MANUFACTURING INDUSTRIES

Syllabus

- *Importance of manufacturing*
- *Contribution of Industry to National Economy*
- *Industrial Location*
- *Classification of Industries*
- *Spatial distribution*
- *Industrial pollution and environmental degradation*
- *Control of Environmental Degradation*

Learning Outcomes

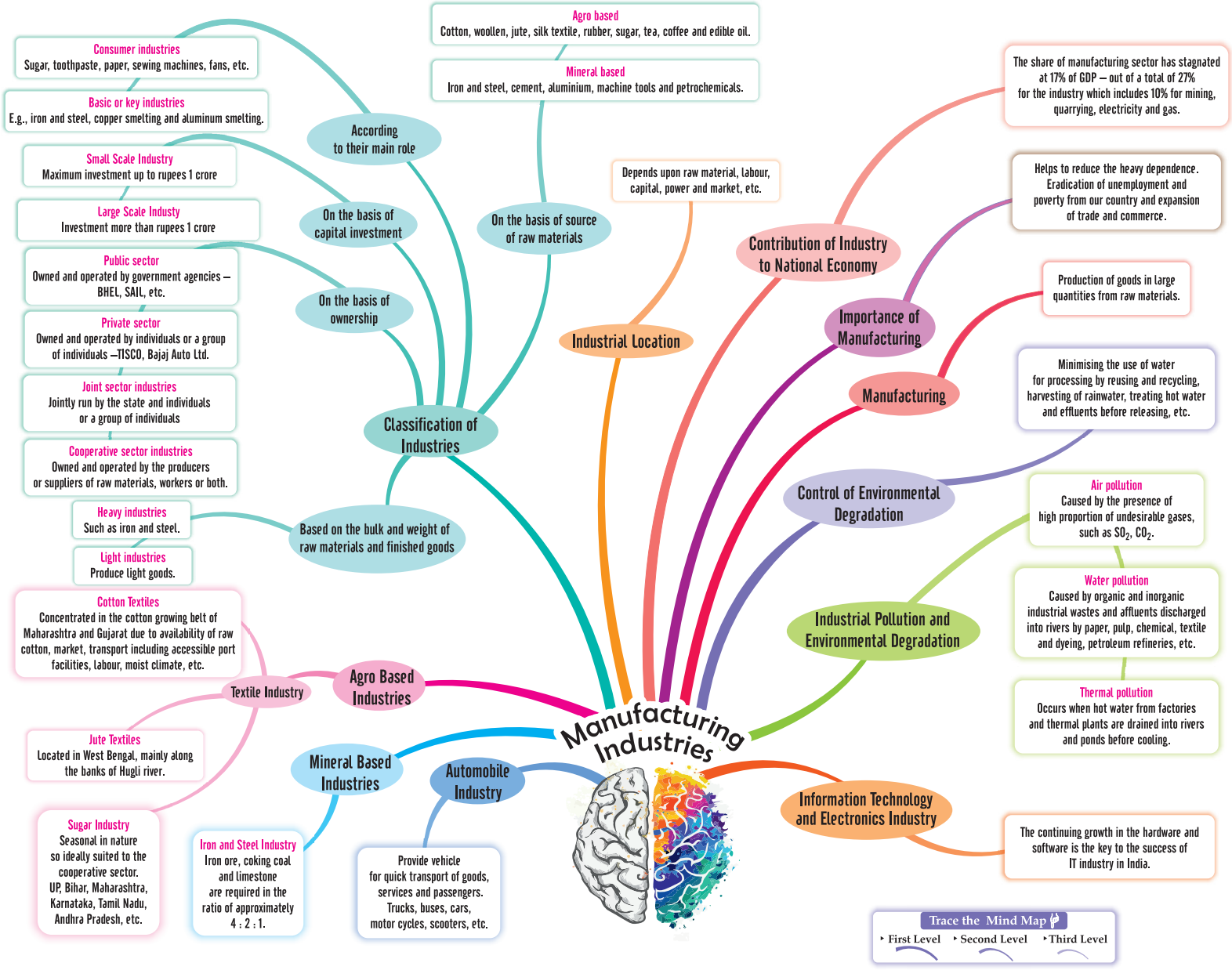
- ***Bring out the importance of industries in the national economy as well as understand the regional disparities which resulted due to concentration of industries in some areas.***
- ***Discuss the need for a planned industrial development and debate over the role of government towards sustainable development.***

Revision Notes

Manufacturing Industries – Introduction, Location and Classification

Introduction

- Manufacturing is the production of goods in large quantities after processing raw materials into more valuable products. Industries that manufacture finished products from primary materials are called Manufacturing Industries.
- **Importance of Manufacturing**
  - Manufacturing Industries help in modernizing agriculture, which forms the backbone of our economy.
  - Manufacturing Industries also reduce the heavy dependence of people on agricultural income because of the creation of new jobs in secondary and tertiary sectors.
  - Industrial development helps in eradication of unemployment and poverty.
  - Export of manufactured goods expands trade and commerce and brings in much needed foreign exchange.
  - A country with a high level of manufacturing activities becomes prosperous.


Manufacturing Industries
Classification of Industries
According to their main role
Consumer industries
Sugar, toothpaste, paper, sewing machines, fans, etc.
Basic or key industries
E.g., iron and steel, copper smelting and aluminum smelting.
On the basis of capital investment
Small Scale Industry
Maximum investment up to rupees 1 crore
Large Scale Industy
Investment more than rupees 1 crore
On the basis of ownership
Public sector
Owned and operated by government agencies – BHEL, SAIL, etc.
Private sector
Owned and operated by individuals or a group of individuals –TISCO, Bajaj Auto Ltd.
Joint sector industries
Jointly run by the state and individuals or a group of individuals
Cooperative sector industries
Owned and operated by the producers or suppliers of raw materials, workers or both.
On the basis of source of raw materials
Agro based
Cotton, woollen, jute, silk textile, rubber, sugar, tea, coffee and edible oil.
Mineral based
Iron and steel, cement, aluminium, machine tools and petrochemicals.
Based on the bulk and weight of raw materials and finished goods
Heavy industries
Such as iron and steel.
Light industries
Produce light goods.
Industrial Location
Depends upon raw material, labour, capital, power and market, etc.
Contribution of Industry to National Economy
The share of manufacturing sector has stagnated at 17% of GDP – out of a total of 27% for the industry which includes 10% for mining, quarrying, electricity and gas.
Importance of Manufacturing
Helps to reduce the heavy dependence. Eradication of unemployment and poverty from our country and expansion of trade and commerce.
Manufacturing
Production of goods in large quantities from raw materials.
Control of Environmental Degradation
Minimising the use of water for processing by reusing and recycling, harvesting of rainwater, treating hot water and effluents before releasing, etc.
Industrial Pollution and Environmental Degradation
Air pollution
Caused by the presence of high proportion of undesirable gases, such as SO_2, CO_2.
Water pollution
Caused by organic and inorganic industrial wastes and affluents discharged into rivers by paper, pulp, chemical, textile and dyeing, petroleum refineries, etc.
Thermal pollution
Occurs when hot water from factories and thermal plants are drained into rivers and ponds before cooling.
Information Technology and Electronics Industry
The continuing growth in the hardware and software is the key to the success of IT industry in India.
Automobile Industry
Provide vehicle for quick transport of goods, services and passengers. Trucks, buses, cars, motor cycles, scooters, etc.
Mineral Based Industries
Iron and Steel Industry
Iron ore, coking coal and limestone are required in the ratio of approximately 4 : 2 : 1.
Agro Based Industries
Textile Industry
Cotton Textiles
Concentrated in the cotton growing belt of Maharashtra and Gujarat due to availability of raw cotton, market, transport including accessible port facilities, labour, moist climate, etc.
Jute Textiles
Located in West Bengal, mainly along the banks of Hugli river.
Sugar Industry
Seasonal in nature so ideally suited to the cooperative sector. UP, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, etc.
Trace the Mind Map
First Level
Second Level
Third Level

➢ **Contribution of Industry to National Economy**
- The share of manufacturing sector in the GDP (Gross Domestic Product) has stagnated at 17% over the last two decades.
- The total contribution of industry to the GDP is 27% out of which 10% comes from mining, quarrying, electricity and gas.
- The growth of the manufacturing sector had been 7% in the last decade. Since 2003, the growth rate has been 9 to 10% per annum. The desired growth rate over the next decade is 12%.
- The National Manufacturing Competitiveness Council (NMCC) has been set with the objectives of improving productivity through proper policy interventions by the government and renewed efforts by the industry.

➢ **Factors which Affect the Industrial Location**
- Availability of raw materials.
- Availability of labour.
- Availability of capital.
- Availability of power.
- Availability of market.
- Infrastructure.

Manufacturing Industry and Urbanisation

➢ A Manufacturing Industry promotes the urbanisation of its neighbourhood. Already urbanised areas also attract industries, since they provide ready facilities for transport, banking, labour, consultancy, etc. If an urban centre offers sufficient facilities and advantages, several industries come up there together to form an industrial agglomeration. These industries together form an agglomeration economy.

➢ Before Independence, most industries in India were located in port cities to enable easy overseas trade.

Classification of Industries

1. On the basis of raw materials:
- **(i) Agro-Based Industries:** Cotton, woollen, jute, silk textile, rubber, sugar, tea, coffee, etc.
- **(ii) Mineral-Based Industries:** Iron and steel, cement, aluminium, petrochemicals, etc.

2. On the basis of their main roles:
- **(i) Basic or Key Industries:** These industries supply their products or raw materials to manufacture other goods, *e.g.,* iron and steel, copper smelting, aluminium smelting.
- **(ii) Consumer Industries:** These industries produce goods which are directly used by consumers, *e.g.,* sugar, paper, electronics, soap, etc.

3. On the basis of capital investment:
- **(i) Small Scale Industry:** If the invested capital is up to ₹1 crore, then the industry is called a Small Scale Industry.
- **(ii) Large Scale Industry:** If the invested capital is more than ₹1 crore, then the industry is called a Large Scale Industry.

