

2026
EXAMINATION



CBSE QUESTION & CONCEPT BANK

Chapter-wise & Topic-wise
with 50% Competency Questions

CLASS 10



Chapter-wise with PYQs Tagging
CONCEPT MAPS



Important Questions with Detailed Explanations
NCERT



Handpicked & High yield from Past 10 Years
PYQs



Revision Blue Print & Solved Questions
COMPETENCY FOCUSED



CBSE 2025 Past Year & SQP Solved Papers
LATEST CBSE PAPERS



As per Latest Pattern
MOCK TESTS



SOCIAL SCIENCE

Chapter-wise Weightage and Trend Analysis of CBSE Past 6 Years' Papers

SOCIAL SCIENCE										
CHAPTERS	2020		2022		2023		2024		2025	
	DL	ODL	DL	ODL	DL	ODL	DL	ODL	DL	ODL
HISTORY										
The Rise of Nationalism in Europe	11	4	–	–	4	4	8	4	4	5
Nationalism in India	9	10	10	13	8	12	6	8	8	8
The Making of a Global World (Some portion is Rationalised)	6	4	–	–	3	–	2	3	3	1
The Age of Industrialisation	1	4	–	–	1	–	–	–	–	–
Print Culture and the Modern World	4	5	–	–	4	3	4	5	5	6
GEOGRAPHY										
Resources and Development (Some portion is Rationalised)	7	1	–	–	1	1	1	2	3	2
Forest and Wildlife Resources (Some portion is Rationalised)	–	–	–	–	–	4	2	4	4	1
Water Resources	1	1	–	–	5	1	5	2	1	3
Agriculture (Some portion is Rationalised)	5	2	–	–	3	2	1	6	4	6
Minerals and Energy Resources	2	5	1	2	3	–	7	2	7	6
Manufacturing Industries (Some portion is Rationalised)	4	17	5	6	3	6	4	4	1	1
Lifelines of National Economy	4	6	5	3	5	2	1	1	1	2
POLITICAL SCIENCE										
Power-sharing	2	–	–	–	2	4	4	5	2	3
Federalism	8	4	–	–	5	1	5	4	6	6
Democracy and Diversity (Rationalised)	3	3	–	–	–	–	–	–	–	–
Gender, Religion and Caste (Some portion is Rationalised)	5	5	–	–	2	2	2	1	2	6
Popular Struggles and Movements (Rationalised)	8	8	4	5	–	–	–	–	–	–
Political Parties	5	12	5	12	4	4	4	4	4	2
Outcomes of Democracy	8	1	10	3	6	5	5	6	6	3
Challenges to Democracy (Rationalised)	–	–	–	–	–	–	–	–	–	–
ECONOMICS										
Development	5	6	–	–	5	5	6	5	5	2
Sectors of the Indian Economy	10	4	–	–	10	4	3	4	5	12
Money and Credit	5	9	5	5	5	4	5	5	5	3
Globalisation and the Indian Economy (Some portion is Rationalised)	5	1	5	5	3	6	6	6	5	3
Consumer Rights (Rationalised)	–	–	–	–	–	–	–	–	–	–

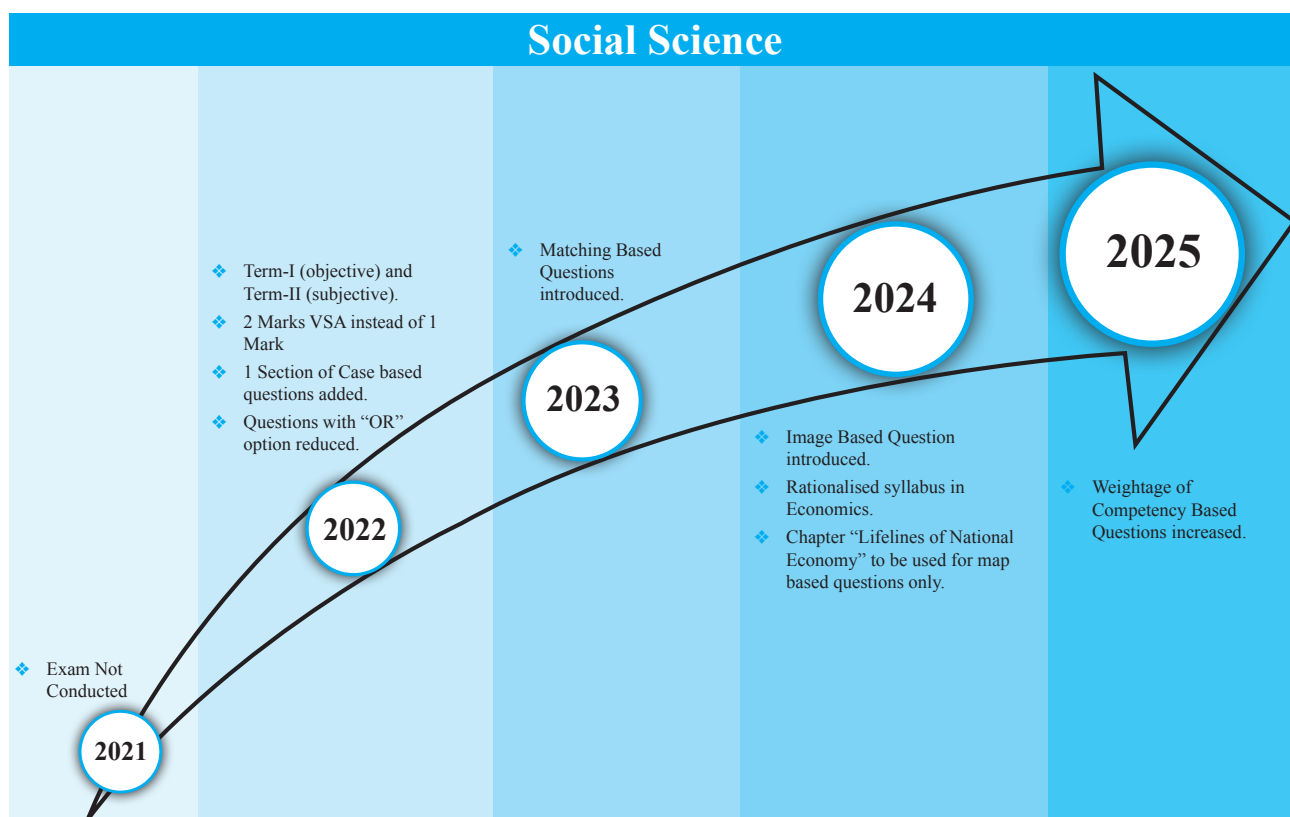
*The marks allotment mentioned above is chapter-wise and includes internal choice questions as well. Therefore, the total might not match the Maximum Marks of the respective Previous Year Paper. Here, DL is Delhi, ODL is Outside Delhi.

*For the year 2021, the exam was not conducted.

Question Typology

YEAR	Objective Questions		Subjective Questions				
	MCQs	A/R	VSA	SA	LA	Case/Source Based type	Map-Based type
2025	18	2	4	5	4	3	1
2024	19	1	4	5	4	3	1
2023	19	1	4	5	4	3	1
2022 (T-II)	-	-	5	3	2	2	1
2022 (T-I)	30	8	-	-	-	2	2
2021	Exam Not Conducted						

Evolving Trends in CBSE Exam Patterns



HOW TO USE THIS BOOK

This book is structured to support your learning journey of preparing for your board exams through a variety of engaging and informative elements. Here's how to make the most of it:

CBSE Solved Paper of 2025, 2024 & 2023 with Handwritten Answers: Get yourself updated with the latest Board Question Papers. With handwritten answers, learn the practical application of concepts and effective answering techniques to achieve higher scores.

CBSE Solved Paper

CBSE SOLVED PAPER 2024

Time allowed : 3 hours
Maximum Marks : 80

GENERAL INSTRUCTIONS:
Read the following instructions carefully and follow them:
(i) This question paper contains 11 questions. All questions are compulsory.
(ii) The question paper contains THREE sections:
Section A - Reading Skills
Section B - Grammar and Creative Writing Skills
Section C - Literature
(iii) Attempt question based on specific instructions for each part.

SECTION - A

1. Which one of the following banks in India controls the issuance of currency and regulates the credit system in the country? (1 Mark)

(a) Punjab National Bank (b) Indian Bank (c) Reserve Bank of India (d) State Bank of India

1. (c) Reserve Bank of India controls the issuance of currency and regulates the credit system in the country.



"Resources are materials or substances like water, minerals, and forest, used by us. Development involves using these resources wisely for our needs and future generations."

Preview

At the start of every chapter, you'll find a thoughtfully chosen image and a quote that captures the main idea and motivation of the topic. This approach aims to get your interest and give you a glimpse of the theme ahead.

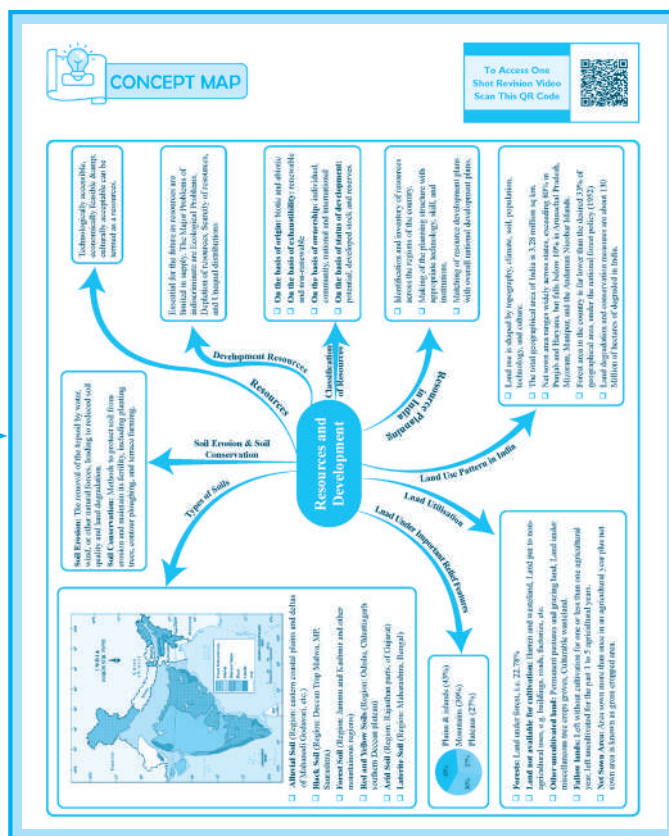
Before diving into the details, we outline the syllabus and analyze the weightage given to each topic over the past five years. This helps you prioritize your study focus based on the significance of each section.

SYLLABUS & WEIGHTAGE

List of Concept Names	Years				
	2020	2021	2022	2023	2024
Resources (Development of Resources, Resource planning in India, Conservation of Resources, Classification of resources)	1 Q (3 M)		—	—	—
Land Resources (Land utilisation and land use pattern in India, Land degradation and conservation measures)	—	Exam not Conducted	—	—	1 Q (2 M)
Soil as a Resource (Classification of soil, Soil erosion and soil conservation)	—	—	—	1 Q (1 M)	—

The concept map appears to be a comprehensive study aid that outlines key concepts in a structured format, featuring definitions, diagrams, and processes. For a student, it would serve as a visual summary, making complex ideas more accessible and aiding in revision and understanding of concept for their curriculum.

