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Teacher: OM SIKARWAR

Class 10 | Geography

Contemporary India – II

Chapter 6

Manufacturing Industries



■ COMPREHENSIVE QUESTION BANK

English Medium | NCERT Based

Section	Type	Marks	Qty
A	Multiple Choice Questions (MCQ)	1 mark each	20
B	Fill in the Blanks	1 mark each	10
C	Frequently Asked Questions (FAQ)	2–3 marks	20
D	Matching	1 mark each	10
E	Short Answer Type Questions	3 marks each	10
F	Long Answer Type Questions	5 marks each	7
G	NCERT Book Exercises (All Solved)	—	All

■ SECTION A — Multiple Choice Questions (MCQs)

Choose the correct option. Each question carries 1 mark.

Q1. Which one of the following is the correct definition of manufacturing?

- (a) Growing crops in fields
- (b) Converting raw materials into finished valuable goods
- (c) Trading goods between states
- (d) Extracting minerals from mines

✓ **Answer:** (b) Converting raw materials into finished valuable goods

Q2. Which industry is called the 'backbone of modern industry'?

- (a) Cotton Textile Industry
- (b) Sugar Industry
- (c) Iron and Steel Industry
- (d) IT Industry

✓ **Answer:** (c) Iron and Steel Industry

Q3. The first cotton textile mill in India was established in the year:

- (a) 1818
- (b) 1854
- (c) 1900
- (d) 1947

✓ **Answer:** (b) 1854

Q4. Which fibre is known as the 'Golden Fibre'?

- (a) Silk
- (b) Cotton
- (c) Jute
- (d) Wool

✓ **Answer:** (c) Jute

Q5. India is the _____ largest producer of sugar in the world.

- (a) First
- (b) Second
- (c) Third
- (d) Fourth

✓ **Answer:** (b) Second

Q6. Which one of the following is the raw material for aluminium smelting?

- (a) Iron ore
- (b) Limestone
- (c) Bauxite
- (d) Coal

✓ **Answer:** (c) Bauxite

Q7. The first jute mill in India was set up at:

- (a) Kolkata
- (b) Rishra (near Kolkata)
- (c) Dhaka
- (d) Murshidabad

✓ Answer: (b) Rishra (near Kolkata)

Q8. TISCO (Tata Iron and Steel Company) is located at:

- (a) Bhilai
- (b) Bokaro
- (c) Jamshedpur
- (d) Rourkela

✓ Answer: (c) Jamshedpur

Q9. Which city is known as the 'Electronic Capital of India'?

- (a) Pune
- (b) Chennai
- (c) Hyderabad
- (d) Bengaluru

✓ Answer: (d) Bengaluru

Q10. The first cement plant in India was established in 1904 at:

- (a) Mumbai
- (b) Kolkata
- (c) Chennai
- (d) Ahmedabad

✓ Answer: (c) Chennai

Q11. Which of the following is an agro-based industry?

- (a) Iron and Steel
- (b) Cement
- (c) Sugar
- (d) Aluminium

✓ Answer: (c) Sugar

Q12. BHEL is an example of which sector?

- (a) Private Sector
- (b) Public Sector
- (c) Joint Sector
- (d) Cooperative Sector

✓ Answer: (b) Public Sector

Q13. Which region has the maximum concentration of Iron and Steel plants in India?

- (a) Indo-Gangetic Plain
- (b) Chhotanagpur Plateau
- (c) Deccan Plateau
- (d) Eastern Coastal Plain

✓ Answer: (b) Chhotanagpur Plateau

Q14. What type of pollution is caused when hot water from factories is released into rivers?

- (a) Air Pollution
- (b) Noise Pollution
- (c) Thermal Pollution
- (d) Soil Pollution

✓ **Answer:** (c) Thermal Pollution

Q15. Which one of the following has received ISO 14001 certification for environmental management?

- (a) SAIL
- (b) NTPC
- (c) BHEL
- (d) TISCO

✓ **Answer:** (b) NTPC

Q16. In which year did India liberalise its automobile sector, leading to a major boom?

- (a) 1980
- (b) 1984
- (c) 1991
- (d) 2000

✓ **Answer:** (c) 1991

Q17. Which cooperative sector is famous for sugar production?

- (a) Uttar Pradesh
- (b) Bihar
- (c) Maharashtra
- (d) Tamil Nadu

✓ **Answer:** (c) Maharashtra

Q18. Potash required for fertilizer industry in India is:

- (a) Produced entirely in Gujarat
- (b) 100% imported
- (c) Found in Rajasthan
- (d) Extracted from the sea

✓ **Answer:** (b) 100% imported

Q19. Which of the following is a mineral-based industry?

