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ICSE GEOGRAPHY

Based on the latest ICSE syllabus

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ICSE GEOGRAPHY

Class 10

Chapter 10: India-Mineral Resources (Iron ore, Manganese, Copper and Bauxite)

The commercial exploitation of a mineral depends upon the amount of mineral contents in the ore. Most of the minerals have the following characteristics:

1. The minerals are exhaustible.
2. The minerals are unevenly distributed on the Earth.
3. Most of the minerals have impurities.
4. No country is self-sufficient in all the minerals.

TYPES OF MINERALS

On the basis of physical and chemical properties, the minerals are normally divided into metallic minerals and non-metallic minerals.

1. **Metallic minerals** contain metals, for example, iron, copper, gold, silver, manganese, etc. The metallic minerals are further divided into two groups:

a. **Ferrous minerals,** which have iron content, such as iron, manganese and tungsten.

b. **Non-ferrous minerals,** which do not have iron content, such as gold, copper, silver and bauxite.

2. **Non-metallic minerals** do not contain metals, for example, limestone, mica, sulphur and coal. Some non-metallic minerals are called **mineral fuels**, for example, coal and petroleum.

DISTRIBUTION OF MINERALS

India is rich in mineral resources, but these are unevenly distributed. The Northern Plains of India have a thick layer of alluvium deposited by the rivers. This region is very poor in mineral resources.

India has five well-defined mineral belts. These are:

1. **The Northeastern Plateau region** covers Chotanagpur (Jharkhand), Odisha plateau, West Bengal and parts of Chhattisgarh. This is the largest mineral belt in India.
2. **The Central belt** covers parts of Chhattisgarh, Madhya Pradesh, Telangana, Andhra Pradesh and Maharashtra. This is the second largest mineral belt in India.
3. **The Southern belt** covers parts of Karnataka and also extends into the Tamil Nadu uplands.
4. **The Southwestern belt** covers western Karnataka and Goa.
5. **The Northwestern belt** covers Rajasthan and the adjoining areas of Gujarat.

Opencast mine

Quarrying

Shaft mine

In the **northern mountains of India,** the mining of mineral resources is uneconomical due to (i) difficult terrain, (ii) lack of transport facilities, (iii) adverse climatic conditions, and (iv) sparse population.

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IRON ORE

Iron, a metal of universal use, is the backbone of modern civilization. It is used for manufacturing articles ranging from safety pins to ships. Iron is a cheap and durable metal. It can be easily mixed with other metals to form useful alloys.

On this basis, the reserves of iron ore in India can be divided into four types:

1. **Haematite,** also known as red ochre due to its reddish colour, is the best quality of iron ore in India. The iron contents are about 70 per cent. Most of the reserves of haematite ore are in Odisha, Jharkhand, Chhattisgarh, Andhra Pradesh, Karnataka and Goa.

2. **Magnetite,** also known as black ore due to its blackish colour, is the second best quality of iron ore in India. The iron contents are about 60 to 70 per cent.

Most of the reserves of magnetite ore are in Karnataka, Rajasthan, Andhra Pradesh, Tamil Nadu and Madhya Pradesh. This type of iron ore has magnetic properties.

3. **Limonite** is yellow or light brown in colour and is also called the **hydrated iron oxide**. This is the inferior quality and the iron contents range from 40 to 60 per cent. Most of the reserves are in Raniganj, Garhwal, Mirzapur (Uttar Pradesh), Kangra (Himachal Pradesh), etc. It has the advantage of easy and cheap mining.

4. **Siderite** is of very poor quality, and the iron contents are less than 40 per cent. The mining of siderite ore is uneconomical due to several impurities present in it. However, this type of iron ore is self-fluxing due to the presence of lime.

RESERVES OF IRON ORE

The main types of iron ore found in India are **haematite** and **magnetite**. The known reserves of the haematite ore are about 1785 crore tonnes, which are mostly in Odisha, Jharkhand, Chhattisgarh, Karnataka and Goa.