Concept Map



1 | RESOURCES

NCERT Definitions (Commonly asked in 1 mark)

- Resource:** Everything available in our environment that can be used for our needs, which is technologically accessible, economically feasible, and culturally acceptable can be termed as a resource.
- Resource Planning:** The process involves finding resources, ensuring their efficient use, and monitoring them to ensure equitable and eco-friendly use.
- Deforestation:** It refers to the process of clearing or cutting down large areas of forests for various purposes, often leading to environmental problems, including loss of biodiversity and disruption of ecosystems.
- Afforestation:** It means *planting trees* in areas where there were no trees before. It's like creating new forests to improve the environment and provide benefits like cleaner air, wildlife habitat, and protection against soil erosion.
- Biotic Resources:** These resources are *living components* of the environment, such as plants, animals, and microorganisms, from which humans can derive value, either directly or indirectly.
- Abiotic Resources:** These resources are *non-living* elements in the environment, including minerals, water, and air. They form the physical and chemical foundations essential for ecosystems and human activities, such as agriculture, industry, and environmental processes.
- Renewable Resources:** These types of resources are natural resources that can *replenish themselves* over time through natural processes, ensuring their availability for future generations. Examples: sunlight, wind, water, and solar energy.
- Non-renewable Resources:** These types of resources are natural resources that *cannot replenish* themselves at a sufficient rate for sustainable economic profitability in meaningful human time-frames. Once depleted, they cannot be readily replaced. Examples: fossil fuels, coal, oil, and natural gas etc.
- Sustainable Development:** It means using resources today in a way that doesn't *steep* future generations from meeting their needs.
- Conservation of Resources:** It involves *careful management and use* of natural resources to prevent waste and ensure their sustainability for the future generations.
- Development of Resources:** It means *responsibly using and managing* natural resources to improve people's lives and protect the environment.



Important Facts

- 01** In June 1992, over 100 leaders convened in Rio, Brazil, for the first Earth Summit. *Rio de Janeiro Earth Summit, 1992*
- 02** Aims for global sustainable development. *Agenda 21*
- 03** The oceanic resources are beyond 200 nautical miles of the Exclusive zone. *International Resources*
- 04** Our Most Precious Resource. *Water Resources*

Classification: It organizes complex information into clear categories, making it easier for students to grasp differences, recognize patterns, and predict properties or behaviors in their learning.

Difference Between: Side-by-side comparisons to help distinguish similar concepts.

Mnemonics: Memory aids to help you retain and recall information.

NCERT Definitions: It simplifies complex topics into brief, easy-to-understand explanations.

Important Facts: Quick, bullet point facts that are crucial for exams.

Classification

Resources can be classified into the following ways:

- By origin: Biotic and Abiotic
- By exhaustibility: Renewable and Non-renewable
- By ownership: Individual, Community, National, International
- By status of development: Potential, Developed, Stocks, Reserve

Difference Between

Renewable resources Vs. Non-renewable resources		
Basis of Difference	Renewable resources	Non-renewable resources
Regeneration	Yes, through natural processes	No
Distribution	Widespread and available in many parts of the world	Limited, specific locations
Examples	Sunlight, wind, water, solar energy, etc.	Fossil fuels, coal, oil, natural gas, etc.
Biotic resources Vs. Abiotic resources		
Basis of Difference	Biotic resources	Abiotic resources
Origin	Living organisms & processes	Non-living environmental components
Renewability	Renewable if managed sustainably	Renewable (sunlight, wind) or non-renewable (fossil fuels, minerals)
Examples	Plants, animals, birds, fish, microorganisms.	Minerals, metals, air, sunlight
Stock Vs. Reserve		
Basis of Difference	Stock	Reserve
Definition	Present but not usable due to current technology or knowledge limitations	Identified and usable with existing technology and knowledge
Potential Use	Can become useful with technological advancements	Already quantified and extractable profitably
Examples	Hydrogen in water, deep minerals	Coal, petroleum deposits, reservoir water for drinking/irrigation

Mnemonics

"PLANTS" – Biotic Resources Example

- P → Plants
- L → Livestock
- A → Animals
- N → Natural Vegetation
- T → Tree
- S → Soil

"ROCKS" – Abiotic Resources Example

- R → Rocks
- O → Ores
- C → Coal
- K → Kerosene
- S → Sunlight

Real Life Application Based Questions

- How do composting, water-saving methods, and using native plants in gardens enhance local biodiversity and sustainability?
Ans. Composting boosts soil health, lessening chemical fertilizer use. Rainwater harvesting and choosing native plants save water and support wildlife, boosting biodiversity. These sustainable practices enhance environmental and community well-being.
- How do individual actions like saving water, using efficient devices, and careful consumption aid water sustainability?
Ans. Personal water conservation efforts, efficient appliance use, and mindful consumption lessen water and energy use, reducing environmental impact. These practices help preserve water for future generations, supporting sustainable development.
- How do solar panels, wind turbines, and geothermal systems reduce emissions, cut costs, and boost sustainability?
Ans. Rooftop solar panels, wind turbines, and geothermal systems cut carbon emissions and energy costs by using renewable sources, promoting sustainability, and aligning with sustainable development goals.

Myth Buster

- Myth:** All resources are renewable.
Fact: Resources are classified into renewable (solar energy) and non-renewable (fossil fuels). Renewable resources can replenish naturally over time, while non-renewable resources deplete with use.



- Myth:** Man-made resources are not as important as natural resources.
Fact: Man-made resources, like buildings, machinery, and technology, are crucial for utilizing natural resources effectively and play a significant role in economic development.



Real-Life Application Based Questions: Exercises that connect theory with practical scenarios. It will enhance your understanding and relevance of concepts.

Myth Buster: Clear up common misconceptions to ensure your understanding is accurate.

COMPETENCY BASED SOLVED EXAMPLES

Multiple Choice Questions

(1 M)

1. Which one of the following types of resource is iron ore?
(1M) (NCERT)

- (a) Renewable (b) Biotic
(c) Flow (d) Non-renewable

2. Match the Column-I with Column-II and choose the correct option:
(1M) (CBSE, 2023)

Column-I (Resources)	Column-II (Example)
I. Biological	1. Coal
II. Renewable	2. Wildlife
III. Non-renewable	3. Solar Energy

- (a) I-1; II-3; III-2 (b) I-3; II-2; III-1
(c) I-2; II-3; III-1 (d) I-1; II-2; III-3

3. Based on origin, resources can be classified as and _____.
(1M)

- (a) Biotic and Abiotic
(b) Renewable and Non-renewable
(c) Potential and Developed
(d) None of the above

4. Based on the status of development, resources can be classified as _____.
(1M)

- (a) Potential
(b) Developed Stock
(c) Reserves
(d) All of the above

5. Which type of resource planning focuses on equitable distribution of resources?
(1M)

- (a) National resource planning
(b) Regional resource planning
(c) Local resource planning
(d) Global resource planning

6. Which of the following is not a problem of resource development?
(1M) (CBSE, 2022, Term 1)

- (a) Depletion of resources to satisfy the greed of a few individuals.
(b) Accumulation of resources in few hands.
(c) Indiscriminate exploitation of resources.
(d) An equitable distribution of resources.

7. Match the Column-I with Column-II and choose the correct option:
(1M)

Column-I (Resources)	Column-II (Example)
P. Renewable resources	(i) Forests and wildlife
Q. Non-renewable resources	(ii) The oceanic resources
R. National resources	(iii) Roads, canals and railway
S. International resources	(iv) Minerals and fossil fuels

- (a) P-(i), Q-(iv), R-(iii), S-(ii)
(b) P-(ii), Q-(i), R-(iv), S-(iii)
(c) P-(iv), Q-(i), R-(iv), S-(ii)
(d) P-(i), Q-(iv), R-(ii), S-(iii)

8. Which of the following is a step in resource planning?
(1M)

- (a) Identification and inventory of resources
(b) Allocation of resources based on demand
(c) Formulation and implementation of resource development plans
(d) All of the above

9. The concept of sustainable development aims to: _____.
(1M)

- (a) Deplete natural resources
(b) Preserve natural resources for future generations
(c) Exploit resources without any regard for the environment
(d) None of the above

10. Fill in the blanks:
(1M) (CBSE, 2020)

Types of Resources	Types of Resources
Examples	Examples
A-?	Biotic and Abiotic
B-?	Renewable and non-renewable

Assertion and Reason

(1 M)

Direction: The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- (a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) A is true, but R is false.
(d) A is false, but R is true.

1. Assertion (A): Resources are gifts of nature.
Reason (R): Resources like soil, air, and water are easily available in nature.
(2M)

Solved Examples

For each topic, solved examples are provided including tagging of Competencies, PYQs, CBSE SQPs etc that exemplify how to approach and solve questions. This section is designed to reinforce your learning and improve problem-solving skills.

MISCELLANEOUS EXERCISE

Multiple Choice Questions

(1 M)

1. On the basis of the status of development, resources can be classified as:
(a) Potential (b) Developed Stock
(c) Reserves (d) All of the above
(1M)
2. Which of the following is correctly matched?
(a) Alluvial Soil-Consists of sand and silt
(b) Black Soil-Salt content is high
(c) Arid Soil-Diffusion of iron in crystalline
(d) Laterite Soil - Made up of iron oxides
(1M)
3. Which of the following statements about Agenda 21 is true?
(a) Through technology
(b) Through nurturing environmental resources
(c) Through technology
(d) Through nurturing environmental resources
(1M)

ANSWER KEYS

Multiple Choice Questions

1. (d) 2. (a) 3. (d) 4. (c) 5. (a) 6. (c) 7. (c) 8. (a) 9. (b) 10. (a)
11. (d) 12. (a) 13. (a) 14. (d) 15. (c) 16. (a) 17. (b) 18. (d) 19. (c) 20. (d)

Assertion and Reason

1. (a) 2. (a) 3. (c) 4. (b) 5. (a) 6. (a) 7. (a)

Case-Based Type Questions

Case Based-I

- (i) (b) (ii) (b) (iii) (c) (iv) (d)

Case Based-II

- (i) (b) (ii) (b) (iii) (a) (iv) (b)

HINTS & EXPLANATIONS

Multiple Choice Questions

1. (d) All of the above
2. (a) Alluvial Soil - Consists of sand and silt
3. (d) Option (a) and (b)
4. (c) Eastern and Southern part of Deccan Plateau
5. (a) Deccan trap region
6. (c) Deforestation
7. (c) Bhangar and Khadar
8. (a) Shelter belts

Subjective Questions

Very Short Answer Type Questions

1. **Natural resources:** Everything in our environment that can be used to fulfill our needs, provided it is technologically accessible, economically feasible, and culturally acceptable, can be termed as a 'Resource'.
Examples include water, air, soil, minerals, and forests. (1M)
2. **Renewable resources examples:** Renewable resources are those that can be replenished naturally over time. Examples include sunlight, wind, water, and biomass. (2M)

At the end of each chapter, you'll find additional exercises intended to test your grasp of the material. These are great for revision and to prepare for exams.

Answer Key and Explanations including Topper's Explanations, Mistake 101 and Nailing the right answer to know how to write the ideal answer.

Answer Key

MOCK TEST PAPER

1

Max. Marks: 80

Time Allowed: 3 hours

General Instructions

- (i) The question paper comprises five Sections - A, B, C, D, E and F. There are 37 questions in the Question paper. All questions are compulsory.
(ii) Section A - From questions 1 to 20 are MCQs of 1 mark each.
(iii) Section B - Questions no. 21 to 24 are Very Short Answer Type Questions, carrying 2 marks each. Answer to each question should not exceed 40 words.
(iv) Section C - contains Q.25 to Q.29 are Short Answer Type Questions, carrying 3 marks each. Answer to each question should not exceed 60 words.
(v) Section D - Questions no. 30 to 33 are long answer type questions, carrying 5 marks each. Answer to each question should not exceed 120 words.
(vi) Section E - Questions no. 34 to 36 are case based questions with three sub questions and are of 4 marks each. Answer to each question should not exceed 100 words.
(vii) Section F - Questions no. 37 is map-based, carrying 5 marks with two parts, 37a from History (2 marks) and 37b from Geography (3 marks).

