning and importance of manufacturing, the link between agriculture and industry, classification of industries, agro-based industries (cotton, jute and sugar), mineral-based industries (iron and steel, aluminium, chemicals, fertilisers, cement), automobiles, IT and electronics, industrial pollution and the control of environmental degradation, including NTPC's example.

You also get a classification table, a location-factors table, a pollution control table, a map-work list, NCERT-style questions with answers, 10 MCQs and a free PDF with no signup.

Use the table of contents below to jump to the part you need, or read top to bottom for a complete revision of the chapter.

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Chapter Overview

Production of goods in large quantities after processing raw materials into more valuable products is called manufacturing: paper from wood, sugar from sugarcane, steel from iron ore and aluminium from bauxite. Workers in steel factories, car plants, textile mills and bakeries are in the secondary sector.

The economic strength of a country is measured by the development of its manufacturing

Important Topics and Concepts

Importance of manufacturing

- Manufacturing helps modernise agriculture and reduces people's heavy dependence on agricultural income by providing jobs in the secondary and tertiary sectors.
- Industrial development is a precondition for eradicating unemployment and poverty; this was the philosophy behind public sector and joint sector industries, which also aimed to reduce regional disparities by setting up industries in tribal and backward areas.
- Export of manufactured goods expands trade and brings in foreign exchange.
- Countries that turn raw materials into a wide variety of higher-value finished goods are prosperous.

Agriculture and industry go hand in hand

- Agro-industries have boosted agricultural productivity.
- They depend on agriculture for raw materials and sell irrigation pumps, fertilisers, insecticides, pesticides, PVC pipes, machines and tools to farmers.
- In the age of globalisation, Indian industry must be efficient and competitive, with goods matching international quality.

Classification of industries

- Source of raw materials: agro-based (cotton, woollen, jute, silk textiles, rubber, sugar, tea, coffee, edible oil) and mineral-based (iron and steel, cement, aluminium, machine tools, petrochemicals).
- Main role: basic or key industries supply products as raw materials for other goods (iron and steel, copper and aluminium smelting); consumer industries produce goods for direct use (sugar, toothpaste, paper, sewing machines, fans).
- Capital investment: a small scale industry is defined by the maximum investment allowed on its assets, currently rupees one crore.
- Ownership: public sector (BHEL, SAIL), private sector (TISCO, Bajaj Auto, Dabur), joint sector (Oil India Ltd), and cooperative sector (sugar industry in Maharashtra, coir industry in Kerala).
- Bulk and weight: heavy industries (iron and steel) and light industries (electrical goods).

Textile industry

- Contributes significantly to industrial production, employment and foreign exchange.
- It is the only industry in India that is self-reliant and complete in the value chain, from raw material to highest value-added products.

Cotton textiles

- Ancient India produced cotton textiles by hand spinning and handloom weaving; power looms came after the 18th century; traditional industries suffered under colonial rule.

- The first successful textile mill was set up in Mumbai in 1854.
- Early mills were concentrated in the cotton belt of Maharashtra and Gujarat because of raw cotton, market, transport and port facilities, labour and moist climate.
- The industry supports farmers, boll pluckers and workers in ginning, spinning, weaving, dyeing, designing, packaging and tailoring, and creates demand for chemicals, dyes, packaging and engineering.
- Spinning is centralised in Maharashtra, Gujarat and Tamil Nadu; weaving is decentralised to use traditional skills and designs.
- India has world-class spinning, but weaving produces lower-quality fabric as it cannot use much of the high-quality yarn. Handspun khadi gives large-scale employment in homes.

Jute textiles

- India is the largest producer of raw jute and jute goods and the second largest exporter after Bangladesh.
- Most mills are in West Bengal along the banks of the Hugli river. The first jute mill was set up at Rishra near Kolkata in 1855.
- After Partition in 1947, the mills stayed in India but three-fourths of jute-producing area went to Bangladesh.
- Location factors in the Hugli basin: nearness to jute-growing areas, cheap water transport with good rail, road and waterway links, abundant water for processing, cheap labour from West Bengal, Bihar, Odisha and UP, and Kolkata’s banking, insurance and port facilities.

