

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 mineral is known as 'black gold'?
- (a) Iron ore
 - (b) Coal
 - (c) Petroleum
 - (d) Manganese
- Q2.** Magnetite is a type of:
- (a) Copper ore
 - (b) Iron ore
 - (c) Bauxite
 - (d) Mica
- Q3.** Which state is the largest producer of iron ore in India?
- (a) Maharashtra
 - (b) Karnataka
 - (c) Odisha
 - (d) Gujarat
- Q4.** Bauxite is used to extract which metal?
- (a) Iron
 - (b) Copper
 - (c) Aluminium
 - (d) Zinc
- Q5.** Which of the following is a non-metallic mineral?
- (a) Copper
 - (b) Iron ore

- (c) Mica
- (d) Manganese

Q6. The Monazite sand contains which radioactive mineral?

- (a) Uranium
- (b) Thorium
- (c) Radium
- (d) Plutonium

Q7. Which type of coal has the highest carbon content?

- (a) Peat
- (b) Lignite
- (c) Bituminous
- (d) Anthracite

Q8. Mumbai High is famous for the production of:

- (a) Coal
- (b) Iron ore
- (c) Petroleum
- (d) Copper

Q9. Which is a renewable source of energy?

- (a) Coal
- (b) Petroleum
- (c) Hydroelectricity
- (d) Natural gas

Q10. The Kudremukh mines are located in:

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

SECTION B - Short Answer Questions (2 marks each)

Q11. Differentiate between ferrous and non-ferrous minerals with one example of each. (2 marks)

Q12. What is an ore? Why is the concentration of minerals in ore important? (2 marks)

Q13. Name two iron ore belts in India and mention the states in which they are located. (2 marks)

Q14. What are the uses of manganese? (2 marks)

SECTION C - Short Answer Questions (3 marks each)

Q15. Explain how minerals occur in igneous and metamorphic rocks. (3 marks)

Q16. Describe the formation of coal. Name three important coalfields of India. (3 marks)

Q17. Why is there a pressing need to use renewable energy sources? Give three reasons. (3 marks)

SECTION D - Long Answer Question (5 marks)

Q18. Discuss the importance of conservation of minerals. Suggest any three methods to conserve mineral resources. (5 marks)

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

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

India is fortunate to have fairly rich and varied mineral resources. However, these are unevenly distributed. Broadly speaking, peninsular rocks contain most of the reserves of coal, metallic minerals, mica and many other non-metallic minerals. Sedimentary rocks on the western and eastern flanks of the peninsula, in Gujarat and Assam have most of the petroleum deposits. The major iron ore belts in India include Odisha-Jharkhand belt, Durg-Bastar-Chandrapur belt, Ballari-Chitradurga-Chikkamagaluru-Tumakuru belt and Maharashtra-Goa belt.

- (i) Why are mineral resources unevenly distributed in India? (1 mark)
- (ii) Which type of rocks contain petroleum deposits in India? (1 mark)
- (iii) Name any two iron ore belts mentioned in the passage. (1 mark)
- (iv) Which minerals are found in peninsular rocks? (1 mark)

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

The growing consumption of energy has resulted in the country becoming increasingly dependent on fossil fuels such as coal, oil and gas. Rising prices of oil and gas and their potential shortages have raised uncertainties about the security of energy supply in future. Moreover, increasing use of fossil fuels also causes serious environmental problems. Hence, there is a pressing need to use renewable energy sources like solar energy, wind, tide, biomass and energy from waste material. India is blessed with an abundance of sunlight, water, wind and biomass.

- (i) Why has India become dependent on fossil fuels? (1 mark)
- (ii) What are the two major concerns related to fossil fuels? (1 mark)
- (iii) Name any two renewable energy sources. (1 mark)
- (iv) Why is India suitable for developing renewable energy? (1 mark)

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DETAILED ANSWER KEY - PAPER 01

SECTION A - Answers to MCQs

Ans 1. (c) Petroleum

Petroleum is called 'black gold' due to its high commercial value and dark color.

Ans 2. (b) Iron ore

Magnetite is the finest quality iron ore with very high iron content up to 70%.

Ans 3. (c) Odisha

Odisha is the largest iron ore producing state in India, accounting for a major share of production.

Ans 4. (c) Aluminium

Bauxite is a clay-like substance from which alumina and later aluminium is extracted.

Ans 5. (c) Mica

Mica is a non-metallic mineral used in electrical and electronic industries.

Ans 6. (b) Thorium

The Monazite sands of Kerala are rich in Thorium, which is used for generating nuclear power.

Ans 7. (d) Anthracite

Anthracite is the highest quality hard coal with maximum carbon content.