Section-A

1. Look at the pictures given below. Identify the name of the painter of this painting from the following options.



- (a) Abanindranath Tagore (b) Rabindranath Tagore
(c) Raja Ravi Varma (d) Sarad Das Gupta

2. Who among the following was the author of the book 'Gita Rahasya'?

- (a) Tulsidas (b) Swami Vivekananda
(c) Jayadev (d) Rishabh

3. Arrange the following in chronological order:

- I. Print culture created the conditions for the French Revolution
II. Martin Luther's writings led to beginning of the Protestant Reformation
III. Menocchio misinterpreted the message of the Bible
IV. Johann Gutenberg invented Printing press

- (a) III, II, I & IV (b) I, II, III & IV
(c) IV, III, II & I (d) IV, II, III & I

4. What helped in the colonization of Asian and African countries? Identify the correct statement from the following options:

- (a) Inter-governmental policies for the expansion of trade
(b) Governmental incentive to the mother countries for expansion
(c) Technology, investments and improvement in transport
(d) Capitalists of these regions wanted trade with colonial powers

5. Statement-I: Mahatma Gandhi successfully organized the Satyagraha movement of 1916 and 1917 in favour of peasant.

Statement-II: In Champaran, Gandhi Ji inspired the middle class to struggle against the oppressive plantation system and in Kachhi districts of Gujarat he supported their demand for education in revenue collection affected by crop failure.

- (a) Statement-I is true, Statement-II is false
(b) Statement-I is false, Statement-II is true
(c) Both Statement are True and Statement-II provides explanation to Statement-I
(d) Both Statement are True and Statement-II does not provide explanation to Statement-I

Mock Test Papers: Test your preparedness with our Mock Test Papers designed to mirror the format and difficulty of real exams. Use the detailed explanations to identify areas of strength and opportunities for improvement.

Mock Test

CONTENTS

Questions have been categorized according to the Bloom's Taxonomy (as per CBSE Board).

The following abbreviations have been used in the book:

(Un) - Understanding

(Re) - Remembering

(Ap) - Applying

(An) - Analysing

(Cr) - Creating

(Ev) - Evaluating

CBSE Solved Paper 2025

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Mock Test Paper-1

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Mock Test Paper-2

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CBSE SOLVED PAPER 2025

Time allowed : 3 hours

Maximum Marks : 80

GENERAL INSTRUCTIONS:

Read the following instructions very carefully and strictly follow them:

- (i) This question paper contains **37** questions. **All** questions are **compulsory**.
- (ii) Question paper is divided into **Six** Sections - Section **A, B, C, D, E** and **F**.
- (iii) **Section A** - questions no. **1 to 20** are multiple choice type questions. Each questions carries **1** mark.
- (iv) **Section B** - question number **21 to 24** are Very Short Answer type questions. Each question carries **2** marks. Answer to these questions should not exceed **40** words.
- (v) **Section C** - question number **25 to 29** are Short Answer type questions. Each question carries **3** marks. Answer to these questions should not exceed **60** words.
- (vi) **Section D** - question number **30 to 33** are Long Answer (LA) type questions. Each question carries **5** marks. Answer to these questions should not exceed **120** words.
- (vii) **Section E** - question number **34 to 36** are **Case-based/Source-based questions** with three sub-questions. Each question carries **4** marks.
- (viii) In **Section F** - question number **37** is Map skill based question with two parts -
37(i) History (**2** marks) and **37(ii)** Geography (**3** marks). This question carries total **5** marks.
- (ix) In addition to this, NOTE that a separate question has been provided for Visually Impaired candidates in lieu of questions having visual inputs, Map etc. Such questions are to be attempted by Visually Impaired candidates only.

SECTION - A

1. Arrange the following historical events in chronological order and choose the correct option:

(An) (1 Mark)

- I. Bardoli Satyagraha II. Rowlatt Satyagraha III. Champaran Satyagraha IV. Kheda Satyagraha

Options:

- (a) I, II, III, IV (b) III, II, I, IV (c) II, I, IV, III (d) III, IV, II, I

1.(d)	The correct chronological order is :
	III. Champaran Satyagraha - 1917
	IV. Kheda Satyagraha - 1918
	II. Rowlatt Satyagraha - 1919
	I. Bardoli Satyagraha - 1928

2. Which among the following newspapers is related to Bal Gangadhar Tilak?

(Re) (1 Mark)

- (a) Hindustan (b) Bangla Patrika (c) Veer Bhoomi (d) Kesari

2.(d)	When Punjab revolutionaries were deported in 1907, Balgangadhar Tilak wrote with great sympathy about them in his Kesari. This led to his imprisonment in 1908, provoking in turn widespread all over India.
-------	--

3. In reference to the Germania allegory the "olive branch around the sword" symbolizes which one of the following? (Un) (1 Mark)

- (a) Being freed (b) Heroism and strength (c) Willingness to make peace (d) Beginning of a new era

3.(c) In the Germania allegory, The "olive branch around the sword" symbolizes the willingness to make peace. The olive branch traditionally represents peace, and when it surrounds a sword, it indicates a readiness to maintain peace without compromising strength.

4. The germs of which disease paved the way for Europe's conquest of America in the later half of the sixteenth century?

(Re) (1 Mark)

- (a) Cholera (b) Smallpox (c) Jaundice (d) Malaria

4.(b) Smallpox was the most devastating disease brought by Europeans to the Americans. The indigenous population, having no immunity to this new disease, suffered massive fatalities.

5. Mrs. Monica, along with her family, clears a piece of land and grows grain and other food crops to feed her family. When the soil's fertility decreases, she prepares another piece of land for agriculture. Which of the following methods of agriculture does she use?

(Un) (1 Mark)

- (a) Plantation farming (b) Slash and burn farming
(c) Intensive subsistence farming (d) Commercial farming

5.(b) In slash and burn farming, farmers clear a piece of land, grow crops, and when the soil loses fertility, they move to another plot. This method is commonly practiced for subsistence farming.

6. Match Column-I with Column-II and choose the correct option:

(Un) (1 Mark)

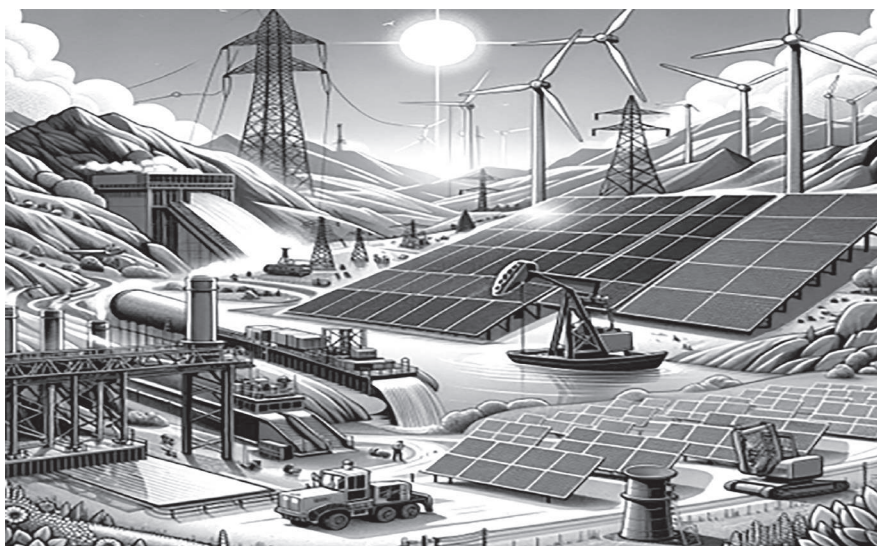
Column-I (Minerals)		Column-II (Features)	
A.	Sariska Wildlife Sanctuary	(i)	Uttarakhand
B.	Manas Tiger Reserve	(ii)	Rajasthan
C.	Periyar Tiger Reserve	(iii)	Assam
D.	Corbett National Park	(iv)	Kerala

- (a) A-(i), B-(ii), C-(iii), D-(iv) (b) A-(ii), B-(iii), C-(iv), D-(i)
(c) A-(iv), B-(i), C-(iii), D-(ii) (d) A-(ii), B-(i), C-(iv), D-(iii)

6.(b) A - (ii), B - (iii), C - (iv), D - (i)

MINERALS AND ENERGY RESOURCES

5



“From the depths of the Earth to the core of our daily lives, minerals and energy resources weave the fabric of our existence, powering our homes, fueling our travels, and shaping our world with their indispensable presence.”

SYLLABUS & WEIGHTAGE

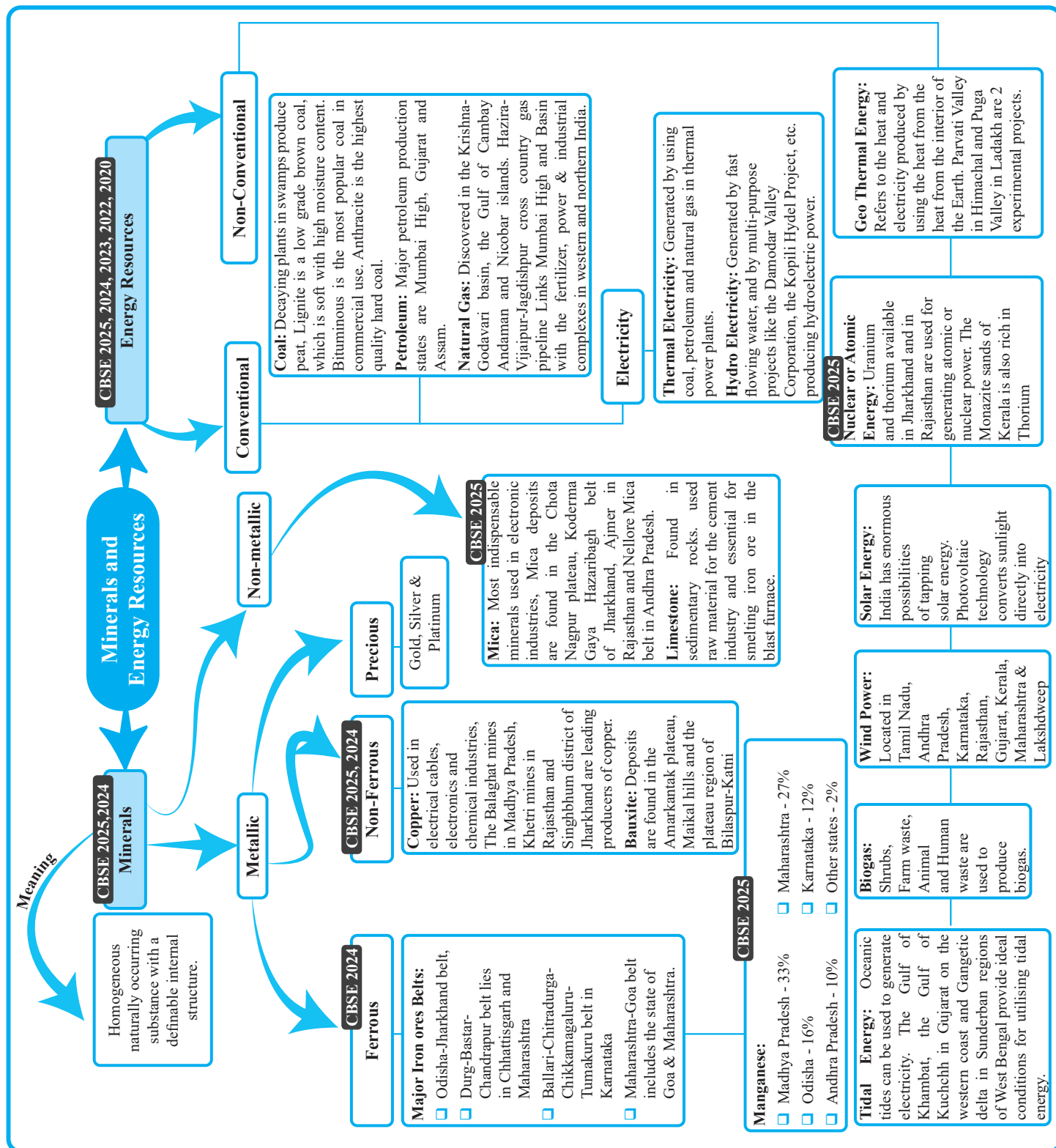


List of Concept Names	Years					
	2020	2021	2022	2023	2024	2025
Minerals (Mode of occurrence of Minerals, Types of Minerals, Conservation of Minerals)	—	Exam not Conducted	—	—	1Q (1 M)	(1Q + 1Q + 1Q) (4 M)
Energy Resources (Energy Resources, Conservation of Energy Resources)	1Q (1 M)		2 Q (2 M)	1Q (1 M)	1Q (1 M)	1Q (1 M)



