UNIQUE STUDY POINT

By Sumeet Sahu

www.uniquestudyonline.com

Unique Study Point, Amitesh Nagar, Indore, MP | Contact: 8103405051

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 mineral is used for cement manufacturing?

(a) Bauxite

(b) Limestone

(c) Mica

(d) Manganese

Q2. Gondwana coal series is approximately how many million years old?

(a) 50 million years

(b) 100 million years

(c) 200 million years

(d) 300 million years

Q3. Khetri mines in Rajasthan are famous for:

(a) Iron ore

(b) Copper

(c) Bauxite

(d) Coal

Q4. Which energy source is used in 'Gobar gas plants'?

(a) Solar energy

(b) Wind energy

(c) Biogas

(d) Tidal energy

Q5. The largest wind farm cluster in India is located in:

(a) Gujarat

(b) Rajasthan

(c) Tamil Nadu
(d) Karnataka

Q6. Which of the following is formed by decomposition of rocks?
(a) Iron ore
(b) Coal
(c) Bauxite
(d) Copper

Q7. Damodar Valley is famous for:
(a) Petroleum
(b) Natural gas
(c) Coal
(d) Uranium

Q8. Which type of coal has low carbon and high moisture content?
(a) Anthracite
(b) Bituminous
(c) Lignite
(d) Peat

Q9. Approximately how much manganese is required to manufacture one tonne of steel?
(a) 5 kg
(b) 10 kg
(c) 15 kg
(d) 20 kg

Q10. Which state leads in the production of manganese in India?
(a) Odisha
(b) Karnataka
(c) Madhya Pradesh
(d) Maharashtra

SECTION B - Short Answer Questions (2 marks each)

Q11. What is a mineral? Give two examples. (2 marks)

Q12. Name two geothermal energy projects in India and their locations. (2 marks)

Q13. Why is copper considered an important mineral? Mention any two uses. (2 marks)

Q14. What are veins and lodes? In which type of rocks are they found? (2 marks)

SECTION C - Short Answer Questions (3 marks each)

Q15. Explain the occurrence of minerals in placer deposits. Give examples. (3 marks)

Q16. Why is solar energy considered to have a bright future in India? Give three reasons. (3 marks)

Q17. Describe the distribution and uses of mica in India. (3 marks)

SECTION D - Long Answer Question (5 marks)

Q18. Describe the distribution of iron ore in India. Name the major iron ore belts and explain why iron ore is important for industrial development. (5 marks)

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

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

Coal is formed due to the compression of plant material over millions of years. Decaying plants in swamps produce peat, which has low carbon and high moisture content. Lignite is a low grade brown coal with high moisture content. Bituminous coal is the most popular coal in commercial use. Metallurgical coal is high grade bituminous coal which has special value for smelting iron. Anthracite is the highest quality hard coal. In India, coal occurs in rock series of two main geological ages - Gondwana (over 200 million years old) and tertiary deposits (about 55 million years old).

(i) How is coal formed? (1 mark)
(ii) Which is the most popular coal in commercial use? (1 mark)
(iii) What is the special use of metallurgical coal? (1 mark)
(iv) Name the two geological ages in which coal is found in India. (1 mark)

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

Though bauxite deposits are formed by the decomposition of rocks rich in aluminium silicates, aluminium is an important metal because it combines the strength of metals such as iron with extreme lightness and also has good conductivity and great malleability. India's bauxite deposits are mainly found in the Amarkantak plateau, Maikal hills and the plateau region of Bilaspur-Katni. Odisha was the largest bauxite producing state in India in 2018-19, accounting for 65% of total production. Panchpatmali deposits in Koraput district are the most important bauxite deposits in the state.

(i) How are bauxite deposits formed? (1 mark)
(ii) Why is aluminium considered an important metal? (1 mark)
(iii) Which state is the largest producer of bauxite in India? (1 mark)
(iv) Name the important bauxite deposits in Odisha. (1 mark)

DETAILED ANSWER KEY - PAPER 03

SECTION A - Answers to MCQs

Ans 1. (b) Limestone

Limestone is the basic raw material for the cement industry and is also essential for smelting iron ore.

Ans 2. (c) 200 million years

Gondwana coal series is a little over 200 million years old and contains metallurgical coal.

Ans 3. (b) Copper

Khetri mines in Rajasthan are one of the leading producers of copper in India.

Ans 4. (c) Biogas

Gobar gas plants use cattle dung to produce biogas through decomposition of organic matter.

Ans 5. (c) Tamil Nadu

The largest wind farm cluster in India is located in Tamil Nadu from Nagarcoil to Madurai.

Ans 6. (c) Bauxite

Bauxite is formed by decomposition of surface rocks and removal of soluble constituents, leaving a residual mass of weathered material.

Ans 7. (c) Coal

Damodar Valley in West Bengal-Jharkhand is famous for major Gondwana coalfields including Jharia and Raniganj.

Ans 8. (d) Peat

Peat is produced by decaying plants in swamps and has low carbon, high moisture content and low heating capacity.

Ans 9. (b) 10 kg

Nearly 10 kg of manganese is required to manufacture one tonne of steel.