- (a) Sugar Industry
- (b) Cotton Textile Industry
- (c) Jute Industry
- (d) Cement Industry

✓ **Answer:** (d) Cement Industry

Q20. The ratio of raw materials used in Iron and Steel manufacturing (iron ore : coking coal : limestone) is:

- (a) 2:4:1
- (b) 4:2:1

(c) 1:2:4

(d) 3:2:1

✓ **Answer:** (b) 4:2:1

■ SECTION B — Fill in the Blanks

Fill in the blanks with the most appropriate word/phrase. Each carries 1 mark.

Q1. Manufacturing is the process of converting _____ materials into _____ goods.

✓ Answer: raw / finished (valuable)

Q2. The first successful textile mill was established in _____ in the year 1854.

✓ Answer: Mumbai (Bombay)

Q3. India is the largest producer of _____ jute in the world.

✓ Answer: raw

Q4. Iron and Steel is called the _____ of all industries.

✓ Answer: 'Mother'

Q5. _____ is known as the Electronic Capital of India.

✓ Answer: Bengaluru

Q6. 4 to 6 tonnes of _____ is required to produce one tonne of aluminium.

✓ Answer: bauxite

Q7. The automobile industry in India got a major boost after the liberalisation policy of _____.

✓ Answer: 1991

Q8. _____ is an example of a public sector steel plant located in Chhattisgarh.

✓ Answer: Bhilai Steel Plant (SAIL)

Q9. Factories release _____ dioxide and carbon monoxide, causing air pollution.

✓ Answer: sulphur

Q10. NTPC has received _____ certification for its proactive environmental management approach.

✓ Answer: ISO 14001

■ SECTION C — Frequently Asked Questions (FAQ)

Each question carries 2–3 marks.

Q1. What is manufacturing? Give two examples.

Answer: Manufacturing is the process of converting raw materials into finished valuable goods using machines and labour in large quantities. Example: Sugar from sugarcane, Steel from iron ore.

Q2. Why is manufacturing called the backbone of a nation's economy?

Answer: Manufacturing creates employment, earns foreign exchange through exports, reduces dependence on imports, modernises agriculture, and removes regional disparities — making it the backbone of economic development.

Q3. What are agro-based industries? Give two examples.

Answer: Industries that use agricultural products as their raw material are called agro-based industries. Examples: Cotton Textile Industry (uses raw cotton), Sugar Industry (uses sugarcane).

Q4. What are mineral-based industries? Give two examples.

Answer: Industries that use minerals as raw materials are called mineral-based industries. Examples: Iron & Steel Industry (uses iron ore, coal, limestone), Cement Industry (uses limestone, silica, alumina).

Q5. Distinguish between basic industries and consumer industries.

Answer: Basic industries supply their products as raw materials to other industries (e.g., Iron & Steel supplies steel to automobile industry). Consumer industries produce goods directly for consumers (e.g., Sugar, Toothpaste, Paper).

Q6. Why was Mumbai the first city to have a successful cotton textile mill?

Answer: Mumbai had: (i) proximity to cotton-growing areas of Maharashtra & Gujarat, (ii) moist climate for spinning, (iii) good transport connections, (iv) a port for importing machinery and exporting cloth, and (v) available labour.

Q7. Why are jute mills concentrated along the Hooghly river in West Bengal?

Answer: Because: (i) jute grows in the Ganga delta nearby, (ii) water is available for processing, (iii) cheap labour from Bihar, UP, Odisha, (iv) Kolkata port for exports, and (v) banking and insurance facilities exist.

Q8. Why is the sugar industry shifting from North India to South India?

Answer: Because: (i) sucrose content in sugarcane is higher in South India, (ii) South Indian climate is cooler allowing longer crushing season, (iii) Maharashtra sugar cooperatives are more efficient.

Q9. What is the importance of Iron and Steel industry?

Answer: Iron and Steel is the 'mother of all industries' as it supplies raw material (steel) to build machines, tools, railways, automobiles, buildings, ships — essentially supporting every other industry. Steel production is an index of a nation's development.

Q10. Name the major Iron and Steel plants in India and their locations.

