

UNIQUE STUDY POINT

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Class: X	Subject: Science	Session: 2025-26
Chapter: 05 - Mineral and Energy Resources	Time: 1½ Hours	Max. Marks: 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

- Q1.** Which of the following is the purest form of iron ore?
- (a) Hematite
 - (b) Magnetite
 - (c) Limonite
 - (d) Siderite
- Q2.** Rat-hole mining is practiced in:
- (a) Karnataka
 - (b) Odisha
 - (c) Meghalaya
 - (d) Kerala
- Q3.** Which is the oldest oil-producing state in India?
- (a) Gujarat
 - (b) Assam
 - (c) Maharashtra
 - (d) Rajasthan
- Q4.** Mica is mainly used in:
- (a) Construction industry
 - (b) Electric and electronic industries
 - (c) Food industry
 - (d) Textile industry
- Q5.** Which type of coal is used in the Neyveli thermal power plant?
- (a) Anthracite
 - (b) Bituminous

- (c) Lignite
- (d) Peat

Q6. Bailadila hills are located in:

- (a) Karnataka
- (b) Odisha
- (c) Chhattisgarh
- (d) Maharashtra

Q7. Which mineral is known for its excellent di-electric strength?

- (a) Copper
- (b) Iron
- (c) Mica
- (d) Bauxite

Q8. The HVJ pipeline transports:

- (a) Petroleum
- (b) Water
- (c) Natural gas
- (d) Coal slurry

Q9. Which state is the largest producer of bauxite in India?

- (a) Jharkhand
- (b) Gujarat
- (c) Odisha
- (d) Maharashtra

Q10. Placer deposits contain minerals like:

- (a) Coal and iron
- (b) Gold and silver
- (c) Copper and zinc
- (d) Mica and limestone

SECTION B - Short Answer Questions (2 marks each)

Q11. Why are minerals called non-renewable resources? (2 marks)

Q12. Name two nuclear power stations in India and mention their locations. (2 marks)

Q13. What are the hazards faced by miners? Mention any two. (2 marks)

Q14. Distinguish between conventional and non-conventional sources of energy. (2 marks)

SECTION C - Short Answer Questions (3 marks each)

Q15. Explain how minerals are formed in sedimentary rocks. Give two examples. (3 marks)

Q16. Why is biogas considered an excellent fuel for rural areas? Give three reasons. (3 marks)

Q17. Describe the distribution of petroleum in India. Name three important oil fields. (3 marks)

SECTION D - Long Answer Question (5 marks)

Q18. Explain the importance of minerals in our daily life. Why do we need to conserve them? Suggest any two measures for their conservation. (5 marks)

SECTION E - Case Study Based Questions (4 marks each)

Q19. Read the case study given below and answer the questions that follow:

Iron ore is the basic mineral and the backbone of industrial development. India is endowed with fairly abundant resources of iron ore. Magnetite is the finest iron ore with a very high content of iron up to 70 per cent. Hematite ore is the most important industrial iron ore in terms of quantity used, but has a slightly lower iron content than magnetite (50-60 per cent). In 2018-19, almost entire production of iron ore (97%) came from Odisha, Chhattisgarh, Karnataka and Jharkhand. The remaining production (3%) was from other states.

- (i) Why is iron ore called the backbone of industrial development? (1 mark)
- (ii) Which iron ore has the highest iron content? (1 mark)
- (iii) Name any two states that are major producers of iron ore in India. (1 mark)
- (iv) What is the iron content in hematite ore? (1 mark)

Q20. Read the case study given below and answer the questions that follow:

The dust and noxious fumes inhaled by miners make them vulnerable to pulmonary diseases. The risk of collapsing mine roofs, inundation and fires in coal mines are a constant threat to miners. The water sources in the region get contaminated due to mining. Dumping of waste and slurry leads to degradation of land, soil, and increase in stream and river pollution. Stricter safety regulations and implementation of environmental laws are essential to prevent mining from becoming a "killer industry".

- (i) What health problem do miners face due to dust and fumes? (1 mark)
- (ii) Name any two threats faced by miners in coal mines. (1 mark)
- (iii) How does mining affect water sources? (1 mark)
- (iv) What is essential to prevent mining from becoming a killer industry? (1 mark)

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SECTION A - Answers to MCQs

Ans 1. (b) Magnetite

Magnetite is the finest quality iron ore with very high iron content up to 70%, making it the purest form.

Ans 2. (c) Meghalaya

Rat-hole mining is practiced in Meghalaya, particularly in Jowai and Cherapunjee regions for coal extraction.

Ans 3. (b) Assam

Assam is the oldest oil-producing state of India with important oil fields like Digboi, Naharkatiya and Moran-Hugrijan.

Ans 4. (b) Electric and electronic industries

Mica is indispensable in electric and electronic industries due to its excellent insulating properties.

Ans 5. (c) Lignite

Lignite, a low-grade brown coal, is found in Neyveli, Tamil Nadu and used for electricity generation.

Ans 6. (c) Chhattisgarh

Bailadila hills are located in the Bastar district of Chhattisgarh and have super high-grade hematite iron ore.

Ans 7. (c) Mica

Mica has excellent di-electric strength, low power loss factor and high voltage resistance.

Ans 8. (c) Natural gas

The HVJ (Hazira-Vijaipur-Jagdishpur) pipeline transports natural gas across the country.