4. On the basis of ownership:
- **(i) Public Sector:** These industries are owned and operated by government agencies, *e.g.,* SAIL, BHEL, ONGC, etc.
- **(ii) Private Sector:** These industries are owned and operated by individuals or a group of individuals, *e.g.,* TISCO, Reliance, Mahindra, etc.
- **(iii) Joint Sector:** These industries are jointly owned by the government and individuals or a group of individuals, *e.g.,* Oil India Limited.
- **(iv) Cooperative Sector:** These industries are owned and operated by the producers or suppliers of raw materials, workers or both. The resources are pooled by each share holder and profits or losses are shared proportionately. AMUL which is Milk Cooperative is a good example. The Sugar Industry in Maharashtra is another example.

5. On the basis of bulk and weight of raw materials and finished goods:
- **(i) Heavy Industries:** Iron and Steel.
- **(ii) Light Industries:** Electronics Industry

Agro-Based Industries

Agro-Based Industries
- Industries based on agricultural raw materials are called agro based industries. For example, cotton textiles, jute textiles, woollen textiles, silk textiles, synthetic textiles, sugar industry, etc.

Types of Agro Based Industries

1. Textile Industry:
- The textile industry contributes 14% to industrial production in India.
- 35 million people are directly employed in the textiles industry in India.
- In terms of employment generation, this industry is the second largest after agriculture.
- It earns approximately 24.6% of the foreign exchange.
- The contribution of textiles industry to GDP is 4%.
- This is the only industry in the country which is self-reliant and complete in the value chain.

(i) **Cotton textiles:** It occupies a unique position in the Indian economy, contributes 14% of industrial production.
- Provides employment to 35 million people directly.
- Earlier the cotton textile industries were located in Maharashtra and Gujarat.
- Today, they are spread over 80 towns and cities of India.
- Scarcity of good quality cotton, obsolete machinery, erratic power supply, low productivity of labour and stiff competition are some of the problems faced by the cotton textiles industry.
- The industry provides a source of livelihood to farmers, cotton ball pluckers and workers engaged in ginning, spinning, weaving, dyeing, designing, packaging, tailoring and sewing.
- India has world class production in spinning but weaving supplies low quality of fabrics as it cannot use much of the high quality yarn produced in the country.

(ii) **Jute textiles:** There are about 80 Jute Mills in India and most of these are located in West Bengal, mainly in the Hugli basin.
- India is the largest producer of raw jute and jute goods in the world.
- India is the second largest exporter of jute goods after Bangladesh.
- Most of these mills are located in West Bengal; mainly along the banks of river Hooghly.
- The jute industry is in a narrow belt which is 98 km long and 3 km wide.

2. **Sugar Industry:** India is the second largest producer of sugar in the world.
- It is the largest producer of Gur and Khandsari.
- They are spread over Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh.
- Sixty percent mills are in UP and Bihar.
- This industry is seasonal and hence, is more suited to the cooperative sector.
- In recent years, there has been a growing tendency to shift and concentrate in the southern and western states, especially in Maharashtra.
- The cane produced in this region has higher sucrose content. The cooler climate of this region ensures a longer crushing season.

Mineral Based Industries

Mineral Based Industries

➢ Manufacturing industries that use minerals as raw material are called mineral-based industries. The iron and steel industry is the basic industry on which all other industries depend. The production and per capita consumption of steel is a measure of a country's economic development.

Types of Mineral Based Industries

➢ The main raw materials used in the Iron and Steel Industry are iron ore, coal and limestone. The raw materials and finished products of iron and steel industries are quite bulky; these industries must be located near the mining areas of the required minerals and must be connected by a good transport network.

1. **Iron and Steel Industry:**
- Iron and steel is the basic industry as all the other industries – heavy, medium and light, depend on it for their machinery.
- It is considered as a heavy industry because all the raw materials, as well as finished goods, are heavy and bulky entailing heavy transportation costs.
- India is an important iron and steel producing country in the world yet, we are not able to perform to our full potential largely due to:

(i) High costs and limited availability of coking coal.
(ii) Lower productivity of labour.
(iii) Irregular supply of energy.
(iv) Poor infrastructure.

- China has become the world's largest producer and consumer of steel, leaving India far behind.
- Most steel manufacturing industries are located in the Chota Nagpur Plateau region because of the availability of inexpensive, high-grade raw material and abundant cheap labour.

2. **Aluminium Smelting:**
- Aluminium Smelting is the second most important metallurgical industry in India. It is used to manufacture aircraft, utensils and wires. Bauxite is the raw material used in the smelters.

- Aluminium Smelting has gained popularity as a substitute for steel, copper, zinc and lead in a number of industries. It exhibits the following properties:

(i) Light in weight.
(ii) Resistant to corrosion.
(iii) A good conductor of heat.
(iv) Malleable.
(v) Becomes strong when it is mixed with other metals.

3. **Chemical Industry:**
   - The Chemical industry comprises both large and small scale manufacturing units.
   - Rapid growth has been recorded in both inorganic and organic sectors.
4. **Fertilizer Industry:**
   - The fertilizer industries are centred around the production of nitrogenous fertilizers (mainly urea) and complex fertilizers which have a combination of nitrogen (N), phosphate (P) and potash (K).
   - Gujarat, Tamil Nadu, Uttar Pradesh, Punjab and Kerala contribute towards half of the fertilizer production.
5. **Cement Industry:**
   - Cement is essential for construction activity such as building houses, factories, bridges, roads, airports, dams and for other commercial establishments.
   - This industry requires bulky and heavy raw materials like limestone, silica and gypsum.
6. **Automobile Industry:**
   - This industry deals with the manufacturing of trucks, buses, cars, motorcycles, scooters, three-wheelers and multi-utility vehicles.
   - These industries are located around Delhi, Gurugram, Mumbai, Pune, Chennai, Kolkata, Lucknow, Indore, Hyderabad, Jamshedpur and Bengaluru.
7. **Information Technology and Electronics Industry:**
   - The electronics industry covers a wide range of products from transistor sets to television, telephones, cellular telecom, telephone exchange, radars, computers and many other equipment required by the telecommunication industry.
   - This industry has generated employment in India. Bengaluru is known as the electronic capital of India.

Industrial Pollution and Environmental Degradation

Types of Pollution caused by Industries:

1. **Air pollution:** It is caused by the presence of a high proportion of undesirable gases, such as sulphur dioxide and carbon monoxide. Smoke is emitted by chemical and paper factories, brick kilns, refineries and smelting plants, and burning of fossil fuels lead to air pollution. It adversely affects human health, animals, plants, buildings and the atmosphere as a whole.
2. **Water pollution:** It is caused by organic and inorganic industrial wastes and effluents discharged into rivers. The industries which are mainly responsible for water pollution are paper, pulp, chemical, textile and dyeing, petroleum refineries, tanneries and electroplating industries.
3. **Thermal pollution:** Pollution of water occurs when hot water from factories and thermal plants is drained into rivers and ponds before cooling.
4. **Noise pollution:** It is the propagation of noise with harmful impact on the activity of human or animal life. It results in irritation, anger, cause hearing impairment, increased heart rate and blood pressure.

Steps to Control Environmental Degradation

- One of the most important steps for the control of environmental degradation is treating hot and polluted waste water from industries before releasing it into our rivers and lakes.
- Treated waste water can be recycled for reuse in industrial processes.
- Rainwater harvesting can be used to meet the requirements of water for industrial processes.
- Legal provisions must be made to regulate the use of groundwater for industrial use. Smoke stacks, filters, scrubbers and electrostatic and inertial separators remove a large number of harmful particles from industrial smoke. The emission of smoke itself from industries can be reduced by using more efficient fuels like oil and natural gas in place of coal.
- Industrial and generator silencers, and sound-absorbing material are available to reduce the noise level in industries. Industrial workers can use earphones and earplugs for individual protection of health and hearing .
- National Thermal Power Corporation or NTPC is a major electricity generation and distribution company in India.

- NTPC has demonstrated how conservation of environment and natural resources can happen simultaneously with industrial growth by:
  (i) Adopting latest technical know how.
  (ii) Minimising waste.
  (iii) Providing green cover.
  (iv) Reducing environmental pollution.
  (v) Continuous monitoring.

Know the Terms

- **Manufacturing:** Production of goods in large quantities after converting raw materials, components or parts into finished goods.
- **NMCC:** The National Manufacturing Competitiveness Council.
- **Agglomeration Economies:** The industries tend to come together to make use of the advantages offered by urban centres.
- **Entrepreneur:** An innovator of new ideas who sets up a business taking on financial risks in the hope of profit.
- **Large Scale Industries:** Industries which employ a large number of labour in each unit. Example- Cotton Textile Industry.
- **Public Sector Industries:** Industries which are owned and operated by government agencies. Example- BHEL.
- **Agro-Based Industries:** Industries which obtain raw materials from agricultural products. Example- Sugar Industry.
- **Mineral-Based Industries:** Industries that use minerals and metals as raw materials. Example- Iron and Steel Industry.
- **Basic Industries:** Industries, on which depend, many other industries for their manufacturing processes. Example- Iron and Steel Industry.
- **Textile Industries:** Textile is a fabric that is knitted or woven and made from yarn. It is the industry that is responsible for taking raw material like cotton or wool and spinning it into yarn that is later used to create the fabric.
- **Ginning:** The process of separating the seeds from the cotton fibers is known as ginning.
- **Spinning:** It is the twisting together of drawn-out strands of fibers to form a yarn, and is a major part of the Textile Industry.
- **Dyeing:** It is the process of adding colour to textile products like fibers, yarns and fabrics.
- **Khandsari:** It is a type of unrefined raw white sugar made from thickened sugarcane syrup. It is neither bleached nor contains harmful chemicals and additives.
- **Organic Chemicals:** These include petrochemicals, which are used for manufacturing of synthetic fibre, plastics, drugs and pharmaceuticals.
- **Inorganic Chemicals:** These include sulphuric acid, nitric acid, alkalis, soda ash and caustic soda.
- **Air Pollution:** It is caused by the presence of high proportion of undesirable gases, such as sulphur dioxide and carbon monoxide.
- **Water Pollution:** It is caused by organic and inorganic industrial wastes and effluents discharged into rivers.
- **Thermal Pollution:** The pollution caused by the discharge of hot water from factories and thermal plants into rivers and ponds before cooling.
- **Noise Pollution:** It is caused by industrial and construction activities, machinery, generators, electric drills and loudspeakers.