Answer: 1. TISCO — Jamshedpur (Private), 2. SAIL/Bhilai — Chhattisgarh (Public), 3. Durgapur — West Bengal, 4. Bokaro — Jharkhand, 5. Rourkela — Odisha, 6. Vijayanagar — Karnataka, 7. Salem — Tamil Nadu.

Q11. Why does the aluminium smelting industry require regular electricity supply?

Answer: Aluminium smelting requires electrolysis, a process that needs continuous and large amounts of electricity. Any interruption damages the smelting pots and disrupts production, making a reliable power supply essential.

Q12. What are the main products of the chemical industry?

Answer: Inorganic chemicals: Sulphuric acid, Nitric acid, Alkalies, Soda ash — used in fertilisers, glass, soaps. Organic chemicals: Petrochemicals, synthetic fibres, plastics, dyes — produced near oil refineries.

Q13. What are Software Technology Parks (STPs)?

Answer: Software Technology Parks (STPs) are special zones established in major Indian cities for IT companies. They provide infrastructure, high-speed data connectivity, and tax benefits to promote software exports. Major STPs are in Bengaluru, Noida, Chennai, Hyderabad, Pune, Mumbai.

Q14. Name the four types of industrial pollution and give one cause for each.

Answer: 1. Air Pollution — Sulphur dioxide from refineries/brick kilns. 2. Water Pollution — Toxic dyes/heavy metals from textile/tannery industry. 3. Thermal Pollution — Hot water released by factories into rivers. 4. Noise Pollution — Machinery and generators in factories.

Q15. What is the significance of cooperative sector in Indian industry? Give an example.

Answer: Cooperative sector industries are owned and managed jointly by workers or producers. They distribute profits among members and are democratic. Example: Maharashtra's sugar cooperatives are among the most successful in India.

Q16. How does manufacturing help in reducing unemployment?

Answer: Manufacturing industries create direct employment in factories (secondary sector) and indirect employment in transport, trade, banking, and services (tertiary sector), thereby reducing unemployment and poverty.

Q17. What steps can be taken to control water pollution caused by industries?

Answer: Steps: (i) Minimise water use and recycle in 2 stages. (ii) Treat hot effluents before discharge. (iii) Primary treatment (mechanical — screening, grinding). (iv) Secondary treatment (biological process). (v) Tertiary treatment (biological + chemical + physical — recycled wastewater).

Q18. How does the automobile industry contribute to India's economy?

Answer: It: (i) provides large-scale employment, (ii) earns foreign exchange through exports of vehicles and parts, (iii) supports ancillary industries (tyres, glass, paint), (iv) has grown rapidly since 1991 liberalisation with foreign collaborations.

Q19. What is meant by 'joint sector' in Indian industries? Give an example.

Answer: Joint sector refers to industries owned and operated jointly by the government (public sector) and private individuals/companies. Example: Oil India Ltd (OIL) is a joint sector enterprise.

Q20. How do electrostatic precipitators help in controlling air pollution?

Answer: Electrostatic precipitators are devices fitted in factory chimneys/smoke stacks. They use electric charge to attract and collect airborne dust particles and smoke, preventing them from being released into the atmosphere — thus reducing air pollution significantly.

■ SECTION D — Matching Questions

Match Column A with Column B. Each correct match carries 1 mark.

Column A	Column B
1. TISCO	A. Electronic Capital of India
2. Jute — Golden Fibre	B. Aluminium Smelting raw material
3. Bengaluru	C. Iron & Steel cluster region
4. Bhilai Steel Plant	D. Mumbai (Bombay)
5. First cotton mill (1854)	E. Public Sector Steel Plant, Chhattisgarh
6. Bauxite	F. Private Sector, Jamshedpur
7. Sugar Industry (Cooperative)	G. Environmental certification — NTPC
8. ISO 14001	H. Maharashtra
9. First Jute Mill (1855)	I. Used for gunny bags, carpet backing
10. Chhotanagpur Plateau	J. Rishra, near Kolkata

Answer Key: 1 → F | 2 → I | 3 → A | 4 → E | 5 → D | 6 → B | 7 → H | 8 → G | 9 → J | 10 → C

■ SECTION E — Short Answer Type Questions

Answer each question in 3–5 sentences. Each carries 3 marks.

Q1. Explain any three reasons why manufacturing industries are important for India.

1. Modernises Agriculture: Manufacturing provides tractors, pumps, fertilisers and irrigation equipment that modernise farming.
2. Reduces Unemployment: Industries create jobs in the secondary (factory workers) and tertiary (transport, banking) sectors.
3. Earns Foreign Exchange: Exported manufactured goods earn foreign currency (dollars), strengthening India's economy.
4. Reduces Regional Disparities: Setting up industries in backward and tribal areas helps develop those regions.
5. Self-Reliance: Manufacturing reduces dependence on imported goods, promoting *aatmanirbharta*.