Sugar industry

- India is the second largest producer of sugar in the world and first in gur and khandsari.
- Sugarcane is bulky and loses sucrose in haulage, so mills are located near cane areas.
- Mills are in UP, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh; 60 per cent are in UP and Bihar.
- It is seasonal, so it suits the cooperative sector.
- Mills are shifting to southern and western states, especially Maharashtra, because cane there has higher sucrose content, the cooler climate gives a longer crushing season and cooperatives are more successful.

Iron and steel industry

- The basic industry, as all heavy, medium and light industries depend on it for machinery; steel is needed for engineering goods, construction, defence, medical, telephonic and scientific equipment and consumer goods.
- Production and consumption of steel is regarded as an index of a country’s development.
- It is a heavy industry because raw materials and finished goods are heavy and bulky.
- Iron ore, coking coal and limestone are needed in the ratio of about 4 : 2 : 1; manganese hardens steel.
- The Chotanagpur plateau has the maximum concentration because of low-cost iron ore, high-grade raw materials nearby, cheap labour and a large home market.

Aluminium smelting

- Second most important metallurgical industry in India.

- Aluminium is light, corrosion-resistant, a good conductor of heat, malleable and strong when alloyed; used for aircraft, utensils and wires, and as a substitute for steel, copper, zinc and lead.
- Plants are in Odisha, West Bengal, Kerala, Uttar Pradesh, Chhattisgarh, Maharashtra and Tamil Nadu.
- Bauxite is a bulky, dark reddish rock. Regular electricity supply and an assured source of raw material at minimum cost are the two prime location factors.

Chemical and fertiliser industries

- The chemical industry is fast growing and diversified, with large and small units.
- Inorganic chemicals: sulphuric acid (fertilisers, synthetic fibres, plastics, adhesives, paints, dyes), nitric acid, alkalies, soda ash (glass, soaps, detergents, paper) and caustic soda; widely spread.
- Organic chemicals: petrochemicals for synthetic fibres, rubber, plastics, dyes, drugs and pharmaceuticals; located near oil refineries or petrochemical plants.
- The chemical industry is its own largest consumer.
- Fertilisers: nitrogenous (mainly urea), phosphatic, ammonium phosphate (DAP) and complex NPK fertilisers. Potash is entirely imported. After the Green Revolution the industry spread; Gujarat, Tamil Nadu, Uttar Pradesh, Punjab and Kerala produce half of the fertilisers.

Cement industry

- Essential for building houses, factories, bridges, roads, airports and dams.
- Needs bulky raw materials like limestone, silica and gypsum, plus coal, electric power and rail transport.
- The first cement plant was set up in Chennai in 1904; the industry expanded after Independence.
- Plants in Gujarat have access to markets in the Gulf countries.

Automobile industry

- Provides vehicles for quick transport of goods, services and passengers: trucks, buses, cars, motorcycles, scooters, three-wheelers and multi-utility vehicles.
- After liberalisation, new models stimulated demand and healthy growth.
- Located around Delhi, Gurugram, Mumbai, Pune, Chennai, Kolkata, Lucknow, Indore, Hyderabad, Jamshedpur and Bengaluru.

Information technology and electronics

- Covers transistor sets, televisions, telephones, cellular telecom, telephone exchanges, radars and computers.
- Bengaluru has emerged as the electronic capital of India; other centres are Mumbai, Delhi, Hyderabad, Pune, Chennai, Kolkata, Lucknow and Coimbatore.
- Major concentration at Bengaluru, Noida, Mumbai, Chennai, Hyderabad and Pune.
- Its major impact has been employment generation; growth in hardware and software is key to its success.

Industrial pollution and environmental degradation

- Air pollution: high proportion of undesirable gases like sulphur dioxide and carbon monoxide, and particulate matter (dust, sprays, mist, smoke) from chemical and paper factories, brick kilns, refineries, smelting plants and fossil fuel burning. Toxic gas leaks, such as the Bhopal gas tragedy, have long-term effects.
- Water pollution: organic and inorganic wastes and effluents from paper, pulp, chemical, textile, dyeing, refineries, tanneries and electroplating industries, releasing dyes, detergents, acids, salts and heavy metals like lead and mercury. Fly ash, phospho-gypsum and iron and steel slags are major solid wastes.
- Thermal pollution: hot water from factories and thermal plants drained into rivers before cooling, harming aquatic life. Nuclear wastes cause cancers, birth defects and miscarriages.
- Land pollution: dumping of glass, chemicals, effluents, packaging, salts and garbage makes soil useless; pollutants seep into groundwater.
- Noise pollution: machinery, generators, saws and drills cause irritation, stress, hearing impairment, higher heart rate and blood pressure.