(A) Objective Type Questions — 1 Mark Each

Stand Alone MCQs (1 Mark Each)

1.

Column A		Column B	
(i)	Agro Based Industry	**(a)**	Amul
(ii)	Private Sector Industry	**(b)**	Oil India Ltd.
(iii)	Joint Sector Industry	**(c)**	Jute Industry
(iv)	Cooperative Sector Industry	**(d)**	TISCO

RU

(A) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)
(B) (i)-(c), (ii)-(d), (iii)-(b), (iv)-(a)
(C) (i)-(d), (ii)-(c), (iii)-(b), (iv)-(a)
(D) (i)-(a), (ii)-(b), (iii)-(c), (iv)-(d)

Ans. Option (B) is correct.

Explanation:
(i) Agro Based Industries are based on the Source of raw materials. *e.g.* Jute Industry.
(ii) Private Sector Industries are owned and operated by individuals or a group of individuals. *e.g.* TISCO.

(iii) Joint Sector Industries are jointly run by the State and individuals or a group of individuals *e.g.* Oil India Ltd.
(iv) Cooperative Sector Industries are owned and operated by the Producers or Suppliers of raw materials workers or both. *e.g.* Amul.

2.

Column A		Column B	
(i)	Information Technology and Electronics Industry	**(a)**	Gurugram
(ii)	Cement Industry	**(b)**	Rajasthan
(iii)	Automobile Industry	**(c)**	Gujarat
(iv)	Fertilizer Industry	**(d)**	Bengaluru

(A) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c) RU
(B) (i)-(c), (ii)-(d), (iii)-(b), (iv)-(a)
(C) (i)-(d), (ii)-(c), (iii)-(a), (iv)-(b)
(D) (i)-(a), (ii)-(b), (iii)-(c), (iv)-(d)

Ans. Option (C) is correct.

Explanation:
(i) Major IT industries are at Bengaluru, Noida, Mumbai, Chennai, Hyderabad and Pune.
(ii) Major Cement plants are situated at Gujarat.
(iii) Automobile Industry is located in Gurugram. Besides Gurugram they are also in Delhi, Mumbai, Pune, Chennai.
(iv) Major Fertilizers Industries are located in Rajasthan. Some Industries are also found in Gujarat, Tamil Nadu, Uttar Pradesh, etc.

3. How to make a garment? Arrange the following in the correct sequence: RUA

(i) Weaving or knitting of fabric
(ii) Manufacturing of garment (stitching)
(iii) Spinning of yarn
(iv) Dyeing and finishing of garment

Options:

(A) (iii) - (iv) - (i) - (ii)
(B) (iv) - (iii) - (ii) - (i)
(C) (iii) - (i) - (iv) - (ii)
(D) (i) - (iv) - (ii) - (iii)

Ans. Option (C) is correct.

4. How to manufacture Steel? Arrange the following in the correct sequence: RUA

(i) Pig iron
(ii) Blast furnace
(iii) Shaping metal
(iv) Steel making

Options:

(A) (ii) - (i) - (iv) - (iii) **(B)** (iii) - (i) - (iv) - (ii)
(C) (i) - (iv) - (ii) - (iii) **(D)** (ii) - (iii) - (iv) - (i)

Ans. Option (A) is correct.

5. Identify the process in sequence for the shaping of Steel: R

(i) Forging
(ii) Pressing
(iii) Casting
(iv) Rolling

Options:

(A) (i) - (iv) - (ii) - (iii) **(B)** (iv) - (ii) - (iii) - (i)
(C) (iii) - (i) - (iv) - (ii) **(D)** (ii) - (i) - (iii) - (iv)

Ans. Option (B) is correct.

6. On what basis is the industrial sector classified into Public and Private Sectors? R

(A) Employment conditions
(B) The nature of economic activity
(C) Ownership of enterprises
(D) Number of workers employed in the enterprise

Ans. Option (C) is correct.

Explanation: If the various types of industries are classified into Public and Private sector then we would be able to understand their manufacturing and management processes better.

7. Which one of the following agencies markets steel for the public sector plants? R

(A) HAIL **(B)** SAIL
(C) TATA Steel **(D)** MNCC

Ans. Option (B) is correct.

8. Which one of the following industries manufactures Telephones, Computer, etc.? UA

(A) Steel **(B)** Electronic
(C) Aluminium Smelting **(D)** Information Technology

Ans. Option (B) is correct.

9. Which one of the following industries uses limestone as a raw material? R

(A) Aluminium **(B)** Cement
(C) Plastic **(D)** Automobile

Ans. Option (B) is correct.

Explanation: The powdered limestone is heated with clay to produce cement as a product. Limestone helps in minimizing water loss due to absorption.

AI **10. Which of the two steel plants are in collaboration with Russia?** R

(A) Bhadravati and Salem
(B) Bokaro and Jamshedpur
(C) Burnpur and Durgapur
(D) Bhilai and Bokaro

Ans. Option (D) is correct.

11. Which of the following industries use bauxite as a raw material? R

(A) Aluminium **(B)** Cement
(C) Jute **(D)** Steel

Ans. Option (A) is correct.

Explanation: Bauxite is used as the main raw material for alumina manufacturing which in turn is utilizing for Aluminium Manufacturing.

12. **Study the table given below and answer the following question:** UA

Year	Total Production of finished steel in India (in metric tonnes per annum)
2010-11	68·62
2011-12	75·70
2012-13	81·68
2013-14	87·67
2014-15	92·16
2015-16	91·00
2016-17	101·30

Source: Ministry of Steel, Government of India

How much steel was produced in the year 2014-15?

(A) 101.30 metric tonnes **(B)** 75.70 metric tonnes
(C) 92.16 metric tonnes **(D)** 91.00 metric tonnes

Ans. Option (C) is correct.

13. **Study the picture given below and answer the following question:** R

Where is this Sewage Treatment Plant under Yamuna Action Plan situated?

(A) Faridabad **(B)** Firozabad
(C) Ahmedabad **(D)** Nasirabad

Ans. Option (A) is correct.

Explanation: As the question suggests the name Yamuna, so out of all the options, Faridabad is correct as Yamuna flows through Faridabad.

14. **Analyze the information given below, considering one of the following correct options:** RU

It not only results in irritation and anger. It can also cause hearing impairment, increased heart rate and blood pressure among other physiological effects. Unwanted sound is an irritant and a source of stress.

(A) Water Pollution **(B)** Noise Pollution
(C) Air Pollution **(D)** Soil Pollution

Ans. Option (B) is correct.

15. **Analyze the information given below, considering one of the following correct options:** RU

These plants are smaller, have electric furnaces, use steel scrap and sponge iron. They have re-rollers that use steel ingots as well. They produce mild and alloy steel of given specifications.

(A) Heavy Steel Plants **(B)** Major Steel Plants
(C) Mini Steel Plants **(D)** Light Steel Plants

Ans. Option (C) is correct.

16. **Find the incorrect option from the following:** U

(A) Agriculture and industry are not exclusive of each other.
(B) They move away from each other.
(C) The agro industries in India have given a major boost to agriculture by raising its productivity.
(D) They depend on the latter for raw materials and to sell their products.

Ans. Option (B) is correct.

Explanation: Agriculture and industry move hand in hand.

17. **Find the incorrect option from the following:** RU

(A) We have a large share in the world trade of cotton yarn.
(B) Our spinning mills are competitive at the global level and capable of using all the fibres we produce.
(C) The weaving, knitting and processing units can use much of the high quality yarn that is produced in the country.
(D) There are some large and modern factories in these segments.

Ans. Option (C) is correct.

Explanation: The weaving, knitting and processing units cannot use much of the high quality yarn that is produced in the country.

Assertion and Reason Based MCQs
(1 Mark Each)

Directions : In the following questions, A statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is NOT the correct explanation of A.
(C) A is true but R is false.
(D) A is false and R is true.

1. **Assertion (A):** The handspun Khadi provides large scale employment to weavers in their homes as a cottage industry. RU
Reason (R): Mahatma Gandhi laid emphasis on spinning yarn and weaving khadi.

Ans. Option (A) is correct.

2. **Assertion (A):** India is the largest producer of raw jute and jute goods and stands at second place as an exporter after Bangladesh. R
Reason (R): Other problems are the low output of labour and stiff competition with the synthetic fibre industry.

Ans. Option (C) is correct.

Explanation: Most of the Indian Jute mills are located in West Bengal, mainly along the banks of the Hugli river, which is favourable. But challenges forced by the industry include stiff competition in the International Market from Synthetic substitutes and from the other competitor like Bangladesh, Brazil, Philippines, Egypt and Thailand.

3. **Assertion (A):** Rain water harvesting increases industrial pollution. U

Reason (R): Rain water helps industry to meet water requirements.

Ans. Option (D) is correct.

> ***Explanation:*** Pollution occurs when waste water discharged by industry pollutes fresh water. Rain water harvesting replenishes the water which helps industries to meet water requirements.

4. **Assertion (A):** The economic strength of the country is measured by the development of manufacturing industries. U

Reason (R): India's prosperity lies in diversifying its manufacturing industries.

Ans. Option (B) is correct.

> ***Explanation:*** India manufactures various kinds of goods which reduces the dependency upon agriculture. Economy enhances when export of goods increases.

Case-based MCQs (1 Mark Each)

I. Read the text given below and answer the questions that follow: U **[CBSE SQP, 2020-21]**

> Manufacturing industries not only help in modernising agriculture, which forms the backbone of our economy, they also reduce the heavy dependence of people on agricultural income by providing them jobs in secondary and tertiary sectors. Industrial development is a precondition for eradication of unemployment and poverty from our country. This was the main philosophy behind public sector industries and joint sector ventures in India. It was also aimed at bringing down regional disparities by establishing industries in tribal and backward areas. Export of manufactured goods expands trade and commerce, and brings in much needed foreign exchange. Countries that transform their raw materials into a wide variety of finished goods of higher value are prosperous. India's prosperity lies in increasing and diversifying its manufacturing industries as quickly as possible. Agriculture and industry are not exclusive of each other. They move hand in hand. For instance, the agro industries in India have given a major boost to agriculture by raising its productivity.

Answer the following MCQs by choosing the most appropriate option:

1. **Manufacturing industries fall in _____ and agriculture in _____ .** RA

(A) Primary, Secondary Sector

(B) Secondary, Tertiary Sector

(C) Primary, Tertiary Sector

(D) Secondary, Primary Sector

Ans. Option (D) is correct.

> ***Explanation:*** Agriculture is Primary Sector whereas Manufacturing Industries are Secondary Sector. They not only help on modernising agriculture but also reduce the heavy dependence of people in agriculture income by providing them jobs also in Secondary and Tertiary sectors.

2. **Manufacturing provides job opportunities to reduce dependence on agriculture. Identify which sector the following jobs belong to:**

Jobs created or promoted by manufacturing industries	Sector
a. Garment production	**1.** Primary
b. Research and Development	**2.** Tertiary
c. Banking	**3.** Secondary
d. Mining	**4.** Quaternary

Choose the correct option: U A

(A) a-1, b-2, c-3, d-4 **(B)** a-3, b-4, c-2, d-1

(C) a-2, b-3, c-1, d-4 **(D)** a-4, b-1, c-2, d-3

Ans. Option (B) is correct.

3. **Which of the following options does not help in modernising agriculture?** U

(A) Manufacturing farm equipment

(B) Providing unskilled labour force

(C) Supplying fertilizers and pesticides

(D) Producing tube well pumps and sprinklers

Ans. Option (B) is correct.

4. **In order to attract foreign manufacturing firms, a country needs to develop:** UA

(A) Agrarian facilities **(B)** Cultivable lands

(C) Media facilities **(D)** Infrastructure facilities

Ans. Option (D) is correct.

AI **II. Read the text given below and answer the questions that follow:** AU

> The iron and steel industry is the basic industry since all the other industries — heavy, medium and light, depend on it for their machinery. Steel is needed to manufacture a variety of engineering goods, construction material, defence, medical, telephonic, scientific equipment and a variety of consumer goods. Production and consumption of steel is often regarded as the index of a country's development. Iron and steel is a heavy industry because all the raw materials as well as finished goods are heavy and bulky, entailing heavy transportation costs. Iron ore, coking coal and limestone are required in the ratio of approximately 4: 2: 1. Some quantities of manganese are also required to harden the steel. Where should the steel plants be ideally located? Remember that the finished products also need an efficient transport network for their distribution to the markets and consumers. In 2016, with 95.6 million tonnes of crude steel production, India ranked 3rd among the world crude steel producers. It is the largest producer of sponge iron. In 2016, per capita consumption of steel in the country was only around 63 kg per annum against the world average of 208 kg.

Answer the following MCQs by choosing the most appropriate option:

1. **Which industry is called the basic industry of India?** R

(A) Textile Industry **(B)** Sugar Industry
(C) Cement Industry **(D)** Iron and Steel Industry

Ans. Option (D) is correct.

Explanation: As India has abundant resources of iron ore and it is the basic mineral which is the backbone of industrial development also.

2. **Index of a country's development is regarded on what basis? Select the appropriate option:** RU

(A) Extraction and processing of steel.
(B) Production and consumption of steel.
(C) Production and manufacturing of steel.
(D) Consumption and manufacturing of steel.

Ans. Option (B) is correct.

3. **Apart from iron ore, coking coal and limestone in a fixed proportion, minor quantities of which of the following is also used in manufacturing of steel?** R

(A) Manganese **(B)** Copper
(C) Both A & B **(D)** Neither of the above

Ans. Option (A) is correct.

4. **Manufacturing steel is not every person's business. Suppose you are working in a Steel Industry, what will be the proportion of Iron Ore, coking coal and limestone you would use to produce steel?** A

(A) 2: 1: 4 **(B)** 4: 1: 2
(C) 4: 2: 1 **(D)** 2: 4: 1

Ans. Option (C) is correct.

Explanation: For steel manufacturing, Iron ore, Cooking coal and lime stone are required in the ratio of approximately 4: 2: 1.

III. Read the text given below and answer the questions that follow: R

Every litre of waste water discharged by our industry pollutes eight times the quantity of fresh water. How can the industrial pollution of fresh water be reduced? Some suggestions are:

- Minimising the use of water for processing by reusing and recycling it in two or more successive stages.
- Harvesting of rainwater to meet water requirements.
- Treating hot water and effluents before releasing them in rivers and ponds. Treatment of industrial effluents can be done in three phases.
- Primary treatment by mechanical means: It involves screening, grinding, flocculation and sedimentation.
- Secondary treatment by biological process.
- Tertiary treatment by biological, chemical and physical processes. This involves recycling of waste water.

Overdrawing of groundwater reserves by industry where there is a threat to groundwater resources also needs to be regulated legally. Particulate matter in the air can be reduced by fitting smoke stacks to factories with electrostatic precipitators, fabric filters, scrubbers and inertial separators. Smoke can be reduced by using oil or gas instead of coal in factories. Machinery and equipment can be used and generators should be fitted with silencers. Almost all machinery can be redesigned to increase energy efficiency and reduce noise. Noise absorbing material may be used apart from personal use of earplugs and earphones.

The challenge of sustainable development requires integration of economic development with environmental concerns.

Answer the following MCQs by choosing the most appropriate option:

1. **How many treatments are there for industrial effluents?** R

(A) 3 **(B)** 2
(C) 5 **(D)** 4

Ans. Option (A) is correct.

Explanation: Treatment of industrial effluents can be done in three phases- Primary, Secondary and Tertiary.

2. **What could be done to reduce pollution of machinery and equipment?** UA

(A) Stop the use of machinery
(B) Use generators fitted with silencers
(C) Use manual labour
(D) None of the above

Ans. Option (B) is correct.

3. **The challenge of sustainable development requires integration of economic development with _____ concerns.** U

(A) social **(B)** cultural
(C) environmental **(D)** political

Ans. Option (C) is correct.

4. **_____ treatment involves biological, chemical and physical processes.** R

(A) Primary **(B)** Secondary
(C) Tertiary **(D)** None of the above

Ans. Option (C) is correct.

Explanation: Primary involves mechanical process and secondary involves biological process.

IV. Read the text given below and answer the questions that follow: R

In ancient India, cotton textiles were produced with hand spinning and handloom weaving techniques. After the 18th century, power-looms came into use. Our traditional industries suffered a setback during the colonial period because they could not compete with the mill-made cloth from England.

In the early years, the cotton textile industry was concentrated in the cotton growing belt of Maharashtra and Gujarat. Availability of raw cotton, market, transport including accessible port facilities, labour, moist climate, etc., contributed

towards its localisation. This industry has close links with agriculture and provides a living to farmers, cotton ball pluckers and workers engaged in ginning, spinning, weaving, dyeing, designing, packaging, tailoring and sewing. The industry by creating demands supports many other industries, such as, chemicals and dyes, packaging materials and engineering works.
While spinning continues to be centralised in Maharashtra, Gujarat and Tamil Nadu, weaving is highly decentralised to provide scope for incorporating traditional skills and designs of weaving in cotton, silk, zari, embroidery, etc. India has world class production in spinning, but weaving supplies low quality of fabric as it cannot use much of the high-quality yarn produced in the country. Weaving is done by handloom, power loom and in mills.
The handspun khadi provides large scale employment to weavers in their homes as a cottage industry.

Answer the following MCQs by choosing the most appropriate option:

1. Why did our Traditional Industries suffer a setback during the Colonial Period?
(A) No machines were available.
(B) They could not compete with the mill-made cloth from England.
(C) They lacked knowledge.
(D) They had no motivation to compete. U

Ans. Option (B) is correct.

Explanation: Because in India industries used hand spinning and handloom weaving techniques, which were slow.

2. The handspun khadi provides large scale employment to weavers in their homes as a _____ industry. R
(A) Cottage **(B)** Primary
(C) Secondary **(D)** Basic

Ans. Option (A) is correct.

Explanation: Because a cottage industry is often run out on a person's home.

3. Availability of raw cotton, market, transport including accessible port facilities, labour, moist climate, etc., contributed towards its localisation. HOTS
(A) False **(B)** True
(C) Some what true **(D)** Not sure

Ans. Option (B) is correct.

4. Weaving is done by:
(A) Hand loom **(B)** Power loom
(C) Mills **(D)** All of these

Ans. Option (D) is correct.

(B) Subjective Questions

Very Short Answer Type Questions
(1 Mark Each)

1. How is Public Sector different from Private Sector? R **[Delhi Set-I , 2020]**

Ans. In public sector, government owns most of the assets and provides all the services, e.g., railways or post office. While in the private sector, ownership of assets and delivery of services is in the hands of private individuals or companies, *e.g.*, Tata Iron and Steel Company Limited (TISCO) or Reliance Industries Limited (RIL). **1**
[CBSE Marking Scheme, 2020]

AI **2. Describe the various physical and human factors responsible for the location of Industries.** R **[O.E.B.]**

Ans. (i) Physical Factors:
(a) Availability of raw materials–Ideal location should be near the sources of raw materials.
(b) Power resources–Power resources like coal and electricity must be available for the industry.
(c) Water and favourable climate. **(Any one)**

(ii) Human Factors:
(a) Cheap and efficient labour.
(b) Capital and bank facilities.
(c) Good market.
(d) Transport facility. **(Any one)**

AI **3. Classify industries on the basis of source of raw materials used.** U **[O.E.B.]**

Ans. Classification:
(i) Agro-based: Cotton, wool, jute, silk textile, etc.
(ii) Mineral-based: Iron and steel, cement, etc.

AI **4. Define Public Sector Industries.** R **[O.E.B.]**

Ans. Industries which are owned and operated by Government Agencies are called Public Sector Industries.

AI **5. Why is Cotton Textile Industry the largest industry in India today?** U **[O.E.B.]**

Ans. (i) Cotton Textile Industry contributes 14 per cent of the total industrial production.
(ii) It provides employment to 35 million persons directly – the second largest after Agriculture.
(iii) It earns foreign exchange of about 24.6 per cent (4 per cent of GDP). **(Any two points) (½×½=1)**

AI **6. Which industry, due to its seasonal nature, is ideally suited to the cooperative sector?** R **[O.E.B.]**

Ans. Sugar Industry.

7. Name two most important sugar producing states in India. R **[O.E.B.]**

Ans. Uttar Pradesh and Maharashtra.

AI **8. What is the importance of the Information Technology sector for the Indian economy? Explain.** U **[O.E.B.]**

Ans. The importance of IT sector is as follows:

(i) It has provided employment to over one million people.

(ii) This Industry is said to be a major Foreign Exchange earner.

(iii) It has helped in the growth of the Service Sector.

(iv) It provides employment to innumerable Men and Women. **(Any Two)(½ +½ =1)**

AI **9. Mention any one factor that has contributed to a healthy growth of the automobile industry in India.** AU [O.E.B.]

Ans. (i) The introduction of new and contemporary models stimulated the demand for vehicles in the Market.

(ii) Foreign Direct Investment (FDI) brought in new technology and aligned the industry with global developments. **(Any one)**

AI **10. Why is Iron and Steel Industry called a basic Industry? Explain.** U [O.E.B.]

Ans. Iron and steel Industry is the Basic Industry as:

(i) All the other industries depend on it for their machinery.

(ii) Steel is needed to manufacture a variety of engineering goods.

(iii) It provides variety of consumer goods. **(Any One) 1**

AI **11. What is a negative effect of Industrialisation?** U R [O.E.B.]

Ans. Pollution

AI **12. Examine what are the causes of industrial pollution of freshwater resources.** R [O.E.B.]

Ans. Freshwater resources are polluted by:

(a) Organic and inorganic wastes;

(b) Effluents discharged by industries into rivers.

The main culprits are paper and pulp, chemical, textile, petroleum refineries, tanneries, electroplating industries, etc. **(½ + ½ =1)**

AI **13. What is thermal pollution?** R [O.E.B.]

Ans. The pollution caused by the discharge of hot water from factories and thermal plants into rivers and ponds before cooling.

Short Answer Type Questions

(3 Marks Each)

AI **1. Describe the importance of manufacturing sector in countries like India.** **[Board Term-II, 2018]**

OR

"Manufacturing sector is considered as the backbone of economic development of the country." Support the statement with examples.

[Board Term-II, 2017]

OR

Describe the importance of manufacturing.

A **[Board Term–II, 2016]**

Ans. The economic strength of a country lies in the development of Manufacturing Industries because:

(i) Manufacturing industries help in modernising agriculture which forms the backbone of our economy.

(ii) It reduces the heavy dependence of people on the agriculture sector and creates jobs in secondary and tertiary sectors.

(iii) It is necessary for the removal of unemployment and poverty.

(iv) It brings down regional disparities.

(v) Export of manufactured goods expands Trade and Commerce and enhances prosperity.

(vi) It brings much needed Foreign Exchange.

(Any three)

2. Classify Industries on the basis of source of raw material. How are they different from each other?

R **[Board Term–II, OD Set–I, II, 2016]**

Ans. On the basis of sources of raw material, industries are classified as follows:

(i) Agro-based industries: These industries are based on agricultural raw material, e.g., cotton, jute, silk, rubber, sugar, tea, coffee and edible oils.

(ii) Mineral-based industries: Industries that use minerals and metals as raw materials are called mineral-based industries, e.g., iron and steel, cement, aluminium, machine tools, petrochemicals, etc. **1½ + 1½ = 3**

[CBSE Marking Scheme, 2016]

3. Classify industries on the basis of their main role. How are they different from each other?

R **[Board Term–II, 2016]**

Ans. Classification according to their main role:

(i) Basic or key industries which supply their products or raw materials to manufacture other goods, e.g., iron and steel, copper smelting, aluminium smelting.

(ii) Consumer industries that produce goods for direct use by consumers sugar, toothpaste, paper, sewing machines, fans, etc. **1½ + 1½ = 3**

[CBSE Marking Scheme, 2016]

4. Classify industries on the basis of capital investment. How are they different from one another? Explain with examples.

R **[Board Term–II, Delhi Set–II, III, 2016]**

Ans. (i) Classification of the industries on the basis of capital investment:

(a) Small scale industry

(b) Large scale industry

(ii) Difference:

If the investment is more than one crore in any industry, it is considered as a large scale industry. For example, Iron and Steel Industry/Cement industry (any other relevant example). When the investment is less than one crore in an industry, it is considered as a small scale industry, e.g., Plastic Industry, Toy Industry, etc. **1 + 2 = 3**

[CBSE Marking Scheme, 2016]

COMMONLY MADE ERROR

➲ The students try to attempt the answer without understanding the difference between Small scale and Large- scale industries.

ANSWERING TIP

➲ Both industries vary from each other in terms of finances, set up and manpower involved.

AI **5. Classify Industries on the basis of ownership and give one example of each category.** R

Ans. Classification of Industries on the basis of ownership:

S. No.	Category: Examples
(i)	Public Sector Industries: BHEL, SAIL, etc.
(ii)	Private Sector Industries: TISCO, Bajaj Auto Ltd.
(iii)	Joint Sector Industries: Oil India Ltd.
(iv)	Cooperative Sector Industries: Sugar Industry in Maharashtra; AMUL, etc.

AI **6. Describe any three major problems faced by the weaving and processing sectors in Cotton Textile Industry.** U A **[Board Term-II, 2015]**

OR

Describe any three major problems faced by Cotton Textile Industry in India. A

Ans. Three major problems faced by Cotton Textile in India are:

(i) The weaving knitting and processing units cannot use much of the high quality yarn that is produced in the country.

(ii) There are some large and modern factories in those segments but most of the production is in fragmented small units which cater to the local market. This mismatch is a major drawback for the Industry.

(iii) Power supply is erratic and machinery needs to be upgraded in the weaving and processing sectors in particular.

(iv) Low output of labour and stiff competition with synthetic fibre Industry. **(Any three) 1 × 3 = 3**

COMMONLY MADE ERROR

➲ The students limit their outlook at the problems faced by the Cotton Textile Industry in India.

ANSWERING TIP

➲ Logically answer the question by focusing on each and every problem in a systematic order.

7. "Agriculture gives boost to the Industrial Sector." Support the statement with arguments. U **[Board Term-II, Delhi Set-II, 2015]**

Ans. Agriculture gives boost to the Industrial Sector:

(i) Agriculture provides raw material to Industries.

(ii) Agriculture provides market for Industrial products.

(iii) Agriculture helps boost new Industrial products.

(iv) The industries such as cotton, jute, silk, woollen textiles, sugar and edible oil, etc., are based on agricultural raw materials. **(Any three)**

8. Why is there a tendency for the Sugar Mills to concentrate in Southern states of India in recent years? Give three reasons. A U

Ans. Shifting of Sugar Industries to Southern states is because:

(i) Sugarcane that grows there has higher sucrose content.

(ii) Favourable climate provides longer crushing period and growing season.

(iii) Cooperatives are successful in these states.

(iv) Modern mills have more crushing capacity.

(Any three)

AI **9. Explain any three factors which were responsible for the concentration of Cotton Textile Industry in Maharashtra and Gujarat in early years.**

U **[O.E.B.]**

Ans. (i) Availability of raw cotton.

(ii) Ready markets are available.

(iii) Well-developed means of transportation.

(iv) Abundant skilled and unskilled labour at cheap rate.

(v) Moist climate which is suitable for the Cotton Industry. **(Any three)**

AI **10. Why is Cotton Textile Industry the largest Industry in India today? Give any three reasons.**

R **[O.E.B.]**

Ans. (i) Cotton Textile Industry contributes 14 per cent of the total Industrial Production.

(ii) It provides employment to 35 million persons directly – the Second largest after Agriculture.

(iii) It earns Foreign Exchange of about 24.6 per cent (4 per cent of GDP).

COMMONLY MADE ERROR

➲ The facts and figures mentioned in the answers are not accurate.

ANSWERING TIP

➲ The student should mention points pertaining to GDP and employment.

AI **11. Explain any three factors responsible for the location of Cotton Textile Industry in Mumbai and Ahmedabad.** U **[O.E.B.]**

Ans. (i) Availability of raw cotton, market and transport including accessible port facilities.

(ii) Cheap labour.

(iii) Moist climate has caused the concentration of cotton textile industries in Mumbai and Ahmedabad region. **1×3 = 3**

12. Why are we not able to perform to our full potential in the production of Iron and Steel in India? Explain any three reasons.

U **[OD Set-II, 2017]**

OR

"India is an important Iron and Steel producing country in the World. Yet we are not able to perform to our full potential." Suggest and explain any three measures to get full potential.

U **[Board Term–II, 2016]**

Ans. India is an important iron and steel producing country in the world, yet we are not able to perform to our full potential largely due to:

(i) High costs and limited availability of cooking coal.

(ii) Lower productivity of labour.

(iii) Irregular supply of power.

(iv) Poor Infrastructure. **(Any three) 1 × 3 = 3**

[CBSE Marking Scheme, 2017]

13. Why do we have maximum concentration of Iron and Steel Industry in Chota Nagpur Plateau region? Give any three reasons.

R U **[Board Term–II, 2016]**

OR

Why has the Chota Nagpur region maximum concentration of Iron and Steel Industries? Explain any three. **[Board Term-II, 2015]**

Ans. Refer to Answer of Long Q.1.

(Any three) 1 × 3 = 3

AI **14. "Industrialisation and Urbanisation go hand in hand". Validate the statement.**

HOTS **[Board Term II, SQP–2016]**

Ans. (i) After an industrial activity starts in a town, urbanisation follows. Industry provides employment to the people of the area. Population migrates from rural hinterlands to seek jobs. Housing and transport facilities are developed to accommodate these people. Other Infrastructural developments take place leading to growth and development of the town into a city.

(ii) Sometimes Industries are located in or near the cities.

(iii) Cities provide markets for manufactured goods.

(iv) Cities provide various services like Banking and Insurance, etc. **(Any three) 1 × 3 = 3**

[CBSE SQP Marking Scheme, 2016]

COMMONLY MADE ERROR

- Students forget to interrelate Industrialization and Urbanization to each other and write generic answers.

ANSWERING TIP

- Remember after an industrial activity starts, Urbanization follows.

AI **15. What are Software Technology Parks? State any two points of significance of Information Technology Industry in India.** R A **[O.E.B.]**

Ans. Software Technology Park: Software Technology parks provide single window service and high data communication facility to software experts.

Significance of IT industry:

(i) A major impact of this industry has been an employment generation. Up to 31st March, 2005, the IT industry employed over one million persons.

(ii) It is encouraging to know that 30 per cent of the people employed in this sector are Women.

(iii) This industry has been a major Foreign Exchange earner in the last two or three years because of its fast growing Business Processes Outsourcing (BPO) sector.

(iv) The continuous growth in the Hardware and Software is the key to the success of the IT industry in India. **(Any two)**

COMMONLY MADE ERROR

- Many students have not attempted first part of the question which carries one mark.

ANSWERING TIP

- The students should mention the contribution of IT sector in various domains.

AI **16. What is the importance of the Information Technology sector for the Indian economy? Explain.** U **[O.E.B.]**

Ans. The importance of IT sector is as follows:

(i) It has provided employment to over one million people.

(ii) This Industry is said to be a major Foreign Exchange earner.

(iii) It has helped in the growth of the Service Sector.

AI **17. Mention any two factors that have contributed to a healthy growth of the Automobile Industry in India? Name two centres where this industry is located.** A **[O.E.B.]**

Ans. (i) The introduction of new and contemporary models stimulated the demand for vehicles in the market.

(ii) Foreign Direct Investment (FDI) brought in new technology and aligned the Industry with Global Developments.

The two Centres of Automobile Industry are Jamshedpur and Gurugram. **2 + 1 = 3**

AI **18. Examine the impacts of Liberalisation on Automobile Industry of India.** U A **[O.E.B.]**

Ans. Impacts of Liberalisation on Automobile Industry are:

(i) Multi-utility vehicles have been introduced.

(ii) The coming of new and contemporary models.

(iii) Healthy growth of the market.

(iv) FDI in new technology.

(v) Aligned the industry with global development.

(vi) Industry has experienced a quantum jump.

½ × 6 = 3

AI 19. "The Iron and Steel Industry is the Basic as well as Heavy Industry." Support the statement with three points. HOTS A [O.E.B.]

OR

Why is Iron and Steel Industry called a Basic Industry? Explain. A [O.E.B.]

Ans. Iron and Steel Industry is the Basic Industry as:

(i) All the other Industries depend on it for their machinery.

(ii) Steel is needed to manufacture a variety of Engineering goods.

(iii) It provides variety of Consumer goods.

(iv) Construction material, Defence, Medical, Telephonic, Scientific equipment, etc., are the gift of Iron and Steel Industry.

(Any three)

AI 20. Distinguish between Integrated Steel Plants and Mini Steel Plants, stating three points of distinction. A [O.E.B.]

Ans. (i) An Integrated Steel Plant is larger than a Mini Steel Plant.

(ii) Mini Steel Plant uses steel scrap and sponge iron while integrated steel plant uses basic raw materials, *i.e.*, iron ore for making steel.

(iii) Mini steel plant produces mild and alloy steel while integrated steel plant produces only steel.

COMMONLY MADE ERROR

- The raw material used in both plants is not specified clearly by the students.

ANSWERING TIP

- The student should mention the differences particularly in terms of configuration.

21. Explain the ways through which the Industrial Pollution of fresh water can be reduced.

UA [OD, Set I, 2020]

Ans. The ways through which the Industrial Pollution of fresh water can be reduced are:

(i) Treated waste water can be recycled for reuse in industrial processes.

(ii) Harvesting of rain water to meet water requirement for industrial process.

(iii) Treating hot and polluted waste water from industries before releasing it into our rivers and lakes.

(iv) Installing water treatment plants at the industrial sites for recycling.

(v) Legal provisions must be made to regulate the use of groundwater for industrial use. **(Any three)**

22. "Consequences of environmental degradation do not respect National or State boundaries." Justify the statement. HOTS U [Delhi, Set I, 2019]

Ans. Consequences of Environmental degradation do not respect National or State boundaries because:

(i) The increase in pollution of land water, air, noise and resulting in degradation of the environment cannot be overlooked.

(ii) Pollution of river waters affects all as most of the rivers pass through different states.

(iii) Air pollution caused by the presence of a high proportion of undesirable gases adversely affects human health and the atmosphere as a whole.

(iv) Thermal pollution of river water affects aquatic life irrespective of State and National Boundaries.

(Any three) 1×3=3

[CBSE Marking Scheme, 2019]

AI 23. How has the ever increasing number of industries in India made position worse by exerting pressure on existing fresh water resources? Explain. U [Delhi & OD, 2018]

Ans. Increasing number of industries exerting pressure on Fresh water resources:

(i) Industries are heavy users of water.

(ii) More demand of hydroelectric power.

(iii) Industrial wastes and effluents are discharged into rivers causing Water pollution.

(iv) Multiplying urban centres, due to Industries, has caused pressure on water resources.

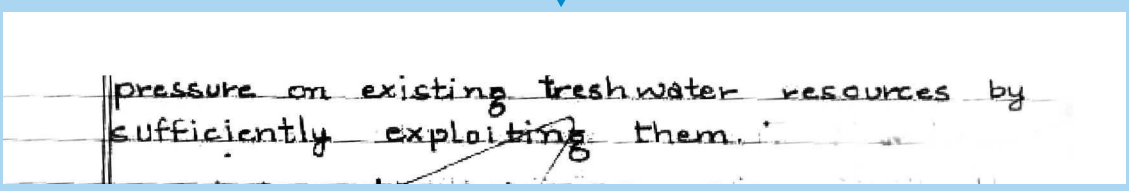
(v) Any other relevant point.

(Any three points to be explained) **1×3=3**

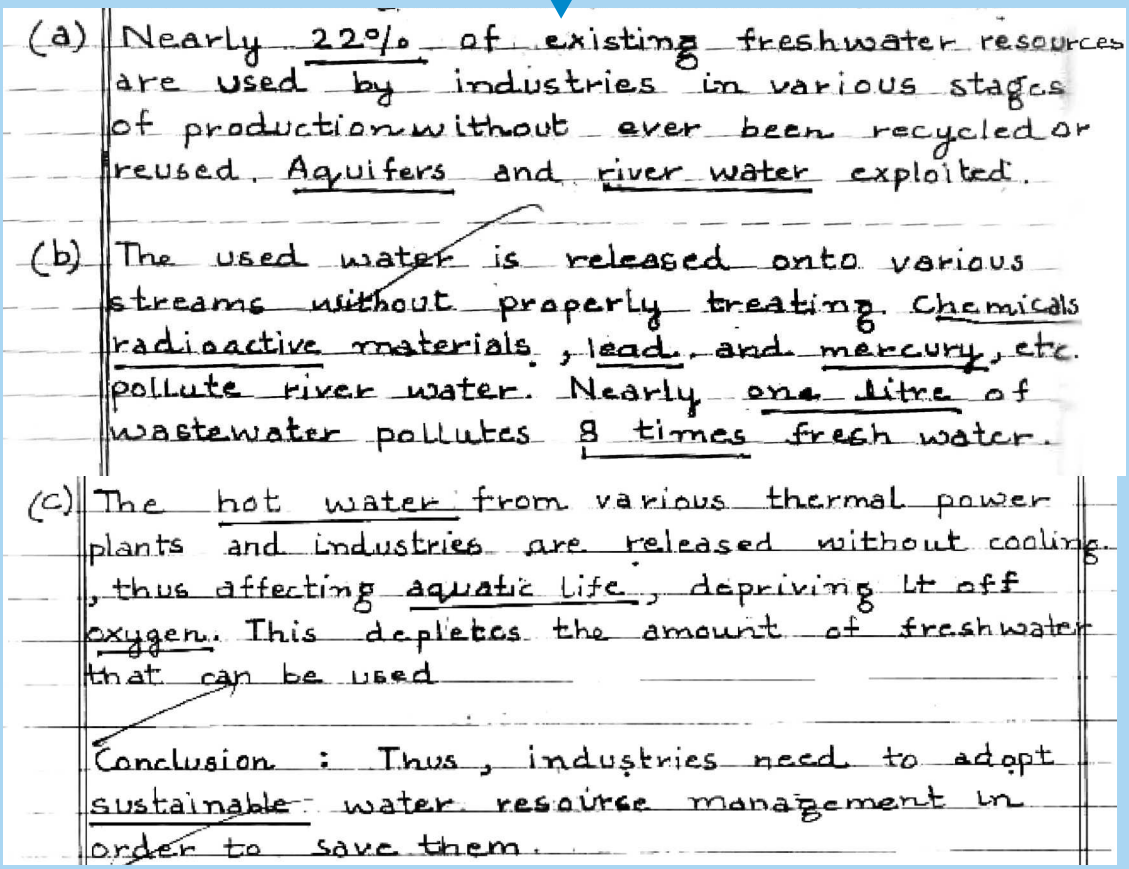
[CBSE Marking Scheme, 2018]

Detailed Answer:

Topper's Answer, 2018


pressure on existing freshwater resources by sufficiently exploiting them.

Topper's Answer, 2018



(a) Nearly 22% of existing freshwater resources are used by industries in various stages of production without ever been recycled or reused. Aquifers and river water exploited.

(b) The used water is released onto various streams without properly treating. Chemicals radioactive materials, lead and mercury, etc. pollute river water. Nearly one litre of wastewater pollutes 8 times fresh water.

(c) The hot water from various thermal power plants and industries are released without cooling, thus affecting aquatic life, depriving it off oxygen. This depletes the amount of freshwater that can be used

Conclusion : Thus, industries need to adopt sustainable water resource management in order to save them.

COMMONLY MADE ERRORS

- Students have just written industrial waste without mentioning its types like chemicals, oil, radioactive minerals, etc.
- The student do not late fact particularly pertaining to waits pollutions.

ANSWERING TIPS

- Besides requirements of fresh water in industries, you can discuss about requirements of urbanisation also.
- In fresh water resources, write points only are water whereas in any three measures to minimise environment degradation you can discuss any three options water, movie, etc.

AI **24. Suggest any three measures to minimize the Environment Degradation by Industries in India.** UA **[Board Term - II, Compartment Delhi, Set-I, 2017]**

OR

Suggest any three steps to minimize the Environmental degradation caused by the Industrial development in India.

U **[Board Term–II, OD, 2016]**

Ans. Three steps to minimize the environmental degradation caused by industrial development in India are:

(i) Minimizing use of water for processing by reusing and recycling it in two or more successive stages.

(ii) Harvesting of rainwater to meet water requirements.

(iii) Treating hot water and effluents before releasing them in rivers and ponds.

(iv) Particulate matter in the air can be reduced by fitting smoke stacks to factories with electrostatic precipitators, fabric filters, scrubbers and inertial separators.

(v) Smoke can be reduced by using oil or gas instead of coal in factories.

(vi) Machinery and equipment can be used and generators should be fitted with silencers.

(vii) Almost all machinery can be redesigned to increase energy efficiency and reduce noise.

(Any three) 1 × 3 = 3

[CBSE Marking Scheme, 2016]

COMMONLY MADE ERROR

- The students do not state facts particularly pertaining to water pollution.

ANSWERING TIP

- In freshwater resources, write points only on water, whereas in any three measures to minimize Environment Degradation you can discuss any three points on air, water, noise, etc.

Long Answer Type Questions

(5 Marks Each)

AI **1. Explain with examples any five factors that are responsible for Industrial location.**

U **[Delhi Set-II, 2019, 2015]**

Ans. Five factors responsible for industrial location are:

1. Availability of raw material at low cost.
2. Government Policies.
3. Availability of specialized labour.
4. Availability of markets and services facilities like banking, transport, etc.
5. Availability of power.
6. Any other relevant point to be explained with example.

(Any five points to be explained with examples.) 5×1=5

[CBSE Marking Scheme, 2019]

Detailed Answer:

The location of Industries depends on a number of physical and socio-economic factors among which following are the major ones:

(i) Availability of raw material: Large quantities of raw materials are needed for Industries. Therefore, industries are located near the source of raw materials. It saves the cost of transportation. Steel centres are developed where coal and iron are easily available. Jute mills in West Bengal and the cotton textile mills in Maharashtra are located due to the availability of raw materials.

(ii) Availability of power resources: Coal, oil and hydro power are the main sources of power. Most of the industries are located near coal fields. Aluminium industries and paper industries are located near hydroelectric stations.

(iii) Availability of means of transportation: Modern industries need cheap, developed and quick means of transportation. Cheap means of transportation are required for the movement of workers, raw materials and machinery to the factories.

(iv) Climate: Stimulating climate increases the efficiency of the labourers. The Cotton textile Industry requires humid climate. The Film Industry needs good weather with clear blue skies. Similarly, the Aircraft Industry also needs clear weather.

(v) Availability of skilled labour: Cheap and skilled labour is essential for the location of industries. Glass Industry at Firozabad and the Sports Goods Industry in Jalandhar are located due to the availability of skilled labour.

COMMONLY MADE ERROR

- The students generally stick to the Geographical factors while answering the question.

ANSWERING TIP

- Besides mentioning purely Geographical factors influencing industrial location, there are factors of historical, human, political and economic nature that should be taken into consideration.

2. Why is the economic strength of a country measured by the development of Manufacturing Industries? Explain with examples.

U + R **[Delhi/OD, 2018]**

OR

Analyse the role of the manufacturing Sector in the Economic Development of India.

[Board Term–II, OD Set–I, 2017]

OR

AI **"The economic strength of a country is measured by the development of Manufacturing industries." Support the statement with arguments.**

A **[Board Term–II, Delhi Set–I, II, III, 2016]**

[Board Term–II, OD Compartment, Set 2017]

Ans. The economic development of a country is measured by the development of Manufacturing industries in the following ways:

(i) Manufacturing Industries help in modernising agriculture which forms the backbone of our economy.

(ii) They reduce the heavy dependence of people on agricultural income by providing them jobs in Secondary and Tertiary Sectors.

(iii) Industrial development is a pre-condition for the eradication of unemployment and poverty from our country.

(iv) Manufacturing activities expand Trade and Commerce.

(v) Exports bring in much needed Foreign Exchange.
(vi) Manufacturing is the process of value addition.
(vii) It also brings down regional disparities by establishing industries in tribal and backward areas.
(viii) It increases the GDP/ National Income of the country.

Any five points to be explained.

[CBSE Marking Scheme, 2018] 5 × 1 = 5

3. What is the Manufacturing Sector? Why is it considered as the backbone of development? Interpret the reason.

U [Board Term-II, OD Set-I, 2015]

Ans. Definition of Manufacturing Sector:
Production of goods in large quantities after processing raw materials into more valuable products is called Manufacturing.

It is considered as a backbone of development because:

(i) It not only helps in modernising agriculture but also forms the backbone of our economy.
(ii) Industrial development is a precondition for the eradication of unemployment and poverty from our country.
(iii) Export of manufactured goods expands Trade and Commerce.
(iv) Countries that transform their raw materials into a wide variety of finished goods of higher value are prosperous. 1 + 4 = 5

[CBSE Marking Scheme, 2015]

4. What is Manufacturing Sector? Describe four types of manufacturing sector on the basis of Ownership. A [Board Term-II, 2015]

Ans. Manufacturing Sector: Production of goods in large quantities after processing from raw materials to more valuable products is called manufacturing. For example: paper is manufactured from wood, sugar from sugarcane and aluminium from bauxite.

Four types of manufacturing sector on the basis of ownership are:

(i) Public sector owned by government agencies. For example: BHEL, SAIL, etc.
(ii) Private sector owned by individuals or a group of individuals. For example: TISCO, Bajaj Auto Ltd., Dabur Industries, etc.
(iii) Joint sector jointly owned by the state and individuals. For example: Oil India Ltd, etc.
(iv) Cooperative sector is owned and operated by the producers or suppliers of raw materials, workers or both. For example: AMUL, Mother Dairy, etc.

1 + 4 = 5

[CBSE Marking Scheme 2015]

AI **5. Why are maximum Jute Textile Mills located in the Hugli Basin?** U (SQP, 2018-19)

OR

Explain any five factors that are responsible for the location of the 'Jute Mills' mainly along the banks of the 'Hugli River'.

U (CBSE Compartment Set 2018)

OR

Evaluate the factors which are responsible for the location of Jute Industry in West Bengal.

A [Board Term-II, 2016]

OR

Describe any five factors responsible for the concentration of Jute Mills along the banks of the Hugli river. U [Board Term-II, Foreign Set-II, 2015]

Ans. Factors responsible for the location of the Jute Mills in Hugli Basin:

(i) Proximity of jute producing areas.
(ii) Cheap water transport supported by a good network.
(iii) Water transport is supported by good network of railways and roadways.
(iv) Abundant water for processing raw jute.
(v) Availability of cheap labour.
(vi) Kolkata port facility is available.
(vii) Insurance and banking facilities are also available.
(viii) Any other relevant point.

(Any five factors to be explained) 1 × 5 = 5

(CBSE Marking Scheme, 2018)

COMMONLY MADE ERROR

➲ Cheap water transport is not mentioned in the answers.

ANSWERING TIP

➲ Hugli Basin in Calcutta (Kolkata) has the most suitable land for the production of Jute.

6. Explain any two main challenges faced by the Jute Industry in India. Explain any three objectives of National Jute Policy.

U [Board Delhi, 2017]

Ans. Challenges faced by the jute industry are:

(i) Stiff competition in the International Market from synthetic substitutes.
(ii) To stimulate demand the products need to be diversified.
(iii) Stiff competition from other competitors like Bangladesh, Brazil, etc.

Any other relevant point.
(Any two points to be explained.)

Objective of National Jute Policy:

(i) Increasing productivity.

(ii) Improving quality.

(iii) Ensuring good prices to the Jute Farmers.

(iv) Enhancing the yield per hectare.

Any other relevant points.

(Any three) (2+3=5)

[CBSE Marking Scheme, 2017]

Detailed Answer:

(i) Following are the challenges faced by Jute Industries in India:

(a) Prices for jute textiles are so low that industrialists hesitate to set up these industries.

(b) International demand of jute goods is falling sharply which is not an encouragement for these Industries.

(c) Many countries now prefer substitutes for Jute like Plastic or Synthetic fibres which reduce its demand.

(d) Our jute industries face hard competition from Brazil, Thailand, Bangladesh and Egypt whose production cost of jute textile is much lower than of India.

(e) As Jute exhausts soil fertility very fast and also because of its low profits, farmers now prefer to cultivate alternative crops like Rice.

(ii) The government has taken the following steps to boost Jute production:

- The Government has made it compulsory in the country to use Jute Packaging.
- In 2005, our government formulated the National Jute policy with the following aims:

(a) To expand production

(b) To enhance quality

(c) To provide good prices to the farmers

(d) To enhance yield per hectare

(iii) With the increased awareness about environmental degradation, many state governments have also banned the use of plastic bags and recommended jute or paper bags.

7. Why are Sugar Mills concentrated in Sugarcane producing areas? Explain any three problems faced by Sugar Industry in India.

A **(Delhi, Set II, 2016)**

Ans. Sugar Industries are concentrated in the sugarcane producing areas because:

(i) The raw material used in the Sugar Mills, is Sugarcane which is bulky.

(ii) In haulage, its sucrose content reduces.

(Any other relevant point) (Any two)

Challenges:

(i) Seasonal nature of the Industry.

(ii) Old and inefficient methods of production.

(iii) Transport delays for Sugarcane to reach to the Mills.

(iv) Need to maximize the use of bagasse.

(Any other relevant points) (Any three)

(2+3=5)

[CBSE Marking Scheme, 2016]

Detailed Answer:

The Sugar Mills in India are usually concentrated in sugarcane producing areas in the southern and western states, especially in Maharashtra because:

(i) The cane produced in these areas has high sucrose content.

(ii) The Sugar Industry is seasonal in nature and therefore a cooler climate ensures longer crushing season.

(iii) The raw-material used in Sugar Industry is bulky. Sucrose contents reduce if there is a delay in haulage.

Challenges:

(i) Uncertain Production Output: Sugarcane has to compete with several other food and cash crops like cotton, oil seeds, rice, etc. This affects the supply of sugarcane to the mills and the production of sugar also varies from year to year causing fluctuations in prices leading to losses in times of excess production due to low prices.

(ii) Low Yield of Sugarcane: India's yield per hectare is extremely low as compared to some of the major sugarcane producing countries of the world. For example, India's yield is only 64.5 tonnes/hectare as compared to 90 tonnes in Java and 121 tonnes in Hawaii.

(iii) Short crushing season: Sugar production is a seasonal industry with a short crushing season varying normally from 4 to 7 months in a year. It causes financial loss and seasonal employment for workers and lack of full utilization of Sugar Mills.

(iv) Low Sugar recovery rate: The average rate of recovery of sugar from sugarcane in India is less than ten per cent which is quite low as compared to other major sugar producing countries.

(v) High Production Cost: High cost of Sugarcane, inefficient technology, uneconomic process of production and heavy excise duty result in high cost of manufacturing. Most of the sugar mills in India are of small size with a capacity of 1,000 to 1,500 tons per day thus, failing to take advantage of economies of scale.

8. Why was the Cotton Textile Industry concentrated in the cotton growing belt in the early years? Explain.

U **[Board Term-II, OD Set-II, 2015]**

Ans. Cotton Textile Industry was concentrated in the Cotton growing belt in the early years because of:

(i) Availability of raw cotton- *e.g.* belt of Maharashtra and Gujarat

(ii) Proximity to market

(iii) Transport

(iv) Port facilities

(v) Cheap labour

(vi) Moist climate

(Any five points to be explained) $1 \times 5 = 5$

[CBSE Marking Scheme, 2015]

AI 9. **Explain any five factors that are responsible for concentration of 'Iron and Steel' Industries mainly in 'Chota Nagpur Plateau Region'.**

R **(CBSE Compartment, 2018)**

Ans. Concentration of Iron and Steel Industries in Chota Nagpur Plateau Region:

(i) High grade raw material in proximity.

(ii) Availability of labour.

(iii) Raw materials as well as finished goods are heavy and bulky containing heavy transport cost.

(iv) Road and rail transport facilities are available.

(v) Vast growth potential in the home market.

(vi) Low cost iron ore.

(Any other relevant point)

(Any five points to be explained) 1 × 5 = 5

(CBSE Marking Scheme, 2018)

Detailed Answer:

The factors responsible for the concentration of Iron and Steel Industries in and around the 'Chota Nagpur Plateau Region' are as follows:

(i) Low cost of iron ore. Iron Mines are located in the nearby areas.

(ii) High grade raw materials in proximity and other bulky raw materials like, coking coal, limestone are also available in proximity.

(iii) From the adjoining areas of Bihar, Jharkhand and Odisha, cheap labour is available in abundance.

(iv) This region is well connected with roadways and railways that help in the swift movement of raw materials and finished goods to the industry and market areas, respectively.

(v) Kolkata is a well developed port that is near to this area.

COMMONLY MADE ERROR

- The students generally mention about the geographical factors for concentration of Iron and Steel Industries in and around Chota Nagpur region.

ANSWERING TIP

- Along with the geographical factors students must mentioned the climatic factors

10. **Explain the ways through which the Industrial Pollution of fresh water can be reduced.**

U **(OD Set I, 2020)**

OR

How can the Industrial Pollution of fresh water be reduced? Explain various ways.

U **[OD Set-I, 2019]**

Ans. The ways through which the Industrial Pollution of fresh water can be reduced are:

(i) Treated waste water can be recycled for reuse in Industrial processes.

(ii) Harvesting of rain water to meet water requirement for Industrial process.

(iii) Treating hot and polluted waste water from industries before releasing it into our rivers and lakes.

(iv) Installing water treatment plants at the Industrial sites for Recycling.

(v) Legal provisions must be made to regulate the use of groundwater for Industrial use. **1×5=5**

[CBSE Marking Scheme, 2020]

Detailed Answer:

After Independence, the number of Industries has been increasing at a rapid pace and this has become a reason for pressure on existing fresh water resources. Fresh water is almost limited, though renewable in India, but over exploitation and mismanagement of this resource by industries is aggravating the water stress day-by-day.

(i) Industries, especially heavy industries, use huge amount of fresh water for industrial purpose and pollute and waste such water.

(ii) These industries, for their energy requirements, depend on hydroelectric projects and this electricity is generated through the construction of dams in the rivers' upstream. So, the river almost dries up in the lower stream areas.

(iii) Again, industries dump the chemical waste in the rivers, lakes, etc., which then consequently pollute the water dangerously for human survival. These also contaminate the ground water through seepage of industrial wastes. So, the increasing number of industries exerts pressure on existing freshwater resources.

COMMONLY MADE ERROR

- Factors affecting water pollution are not written clearly by few students.

ANSWERING TIP

- Minimising the use of water is always a good start for this type of answer.

AI 11. **'The challenge of sustainable development requires control over Industrial Pollution.' Substantiate the statement with examples.**

A **[CBSE SQP, 2020]**

Ans. (i) On one hand, industries lead to extensive industrial growth and expansion but on the other hand, these are also the cause of environmental degradation which prompt to the different types of air and Water Pollution.

(ii) There is an increasing requirement to adopt a further sustainable model.

(iii) Industries must produce eco-friendly products and dump wastes responsibly.

(iv) Use of latest technology can help industries to control pollution and lead towards sustainable mode of operation.

(v) Industries use – Reuse-Recycle-Refuse approach.

(vi) Treatment of hot water and effluents before releasing them in rivers and ponds should be done. There should be no thermal plants in the cities.

(Any five points to be explained) 5

[CBSE Marking Scheme, 2020]

COMMONLY MADE ERROR

- Some students haven't understood the question properly. They haven't understood the meaning of 'sustainable'.

ANSWERING TIP

- For sustainable development, mentioning measures to prevent air, water or noise pollution is must.

AI 12. How are Industries responsible for environmental Degradation in India? Explain with examples.

U **[Delhi Set-I, 2019]**

Ans. Industries are responsible for environmental Degradation in India in the following ways:

1. Pollution of land, water and air from industries causes Environmental degradation.
2. Burning of fossil fuels in big and small factories emit smoke in the air.
3. Organic and inorganic industrial wastes and effluents are discharged into rivers.
4. Dumping of wastes from industries render the soil useless.
5. Rain water carrying pollutants from wastes dumped by industries percolates and contaminates the ground water.
5. Any other relevant point.

(Any five points to be explained with examples) 1×5=5

[CBSE Marking Scheme, 2019]

Detailed Answer:

Industries are responsible for Environmental Degradation in India in the following ways:

(i) Industries emit smoke and pollute water and air very badly.

(ii) Undesirable gases like carbon monoxide and sulphur dioxide cause air pollution.

(iii) Industrial water contains toxic metals which pollute land and soil.

(iv) Unwanted loud sound from Industries also causes pollution and damages the hearing system of living beings.

(v) Industrial effluents are discharged into the rivers. They include both organic and inorganic matter such as coal, dyes, soaps, pesticides and fertilizers, plastics and rubber. These are major water pollutants.

(vi) Sometimes, solid industrial waste is dumped into isolated pockets of land. This leads to land and soil pollution in adjoining areas.

(Any five points)

COMMONLY MADE ERROR

- Students have given only points on degradation of liquid wastes. They could have mentioned some points on gases and solid wastes also.

ANSWERING TIP

- Students should mention what type of wastes are generated by the industries in detail.

AI 13. Explain five types of 'Industrial Pollution.'

U **[Delhi Set-III, 2019]**

Ans. Five types of industrial pollution:

1. Air pollution.
2. River water pollution.
3. Underground water pollution.
4. Noise pollution.
5. Soil pollution.
6. Any other relevant point.

(Any five points to be explained) 5

[CBSE Marking Scheme, 2019]

Detailed Answer:

Five types of industrial pollution are:

(i) Air Pollution: It is caused by the presence of high proportion of undesirable gases, such as sulphur dioxide and carbon monoxide. It adversely affects human health, animals, plants, buildings and the atmosphere as a whole.

(ii) Water Pollution: It is caused by organic and inorganic industrial wastes and effluents discharged into rivers. It affects every level of the ecosystem, including human health.

(iii) Soil Pollution: It is caused by dumping of wastes, specially glass, harmful chemicals, industrial effluents, packaging, salts and garbage. It renders the soil useless. When rainwater percolates to the soil carrying the pollutants to the ground, the ground water also gets contaminated.

(iv) Thermal Pollution: It occurs when hot water from factories and thermal power plants is drained into rivers and ponds before cooling.

(v) **Noise Pollution:** It is caused by industrial and construction activities, machinery, factory equipment, generators, saws and pneumatic and electric drills. It not only results in irritation and anger, but also causes hearing impairment, increased heart rate and blood pressure among other physiological effects.

COMMONLY MADE ERROR

- Many students have written points only on air, water and noise pollution. They could have discussed few lines on gases and underground water pollution also, which would increase their marks.

ANSWERING TIP

- Each type of pollution should be discussed briefly in at least two-three lines.

AI **14. Explain the pro-active approach adopted by the National Thermal Power Corporation (NTPC) for preserving the natural environment and resources.** U **[Board Term-II, OD Set-III, 2015]**

Ans. The pro-active approach adopted by the National Thermal Power Corporation (NTPC) for preserving the natural environment is as follows:

1. Optimum utilisation of equipment adopting latest techniques and upgrading existing equipment.
2. Minimising waste generation by maximising ash utilisation.
3. Providing green belts for nurturing ecological balance and addressing the question of special purpose vehicles for afforestation.
4. Reducing environmental pollution through ash pond management, ash water recycling system and liquid waste management.
5. Ecological monitoring, reviews and online database management for all its power stations. **1 × 5 = 5**

[CBSE Marking Scheme, 2015]

15. Explain any five measures to control Industrial Pollution in India. U **[O.E.B.]**

Ans. Five ways to reduce industrial pollution are listed below as:

(i) Restructuring the manufacturing processes to reduce or eliminate pollutants, through a process called pollution prevention.

(ii) Creating cooling ponds, which are man-made and are designed to cool the heated water from industries by evaporation, condensation and radiation.

(iii) Filtration of sewage in water treatment plants attached to Industries.

(iv) Instructing Industries to be set up far from residential areas.

(v) Backing the constitutional provisions by a number of laws – acts, rules and notifications.