PRODUCTION AND DISTRIBUTION

The production of all types of iron ore in India has increased from about 4 million tonnes in 1950–51 to about 206.44 million tonnes in 2018-19. There have been many changes in the distribution pattern of iron ore in the last ten years. At present more than 95 per cent of the total iron ore production comes from Odisha, Goa, Chhattisgarh, Karnataka, and Jharkhand. Other main producing states are Andhra Pradesh, Tamil Nadu, Maharashtra, Madhya Pradesh, Rajasthan, etc.

1. **Odisha,** with an annual production of about 113.05 million tonnes, is the largest producer of iron ore in India. It produces about 54.76 per cent of the total iron ore production of India.

2.**Chhattisgarh,** with an annual production of about 34.94 million tonnes, is the second largest producer of iron ore in India. It produces about 16.92 per cent of the total iron ore production of India.

3.**Karnataka,** with an annual production of about 29.79 million tonnes, is the third largest producer of iron ore in India. It produces about 14.43 per cent of the total iron ore production of India.

India – Distribution of major iron ore regions

4. **Jharkhand,** with an annual production of about 23.43 million tonnes, is the fourth largest producer of iron ore in India. It produces about 11.35 per cent of the total iron ore production of India.

5. **Goa** has an annual production of about 10 million tonnes, and is the second largest producer of iron ore in India. Most of the iron ore mines are in North Goa.

MAIN IRON ORE PRODUCING CENTRES

1. Odisha: Sundargarh, Mayurbhanj, Keonjhar, Koraput, Sambalpur, Cuttack
2. Chhattisgarh: Bailadila (Bastar), Durg, Raigarh, Bilaspur, Sarguja
3. Karnataka: Baba Budan hills, Ballari, Chitradurga, Shivamogga, Dharwad, Tumakuru
4. Jharkhand: Singhbhum, Palamau, Dhanbad, Ranchi, Hazaribagh, Santhal Parganas

USES OF IRON ORE

India is the fourth largest producer of iron ore in the world. More than 80 per cent of the total iron ore produced in India, is sent to iron and steel plants for purification.
Iron is widely used in the manufacture of machines and transport equipment, development of infrastructure and building construction. Radioactive iron is used in medicines. Its various chemical compounds are used in paints, plastics, pigments, etc.

MANGANESE

Manganese is a black, hard and iron-like metal, which occurs naturally as manganese oxide. In India, the highest concentration of manganese is found in the Dharwar system of rocks. It is widely used in the manufacture of iron and steel. About 6 kg of manganese is needed in the manufacture of one tonne of steel.

RESERVES OF MANGANESE

The total known reserves of manganese in India are about 495.87 million tonnes, which is the second largest in the world, next only to Zimbabwe. More than 90 per cent of the total reserves are in Madhya Pradesh, Maharashtra, Odisha, Karnataka, Andhra Pradesh, Goa, and Jharkhand. About 44 per cent of the total manganese reserves are in Odisha alone.

PRODUCTION AND DISTRIBUTION

India is the seventh largest producer of manganese in the world, next only to South Africa, China, Australia, Ghana, Gabon and Brazil. The total annual production is about 28 lakh tonnes.

India – Distribution of major manganese ore regions

Now the leading manganese producing states in India are Madhya Pradesh, Odisha, Maharashtra, Andhra Pradesh and Karnataka. These five states together account for more than 98 per cent of the total manganese production in India.

MAIN MANGANESE PRODUCING CENTRES

1. Madhya Pradesh: Balaghat, Chhindwara, Jhabua
2. Maharashtra: Bhandara, Nagpur, Ratnagiri
3. Odisha: Sundargarh, Koraput, Kalahandi, Bolangir, Sambalpur
4. Karnataka: Shivamogga, Uttar Kannada, Ballari, Chitradurga, Tumakuru
5. Andhra Pradesh: Srikakulam, Visakhapatnam, Y S Reddy, Vijayanagaram, Guntur

COPPER

Copper was probably the first metal discovered and used by the early humans, either as an alloy or in the pure form.