CONCEPT MAP

To Access One
Shot Revision Video
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1 | MINERALS

NCERT Definitions (Commonly asked in 1 mark)

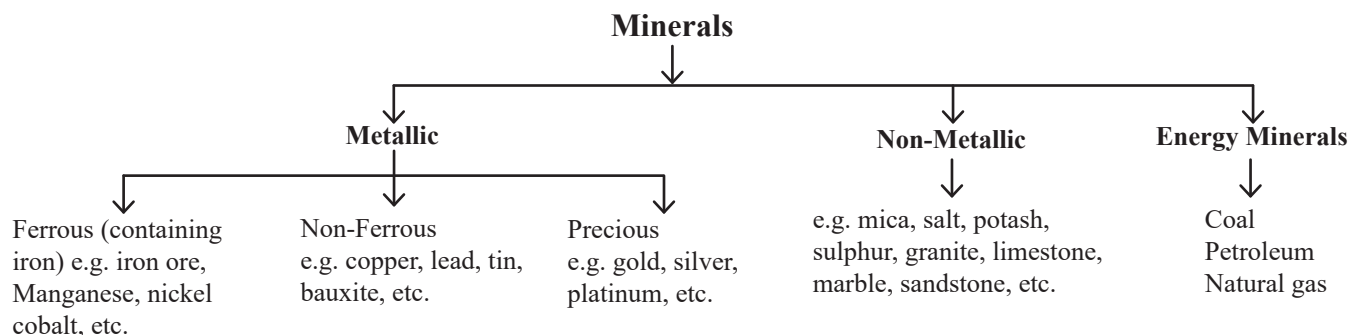
- ❑ **Mineral:** A homogenous, naturally occurring substance with a definable internal structure.
- ❑ **Ore:** An accumulation of any mineral mixed with other elements.
- ❑ **Igneous Rocks:** Rocks formed through the cooling and solidification of magma or lava.
- ❑ **Metamorphic Rocks:** Rocks formed from the transformation of existing rock types, in the process called metamorphism, which means “change in form”. These rocks can also contain minerals in veins and lodes.
- ❑ **Sedimentary Rocks:** Rocks formed by the deposition and solidification of mineral and organic particles on the Earth’s surface and within bodies of water.

Important Facts

- 01 Our mineral intake represents only about **0.3 percent** of our **total intake of nutrients**, they are so potent and important that without them we would not be able to utilise the other 99.7 percent of foodstuffs.
- 02 Although **Over 2000 minerals** have been **identified**, only a few are abundantly found in most of the rocks.
- 03 **Fluoride** which is used to **reduce cavities**, comes from a **mineral fluorite**.
- 04 Most kinds of **toothpaste** are made **white** with **titanium oxide**, which comes from minerals called **rutile, ilmenite, and anatase**.
- 05 The **sparkle** in some kinds of **toothpaste** comes from **mica**.
- 06 The **toothbrush** and **tube** containing the paste are made of **plastics** from **petroleum**.
- 07 **Ferrous minerals** account for about **3/4th** of the total value of the production of metallic minerals.
- 08 Nearly **10 kg of manganese** is required to manufacture **one tonne** of **steel**.
- 09 **Odisha** was the **largest bauxite-producing state** in India in **2016-17**.
- 10 **Kudre** in Kannada means **horse**. The **highest peak** in the **western ghats** of Karnataka resembles the **face of a horse**. The **Bailadila** hills look like the **hump** of an **ox**, and hence its name.

Classification

Minerals are classified as follows:



Important Concepts

Mode of Occurrence of Minerals

- ❑ **In Igneous and Metamorphic rocks**, Minerals may be found in **cracks, crevices, faults, or joints**. The **smaller** occurrences are called **veins** and the **larger** are called **lodes**. Major metallic minerals like tin, copper, zinc and lead, etc. are obtained from veins and lodes.
Formation: Minerals in Liquid/ molten and gaseous forms are forced upward through cavities towards the earth's surface. As they rise, they solidify and cool.
- ❑ **In sedimentary rocks**, Minerals are found in **beds or layers**. Examples of minerals in these rocks are coal, some forms of iron ores, gypsum, potash salt, sodium salt, etc.
Formation: Deposition, accumulation, concentration, and evaporation.
- ❑ **Residual mass of weathered material** containing ores. An example of this form is Bauxite.
Formation: The residual mass of weathered material is created by the decomposition of surface rocks and the removal of soluble elements.
- ❑ **Alluvial deposits** also known as '**placer deposits**'. Examples of minerals are Gold, Silver, Tin, Platinum, etc.
Formation: These deposits are found in the Sands of valley floors and the base of hills. These deposits are not corroded by water.
- ❑ **Minerals found in ocean water**. Examples are common salt, magnesium, bromine and manganese

Rat-Hole Mining

In most of the tribal areas of north-east India, minerals are owned by individuals or communities. In Meghalaya, there are large deposits of coal, iron ore, limestone and dolomite etc. Coal mining in Jowai and Cherapunjee is done by family member in the form of a long narrow tunnel, known as 'Rat hole' mining.

Note: The National Green Tribunal has declared such activities illegal.

Types/Classification of Minerals

Ferrous Minerals

❑ Iron ore

- Iron ore is vital for the manufacturing sector, especially for producing steel, which is fundamental for various industries like construction, automotive, and machinery.

Types of Iron Ores:

- **Magnetite:** This is the highest quality of iron ore, containing up to **70%** iron. It is prized for its magnetic properties, making it especially valuable in the electrical industry.
- **Hematite:** The most important industrial iron ore in terms of usage. It contains a slightly lower iron content than magnetite, ranging from **50-60%**.



Production Concentration:

- The **major states** contributing to iron ore production include Odisha, Chhattisgarh, Karnataka, and Jharkhand. These states accounted for 97% of the total production in the 2018-19 period. The remaining 3% came from **other states**.

Major Iron ore belts in India:

- **Odisha-Jharkhand Belt:**

This belt includes the Mayurbhanj and Kendujhar districts in Odisha and the Singhbhum district in Jharkhand.

Known for high-grade hematite iron ore found in the Badampahar mines in Odisha and in Gua and Noamundi in Jharkhand.

The quality of ore in this belt is highly suitable for steel production.

- **Durg-Bastar-Chandrapur Belt:**

It lies in Chhattisgarh and Maharashtra, Notable for the Bailadila range in the Bastar district of Chhattisgarh.

This belt is famous for its 14 deposits of super high-grade hematite iron ore, which is among the best in the world for steel making.

Iron ore from this belt is exported to countries like Japan and South Korea via the Vishakhapatnam port, highlighting its global importance.

- **Ballari-Chitradurga-Chikkamagaluru-Tumakuru Belt:**

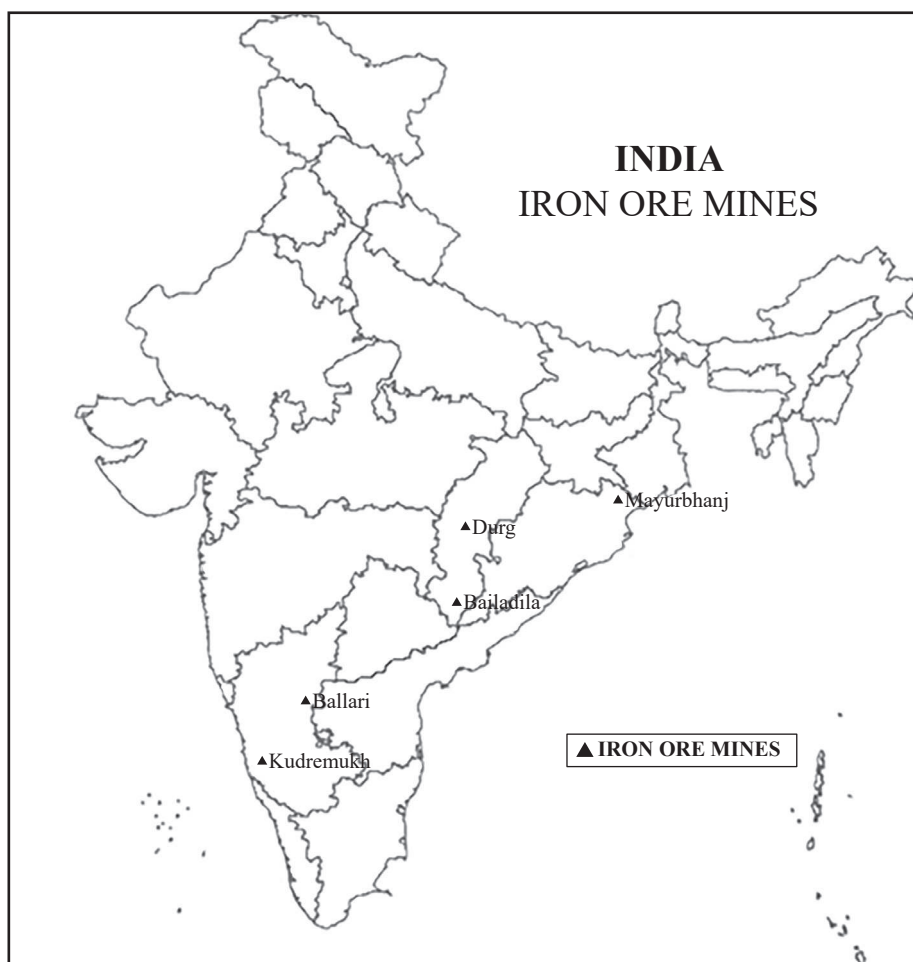
The unique aspect of the Kudremukh mine is its 100% export orientation, with the ore being transported as slurry through a pipeline to a port near Mangaluru for shipment.

- **Maharashtra-Goa Belt:**

It Includes Goa and the Ratnagiri district of Maharashtra.

Though the iron ore quality here may not match the high standards of the other belts, it is still efficiently exploited and exported.

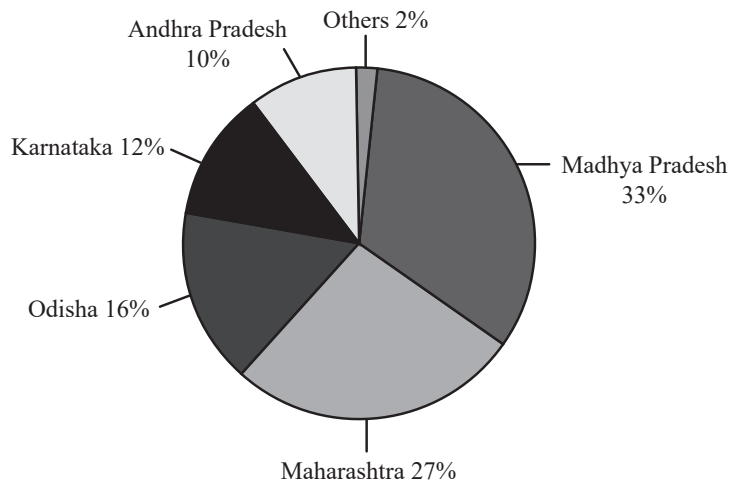
The main exporting port for this belt is Marmagao.