Q2. What is the difference between public sector and private sector industries? Give one example of each.

Public Sector Industries are owned, managed, and financed by the government. They aim at public welfare, not just profit. Example: BHEL, SAIL, NTPC.

Private Sector Industries are owned and managed by private individuals or companies. They are profit-oriented. Example: TISCO (Tata Iron & Steel), Bajaj Auto, Dabur.

Key Difference: Ownership — Government (Public) vs Individuals/Companies (Private).

Q3. Describe the factors that favour the location of jute mills along the Hooghly river basin.

1. Proximity to Raw Material: Jute grows abundantly in the Ganga-Brahmaputra delta (West Bengal, Assam).
2. Water Supply: Hooghly river provides water for retting and processing jute.
3. Cheap Labour: Workers migrate from Bihar, UP, Odisha for low-cost labour supply.
4. Kolkata Port: Facilitates easy export of jute products to international markets.
5. Banking & Insurance: Kolkata's financial services support industrial operations.

Q4. Why is Iron and Steel called the 'mother of all industries'?

Iron and Steel is called the 'mother of all industries' because it provides the basic raw material — steel — for all other industries.

Machines, tools, ships, railways, automobiles, construction equipment, bridges — all require steel.

Without Iron & Steel industry, no other heavy, medium, or light industry can function.

Therefore, the level of steel production and consumption is considered an index of a country's development.

Q5. Explain the role of the IT and Electronics industry in India's economy.

1. Employment: IT sector employs millions in software development, BPO, hardware manufacturing.
 2. Foreign Exchange: India is a major exporter of software services, earning huge foreign exchange.
 3. Innovation Hub: Cities like Bengaluru (Electronic Capital), Noida, Hyderabad are global tech hubs.
 4. Infrastructure: Software Technology Parks (STPs) provide world-class facilities.
 5. Inclusive Growth: IT enables people from small towns to work in global companies.
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Q6. What measures can industries adopt to control noise pollution?

1. Fit Silencers: Generators and compressors should have noise silencers and sound-proof enclosures.
 2. Use Earplugs/Earphones: Workers in high-noise zones must be provided with protective earplugs or earphones.
 3. Proper Maintenance: Regular maintenance of machinery reduces noise from worn-out or loose parts.
 4. Plant Trees: Planting trees around factory boundaries acts as a natural sound barrier.
 5. Time Restrictions: Noisy operations should be restricted to daytime hours to minimise disturbance.
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Q7. Explain the shift of sugar industry from North India to South India.

Traditionally, 60% of India's sugar mills were in Uttar Pradesh and Bihar (North India) due to large sugarcane cultivation.

However, sugar mills are now shifting southward (Maharashtra, Karnataka, Tamil Nadu) because:

1. Higher Sucrose Content: South Indian sugarcane varieties contain higher sucrose (sugar content).
2. Longer Crushing Season: Cooler South Indian climate allows mills to operate for a longer period.
3. Efficient Cooperatives: Maharashtra's cooperative sugar mills are better managed and more profitable.

This makes South India more economically viable for sugar production.

Q8. What are the main steps in tertiary water treatment in industries?

Tertiary treatment is the most advanced level of industrial wastewater treatment, involving three processes:

1. Biological Process: Microorganisms break down organic waste matter.
2. Chemical Treatment: Chemicals are added to remove dissolved pollutants, heavy metals, and phosphates.
3. Physical Process: Filtration and other physical processes further purify the water.

After tertiary treatment, the water is clean enough to be recycled back into the production process or safely released into water bodies, conserving water and preventing water pollution.

Q9. Distinguish between heavy industry and light industry with one example each.

Heavy Industry:

- Uses heavy and bulky raw materials and produces heavy products.
- Requires large capital investment and heavy machinery.
- Example: Iron and Steel Industry — uses iron ore, coal, limestone; produces steel plates, rails, girders.

Light Industry:

- Uses light raw materials and produces lighter finished goods.
 - Requires relatively less capital and smaller machinery.
 - Example: Electric Bulbs, Sewing Machines, Electronic goods — use light inputs and produce consumer goods.
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Q10. What are the major automobile manufacturing centres in India? Why did the automobile industry grow rapidly after 1991?