Ans 10. (c) Madhya Pradesh

Madhya Pradesh is the leading producer of manganese in India, accounting for 33% of total production.

SECTION B - Answers to Short Answer Questions

Ans 11.

Mineral: Geologists define mineral as a homogenous, naturally occurring substance with a definable internal structure. Minerals are found in varied forms in nature.

Examples:
1. Iron ore (metallic mineral)
2. Limestone (non-metallic mineral)
(Other examples: Coal, copper, mica, bauxite, gold, silver)

Ans 12.

Two experimental geothermal energy projects in India:
1. Parvati Valley project: Located near Manikaran in Himachal Pradesh
2. Puga Valley project: Located in Ladakh

Ans 13.

Copper is an important mineral because it is malleable, ductile and a good conductor of electricity.

Uses of copper:
1. It is mainly used in electrical cables due to its excellent conductivity
2. It is used in electronics and chemical industries
(Note: India is critically deficient in copper reserves and production)

Ans 14.

Veins and lodes: When minerals in liquid, molten and gaseous forms are forced upward through cavities towards the earth's surface, they cool and solidify as they rise. The smaller occurrences are called veins and the larger ones are called lodes.

Type of rocks: Veins and lodes are found in igneous and metamorphic rocks, particularly in their cracks, crevices, faults or joints.

SECTION C - Answers to Short Answer Questions

Ans 15.

Placer deposits:

- Certain minerals occur as alluvial deposits in sands of valley floors and the base of hills
- These deposits are called placer deposits
- They generally contain minerals which are not corroded by water
- These minerals get transported by flowing water and accumulate in valleys

Examples of minerals found in placer deposits:
Gold, silver, tin and platinum are the most important minerals found in such deposits.

Ans 16.

Solar energy has a bright future in India because:

1. **Tropical location:** India is a tropical country and receives abundant sunlight throughout the year, providing enormous possibilities for tapping solar energy.

2. **Rural electrification:** Solar energy is fast becoming popular in rural and remote areas where conventional electricity is difficult to reach, making it an ideal solution for rural electrification.

3. **Environmental benefits:** Big solar power plants are being established which will minimize the dependence of rural households on firewood and dung cakes. This contributes to environmental conservation and ensures adequate supply of manure for agriculture.

Ans 17.

Distribution of mica in India:

- Mica deposits are found in the northern edge of the Chota Nagpur plateau

• Koderma-Gaya-Hazaribagh belt of Jharkhand is the leading producer
• In Rajasthan, the major mica producing area is around Ajmer
• Nellore mica belt of Andhra Pradesh is also an important producer

Uses of mica:

• Due to its excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage, mica is indispensable in electric and electronic industries
• It splits easily into thin sheets and can be used for insulation purposes

SECTION D - Answer to Long Answer Question

Ans 18.

Distribution of iron ore in India:

India is endowed with fairly abundant resources of iron ore. In 2018-19, almost entire production (97%) came from four states: Odisha, Chhattisgarh, Karnataka and Jharkhand.

Major iron ore belts in India:

1. Odisha-Jharkhand belt:
• In Odisha: High grade hematite ore is found in Badampahar mines in Mayurbhanj and Kendujhar districts
• In Jharkhand: Hematite iron ore is mined in Gua and Noamundi in Singbhum district

2. Durg-Bastar-Chandrapur belt:
• Located in Chhattisgarh and Maharashtra
• Very high grade hematites are found in the Bailadila range of hills in Bastar district
• This range comprises 14 deposits of super high grade hematite iron ore
• Iron ore is exported to Japan and South Korea via Vishakhapatnam port

3. Ballari-Chitradurga-Chikkamagaluru-Tumakuru belt:
• Located in Karnataka with large reserves
• Kudremukh mines in Western Ghats are a 100% export unit
• The ore is transported as slurry through pipeline to a port near Mangaluru

4. Maharashtra-Goa belt:
• Includes the state of Goa and Ratnagiri district of Maharashtra
• Ores are efficiently exploited though not of very high quality
• Iron ore is exported through Marmagao port

Importance of iron ore for industrial development:

• Iron ore is the basic mineral and the backbone of industrial development
• It is essential for the development of metallurgical industries
• It provides a strong base for the manufacture of steel
• Steel is crucial for infrastructure development and various industries
• India exports substantial quantities after meeting internal demands

SECTION E - Answers to Case Study Based Questions

Ans 19.

(i) Coal is formed due to the compression of plant material over millions of years. Decaying plants in

swamps produce peat, which under pressure and heat transforms into different types of coal.

(ii) Bituminous coal is the most popular coal in commercial use.

(iii) Metallurgical coal has special value for smelting iron in blast furnaces.

(iv) The two geological ages in which coal is found in India are: Gondwana (over 200 million years old) and Tertiary (about 55 million years old).

Ans 20.

(i) Bauxite deposits are formed by the decomposition of a wide variety of rocks rich in aluminium silicates.

(ii) Aluminium is an important metal because it combines the strength of metals such as iron with extreme lightness, and also has good conductivity and great malleability.

(iii) Odisha is the largest producer of bauxite in India, accounting for 65% of total production.

(iv) Panchpatmali deposits in Koraput district are the most important bauxite deposits in Odisha.
