CBSE CLASS X

Social Science (087)

ANSWER KEY

AI-generated question paper

Code: 4J69KW	Questions: 38	Maximum Marks: 79	Generated: 2026-06-26 10:04

SELECTIONS USED

Subject	Social Science
Lessons	5 Minerals and Energy Resources
Level of understanding	Exam-ready
Question selection	CBSE board paper, whole lesson (~80 marks across Sections A-E)
Model	claude-sonnet-4-6

Composition — Difficulty: 17 straightforward · 15 medium · 6 deep | Types: 14 MCQ · 7 Short · 6 Very short · 5 Assertion–reason · 3 Long · 3 Case-based | Sections: A 19Q/19m · B 6Q/12m · C 7Q/21m · D 3Q/15m · E 3Q/12m

Q1. straightforward exam-ready **[1]**

Which of the following is the finest iron ore with an iron content of up to 70 per cent and excellent magnetic qualities?
(A) Hematite
(B) Limonite
(C) Magnetite
(D) Siderite

A Hematite
B Limonite
C Magnetite
D Siderite

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Magnetite

Magnetite is the finest iron ore with a very high iron content of up to 70 per cent and has excellent magnetic qualities.

Explanation

The passage from Chapter 5 directly states: *"Magnetite is the finest iron ore with a very high content of iron up to 70 per cent. It has excellent magnetic qualities."* Hematite, though more commonly used industrially, has a lower iron content (50–60%). Remember this distinction — examiners often pair Magnetite vs Hematite as a comparison point.

Q2. straightforward exam-ready **[1]**

Which one of the following pairs of minerals is obtained from 'placer deposits'?
(A) Coal and mica
(B) Gold and platinum
(C) Copper and zinc
(D) Gypsum and potash salt

A Coal and mica
B Gold and platinum
C Copper and zinc
D Gypsum and potash salt

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(B) Gold and platinum

Placer deposits occur in valley floors and hill bases, containing minerals not corroded by water. Gold, silver, tin, and platinum are the most important minerals found in placer deposits.

Explanation

The passage directly states: *"Certain minerals may occur as alluvial deposits in sands of valley floors and the base of hills. These deposits are called 'placer deposits' and generally contain minerals which are not corroded by water. Gold, silver, tin and platinum are most important among such minerals."* The crossword clue (Down 1) also confirms "Found in placer deposit (4)" = Gold. Eliminate other options: Coal/mica → sedimentary/igneous rocks; Copper/zinc → veins and lodes; Gypsum/potash salt → evaporation (sedimentary).

Q3. straightforward exam-ready **[1]**

Bauxite, from which aluminium is extracted, is formed by which of the following processes?
(A) Cooling of molten magma in veins and lodes
(B) Evaporation in arid regions
(C) Decomposition of surface rocks leaving a residual weathered mass
(D) Deposition in horizontal sedimentary strata

A Cooling of molten magma in veins and lodes
B Evaporation in arid regions
C Decomposition of surface rocks leaving a residual weathered mass
D Deposition in horizontal sedimentary strata

◆ **Minerals and Energy Resources**

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Decomposition of surface rocks leaving a residual weathered mass

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

Source: Chapter 5, Mode of Occurrence of Minerals

Explanation

The textbook explicitly states: "Another mode of formation involves the decomposition of surface rocks, and the removal of soluble constituents, leaving a residual mass of weathered material containing ores. Bauxite is formed this way." This is also directly tested in Exercise Q1(i). Options A, B, and D describe formation of metallic minerals in igneous rocks, evaporite minerals (like gypsum), and sedimentary minerals respectively — not bauxite.

Q4. straightforward exam-ready **[1]**

Which of the following coal types has the highest carbon content and is considered the best quality hard coal?
(A) Lignite
(B) Bituminous
(C) Anthracite
(D) Peat

A Lignite
B Bituminous
C Anthracite
D Peat

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Anthracite

Anthracite is the highest quality hard coal, as stated in the chapter. It has the highest carbon content among all coal types.

Source: Conventional Sources of Energy, chapter 5

Explanation

The passage directly states: *"Anthracite is the highest quality hard coal."* The coal types in increasing order of quality are: Peat → Lignite → Bituminous → Anthracite. This sequence (also confirmed by the crossword clue "Highest quality hard coal") is a commonly tested fact. Always remember Anthracite = best quality = highest carbon content.

Q5. medium exam-ready **[1]**

Petroleum is found trapped in the crest of an anticline in folded rock formations. What prevents the oil from rising further or sinking downward?

(A) Presence of porous sandstone layers
(B) Intervening non-porous rock layers
(C) High pressure of natural gas above it
(D) Dense water table below

A Presence of porous sandstone layers
B Intervening non-porous rock layers
C High pressure of natural gas above it
D Dense water table below

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(B) Intervening non-porous rock layers

The oil is trapped in the crest of the anticline (upfold); the oil-bearing layer is porous limestone or sandstone, but intervening non-porous layers above and below prevent the oil from rising or sinking.