Major Automobile Centres: Delhi, Gurugram, Mumbai, Pune, Chennai, Kolkata, Lucknow, Indore, Hyderabad, Jamshedpur, Bengaluru.

Reasons for Rapid Growth after 1991 Liberalisation:

1. Foreign Collaboration: International automobile companies (Suzuki, Hyundai, Honda) entered India, bringing technology and new models.
 2. Rising Purchasing Power: Economic growth increased incomes, raising demand for vehicles.
 3. Improved Roads: Better road infrastructure encouraged vehicle ownership.
 4. Easy Finance: Availability of car loans made vehicles affordable for the middle class.
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■ SECTION F — Long Answer Type Questions

Answer each question in 8–12 sentences. Each carries 5 marks.

Q1. Explain in detail the classification of industries in India on the basis of raw materials, capital investment, and ownership.

Industries in India are classified on several bases:

1. ON THE BASIS OF RAW MATERIALS:

- Agro-based Industries: Use agricultural products as raw material. Examples: Cotton textiles (raw cotton), Sugar (sugarcane), Jute industry (jute), Silk industry (silk cocoons), Edible oil industry (oilseeds).
- Mineral-based Industries: Use minerals as raw material. Examples: Iron & Steel (iron ore, coal), Cement (limestone), Aluminium (bauxite).

2. ON THE BASIS OF ROLE:

- Basic/Key Industries: Supply raw materials to other industries. Example: Iron & Steel supplies to automobile, construction, machinery industries.
- Consumer Industries: Produce goods for direct consumer use. Example: Sugar, Paper, Toothpaste, Sewing machines.

3. ON THE BASIS OF CAPITAL INVESTMENT:

- Heavy Industries: Use heavy raw materials, produce heavy goods. Example: Iron & Steel, Shipbuilding.
- Light Industries: Use light raw materials, produce lighter goods. Example: Electric bulbs, Electronics, Watches.

4. ON THE BASIS OF OWNERSHIP:

- Public Sector: Government-owned. Example: BHEL, SAIL, NTPC.
- Private Sector: Privately owned. Example: TISCO, Bajaj Auto, Dabur.
- Joint Sector: Govt + Private. Example: Oil India Ltd (OIL).
- Cooperative Sector: Owned by workers/producers. Example: Maharashtra's sugar cooperatives.

This classification helps in planning industrial policy, identifying gaps, and promoting balanced economic growth.

Q2. Describe the Cotton Textile Industry in India. Why is it one of the most important industries?

Cotton Textile Industry is one of India's oldest and most important manufacturing sectors.

HISTORY: India had a rich tradition of hand-woven cotton since ancient times. The first successful power-driven cotton mill was established in Mumbai in 1854, marking the beginning of the modern textile era.

IMPORTANCE:

- India's second largest employer after agriculture.
- Earns significant foreign exchange through exports of cotton cloth, yarn, and garments.
- Supports cottage and handloom industries — Khadi (hand-spun fabric promoted by Mahatma Gandhi) provides rural employment.

LOCATION OF SPINNING: Centralised in Maharashtra, Gujarat, and Tamil Nadu due to:

(i) Proximity to cotton-growing belts, (ii) Moist climate ideal for spinning, (iii) Skilled labour, (iv) Good transport and port facilities.

LOCATION OF WEAVING: Decentralised — spread across India through cottage industries to preserve traditional designs (e.g., Banarasi silk in Varanasi, Kanjeevaram silk in Tamil Nadu).

CHALLENGES: India faces competition from synthetic fibres and cheap imports. Power shortages and outdated machinery are also problems.

SPECIAL PRODUCTS: Banarasi Silk (UP), Ludhiana Woolens (Punjab), Mysuru Silk (Karnataka), Pochampalli (Andhra Pradesh).

Despite challenges, Cotton Textile Industry remains the backbone of India's export economy and rural employment.

Q3. Discuss the Iron and Steel Industry in India — its raw materials, major plants, and significance.

Iron and Steel Industry is called the 'Mother of all Industries' and is a key indicator of a nation's economic development.

RAW MATERIALS NEEDED:

- Iron ore (main ingredient), Coking coal (for smelting), Limestone (flux to remove impurities).
- Ratio required: 4 tonnes iron ore : 2 tonnes coking coal : 1 tonne limestone.
- Water and cheap electricity are also needed.

LOCATION: Due to heavy raw materials, plants are located in raw material zones:

- Chhotanagpur Plateau region (Jharkhand, Odisha, West Bengal, Chhattisgarh) — India's most concentrated Iron & Steel belt.