Control of environmental degradation

- Every litre of industrial waste water pollutes eight times the quantity of freshwater.
- Reduce water pollution by reusing and recycling water in successive stages, harvesting rainwater, and treating hot water and effluents before release.
- Effluent treatment: primary (mechanical: screening, grinding, flocculation, sedimentation), secondary (biological) and tertiary (biological, chemical and physical, including recycling of wastewater).
- Regulate overdrawing of groundwater by industry legally.
- Reduce particulate matter with electrostatic precipitators, fabric filters, scrubbers and inertial separators on smoke stacks; use oil or gas instead of coal.
- Fit generators with silencers, redesign machinery for energy efficiency and less noise, use noise-absorbing materials and earplugs.

NTPC shows the way

- NTPC, a major power corporation, has ISO 14001 certification for its Environment Management System.
- It preserves natural resources through optimum use of equipment with the latest techniques and upgrading.
- It minimises waste by maximising ash utilisation.
- It provides green belts for ecological balance and promotes afforestation.
- It reduces pollution through ash pond management, ash water recycling and liquid waste management, and runs ecological monitoring and online databases for its power stations.

Classification of Industries at a Glance

Learn one example for each type.

Basis	Types	Examples
Raw materials	Agro-based; mineral-based	Cotton, jute, sugar; iron and steel, cement
Main role	Basic or key; consumer	Iron and steel; toothpaste, fans

Basis	Types	Examples
Capital investment	Small scale (up to Rs 1 crore); large scale	Small units; big plants
Ownership	Public, private, joint, cooperative	BHEL, SAIL; TISCO, Bajaj Auto; Oil India; Maharashtra sugar, Kerala coir
Bulk and weight	Heavy; light	Iron and steel; electrical goods

Location Factors of Major Industries

Use for 3-mark “why located” questions.

Industry	Main centres	Location factors
Cotton textiles	Maharashtra, Gujarat, Tamil Nadu	Raw cotton, market, transport, ports, labour, moist climate
Jute	Hugli basin, West Bengal	Jute areas nearby, cheap water transport, water for processing, cheap labour, Kolkata port and banking
Sugar	UP, Bihar, Maharashtra, Karnataka	Bulky cane loses sucrose; mills near farms; cooperatives in the south and west
Iron and steel	Chotanagpur plateau	Cheap iron ore, high-grade raw materials nearby, cheap labour, home market
Aluminium	Odisha, West Bengal, Kerala, UP	Regular electricity and cheap assured bauxite
Organic chemicals	Near refineries	Petrochemical raw materials
IT and electronics	Bengaluru, Noida, Mumbai, Chennai, Hyderabad, Pune	Skilled workforce, infrastructure, hardware and software growth

Map Work: Industries

Practise locating these on an outline map of India.

- Cotton textile industries: Mumbai, Indore, Surat, Kanpur, Coimbatore
- Iron and steel plants: Durgapur, Bokaro, Jamshedpur, Bhilai, Vijayanagar, Salem
- Software technology parks: Noida, Gandhinagar, Mumbai, Pune, Hyderabad, Bengaluru, Chennai, Thiruvananthapuram

Types of Industrial Pollution and Their Control

Pollution	Causes	Control measures
Air	SO2, CO, smoke and dust from factories, kilns, refineries; gas leaks	Electrostatic precipitators, fabric filters, scrubbers, inertial separators; oil or gas instead of coal
Water	Effluents with dyes, acids, salts, lead, mercury; hot water	Reuse and recycle water, rainwater harvesting, primary-secondary-tertiary treatment
Land	Dumping of glass, chemicals, effluents, garbage	Proper waste disposal, ash utilisation, green belts
Noise	Machinery, generators, saws, drills	Silencers, redesigned machinery, noise-absorbing material, earplugs