Ans 9. (c) Odisha

Odisha is the largest bauxite producing state in India, accounting for 65% of total production.

Ans 10. (b) Gold and silver

Placer deposits in valley floors and hills contain minerals like gold, silver, tin and platinum that are not corroded by water.

SECTION B - Answers to Short Answer Questions

Ans 11.

Minerals are called non-renewable resources because:

- Minerals required millions of years to be created and concentrated through geological processes
- The rate of their formation is infinitely small compared to the rate at which we consume them
- Once extracted and used, they cannot be replenished in our lifetime
- They are finite resources that will eventually get exhausted

Ans 12.

Two nuclear power stations in India:

1. Rawat Bhata: Located in Rajasthan

2. Kalpakkam: Located in Tamil Nadu

(Other examples: Tarapur in Maharashtra, Narora in Uttar Pradesh, Kaiga in Karnataka, Kakrapar in Gujarat)

Ans 13.

Hazards faced by miners:

1. Health hazards: Dust and noxious fumes inhaled by miners make them vulnerable to pulmonary diseases.

2. Physical dangers: Risk of collapsing mine roofs, inundation and fires in coal mines are constant threats to miners.

Ans 14.

Conventional sources of energy: These are traditional sources like coal, petroleum, natural gas, firewood and electricity (hydel and thermal) that have been in use for a long time.

Non-conventional sources of energy: These are newer renewable sources like solar energy, wind, tidal, geothermal, biogas and atomic energy that are being increasingly used.

SECTION C - Answers to Short Answer Questions

Ans 15.

In sedimentary rocks, minerals are formed in the following ways:

- Minerals occur in beds or layers formed as a result of deposition, accumulation and concentration in horizontal strata
- Some minerals like coal and iron ore have been concentrated as a result of long periods under great heat and pressure
- Another group of sedimentary minerals are formed as a result of evaporation, especially in arid regions

Examples:

1. Coal - formed through compression and heat
2. Gypsum, potash salt and sodium salt - formed through evaporation

Ans 16.

Biogas is considered an excellent fuel for rural areas because:

1. **Higher thermal efficiency:** It has higher thermal efficiency compared to kerosene, dung cake and charcoal, making it more economical.
2. **Twin benefits:** Biogas plants using cattle dung provide both energy and improved quality of manure for agriculture.
3. **Environmental conservation:** It minimizes dependence of rural households on firewood and dung cakes, which helps in preventing loss of trees and ensures adequate supply of manure for agriculture.
4. **Easy availability:** It can be produced from easily available materials like shrubs, farm waste, animal and human waste.

Ans 17.

Distribution of petroleum in India:

Petroleum in India is mainly found in two regions:

- **Western coast:** Major offshore fields like Mumbai High and Gujarat coast (Ankeleshwar being the most important field)
- **Eastern region:** Assam is the oldest oil-producing region with fields in the northeast
- **Eastern coast:** New reserves discovered in Krishna-Godavari basin

Three important oil fields:

1. **Mumbai High:** Major offshore oil field on the western coast
2. **Ankeleshwar:** Most important field in Gujarat
3. **Digboi:** Important oil field in Assam

SECTION D - Answer to Long Answer Question

Ans 18.

Importance of minerals in our daily life:

Minerals are an indispensable part of our lives. Their importance includes:

1. Almost everything we use, from a tiny pin to towering buildings and big ships, is made from minerals
2. Railway lines, road pavements, implements and machinery are made from minerals
3. Cars, buses, trains, and aeroplanes are manufactured from minerals and run on power resources derived from minerals
4. Even the food we eat contains minerals essential for life processes
5. Minerals provide raw materials for various industries like iron and steel, cement, chemical, fertilizer, etc.
6. Minerals are essential sources of energy (coal, petroleum, natural gas, uranium)

Need for conservation:

We need to conserve minerals because:

- They are finite and non-renewable resources
- Geological processes of mineral formation are so slow that replenishment rates are very small
- We are rapidly consuming resources that took millions of years to form
- Continued extraction from greater depths increases costs and decreases quality

Measures for conservation:

1. **Recycling and reuse:** Recycling of metals and using scrap metals reduces the need for fresh mining and conserves mineral resources.
2. **Use of substitutes:** Using alternative materials and substitutes instead of minerals wherever possible helps in conserving them for the future.

SECTION E - Answers to Case Study Based Questions

Ans 19.

(i) Iron ore is called the backbone of industrial development because it is the basic mineral essential for the development of metallurgical industries and is used in manufacturing steel, which is crucial for infrastructure and industrial growth.

(ii) Magnetite has the highest iron content, with up to 70 per cent iron.

(iii) Two major producers of iron ore in India are Odisha and Karnataka (also acceptable: Chhattisgarh,

Jharkhand).

(iv) Hematite ore has 50-60 per cent iron content.

Ans 20.

(i) Miners face pulmonary diseases (lung diseases) due to inhaling dust and noxious fumes.

(ii) Two threats faced by miners in coal mines are: collapsing mine roofs and fires in coal mines (also acceptable: inundation).

(iii) Water sources in mining regions get contaminated due to mining activities, dumping of waste and slurry, leading to pollution of streams and rivers.

(iv) Stricter safety regulations and implementation of environmental laws are essential to prevent mining from becoming a killer industry.

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