MAJOR STEEL PLANTS:

1. TISCO — Jamshedpur (Jharkhand) — Private Sector (Tata Group)
2. Bhilai Steel Plant — Chhattisgarh — Public Sector (SAIL)
3. Durgapur — West Bengal — Public Sector
4. Bokaro — Jharkhand — Public Sector
5. Rourkela — Odisha — Public Sector
6. Vijayanagar — Karnataka
7. Salem — Tamil Nadu
8. Vishakhapatnam — Andhra Pradesh

SIGNIFICANCE:

- Provides steel for railways, ships, automobiles, bridges, buildings, machines.
- Supports national defence (tanks, weapons).
- Steel production level = Index of a country's development.

CHALLENGES: India's steel production cost is higher than China; energy costs are high; technology needs upgrading.

India is among the top steel-producing nations globally, with ambitious plans to expand capacity further.

Q4. How do industries cause environmental degradation? What steps can be taken to minimise this?

Industries contribute enormously to India's GDP but also cause serious environmental damage.

TYPES OF ENVIRONMENTAL DEGRADATION:

1. AIR POLLUTION:

- Chemical factories, brick kilns, oil refineries, and smelting units emit sulphur dioxide, carbon monoxide, nitrogen oxides, and particulate matter.
- This causes respiratory diseases, acid rain, and smog.
- The Bhopal Gas Tragedy (1984) is a grim reminder of industrial air pollution disasters.

2. WATER POLLUTION:

- Paper, pulp, textile, tannery, and chemical industries discharge organic and inorganic wastes, heavy metals (lead, mercury), dyes into rivers.
- This kills aquatic life and contaminates drinking water.

3. THERMAL POLLUTION:

- Power plants and factories release hot water into rivers and ponds.
- Increased water temperature reduces dissolved oxygen, killing fish and aquatic organisms.

4. NOISE POLLUTION:

- Factory machinery, generators, electric drills create excessive noise.
- This causes hearing impairment, stress, increased blood pressure among workers.

CONTROL MEASURES:

- Water: Minimise use; recycle in 2 stages; primary (mechanical), secondary (biological), tertiary (chemical + physical) treatment.
- Air: Install electrostatic precipitators, fabric filters, scrubbers in chimneys; use oil/gas instead of coal.
- Noise: Fit silencers on machinery; provide earplugs to workers.
- Rainwater harvesting to reduce freshwater demand.

MODEL EXAMPLE: NTPC has obtained ISO 14001 certification and follows a comprehensive environmental management system including ash pond management, liquid waste management, and oil/gas conservation.

Industrial growth and environmental protection must go hand in hand for sustainable development.

Q5. Describe the Jute Industry in India — its importance, location factors, and challenges.

Jute Industry is one of India's oldest agro-based industries, centred in the Hooghly river basin of West Bengal.

IMPORTANCE OF JUTE:

- Jute is called the 'Golden Fibre' due to its golden sheen and immense economic value.
- Used for: Gunny bags, hessian cloth, carpet backing, ropes, packaging material.
- It is a natural, biodegradable fibre — environment-friendly.
- India is the world's largest producer of raw jute and the second-largest exporter (after Bangladesh).

HISTORY:

- First jute mill established in 1855 at Rishra, near Kolkata.
- After India's Partition (1947), jute-producing areas went to East Pakistan (now Bangladesh), but mills remained in India.

LOCATION FACTORS — WHY HOOGHLY BASIN?

1. Raw Material: Jute grows in the moist Ganga-Brahmaputra delta.
2. Water: Hooghly river provides water for retting (softening) jute fibres.
3. Cheap Labour: Workers from Bihar, UP, Odisha migrate for employment.
4. Kolkata Port: Facilitates easy export of jute products internationally.
5. Banking, Insurance, and Financial Services: Well-developed in Kolkata.

CHALLENGES:

- Competition from synthetic substitutes (nylon, polypropylene).
- Raw jute supply depends on monsoon, causing price fluctuations.
- Old machinery needs modernisation.
- Bangladesh competes strongly in global jute markets.

PROSPECTS: With the global trend towards eco-friendly and biodegradable materials, jute is regaining popularity. Government support through 'Jute-ICARE' programme helps farmers and the industry.

Q6. Explain the role of manufacturing industries in reducing regional disparities and promoting economic growth in India.

Manufacturing industries play a crucial role in balanced regional development and overall economic growth in India.