Important Definitions and Terms

Term	Meaning
Manufacturing	Production of goods in large quantities after processing raw materials into more valuable products
Secondary sector	Activities that turn primary materials into finished goods
Agro-based industries	Industries using agricultural raw materials
Mineral-based industries	Industries using minerals and metals as raw materials
Basic or key industries	Industries whose products are raw materials for other industries
Consumer industries	Industries producing goods for direct use by consumers
Small scale industry	Industry with maximum investment of Rs 1 crore on assets
Joint sector	Industries run jointly by the state and private individuals
Cooperative sector	Industries owned by producers or suppliers of raw materials, workers or both
Value chain	Stages from raw material to finished high-value product
Thermal pollution	Release of hot water into rivers and ponds before cooling
Electrostatic precipitator	Device that removes particulate matter from factory smoke

Short Answer Questions

Q1. What is manufacturing?

Manufacturing is the production of goods in large quantities after processing raw materials into more valuable products, such as paper from wood, sugar from sugarcane and steel from iron ore.

Q2. What are basic industries? Give an example.

Basic or key industries supply their products as raw materials to manufacture other goods. Examples are iron and steel, copper smelting and aluminium smelting.

Q3. Why is manufacturing considered the backbone of development?

It modernises agriculture, provides jobs outside farming, helps remove unemployment and poverty, reduces regional disparities, earns foreign exchange through exports, and increases prosperity by turning raw materials into higher-value goods.

Q4. How are agriculture and industry interdependent?

Agro-industries depend on agriculture for raw materials such as cotton, jute and sugarcane, and they sell products like irrigation pumps, fertilisers, pesticides, PVC pipes and machines to farmers, increasing farm productivity.

Q5. Why is the textile industry unique in India?

It contributes significantly to industrial production, employment and foreign exchange, and it is the only industry that is self-reliant and complete in the value chain from raw material to the highest value-added products.

Cane there has higher sucrose content, the cooler climate gives a longer crushing season, and cooperatives are more successful in states like Maharashtra.

Q7. Why is the Chotanagpur plateau the main centre of the iron and steel industry?

It has low-cost iron ore, high-grade raw materials like coal and limestone nearby, cheap labour and a vast home market with growth potential.

Q8. What are the prime factors for locating aluminium smelting plants?

Regular supply of electricity and an assured source of bauxite at minimum cost are the two prime factors.

Long Answer Questions

Q1. How do industries pollute the environment?

Air pollution: gases like sulphur dioxide and carbon monoxide and smoke and dust from chemical and paper factories, brick kilns, refineries and smelters; gas leaks like the Bhopal tragedy.

Water pollution: effluents from paper, chemical, textile, dyeing, refineries, tanneries and electroplating industries release dyes, acids, salts and heavy metals like lead and mercury.

Thermal pollution: hot water from factories and thermal plants harms aquatic life; nuclear wastes cause cancers and birth defects.

Land pollution: dumping of glass, chemicals and garbage makes soil useless and pollutes groundwater.

Noise pollution: machinery and generators cause stress, hearing loss and high blood pressure.

Q2. Discuss the steps to be taken to minimise environmental degradation by industry.

Reuse and recycle water in successive stages and harvest rainwater.

Treat hot water and effluents through primary, secondary and tertiary treatment before release.

Legally regulate overdrawing of groundwater.

Fit smoke stacks with electrostatic precipitators, fabric filters, scrubbers and inertial separators; use oil or gas instead of coal.

Fit generators with silencers, redesign machinery for less noise and use earplugs.

Follow NTPC’s example: latest techniques, ash utilisation, green belts, ash pond management and ecological monitoring.

Q3. Explain the factors responsible for the location of the jute industry in the Hugli basin.

Nearness to jute-producing areas of West Bengal.

Inexpensive water transport supported by railways, roadways and waterways.

Abundant water for processing raw jute.

Cheap labour from West Bengal and nearby Bihar, Odisha and Uttar Pradesh.

Kolkata provides banking, insurance and port facilities for exports.