Note: Locating and labelling of only these points are to be considered as per the CBSE Syllabus 2024-25.

❑ Manganese

- Manganese is mainly used in the manufacturing of **steel** and **Ferro-manganese alloys**.
- It is also used in manufacturing **bleaching powder, insecticides, and paints**.



Production of Manganese showing state-wise share in per cent, 2018–19

Non-Ferrous Minerals

Non-ferrous minerals play a vital role in several metallurgical, engineering, and electrical industries.

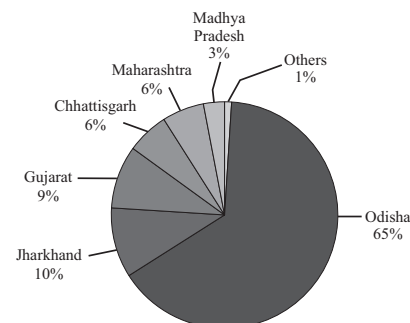
❑ Copper



- **Importance:** Malleability, ductility, and excellent electrical conductivity.
- **Primary Applications:** Electrical cables, electronics, and the chemical industry.
- **Major Producing Areas:** Balaghat (Madhya Pradesh), Khetri (Rajasthan), Singhbhum (Jharkhand).
- **Challenge:** India faces a deficiency in copper reserves and production, leading to reliance on imports.

❑ Bauxite

- **Bauxite** is a **clay-like substance** from which aluminum is extracted.
- It forms through the **decomposition of rocks** containing **aluminum silicates**.
- **Importance of Aluminum:** Combines strength with lightness, good conductivity, and malleability.
- **Bauxite Deposits:** Found in Amarkantak plateau, Maikal hills, Bilaspur-Katni region.
- **Leading Producer:** Odisha, particularly the Panchpatmali deposits in the Koraput district.



Production of Bauxite showing state-wise share in per cent, 2018–19

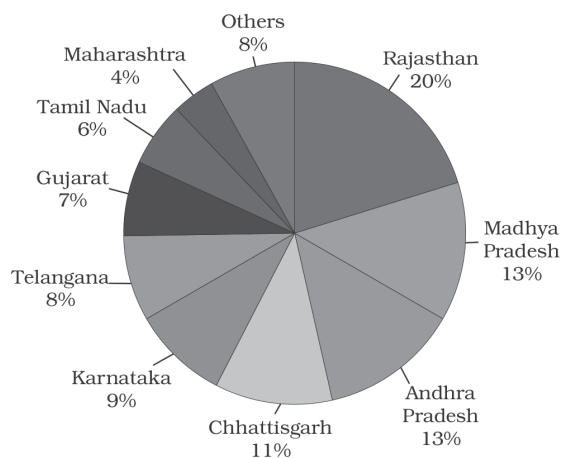
Non-Metallic Minerals

❑ Mica

- **Physical Properties:** Plates or leaves, split into thin sheets, varied colors including clear, black, green, red, yellow, or brown.
- **Applications:** Essential in electric and electronic industries for insulation and resistance to high voltage.
- **Major Producing Areas:** Northern edge of the Chota Nagpur plateau, Koderma Gaya – Hazaribagh belt (Jharkhand), Ajmer (Rajasthan), Nellore mica belt (Andhra Pradesh).

❑ Rock Minerals (Limestone)

- **Composition and Occurrence:** Found in sedimentary rocks, composed of calcium carbonates or a mix with magnesium carbonates.
- **Industrial Applications:** Fundamental for cement production and as a flux in iron ore smelting in blast furnaces.



Production of Limestone showing state-wise share in per cent, 2018–19

Hazards of Mining

- ❑ **Health Risks to Miners:** Exposure to dust and toxic fumes, leading to pulmonary diseases.
Risks of collapsing mine roofs, inundation, and fires.
- ❑ **Environmental Impact:** Contamination of water sources due to mining activities.
Degradation of land and soil from waste dumping.
Increased pollution in streams and rivers from slurry disposal.
- ❑ **Need for Regulations:** Stricter safety regulations for miner protection.
Implementation of environmental laws to reduce mining's impact.

Conservation of Minerals

- ❑ **Finite Resources:** Minerals, formed over **millions of years**, constitute **only 1%** of the **earth's crust**, highlighting their scarcity.
- ❑ **Non-renewable nature:** Once depleted, minerals **cannot be replenished** at a pace that matches their current consumption rate.
- ❑ **Extraction Costs & Decrease in Quality:** As minerals become scarcer, the financial and environmental costs of their extraction from deeper layers increase along with a decrease in quality.

Strategies for Sustainable Use:

- **Technological Improvements:** Improvements in technology are important for utilizing low-grade ores efficiently and reducing extraction costs.
- **Recycling Efforts:** Emphasizing the recycling of metals and the use of scrap metals can significantly conserve mineral resources.
- **Alternative Resources:** Exploring and adopting alternative resources can reduce the dependency on specific minerals, thereby helping in conservation efforts.

COMPETENCY BASED SOLVED EXAMPLES

Multiple Choice Questions

(1 M)

1. Ananya finds an interesting crystal during a science project and brings it to her geologist aunt for examination. Her aunt explained that she could learn a lot about the crystal by studying its internal structure. Why might Ananya's geologist aunt be particularly interested in the crystal's internal structure? (An)

- (a) To determine its age
- (b) To classify it and understand its properties
- (c) To find its exact geographical location
- (d) To assess its economic value

2. Health Nutri-Corp, a nutrition research organization, is hosting a seminar on the importance of minerals in human nutrition. During the seminar, two statements are presented regarding the role of minerals in the diet. Analyze the two statements given below about the role of minerals in human nutrition and which one is correct option. (An)

Statement-I: Minerals, though they constitute only 0.3% of total nutrient intake, are essential for various life processes in human nutrition.

Statement-II: Due to their minimal presence, minerals are not considered vital for the body's functioning.

Choose the correct answer:

- (a) Both statements are false.
 - (b) Statement I is true, Statement II is false.
 - (c) Statement I is false, Statement II is true.
 - (d) Both statements are true.
3. The environmental science club at a school is creating an educational exhibit on different types of mineral deposits. As part of the exhibit, they want to include a section that explains various mineral formations and their characteristics. The students have researched and categorized the following formations: veins, lodes, placer deposits, and beds. They need to create a matching activity to help visitors understand where these mineral deposits are typically found. (Un)

Column-I (Occurrences)			Column-II (Descriptions)
(A)	Veins	(i)	Large deposits found in faults or joints
(B)	Lodes	(ii)	Smaller deposits found in cracks and crevices
(C)	Placer deposits	(iii)	Minerals found in the sands of valley floors
(D)	Beds	(iv)	Layers of mineral deposits in sedimentary rocks

Choose the correct options:

- (a) A-(ii), B-(i), C-(iii), D-(iv)
 - (b) A-(i), B-(ii), C-(iv), D-(iii)
 - (c) A-(iii), B-(iv), C-(ii), D-(i)
 - (d) A-(iv), B-(iii), C-(i), D-(ii)
4. During a school debate on natural resources, one team argues that India's mineral resources are unevenly distributed due to geological factors. The other team needs to provide specific examples of regions and their associated minerals to support this claim. (Ev)
Statement-I: Sedimentary rocks in Gujarat and Assam contain most of India's petroleum deposits.
Statement-II: The vast alluvial plains of North India are rich in economic minerals.
Choose the correct answer:
 - (a) Both statements are false.
 - (b) Statement I is true, Statement II is false.
 - (c) Statement I is false, Statement II is true.
 - (d) Both statements are true.
 5. Which one of the following minerals is contained in the Monazite sand? (Re)(NCERT)
 - (a) Oil
 - (b) Uranium
 - (c) Thorium
 - (d) Coal
 6. Which one of the following is an example of the Ferrous Metal? (Re)(CBSE, 2023)
 - (a) Copper
 - (b) Tin
 - (c) Bauxite
 - (d) Nickel

Assertion and Reason

(1 M)

Direction: The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- (a) Both A and R are true, and R is the correct explanation of A.
- (b) Both A and R are true, but R is not the correct explanation of A.
- (c) A is true, but R is false.
- (d) A is false, but R is true.

1. A government task force is evaluating the potential for increasing iron ore production in India to boost the country's industrial growth. They are reviewing geological reports to understand the distribution and quality of iron ores in various regions, aiming to recommend the most promising areas for new mining operations

Assertion (A): India is endowed with abundant resources of good quality iron ores.

Reason (R): Magnetite has excellent magnetic qualities and contains up to 70% iron, making it highly valuable in the electrical industry. (Ev)

2. As a policy maker, you are drafting a policy to boost the production of certain minerals in India. You need to evaluate the importance of different metals and their sources to make informed decisions that will benefit the country's metallurgical and engineering industries.

Assertion (A): Aluminium is an important metal because it combines the strength of metals like iron with extreme lightness.

Reason (R): Aluminium is mainly obtained from bauxite deposits found in the Amarkantak plateau, Maikal hills, and the Bilaspur-Katni plateau region. **(Ev)**

3. **Assertion (A):** Coal is the most abundant fossil fuel in India.

Reason (R): India has large reserves of coal, which are mainly found in the Gondwana coalfields. **(Un)**

4. **Assertion (A):** Non-metallic minerals like limestone and gypsum are essential for the cement industry.

Reason (R): Limestone and gypsum are used as raw materials in the production of cement, which is a primary building material. **(Un)**

Subjective Questions

Very Short Answer Type Questions

(1 or 2 M)

1. What is a mineral?

(Un)(NCERT)

Ans. A mineral is defined as a homogenous, naturally occurring substance with a definable internal structure. Minerals are found in various forms in nature, ranging from the hardest diamond to the softest talc, showcasing a wide range of colors, hardness, crystal forms, lustre, and density. **(2 M)**

2. You are an environmental scientist working with a team to assess the potential for mining in a newly discovered region. During your survey, a team member finds a rock containing a high concentration of a valuable mineral. Define the term "ore" as used in the context of minerals.

(Re)

Ans. An ore is a rock containing a high concentration of a valuable mineral. This significant concentration makes the extraction of the mineral economically feasible or commercially viable, enabling profitable mining operations. **(2 M)**

3. The Ministry of Commerce and Industry is preparing a comprehensive report on the role of various minerals in driving India's economic growth. As part of this initiative, the Ministry is focusing on understanding the significance of ferrous minerals and their impact on different sectors of the economy.

(Un)

Ans. Ferrous minerals, mainly iron ore, are vital for steel production, a backbone of industrial development and in economic impact, contributing 3/4th of the total value of metallic minerals. **(1 M)**

Sectors Benefited: They significantly support various sectors, including construction, automotive, and machinery, driving economic growth. **(1 M)**

4. You are Rohit, a materials scientist working for a leading electronics manufacturing company, ElectronTech Innovations. The company is exploring alternative materials to enhance its product efficiency. The management has asked you to explain why mica is considered an important mineral for the electric and electronic industries?

(Un)

Ans. Importance of Mica in Electric and Electronic Industries

- (i) **Dielectric Strength:** Mica is essential due to its excellent di-electric strength, which allows it to withstand high voltages. **(½ M)**
- (ii) Its low power loss factor ensures efficiency. **(½ M)**
- (iii) Insulating properties make it ideal for use in electronic components. **(½ M)**
- (iv) Resistance to high voltage prevents breakdown in electrical circuits. **(½ M)**

Short Answer Type Questions

(3 M)

1. "A concerted effort has to be made in order to use mineral resources in a planned and sustainable manner." Suggest and explain any three measures.