1. EMPLOYMENT GENERATION:

- Direct employment in factories (secondary sector) for lakhs of workers.
- Indirect employment in transport, trade, banking, construction, services (tertiary sector).
- Example: An automobile plant employs workers directly and indirectly supports thousands more in ancillary industries.

2. REDUCING REGIONAL DISPARITIES:

- Setting up industries in backward, tribal, and rural areas brings economic activity and development.
- Example: Bokaro Steel Plant developed Jharkhand; Bhilai developed Chhattisgarh.
- Special Economic Zones (SEZs) in underdeveloped regions attract investment.

3. AGRICULTURAL MODERNISATION:

- Manufacturing produces tractors, irrigation pumps, chemical fertilisers, pesticides — transforming traditional farming.
- This increases agricultural productivity and farm incomes.

4. FOREIGN EXCHANGE EARNINGS:

- Exports of textiles, steel, automobiles, software, chemicals earn billions in foreign exchange.
- Strengthens India's Balance of Payments and rupee value.

5. SELF-RELIANCE (ATMANIRBHARTA):

- Domestic manufacturing reduces import dependence.
- 'Make in India' initiative promotes local manufacturing of electronics, defence equipment, pharmaceuticals.

6. URBAN DEVELOPMENT:

- Industrial centres like Jamshedpur, Bhilai, Noida, Pune grew into major cities around industries.
- Housing, schools, hospitals, roads develop along with industries.

Thus, manufacturing is the engine of India's economic development, transforming raw materials into both material wealth and human prosperity.

Q7. Discuss the IT and Electronics Industry in India — its growth, major centres, and significance.

The Information Technology (IT) and Electronics Industry is one of India's fastest-growing and most important sectors.

PRODUCTS MANUFACTURED:

- Electronics: Transistors, television sets, telephones, cellular equipment, radar systems, computers.
- IT Services: Software development, business process outsourcing (BPO), data analytics, cloud computing.

GROWTH AND HISTORY:

- India's IT industry began modestly in the 1980s and exploded after the 1991 liberalisation.
- Software Technology Parks (STPs) established across major cities provided infrastructure and tax incentives.
- Today India is a global IT superpower — one of the largest software exporters in the world.

MAJOR CENTRES:

1. Bengaluru — 'Electronic Capital of India' and 'Silicon Valley of India'.
2. Noida — Major IT/BPO hub near Delhi.
3. Mumbai — Financial and IT convergence hub.
4. Chennai — Electronics manufacturing and software.
5. Hyderabad — 'Cyberabad' — major software hub.
6. Pune — Software and hardware manufacturing.

SIGNIFICANCE:

- Employs millions of educated youth — reducing graduate unemployment.
- Earns massive foreign exchange — IT services exports exceed \$200 billion annually.
- Transforms India's global image as a knowledge economy.
- Enables digital governance, e-commerce, and digital payments across India.
- Attracts multinational companies — Google, Microsoft, Amazon, Infosys, TCS, Wipro all operate globally.

CHALLENGES: Brain drain (emigration of skilled workers), rising competition from other countries (Philippines, China), need for more hardware manufacturing.

India's IT revolution has demonstrated that manufacturing (of knowledge and software) can transform a developing nation into a global economic powerhouse.

■ SECTION G — NCERT Book Exercises (All Solved)

All NCERT textbook exercises solved with detailed answers.

► Part 1: Multiple Choice Questions (MCQs)

Q1. Which one of the following industries uses bauxite as a raw material?

(a) Aluminium Smelting (b) Cement (c) Paper (d) Steel

✓ **Answer:** (a) Aluminium Smelting — Bauxite is the primary ore from which aluminium is extracted. 4-6 tonnes of bauxite yields 1 tonne of aluminium.

Q2. Which one of the following industries manufactures telephones, computer, etc.?

(a) Steel (b) Electronic (c) Aluminium Smelting (d) Information Technology

✓ **Answer:** (b) Electronic — The Electronics industry manufactures all electronic devices including telephones, computers, televisions, radar equipment, and transistors.

► Part 2: Short Answer Questions (30 words)

Q1. What is manufacturing?

✓ **Answer:** Manufacturing is the process of converting raw materials into finished valuable products on a large scale using machines, labour, and capital. Examples: paper from wood, sugar from sugarcane, steel from iron ore, aluminium from bauxite.

Q2. What are basic industries? Give an example.