MCQs with Answers

1. Which industry uses bauxite as a raw material?(a) Aluminium smelting (b) Cement (c) Paper (d) SteelAnswer: (a) Aluminium smelting

2. Which industry manufactures telephones and computers?(a) Steel (b) Electronic (c) Aluminium smelting (d) Information technologyAnswer: (b) Electronic

3. The first successful textile mill was established in Mumbai in(a) 1854 (b) 1855 (c) 1904 (d) 1947Answer: (a) 1854

4. The first jute mill was set up at Rishra in(a) 1854 (b) 1855 (c) 1904 (d) 1950Answer: (b) 1855

5. Iron ore, coking coal and limestone are required in the ratio of(a) 1 : 2 : 4 (b) 4 : 2 : 1 (c) 2 : 4 : 1 (d) 4 : 1 : 2Answer: (b) 4 : 2 : 1

6. Which of these is a joint sector industry?(a) SAIL (b) TISCO (c) Oil India Ltd (d) DaburAnswer: (c) Oil India Ltd

7. Which fertiliser component is entirely imported by India?(a) Nitrogen (b) Phosphate (c) Potash (d) UreaAnswer: (c) Potash

8. The first cement plant in India was set up in Chennai in(a) 1854 (b) 1904 (c) 1947 (d) 1950Answer: (b) 1904

9. Which city is called the electronic capital of India?(a) Hyderabad (b) Pune (c) Bengaluru (d) NoidaAnswer: (c) Bengaluru

10. Every litre of industrial waste water pollutes how many times the quantity of freshwater?(a) Two (b) Four (c) Eight (d) TenAnswer: (c) Eight

Quick Revision Points

- Manufacturing: raw materials processed into more valuable products; secondary sector.
- Importance: modernises agriculture, jobs, removes poverty, reduces disparities, exports, prosperity.
- Classification: raw material, role, capital (small scale up to Rs 1 crore), ownership, bulk.
- Ownership examples: BHEL, SAIL (public); TISCO, Bajaj, Dabur (private); Oil India (joint); Maharashtra sugar, Kerala coir (cooperative).
- Textiles: only industry complete in value chain; first mill Mumbai 1854.
- Spinning centralised (Maharashtra, Gujarat, TN); weaving decentralised.
- Jute: Hugli basin; Rishra 1855; India largest producer, second exporter.
- Sugar: second in sugar, first in gur and khandsari; 60% mills in UP and Bihar; shifting to Maharashtra.
- Iron and steel: basic industry; 4:2:1; Chotanagpur.
- Aluminium: electricity and bauxite are prime location factors.
- Chemicals: own largest consumer; potash fully imported.
- Cement: Chennai 1904; Gujarat plants serve Gulf markets.
- IT: Bengaluru electronic capital.

- Pollution: air, water, thermal, land, noise.
- 1 litre waste water pollutes 8 litres freshwater; treatment: primary, secondary, tertiary.
- NTPC: ISO 14001, ash utilisation, green belts.

Chapter Summary

Manufacturing transforms raw materials into higher-value goods and is the backbone of economic development, creating jobs, reducing poverty and regional disparities, earning foreign exchange and supporting agriculture. Industries are classified by raw materials, main role, capital investment, ownership and bulk.

India’s major industries include cotton and jute textiles, sugar, iron and steel, aluminium, chemicals, fertilisers, cement, automobiles and IT and electronics, each located according to raw materials, power, labour, transport and markets. Industries also cause air, water, thermal, land and noise pollution, which can be controlled through recycling water, effluent treatment, cleaner fuels, pollution control devices and examples like NTPC’s environment management.

Exam Tips and PYQ Pattern

- Learn the classification of industries with examples; it is asked almost every year.
- Location factors of jute, sugar, iron and steel and aluminium are favourite 3-mark questions.
- Long questions: how industries pollute the environment and how to control it.
- Map work: cotton textile centres, iron and steel plants and software technology parks.
- NCERT MCQs: bauxite for aluminium smelting and the electronic industry for telephones and computers.

Frequently Asked Questions

What is manufacturing?

The production of goods in large quantities after processing raw materials into more valuable products.

What are the types of industries based on ownership?

Public sector, private sector, joint sector and cooperative sector industries.

Why is the iron and steel industry called a basic industry?

Because all other industries depend on it for their machinery and equipment.

Is Manufacturing Industries in the 2026-27 syllabus?

Yes, it is Chapter 6 of the Class 10 Geography book for 2026-27, with map work.

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Conclusion

Manufacturing Industries explains how industries drive India’s development and why growth

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Author Bio: Written and reviewed by the Nextoper Editorial Team, a group of CBSE social science educators who build chapter notes directly from the NCERT textbook and past board paper patterns.

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