Ans 8. (c) Petroleum

Mumbai High is an offshore oil field famous for petroleum production.

Ans 9. (c) Hydroelectricity

Hydroelectricity is generated by fast flowing water, which is a renewable resource.

Ans 10. (c) Karnataka

Kudremukh mines are located in the Western Ghats of Karnataka and are known for iron ore.

SECTION B - Answers to Short Answer Questions

Ans 11.

Ferrous minerals: Minerals that contain iron are called ferrous minerals. Example: Iron ore, manganese.

Non-ferrous minerals: Minerals that do not contain iron are called non-ferrous minerals. Example: Copper, bauxite, gold, silver.

Ans 12.

An ore is an accumulation of any mineral mixed with other elements. The concentration of mineral in the ore is important because:

- It must be sufficient to make extraction commercially viable
- Higher concentration reduces the cost of extraction
- It determines whether a mineral deposit can be economically mined

Ans 13.

Two major iron ore belts in India are:

- 1. Odisha-Jharkhand belt:** Located in Odisha (Badampahar mines in Mayurbhanj and Kendujhar districts) and Jharkhand (Gua and Noamundi in Singhbhum district).
- 2. Durg-Bastar-Chandrapur belt:** Located in Chhattisgarh (Bailadila range in Bastar district) and Maharashtra.

Ans 14.

Uses of manganese:

- It is mainly used in the manufacturing of steel and ferro-manganese alloy
- Nearly 10 kg of manganese is required to manufacture one tonne of steel
- It is used in manufacturing bleaching powder
- It is used in manufacturing insecticides and paints

SECTION C - Answers to Short Answer Questions

Ans 15.

In igneous and metamorphic rocks, minerals occur in the following ways:

- Minerals may occur in the cracks, crevices, faults or joints of these rocks
- The smaller occurrences are called veins and the larger ones are called lodes
- These minerals are formed 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
- Major metallic minerals like tin, copper, zinc and lead are obtained from veins and lodes

Ans 16.

Formation of coal: 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 - from lignite to bituminous to anthracite.

Three important coalfields of India:

1. Jharia (Jharkhand)
2. Raniganj (West Bengal)
3. Bokaro (Jharkhand)

Ans 17.

There is a pressing need to use renewable energy sources because:

- 1. Depletion of fossil fuels:** Fossil fuels like coal, oil and gas are being rapidly consumed and will eventually get exhausted as they are non-renewable.
- 2. Rising costs:** Rising prices of oil and gas and their potential shortages have created uncertainties about energy security in the future.
- 3. Environmental problems:** Increasing use of fossil fuels causes serious environmental problems like air pollution, global warming and climate change.

SECTION D - Answer to Long Answer Question

Ans 18.

Importance of conservation of minerals:

1. Minerals are finite and non-renewable resources that took millions of years to form
2. The total volume of workable mineral deposits is only one percent of the earth's crust
3. We are rapidly consuming mineral resources at a much faster rate than they are being replenished
4. Continued extraction from greater depths increases costs and decreases quality
5. Minerals are essential for industry and agriculture, and their depletion would affect economic development

Methods to conserve mineral resources:

1. **Planned and sustainable use:** Use mineral resources in a planned manner to ensure they last longer for future generations.
2. **Improved technology:** Develop and use improved technologies that allow the use of low-grade ores at low costs efficiently.
3. **Recycling:** Recycle metals and use scrap metals to reduce the need for fresh mining.
4. **Substitutes:** Use substitutes wherever possible instead of minerals to reduce consumption.
5. **Reduce wastage:** Minimize wastage during mining and processing operations.

SECTION E - Answers to Case Study Based Questions

Ans 19.

- (i) Mineral resources are unevenly distributed in India due to differences in the geological structure, geological processes and time involved in the formation of minerals in different regions.
- (ii) Sedimentary rocks on the western and eastern flanks of the peninsula contain petroleum deposits in India.
- (iii) Two iron ore belts are: Odisha-Jharkhand belt and Durg-Bastar-Chandrapur belt.
- (iv) Peninsular rocks contain reserves of coal, metallic minerals, mica and many other non-metallic minerals.

Ans 20.

- (i) India has become dependent on fossil fuels due to the growing consumption of energy required for economic development and activities in all sectors.
- (ii) The two major concerns related to fossil fuels are: (a) Rising prices and potential shortages creating uncertainty about energy security, and (b) Serious environmental problems caused by their use.
- (iii) Two renewable energy sources are: Solar energy and Wind energy.
- (iv) India is suitable for developing renewable energy because it is blessed with an abundance of sunlight, water, wind and biomass resources.