✓ **Answer:** Basic industries (also called key industries) are those that supply their products as raw materials to manufacture other goods. They form the foundation of industrial activity. Example: Iron and Steel Industry — supplies steel used in manufacturing machinery, automobiles, railways, buildings, and tools.

► Part 3: Long Answer Questions

Q1. How do industries pollute the environment?

Industries cause four major types of environmental pollution:

1. **AIR POLLUTION:** Chemical factories, brick kilns, oil refineries, foundries, and mining operations release harmful gases — sulphur dioxide, carbon monoxide, nitrogen oxides — and airborne dust particles into the atmosphere. These cause respiratory diseases, acid rain, and global warming. The Bhopal Gas Tragedy (1984) is a stark reminder of what industrial air pollution disasters can do.
2. **WATER POLLUTION:** Industries dump organic and inorganic wastes, toxic chemicals, dyes, heavy metals (lead, mercury, arsenic), synthetic chemicals, and effluents into rivers, lakes, and groundwater. Paper/pulp mills, textile factories, leather tanneries, and chemical plants are major contributors. This kills aquatic life and makes water unsafe for drinking and irrigation.
3. **THERMAL POLLUTION:** Thermal power plants and industries use river/lake water for cooling and release it back at higher temperatures. This reduces dissolved oxygen in water, disrupts aquatic ecosystems, and can kill fish and other marine organisms.
4. **NOISE POLLUTION:** Factory machinery (looms, generators, furnaces, compressors, electric drills) produce excessive decibel levels of noise. This causes permanent hearing loss, psychological stress, sleep disturbances, and increased blood pressure among factory workers and nearby residents.

Q2. What steps can be taken to minimise environmental degradation caused by industry?

Several measures can be adopted to control and minimise industrial environmental degradation:

WATER POLLUTION CONTROL:

- Minimise freshwater use in production processes and aim for zero liquid discharge.
- Recycle industrial water in at least 2 stages before disposing.
- Treat hot effluents in cooling tanks before releasing into water bodies.
- Primary Treatment (Mechanical): Screening, sedimentation, and grinding to remove solid waste.
- Secondary Treatment (Biological): Using microorganisms to break down organic waste.
- Tertiary Treatment (Chemical + Physical): Advanced filtration and chemical neutralisation — treated water can be reused.
- Harvest rainwater to reduce demand for groundwater and river water.
- Regulate groundwater extraction through legal frameworks.

AIR POLLUTION CONTROL:

- Install electrostatic precipitators in chimneys — they use electric charge to trap dust and smoke particles.
- Use fabric filters and scrubbers to clean flue gases before release.
- Substitute coal with cleaner fuels like oil, natural gas, or renewable energy.
- Set emission standards and strictly enforce them through inspections.

NOISE POLLUTION CONTROL:

- Fit silencers and sound-absorbing enclosures on generators and heavy machinery.
- Provide workers with earplugs, earmuffs, or earphones in high-noise zones.
- Plant trees and hedges around factories as natural sound barriers.

MODEL PRACTICE: NTPC (National Thermal Power Corporation) has received ISO 14001 environmental management certification. It actively practices ash pond management, liquid waste management, and promotes oil, gas, and water conservation — making it a model for industrial environmental responsibility.

► Part 4: Activity — One Word Answers

Sr.	Clue / Question	Answer
(i)	Used to drive machinery (5 letters)	POWER
(ii)	People who work in a factory (6 letters)	WORKER
(iii)	Where the product is sold (6 letters)	MARKET
(iv)	A person who sells goods (8 letters)	RETAILER
(v)	Thing produced (7 letters)	PRODUCT
(vi)	To make or produce (11 letters)	MANUFACTURE
(vii)	Land, Water and Air degraded (9 letters)	POLLUTION

► Part 5: Word Search Puzzle Answers

Clue	Answer
Textiles, sugar, vegetable oil — industries from agriculture	AGRO-BASED
Basic raw material for the sugar industry	SUGARCANE
Also known as the 'Golden Fibre'	JUTE
Iron-ore, coking coal, limestone — raw materials of this industry	IRON AND STEEL
A public sector steel plant in Chhattisgarh	BHILAI
Railway diesel engines are manufactured in UP at this place	VARANASI (Diesel Locomotive Works)

► Part 6: Heavy vs Light Industry Classification

Category	Items
Heavy Industry	Oil, Steel, Shipbuilding, Automobiles, Knitting Needles, Brassware, Fuse Wires
Light Industry	Sewing Machines, Electric Bulbs, Paint Brushes, Watches