(Cr)

Ans. **Recycling of Metals:** Recycling and reusing existing metals reduce the need for new mining, conserving resources and energy. **(1 M)**

- **Use of Low-Grade Ores:** Advancements in technology can make the extraction of minerals from low-grade ores more economically viable, reducing waste. **(1 M)**
- **Sustainable Mining Practices:** Implementing environmentally friendly mining techniques minimizes ecological damage and ensures that mineral resources are available for future generations. **(1 M)**



Nailing the Right Answer

- ☐ Clearly suggest measures like recycling of metals to conserve resources.
- ☐ Explain how the use of low-grade ores with advanced technology can reduce waste.
- ☐ Elaborate on the importance of sustainable mining practices to ensure resource availability for future generations.

2. Geo-Explorers Ltd., a leading mining company, is conducting a training session for new employees to help them understand the diverse physical properties of minerals. During the session, a question arose about why minerals exhibit a wide range of physical properties such as colour and hardness.

(Un)

Ans. Minerals exhibit a range of physical properties due to:

- (i) **Chemical Composition:** Different elements and compounds create diverse colours. **(1 M)**
- (ii) **Crystal Structure:** Variations in atomic arrangement affect hardness. **(1 M)**

1. As a mining safety inspector, you are assessing the risks associated with mining operations in Jharia, where frequent mine fires and roof collapses occur. During your inspection, you notice a high level of dust and noxious fumes in the air, and many miners are complaining of respiratory issues. Additionally, you observe that safety measures and environmental laws are not strictly followed. evaluate the following statements.

Assertion (A): The dust and noxious fumes inhaled by miners make them vulnerable to pulmonary diseases

Reason (R): Stricter safety regulations and implementation of environmental laws are essential to prevent mining from becoming a “killer industry.” (Ev)

2. **Assertion (A):** Wind energy is a renewable source of energy.
Reason (R): Wind turbines convert kinetic energy from wind into electrical energy without producing any emissions or pollution. (An)

3. **Assertion (A):** Non-Renewable energy sources like solar and wind power are considered environmentally friendly alternatives to fossil fuels.

Reason (R): Non-Renewable energy sources do not produce harmful greenhouse gas emissions during power generation, unlike fossil fuels. (Un and En)

4. **Assertion (A):** Hydroelectric power plants are not a sustainable source of energy.

Reason (R): Hydroelectric power is generated by harnessing the energy of flowing water, which is a renewable resource. (Ev)

Subjective Questions

Very Short Answer Type Questions (1 or 2 M)

1. Sameer is an energy consultant at the Global Energy Research Institute (GERI). The government of India has tasked you with assessing the current state of atomic or nuclear power resources in the country. Identify the main resources for generating atomic or nuclear power in India. (Re)

Ans. The main resources for generating atomic or nuclear power in India are:

(i) **Uranium:** Sourced from mines in Jharkhand and the Aravalli ranges of Rajasthan. (½ M)

(ii) **Thorium:** Abundant in the Monazite sands of Kerala. (½ M)

Significance:

Uranium and Thorium are crucial for generating nuclear power, providing a stable and sustainable energy source, and reducing reliance on fossil fuels. (1 M)

2. What are the common sources of energy in rural India? (Re)

Ans. Firewood and cattle dung cakes are the most common sources of energy in rural India. (1 M)

3. How is solar energy trapped and used? (Un)

Ans. Solar Panels are used to trap the heat from the sun and are used to heat water in the glass panels. Solar technologies convert sunlight into electrical energy through photovoltaic (PV) panels. (2 M)

4. How is Geo-thermal energy produced? (Un)

Ans. Geothermal energy refers to the heat and electricity produced by using the heat from the interior of the earth. Steam is generated when the underground water comes in contact with the points forming hot springs. (2 M)

5. What are the full forms of CNG and LPG? (Re)

Ans. **CNG:** Compressed Natural Gas, used in vehicles. (1 M)

LPG: Liquefied Petroleum Gas, used as a cooking medium. (1 M)

Short Answer Type Questions (3 M)

1. Distinguish between conventional and non-conventional sources of energy. (An)(NCERT)

Ans. (1 M for each)

Basis	Conventional Sources of Energy	Non-Conventional Sources of Energy
Origin	Mostly derived from fossil fuels like coal, natural gas, and oil, as well as nuclear power.	Include solar, wind, hydro, biomass, and geothermal energy, derived from natural processes that are replenished constantly.
Availability	Limited and tend to get exhausted over time.	Virtually inexhaustible and replenish naturally.
Environmental Impact	Generally high, leading to pollution and contributing to climate change.	Much lower, considered environmentally friendly and sustainable.

2. Mohit is a student representative on the National Youth Council for Sustainable Development. The council is preparing a report on India’s energy sector, focusing on the role of coal. Evaluate the economic and environmental impacts of coal usage in India. (Ev)

Ans. Coal is a crucial part of India’s energy sector, some impacts of coal usage in India are:

(i) **Economic Impact:** Coal is essential for industrial and economic growth, powering major industries and generating electricity in India. (1 M)

(ii) **Environmental Impact:** However, coal mining and usage contribute significantly to air pollution and greenhouse gas emissions, impacting climate and health. (1 M)

(iii) **Resource Depletion:** Extensive coal usage depletes finite resources, necessitating sustainable energy alternatives to balance economic and environmental needs. (1 M)

3. The Indian Renewable Energy Agency (IREA) is exploring sustainable energy solutions for rural and remote areas of India. As part of their initiative, they are focusing on the benefits of solar energy. discuss the specific advantages of implementing solar energy in rural and remote regions of India. (Un)

Ans. The specific advantages of Solar Energy in Rural India:

- (i) **Abundant Resource:** India's tropical location ensures plentiful sunlight, making solar energy a reliable source. (1 M)
- (ii) **Benefits for rural households:** Low maintenance costs and free electricity reduce economic burdens on rural households. (1 M)
- (iii) **Environmental Impact:** Reduces reliance on firewood and kerosene, lowering deforestation and pollution. (1 M)

4. What are the two main ways of generating electricity? How are they different from each other?

Ans. Electricity is generated:

- By running water which drives hydro turbines to generate hydroelectricity. (1 M)
- By burning fuels such as coal, petroleum and natural gas to drive turbines to produce thermal power. (1 M)

They are different from each other in the sense that hydroelectricity is generated by water, which is a renewable source, whereas thermal electricity is generated using non-renewable fossil fuels. (1 M)

Long Answer Type Questions

(5 M)

1. The Indian Ministry of Energy is developing a comprehensive energy strategy to address the growing demand for sustainable energy solutions. As part of this initiative, they are emphasizing the importance of non-conventional sources of energy. explain the significance of non-conventional sources of energy in India's energy strategy. discuss the different types of non-conventional energy sources along with their advantages. (Un)



Ans. **Significance in Energy Strategy:** Non-conventional sources like solar, wind, tidal, and geothermal are vital for sustainable energy development, reducing dependency on finite fossil fuels. (1 M)

Types of Non-Conventional Energy Sources:

(Any four)(½ M for each)

- (i) **Solar Energy:** Abundant in India, reduces reliance on traditional fuels, and provides clean energy.
- (ii) **Wind Energy:** Effective in coastal regions, provides renewable and clean power.
- (iii) **Biogas:** Converts organic waste into energy, improving waste management and providing a renewable source.
- (iv) **Geothermal Energy:** Utilizes Earth's internal heat, providing a stable and sustainable energy source.
- (v) **Tidal Energy:** Harnesses Ocean tides, offering a predictable and renewable energy source.

Advantages: They lower greenhouse gas emissions, create jobs, reduce energy costs, and support rural development. (1 M)

Significance: Non-conventional sources are essential for sustainable development, reducing dependency on finite fossil fuels, and ensuring energy security. (1 M)

2. Explain with examples the significance of the usage of non-conventional sources of energy for the country. (An and Ap)

OR

“Non-conventional resources are the best option to conserve the natural resources” Substantiate this statement with Examples. (Ap and An) (CBSE SQP, 2023)

Ans. The significance of using non-conventional sources of energy for a country includes:

- **Renewable Energy:** Non-conventional sources like solar and wind are abundant and sustainable, reducing dependency on finite fossil fuels. (1 M)
- **Environmental Benefits:** They emit fewer pollutants, reducing greenhouse gas emissions and combating climate change. (1 M)
- **Economic Advantages:** Creates jobs in renewable energy sectors and lowers energy costs over time due to technological advancements. (1 M)
- **Energy Security:** Diversifies energy supply, reducing a country's vulnerability to energy price volatility and supply disruptions. (1 M)
- **Rural Development:** Solar and wind projects can provide power to remote areas, improving living conditions and reducing urban migration. (1 M)

3. Which is the most abundantly available fossil fuel in India? Assess the importance of its different forms. (Re and Ev)(CBSE, 2015)

Ans. Coal is the most abundantly available fossil fuel in India. (1 M)
The different forms of coal hold varying importance:

- **Peat:** It has low carbon and high moisture content, with a low heating capacity. It is an early stage of coal formation and has limited commercial use. (1 M)
- **Lignite:** It is a low-grade brown coal with high moisture content. It is mainly used for electricity generation. (1 M)

MISCELLANEOUS EXERCISE

Multiple Choice Questions

(1 M)

- Which one of the following minerals is formed by the decomposition of rocks, leaving a residual mass of weathered material? **(Un)(NCERT)**
 - coal
 - bauxite
 - gold
 - zinc
- Koderma, in Jharkhand, is the leading producer of which one of the following minerals? **(Re)(NCERT)**
 - bauxite
 - mica
 - iron ore
 - copper
- Minerals are deposited and accumulated in the strata of which of the following rocks? **(Re)(NCERT)**
 - sedimentary rocks
 - metamorphic rocks
 - igneous rocks
 - none of the above
- The Ministry of Mines is assessing the risk factors associated with the regional concentration of manganese production in India. They are reviewing data to develop strategies that could mitigate potential disruptions and ensure a stable supply chain. The provided pie chart displays the state-wise share of manganese production for the year 2018-19. analyze the following statements in the context of the provided data and determine their validity to help the Ministry in its assessment. **(Ev)**

Statement-I: Maharashtra and Madhya Pradesh together account for 60% of India's manganese production.

Statement-II: This high concentration of production in two states suggests a need for diversification to mitigate risks associated with regional dependencies.

- Both statements are true.
 - Both statements are false.
 - Statement I is true; Statement II is false.
 - Statement I is false; Statement II is true.
- Choose the correct option from **Column-I** and **Column-II**. **(Re)(CBSE, 2020)**

Column-I (Minerals)		Column-II (Examples)	
(a)	Chandrapur thermal power plant	(i)	Odisha
(b)	Mayurbhanj iron ore mines	(ii)	Amarkantak
(c)	Kalol oil fields	(iii)	Gujarat
(d)	Bauxite mines	(iv)	Jharkhand

- In a geography project, students are studying the mineral resources of north-east India. They discover that in this region, unlike the rest of the country, minerals are often owned by individuals or communities. This unique ownership has led to mining practices like 'Rat-hole' mining in Meghalaya. The students also learn about the legal actions taken by the National Green Tribunal against these practices due to environmental concerns. **(Ap)**

Statement-I: In north-east India, particularly in Meghalaya, minerals are owned by individuals or communities rather than being nationalized.

Statement-II: The National Green Tribunal has declared 'Rat-hole' mining in Meghalaya illegal due to environmental concerns.