Source: Minerals and Energy Resources, Conventional Sources of Energy (Petroleum)

Explanation

The passage explicitly states: *"The oil is prevented from rising or sinking by intervening non-porous layers."* Options A, C, and D are either partially correct concepts misapplied or not stated in the text. Always quote the textbook language directly for such factual MCQs.

Q6. straightforward exam-ready **[1]**

The Koderma–Gaya–Hazaribagh belt is the leading producer of which mineral in India?
(A) Copper
(B) Iron ore
(C) Mica
(D) Manganese

A Copper
B Iron ore
C Mica
D Manganese

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Mica

The Koderma–Gaya–Hazaribagh belt of Jharkhand is the leading producer of **mica** in India.

Explanation

The passage under "Non-Metallic Minerals" directly states: *"Koderma Gaya–Hazaribagh belt of Jharkhand is the leading producer."* Mica is valued for its di-electric and insulating properties used in electrical/electronic industries. This is also directly tested in Exercise Q1(ii). Eliminate iron ore (Odisha-Jharkhand/Durg-Bastar belts), copper (Balaghat/Khetri/Singhbhum), and manganese (Madhya Pradesh leads) from context.

Q7. straightforward exam-ready **[1]**

Which of the following is correctly classified as a non-conventional source of energy?
(A) Natural gas
(B) Hydroelectric power
(C) Nuclear energy
(D) Tidal energy

A Natural gas
B Thermal electricity
C Coal
D Geothermal energy

◆ **Minerals and Energy Resources**

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(D) Tidal energy is correctly classified as a non-conventional source of energy.

Among the given options, **Geothermal energy** is a non-conventional source of energy.

Source: Energy Resources, Chapter 5

Explanation

The textbook explicitly lists non-conventional sources as: **solar, wind, tidal, geothermal, biogas, and atomic energy**. Conventional sources include coal, petroleum, natural gas, and electricity (hydel and thermal). Note: the question stem and options don't match perfectly — the stem lists nuclear/tidal, but the options list natural gas/coal/geothermal. Answer from the **given options**: **(D) Geothermal energy** is the correct non-conventional source. Always use the actual options provided, not those in the question stem.

Q8. straightforward exam-ready **[1]**

Manganese is an essential input in steel manufacturing. Approximately how much manganese is required to produce one tonne of steel?

(A) 1 kg
(B) 5 kg
(C) 10 kg
(D) 20 kg

A 1 kg
B 5 kg
C 10 kg
D 20 kg

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) 10 kg

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

Explanation

This is a direct fact from the Manganese section of Chapter 5. The exact line from the textbook is: *"Nearly 10 kg of manganese is required to manufacture one tonne of steel."* For MCQs, simply circle/write the correct option and optionally add the supporting fact in one line.

Q9. medium exam-ready **[1]**

Gypsum and potash salt are non-metallic minerals formed by a specific geological process. In which type of rock formation are they most commonly found?

(A) Igneous rocks formed by the cooling of intrusive magma

(B) Metamorphic rocks formed under heat and pressure

(C) Sedimentary formations deposited by evaporation in arid regions

(D) Alluvial placer deposits in river valleys

A Igneous rocks formed by cooling of magma

B Metamorphic rocks under high pressure

C Sedimentary formations created by evaporation in arid regions

D Placer deposits in valley floors

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Sedimentary formations created by evaporation in arid regions

Gypsum and potash salt are sedimentary minerals formed as a result of evaporation, especially in arid regions.

Source: Chapter 5, Mode of Occurrence of Minerals

Explanation

The passage explicitly states: *"Another group of sedimentary minerals include gypsum, potash salt and sodium salt. These are formed as a result of evaporation especially in arid regions."* Examiners expect you to directly link these specific minerals to evaporation-formed sedimentary deposits — not to igneous/metamorphic veins or placer deposits.

Q10. straightforward exam-ready **[1]**

Which of the following states is the oldest oil-producing state in India, with fields like Digboi and Naharkatiya?
(A) Gujarat
(B) Assam
(C) Rajasthan
(D) Maharashtra

A Gujarat
B Assam
C Rajasthan
D Maharashtra

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(B) Assam

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

Source: Conventional Sources of Energy (Petroleum), Chapter 5

Explanation

The textbook explicitly states: *"Assam is the oldest oil producing state of India. Digboi, Naharkatiya and Moran-Hugrijan are the important oil fields in the state."* Examiners expect you to recall this direct factual statement. Mumbai High and Ankeleshwar (Gujarat) are also major petroleum areas, but neither is the *oldest* producing state — that distinction belongs to Assam.

Q11. straightforward exam-ready **[1]**

India has identified certain regions with significant geothermal energy potential. Which of the following correctly identifies two such locations?

(A) Puga Valley (Ladakh) and Manikaran (Himachal Pradesh)

(B) Nagarcoil (Tamil Nadu) and Jaisalmer (Rajasthan)

(C) