- Production of goods in large quantities after processing from raw materials to more valuable products is called **manufacturing**.
- Public sector industries were set up to eradicate unemployment, poverty and bring down regional disparities from our country.
- In order to compete in the international market our industry needs to be more efficient, competitive and produce good quality goods.
- The first successful cotton textile mill was established in Mumbai in 1854.
- India is the second largest exporter of jute products after Bangladesh.
- The first jute mill was set up near Kolkata in 1859.
- The sugar industry is seasonal in nature so, it is ideally suited to the cooperative sector.
- The iron and steel Industry is called the basic industry because all the other industries depend on it for their machinery.
- Iron and steel is called a heavy industry because all the raw materials as well as finished goods are heavy and bulky. It involves heavy transportation costs.
- The chemical industry is its own largest consumer.
- Fertilizer industry expanded after the introduction of Green Revolution.
- The cement industry is concentrated in Gujarat because it has suitable access to the market in the Gulf countries for the export of cement.
- Bangalore city is known as the electronic capital of India.
- Every litre of waste water discharged by our industry pollutes eight times the quantity of freshwater.

Q.1 "The economic strength of a country is measured by the development of manufacturing industries". Justify this statement with four examples.

Ans.

i. Manufacturing industries help in modernizing agriculture;
ii. They also reduce the heavy dependence of people on agricultural income by providing them jobs.
iii. Industrial development reduces unemployment and poverty:
iv. It also brings down regional disparities.
v. Export of manufactured goods expands trade and commerce, and brings foreign exchange.
vi. Prosperity of our country depends on transforming raw materials into furnished goods of higher value and diversifying our industries.
vii. Industrial sector contributes 27 % of GDP and manufacturing contributes 17 % of GDP.

Q.2 "Agriculture and industry are not exclusive of each other. They move hand in hand." Justify this statement with 4 examples.

Ans. The agro-industries in India have given a major boost to agriculture -

i. Agro-based industries have given a boost to agriculture by raising its productivity.
ii. Agro-based industries depend on the agriculture for their raw materials such as cotton, sugarcane, jute etc.
iii. Agriculture depends on industries for products such as irrigation pumps, fertilizers, insecticides, pesticides, machines and tools, etc.
iv. Industrial development helps agriculture in increasing their production and make production processes very efficient.

Q.3 Classification of industries:

On the basis of source of raw materials used:

i. **Agro based**: cotton, woollen, jute, silk textile, rubber and sugar, tea, coffee, edible oil.
ii. **Mineral based**: iron and steel, cement, aluminium, machine tools, petrochemicals.

On the basis of their main role:

i. **Basic or key industries** which supply their products as raw materials to manufacture other goods e.g. iron and steel and copper smelting, aluminum smelting.
ii. **Consumer industries** that produce goods for direct use by consumers – sugar, toothpaste, paper, sewing machines, fans etc.

On the basis of capital investment:

i. **Small scale industry**: having rupees one crore as the maximum investment on the assets of a unit.
ii. **Large scale industry**: If investment is more than one crore on any industry.

On the basis of ownership:

i. **Public sector**: owned and operated by government agencies – BHEL, SAIL etc.
ii. **Private sector** industries owned and operated by individuals or a group of individuals –TISCO, Bajaj Auto Ltd., Dabur Industries.
iii. **Joint sector** industries which are jointly run by the state and individuals or a group of individuals. Oil India Ltd. (OIL) is jointly owned by public and private sector.
iv. **Cooperative sector** industries are owned and operated by the producers or suppliers of raw materials, workers or both. They pool in the resources and share the profits or losses proportionately such as the sugar industry in Maharashtra, the coir industry in Kerala.

Based on the bulk and weight of raw material and finished goods:

i. **Heavy industries** such as iron and steel
ii. **Light industries** that use light raw materials and produce light goods such as electrical industries.

Q.4 Why in early years the cotton textile industry was concentrated in the states of Gujarat and Maharashtra?

Ans. In the early years, the cotton textile industry was concentrated in the Gujarat and Maharashtra because of:

a. Maharashtra and Gujarat are traditional cotton growing belt of India. Raw cotton is available from nearby areas thus reducing the cost of obtaining raw material at site.
b. Urban cetres of these states offer large market to cotton products,
c. Transport including accessible port facilities help in reducing costs,
d. Abundant labour from nearby densely populated region,
e. Moist climate due to nearness to Arabian sea help in industrial production.

Q.5 State the importance of cotton textile industry in India.

Ans. Cotton textile industry has close links with agriculture.

i. It provides a living to farmers, cotton boll pluckers.
ii. It provides income to workers engaged in ginning, spinning, weaving, dyeing, designing, packaging, tailoring and sewing.
iii. This industry creates demands and supports many other industries, such as, chemicals and dyes, mill stores, packaging materials and engineering works.
iv. The handspun khadi provides large scale employment to weavers in their homes as a cottage industry.

Q.6 Why most of our jute mills are located along the banks of the Hugli River in West Bengal?

Ans. Factors responsible for their location in the Hugli basin are:

i. Proximity of the jute producing areas,
ii. Inexpensive water transport,
iii. Support of a good network of railways, roadways and waterways to facilitate movement of raw material to the mills,
iv. Abundant water for processing raw jute,
v. Cheap labour from West Bengal and adjoining states of Bihar, Orissa and Uttar Pradesh.
vi. Kolkata as a large urban centre provides banking, insurance and port facilities for export of jute goods.

Q.7 Explain factors affecting location of sugar mills.

Ans. Sugar industry is located in the sugarcane growing regions because:

i. The raw material (sugarcane) used in this industry is bulky and difficult to transport at low costs.
ii. The sucrose content in the sugarcane reduces during its transportation.
iii. Cooler climates allows the longer crushing season.
iv. Sugar industry is ideally suited for cooperative sector because it's a seasonal industry.
v. Sugarcane grows well during hot and humid climates only.

Q.8 Why in recent years the sugar mills have shifted to southern and western states?

Ans. The sugar mills in recent years have shifted and concentrated in the southern and western states, especially in Maharashtra, This is because -

i. The cane produced here has higher sucrose content.
ii. The cooler climate also ensures a longer crushing season.
iii. The cooperatives are more successful in these states.

Q.9 Explain why most the iron and steel industry are concentrated in Chotanagpur plateau region.

Ans. Chotanagpur region has relative advantages such as:

i. This region is rich in the raw material needed to produce the steel such as iron ore, coal, limestone, etc.
ii. These raw material are heavy and bulky therefore difficult and costly to transport to the plant.
iii. This region has well connected railway lines which offer easy transportation of the finished products for their distribution to the markets and consumers.
iv. This region gets its power supply from Damodar valley.
v. Availability of cheap labour from surrounding regions.

Q.10 What characteristics of aluminium makes it the most important metal?

Ans. Aluminium smelting is the second most important metallurgical industry in India.

i. It is light, resistant to corrosion, a good conductor of heat, mallable and becomes strong when it is mixed with other metals.
ii. It is used to manufacture aircraft, utensils and wires.
iii. It has gained popularity as a substitute of steel, copper, zinc and lead in a number of industries.

Q.11 Mention two most important factors which influence the location of Aluminium industry.

Ans. Bauxite, the raw material used in the industry is a very bulky.

i. Regular supply of electricity for electrolysis.
ii. Assured sources of raw material at minimum cost are the two prime factors for location of the industry.

Q.12 Why the organic chemical industries are located near oil refineries where as inorganic chemical industries are spread all over India?

Ans. The organic chemical industries get their raw materials from byproducts of mineral oil which is processed and refined at oil refineries therefore these industries are located near oil refineries. Whereas the raw material for inorganic chemicals comes from other sources therefore they are not concentrated around one place.

Q.13 Which factors influence the location of cement industry in India?

Ans.

i. Bulky and heavy raw materials like limestone, silica, alumina and gypsum.
ii. Coal and electric power are needed as source of energy.
iii. It also needs good rail transportation.
iv. Port facilities for the export of cement.

Industrial Pollution and Environmental Degradation

Q.14 What is air pollution? Explain how air pollution is caused by the industries. What are the effects of air pollution?

Ans. **Air pollution:** the presence of high proportion of undesirable gases (SO_2 and CO) and airborne particulate materials in the air is called air pollution.
Air pollution is caused by - Airborne particulate materials like dust, sprays mist and smoke. Smoke emitted by chemical and paper factories, brick kilns, refineries and smelting plants, and burning of fossil fuels causes air pollution.
Air pollution adversely causes various diseases related to respiratory, nervous and circulatory systems. Smoky fog over cities called as urban smog is caused by atmospheric pollution. Air pollution can also cause acid rains.

Q.15 How is water pollution caused? Which industries causes the water and land pollution? What are the effects of water and land pollution?

Ans. **Water pollution:** Degradation of the quality of water due to high concentrations of suspended particles, organic and inorganic substances is called water pollution.
Water pollution is caused by - Industrial wastes, polluted waste water, chemical residuals, heavy metals are disposed off in running water or lakes, which destroy the bio-system of these waters. Major water polluting industries are leather, pulp and paper, textiles and chemicals.
Main effects of water pollution causes water borne diseases such as diarrhea, intestinal worms, hepatitis, etc.

Q.16 What is thermal pollution? What are its effects?

Ans. **Thermal pollution:** It occurs when hot water from factories and thermal plants is drained into rivers and ponds before cooling.
The effects are:

i. Wastes from nuclear power plants, nuclear and weapon production facilities cause cancers, birth defects and miscarriages.
ii. Dumping of wastes specially glass, harmful chemicals, industrial effluents, packaging, salts and garbage renders the soil useless.

Q.17 What is noise pollution? Which industrial units cause noise pollution? What are the effects of noise pollution?

Ans. **Noise pollution:** The state of high level of noise levels which is unbearable and uncomfortable to human beings is called noise pollution.
Main source of noise pollution are:

i. It is caused by Industrial and construction activities, Machinery and factory equipments, Generators, Saws, Pneumatic and Electric drills.
ii. The biggest noise pollution is produced by traffic.

Effects of Noise pollution: It results in irritation and anger, hearing impairment, Increased heart rate and blood pressure and a source of stress.

Control of Environmental Degradation

Q.18 How can the industrial pollution of fresh water be reduced?

Ans. Industrial pollution and degradation can be controlled by:

i. Minimizing use 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. Regulating the overdrawing of ground water reserves by industry.
v. Particulate matter in the air can be reduced by fitting smoke stacks to factories with electrostatic precipitators, fabric filters, scrubbers and inertial separators.
vi. Smoke can be reduced by using oil or gas instead of coal in factories.
vii. Generators should be fitted with silencers.
viii. Redesigning machineries to increase their energy efficiency and reduce noise.
ix. Noise absorbing material may be used apart from personal use of earplugs and earphones.