Choose the correct answer:

- Both statements are false.
 - Statement I is true, Statement II is false.
 - Statement I is false, Statement II is true.
 - Both statements are true.
- The National Metallurgical Institute is conducting a study on the distribution and quality of iron ores in India. They aim to determine the best sources for high-quality iron ores and their economic impact on industrial development and the Institute finds that the finest iron ore with a very high iron content and excellent magnetic qualities is valuable in the electrical industry. Which type of iron ore are they referring to? **(Ap)**

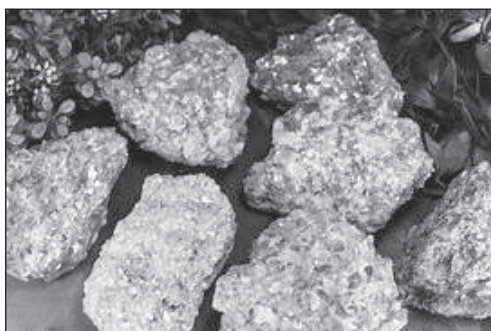


- Hematite
 - Magnetite
 - Siderite
 - Limonite
- You are a logistics manager for a mining company that operates the Kudremukh mines in Karnataka. Your task is to optimize the transportation of iron ore to the port near Mangaluru. Which modern technique do you apply to ensure efficient and cost-effective transportation of iron ore from the Kudremukh mines to the port? **(Ap)**
 - The use of pipelines to transport ore as slurry.
 - The construction of railroads for ore transport.
 - The establishment of air transport routes for ore export.
 - The development of advanced road networks.
 - India's reserves and production of non-ferrous minerals are not very satisfactory. As a student preparing for a geography quiz, you need to analyze the geographical distribution and economic importance of various non-ferrous minerals in India. Match the minerals with their corresponding leading production areas to understand the strategic locations of these resources. **(An)**

Column-I (Mineral)	Column-II (Production Area)
(A) Copper	(i) Amarkantak Plateau
(B) Bauxite	(ii) Khetri Mines
(C) Mica	(iii) Madhya Pradesh
(D) Manganese	(iv) Koderma

Choose the correct option:

- (a) A-(ii), B-(i), C-(iv), D-(iii)
 (b) A-(ii), B-(iii), C-(i), D-(iv)
 (c) A-(iv), B-(i), C-(ii), D-(iii)
 (d) A-(ii), B-(i), C-(iii), D-(iv)
- 10.** Imagine you are a policy advisor named Ananya, working for the Ministry of Environment and Forests. You have been tasked with developing new regulations for the mining sector to ensure sustainable practices and prevent environmental degradation in this region. during your research, you come across the following information about mica. **(Cr)**



Statement-I: Mica deposits are found in the northern edge of the Chota Nagpur plateau.

Statement-II: Mica is an essential mineral in the cement industry due to its excellent insulating properties. evaluate the accuracy of these statements and decide on the appropriate course of action to ensure sustainable mining practices in the Koderma-Gaya-Hazaribagh belt.

- (a) Both statements are false.
 (b) Statement I is true, Statement II is false.
 (c) Statement I is false, Statement II is true.
 (d) Both statements are true.
- 11.** Imagine you are a resident in a mining town that has been experiencing continuous dust generation due to mining activities. Over the years, you have noticed changes in the environment and the health of the community. how would you propose addressing these issues to improve the quality of life in your town? **(Cr)**
- (a) Implementing measures to increase soil fertility and agricultural productivity.
 (b) Taking steps to reduce contamination of air and water resources to prevent health issues.
 (c) Encouraging activities that enhance local biodiversity and ecosystem stability.
 (d) Focusing on reducing the overall mining output to minimize environmental impact.

- 12.** You are the chief engineer at the plant, responsible for advising the management on the best type of coal to use. Analyze the following options and recommend the type of coal that should be chosen for the switch. Choose the appropriate options given below: **(An)**

- (a) Peat, because it has high moisture content
 (b) Lignite, because it is soft and brown
 (c) Bituminous, because it is popular in commercial use
 (d) Anthracite, because it has the highest carbon content and heating capacity

- 13.** Ananya is a high school student preparing for a science fair project on nuclear energy resources in India. She needs to present accurate information about the materials and locations associated with nuclear energy production in the country. Help Ananya by identifying the correct statements from her research notes. **(Un)**

Statements:

- (i) Ananya reads that Uranium and Thorium are essential materials used for generating atomic energy.
 (ii) She finds a reference stating that the Monazite sands of Kerala are rich in Uranium.
 (iii) She learns that altering atomic structures releases energy in the form of heat.
 (iv) Ananya notes that nuclear power stations are located only in Jharkhand and Rajasthan.
- (a) (i) and (ii) only (b) (ii) and (iv) only
 (c) (i) and (iii) only (d) (iii) and (iv) only

Assertion and Reason

(1 M)

Direction: The following questions consist of two statements – **Assertion (A)** and **Reason (R)**. Answer these questions by selecting the appropriate option given below:

- (a) Both A and R are true, and R is the correct explanation of A.
 (b) Both A and R are true, but R is not the correct explanation of A.
 (c) A is true, but R is false.
 (d) A is false, but R is true.

- 1. Assertion (A):** Mining activity is often called a “Killer Industry”.

Reason (R): Mining helps in agriculture. **(Ev)**

- 2. Assertion (A):** Mica is a non-metallic mineral.

Reason (R): Mica mineral is the basic raw material for the cement industry. **(Ev)**

- 3. Assertion (A):** Minerals are an indispensable part of our lives.

Reason (R): Minerals have universal use, they are used to manufacture everything we use in our day-to-day lives. **(An)**

- 4. Assertion (A):** Natural gas is referred to as an environment-friendly fuel.

Reason (R): Natural gas contains low carbon dioxide emissions. **(An)**

5. **Assertion (A):** Fossil fuels such as coal, oil, and gas are easily obtained from natural resources.

Reason (R): Increased use of fossil fuels creates an unhealthy environment. (An)

6. **Assertion (A):** Conservation of Energy Resources is essential.

Reason (R): Energy is a basic requirement for economic development. (An)

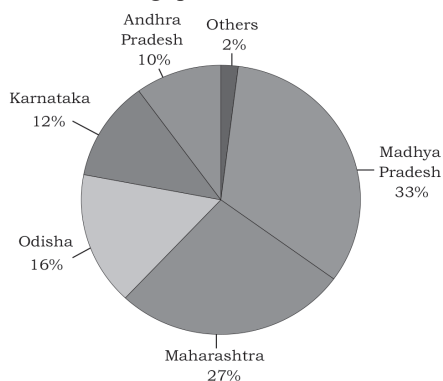
Subjective Questions

Very Short Answer Type Questions (1 or 2 M)

1. Why should the use of cattle cake as fuel be discouraged? (Ev)(CBSE, 2016)
2. How is iron ore transported from Kudremukh mines to a port near Mangaluru? (Re)
3. How is hydroelectricity generated? (Un)
4. What are the Khetri mines in Rajasthan famous for? (Re)
5. Why is copper mainly used in electrical cables, electronics, and chemical industries? (Ap)
6. How are bauxite deposits formed? (Un)

Short Answer Type Questions (3 M)

1. Why is solar energy more developed in western Rajasthan? Give three points to support your answer. (An)
2. The pie chart given below shows the production of manganese in different states. On the basis of diagram answer the following questions:



- (a) Which is the largest producer of Manganese? (Re)
 - (b) Mention any two uses of Manganese. (Re)
3. What is Tidal energy? Name a region of India with proven ideal conditions for using tidal energy. (Un and Re)

Long Answer Type Questions (5 M)

1. Describe the distribution of coal in India. (Un)(NCERT)
2. Why do you think that solar energy has a bright future in India? (Cr and Ev)(NCERT)
3. Why should we use renewable energy resources? Explain with arguments. (Ev)

OR

Why is there a pressing need for using renewable energy sources in India? Explain any five reasons. (Ev)(CBSE, 2014)

Case Based Questions

Case Based-I

Read the source given below and answer the following questions:

Hazards of Mining

Ravi is a young environmental scientist working for the National Environmental Protection Agency (NEPA) in India. He has been assigned to study the impact of mining activities in the Jharia coal belt region. Ravi's task is to assess the environmental and health hazards associated with mining and propose sustainable solutions to mitigate these issues.

The mining activities in the Jharia coal belt have led to significant environmental and health hazards. 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 constant threats. Water sources in the region get contaminated due to mining, and the dumping of waste and slurry leads to land, soil, and river pollution. Recent reports indicate that over 50% of coal-belt mines are unsafe, and there are ongoing efforts to shift the population from these hazardous areas.



- (i) Ravi needs to create a public awareness campaign highlighting the environmental hazards of mining in Jharia. What key points should he include in his campaign to effectively communicate the risks to the local population? (1 M) (Un)
- (ii) Analyze the long-term environmental impacts of mining activities in Jharia. What patterns and issues can be identified from the given data and reports? (1 M) (An)
- (iii) Propose a sustainable plan that Ravi could recommend to the NEPA to mitigate the environmental and health hazards of mining in Jharia. Justify your recommendations with specific examples and strategies. (2 M) (Un)

Case Based-II

Read the source given below and answer the following questions:

Conventional Sources of Energy: Coal

In India, coal is the most abundantly available fossil fuel. It provides a substantial part of the nation's energy needs. It is used for power generation, to supply energy to industry as well as for domestic needs. India is highly dependent on coal for meeting its commercial energy requirements as you are already aware coal is formed due to the compression of plant material over millions

HINTS & EXPLANATIONS

Multiple Choice Questions

- (b) bauxite
- (b) mica
- (a) sedimentary rocks
- (a) Both statements are true as Maharashtra and Madhya Pradesh together account for 60% (33% + 27%), and high regional concentration suggests the need for production diversification.
- (c) Kalol oil fields - (iii) Gujarat

Column-I	Column-II
(a) Chandrapur thermal power plant	(iv) Jharkhand
(b) Mayurbhanj iron ore mines	(i) Odisha
(c) Kalol oil fields	(iii) Gujarat
(d) Bauxite mines	(ii) Amarkantak

- (d) (i) Statement I is true because in north-east India, particularly in Meghalaya, minerals are indeed owned by individuals or communities rather than being nationalized.
(ii) Statement II is true because the National Green Tribunal has declared 'Rat-hole' mining in Meghalaya illegal due to environmental concerns.

Which highlights the unique ownership of minerals in this region and the legal actions taken against environmentally harmful mining practices.

- (b) Magnetite is the type of iron ore that the Institute is referring to. It is known for its very high iron content, which can be up to 70% and its excellent magnetic qualities. These properties make magnetite particularly valuable in the electrical industry, distinguishing it from other types of iron ores such as hematite, siderite, and limonite.
- (a) Using pipelines to transport ore as slurry is an efficient and cost-effective method for transporting iron ore from the Kudremukh mines to the port near Mangaluru. This method reduces transportation costs and minimizes the environmental impact compared to other modes of transport like railroads, air transport, or road networks.
- (a) (i) **Copper:** Leading production area is Khetri Mines in Rajasthan.
(ii) **Bauxite:** Major deposits are found in the Amarkantak Plateau.
(iii) **Mica:** Found in the Koderma region.
(iv) **Manganese:** Major production area is Madhya Pradesh.
- (b) Mica deposits are indeed found in the northern edge of the Chota Nagpur plateau, specifically in the Koderma-Gaya-Hazaribagh belt of Jharkhand, which is known to be the leading producer of mica in India so, Statement I as true.

However, Statement II is incorrect. Mica is not used in the cement industry due to its insulating properties. Instead, mica is widely used in the electrical and electronics industries for its excellent insulating properties and ability to withstand high temperatures.