PRODUCTION AND DISTRIBUTION

The total known reserves of copper ore in India are estimated at about 1.5 billion tonnes, which can provide about 12.5 million tonnes of pure metal. More than 90 per cent of the copper reserves are in Madhya Pradesh, Rajasthan, and Jharkhand. Small reserves of copper are also found in Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Odisha and Sikkim

MAIN COPPER PRODUCING CENTRES

1. Madhya Pradesh: Balaghat and Betul
2. Rajasthan: Khetri, Jhunjhunu, Ajmer, Alwar, Bhilwara, Chittaurgarh
3. Jharkhand: Singhbhum, Hazaribagh, Santhal Parganas

1. **Madhya Pradesh,** with an annual production of about 25 lakh tonnes, is the largest producer of copper ore in India. It accounts for about 53 per cent of the total copper ore production of India.

2.**Rajasthan,** with an annual production of about 13 lakh tonnes, is the second largest producer of copper ore in India. It accounts for about 42 per cent of the total copper ore production of India.

3.**Jharkhand,** with an annual production of about 2.4 lakh tonnes, is the third largest producer of copper ore is India. It accounts for about 14 per cent of the total copper ore production of India.

India – Distribution of major copper ore regions

BAUXITE

Bauxite, a clay like substance, is the ore of aluminium. Due to its lightness, malleability, ductility and resistance to atmospheric corrosion, aluminium has become one of the most useful metals in the present age.

RESERVES OF BAUXITE

The total reserves of bauxite in India are estimated at about 3,896 million tonnes. About 77 per cent of the total reserves are of metallurgical grade. This is about 4.5 per cent of the world's total reserves. The Indian reserves of bauxite are fifth largest in the world, after Guinea, Australia, Brazil and Vietnam.

About 67 per cent of the India's bauxite reserves are in Odisha (51 per cent) and Andhra Pradesh (16 per cent). Other states with bauxite reserves are Gujarat (9 per cent), Madhya Pradesh (4 per cent), Maharashtra (5 per cent), Chhattisgarh (4 per cent) and Jharkhand (6 per cent).

PRODUCTION AND DISTRIBUTION

There has been a significant progress in the production of bauxite in India, which has increased from about 68,000 tonnes in 1950-51 to more than 23.0 million tonnes in 2018-19. The main bauxite producing states are Odisha, Jharkhand, Gujarat, Chhattisgarh, Maharashtra and Madhya Pradesh.

1. **Odisha,** with an annual production of about 15 million tonnes, is the largest producer of bauxite in India. It accounts for about 65 per cent of the total bauxite production of India.

2.**Jharkhand,** with an annual production of about 2.4 million tonnes, is the second largest producer of bauxite in India. It accounts for about 10.2 per cent of the total bauxite production of India.

3. **Gujarat,** with an annual production of about 2.1 million tonnes, is the third largest producer of bauxite in India. It accounts for about 9.2 per cent of the total bauxite production of India.

4.**Chhattisgarh,** with an annual production of about 1.5 million tonnes, is the fourth largest producer of bauxite in India. It accounts for about 6.4 per cent of the total bauxite production of India.

India – Distribution of major bauxite ore regions

5. **Maharashtra,** with an annual production of about 1.4 million tonnes, is the fifth largest producer of bauxite in India, It accounts for about 6 per cent of the total bauxite production of India. Rich deposits with alumina contents 50 to 90 per cent occur in the Kolhapur district. Other districts are Thane, Ratnagiri, Satara and Pune.

6. **Madhya Pradesh,** produces about 7 lakh tonnes of bauxite and the main producing areas are in Amarkantak plateau and the Maikala range. The main producing districts are Shahdol, Balaghat and Jabalpur districts.

Small quantities of bauxite are also produced in Karnataka and Goa. About 80 per cent of bauxite mined in India is used for producing aluminium. India exports small quantities of bauxite to Italy, UK, Germany and Japan.

PRODUCTION OF BAUXITE IN INDIA (2018–19)

S. No.	States	Production (million tonnes)	Percentage of all India
1.	Odisha	15	65
2.	Chhattisgarh	1.5	6.4
3.	Maharashtra	1.4	6
4.	Jharkhand	2.4	10.2
5.	Gujarat	2.1	9.2
6.	Madhya Pradesh	0.7	4.3

THANK YOU