- (b) Implementing measures to reduce air and water contamination directly addresses the core issues of dust generation and noxious fumes from mining, which significantly impact health and environmental quality in the community.
- (d) Anthracite is the highest quality coal due to its high carbon content and superior heating capacity, making it the most efficient choice for power generation.
- (c) (i) **Statement-I is correct:** Uranium and Thorium are used for generating atomic energy.
(ii) **Statement-II is incorrect:** The Monazite sands of Kerala are rich in Thorium, not Uranium.
(iii) **Statement-III is correct:** Alteration of atomic structures releases energy in the form of heat.
(iv) **Statement-IV is incorrect:** nuclear power stations in India are located in various states, not just Jharkhand and Rajasthan.

Assertion and Reason

- (c) Assertion is true but Reason is false. As mining does not help in agriculture.
- (c) Assertion is true but Reason is false. Limestone is the basic raw material for the cement industry.
- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (d) Assertion is false as Fossil fuels such as coal, oil, and gas are formed from the remains of plants and animals that lived millions of years ago. The reason is true.
- (a) Both Assertion and Reason are true and Reason is the correct explanation of assertion.

Subjective Questions

Very Short Answer Type Questions

- (a) It creates pollution. (1 M)
(b) By burning a manure resource is destroyed, which can improve soil fertility. (1 M)

Topper's Explanation:

2. Use of cattle cake as fuel should be discouraged as it reduces the supply of adequate manure which is used in agriculture.

(iii) **Economic Benefits:** Investing in renewable energy technologies creates jobs in manufacturing, installation, and maintenance sectors, boosting local economies and reducing dependence on imported fuels. (1 M)

(iv) **Energy Security:** Diversifying energy sources with renewables reduces vulnerability to global fuel price fluctuations and supply disruptions, enhancing national energy security. (1 M)

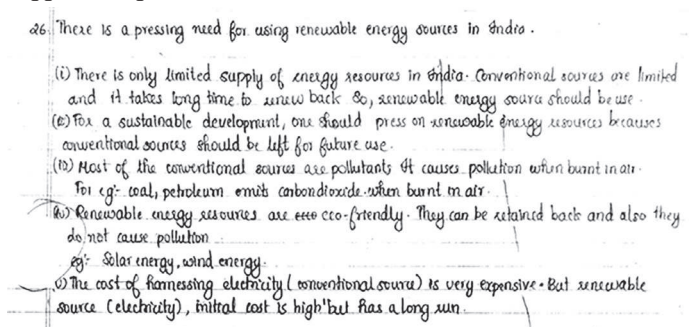
(v) **Health Benefits:** By reducing air and water pollution, renewable energy improves public health, lowering healthcare costs associated with pollution-related diseases. (1 M)



Mistakes 101 : What not to do!

- ☐ Lack of Specific Examples
- ☐ Missing Counter arguments
- ☐ Not Addressing Cost-Effectiveness of Renewable Energy

Topper's Explanation:



Case Based Questions

Case Based-I

- (i) Ravi should include the following key points in his public awareness campaign: (1 M)
- Health risks from inhaling dust and fumes.
 - Water contamination affects drinking water and agriculture.
 - The environmental degradation caused by waste and slurry dumping.
- (ii) Long-term environmental impacts of mining in Jharia include: (1 M)
- Air pollution causing respiratory problems.
 - Water pollution affecting health and ecosystems.
 - Soil degradation harming agriculture.
- (iii) Ravi could recommend the following sustainable plan to the NEPA: (1 M)
- Enforce air quality and dust control regulations, and develop a water management plan to prevent contamination.
 - Start mine reclamation projects and adopt cleaner mining technologies while promoting community engagement and education for sustainable practices.

Case Based-II

(i) **Policy Measures:** Incentives for clean technology adoption and Penalties for non-compliance with environmental standards. Investments in education and training for renewable energy sectors. (1 M)

(ii) **Geological Factors:** Gondwana coal versus tertiary coal formations and different compression levels lead to various coal types (peat, lignite, bituminous, anthracite).

Impact on Energy Industry: Influence on the quality and grade of coal used for different purposes. Strategic placement of industries near coal deposits. (1 M)

(iii) **Advantages:** (1 M)

- Abundant availability in India.
- Key to power generation and industrial supply.
- Cost-effective for energy production.

Disadvantages: (1 M)

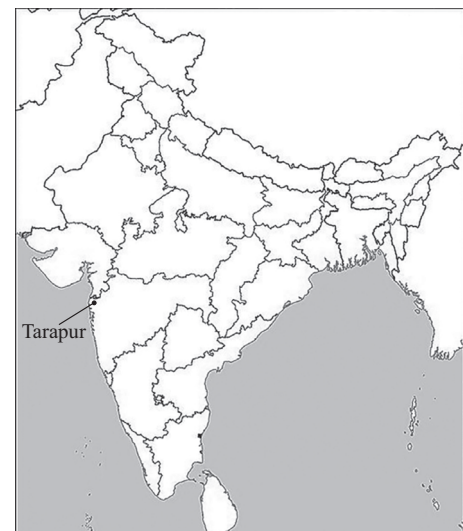
- Environmental pollution and carbon emissions.
- Health hazards due to mining activities.
- Dependency on a finite resource.

Case Based-III

- (i) Rising fossil fuel costs, environmental issues, and energy security concerns drive India's shift towards abundant renewable sources like solar and wind for sustainable energy solutions. (1 M)
- (ii) India's ample sunlight, wind, water, and biomass support large-scale renewable energy programs, reducing fossil fuel reliance and promoting sustainable development. (1 M)
- (iii) Nuclear power stations in India include Tarapur (Maharashtra), Rawatbhata (Rajasthan), Kalpakkam (Tamil Nadu), Narora (Uttar Pradesh), Kakrapar (Gujarat), and Kudankulam (Tamil Nadu). Challenges include uranium shortages, safety concerns, and waste management. (2 M)

Map Based Questions

1.



MOCK TEST PAPER

1

Max. Marks: 80

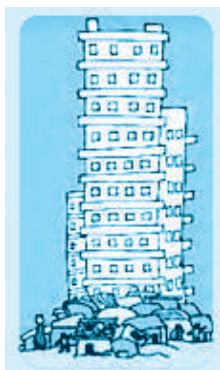
Time Allowed: 3 hours

General Instructions:

- (i) The question paper comprises Six Sections - A, B, C, D, E and F. There are 37 questions in the Question paper. All questions are compulsory.
- (ii) **Section A** - From questions 1 to 20 are MCQs of 1 mark each.
- (iii) **Section B** - Question no. 21 to 24 are Very Short Answer Type Questions, carrying 2 marks each. Answer to each question should not exceed 40 words.
- (iv) **Section C** - contains Q.25 to Q.29 are Short Answer Type Questions, carrying 3 marks each. Answer to each question should not exceed 60 words.
- (v) **Section D** - Question no. 30 to 33 are long answer type questions, carrying 5 marks each. Answer to each question should not exceed 120 words.
- (vi) **Section-E** - Questions no from 34 to 36 are case based questions with three sub questions and are of 4 marks each. Answer to each question should not exceed 100 words.
- (vii) **Section F** - Question no. 37 is map based, carrying 5 marks with two parts, 37a from History (2 marks) and 37b from Geography (3 marks).

Section - A

1. Look at the picture given below. What should not be the developmental goals for such an area?



- (a) Availability of loans for constructing pucca houses with their own toilets.
 - (b) Ownership of the MNCs built adjacent to the colony
 - (c) Availability of municipal services like water, electricity, and sanitation.
 - (d) Medical facilities like dispensaries in the locality.
2. Match the Column-I with Column-II and choose the correct option from the following:

Column-I		Column-II	
A.	Gita Govind	(I)	B G Tilak
B.	Kesari	(II)	Rammohan Roy

C.	Sambad Kaumudi	(III)	Jaydev
D.	Chhote aur Bade ka Sawal	(IV)	Kashibaba

Options:

- (a) A-(III), B-(I), C-(II), D-(IV)
 - (b) A-(II), B-(IV), C-(III), D-(I)
 - (c) A-(I), B-(III), C-(IV), D-(II)
 - (d) A-(IV), B-(II), C-(I), D-(III)
3. Who among the following was the architect for the unification of Germany?
 - (a) Otto Von Bismarck
 - (b) William I
 - (c) Frederick III
 - (d) William II
 4. Reason for decline of cotton textile export from India to Britain in the early 19th century:
 - (a) Imposition of tariff on cotton import into Britain.
 - (b) Quality of cotton textile was poor.
 - (c) Shortage of raw cotton in India.
 - (d) Cotton producers had found other buyers.
 5. Which of the following was the reason for calling off the Non-cooperation Movement by Gandhiji?
 - (a) Pressure from the British Government
 - (b) Second Round Table Conference
 - (c) Gandhiji's arrest
 - (d) Chauri-Chaura incident

2026
EXAMINATION



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The following abbreviations have been used in the book:

(Un) - Understanding

(Re) - Remembering

(Ap) - Applying

(An) - Analysing

(Cr) - Creating

(Ev) - Evaluating

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EXAMINATION



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✍ Rakshak Dua
✍ Samridhi Sharma
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(Ev) - Evaluating

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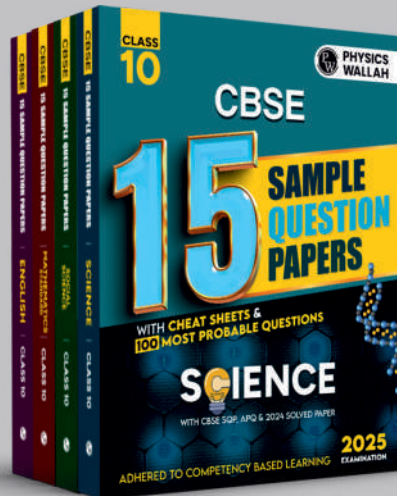
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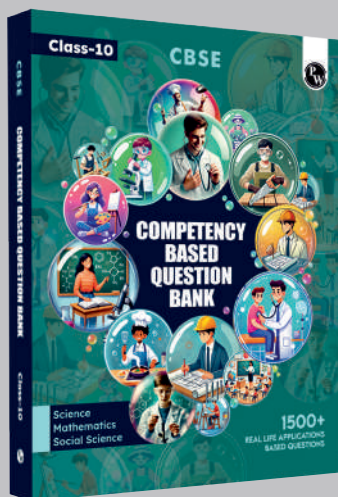
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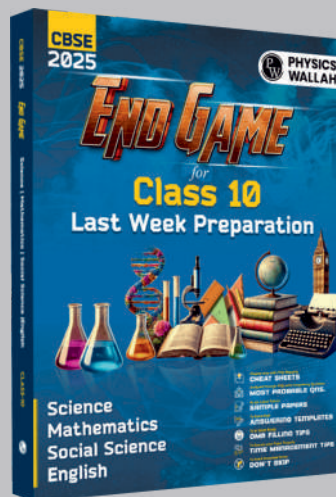
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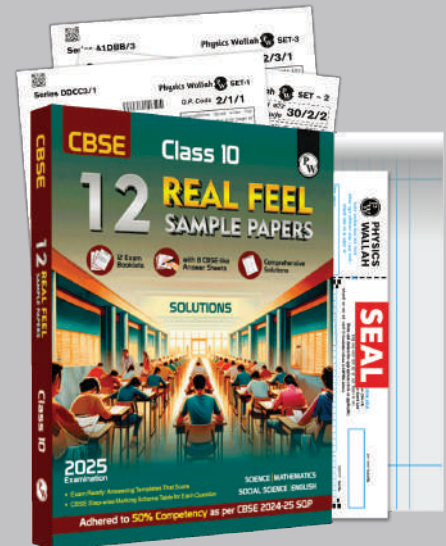
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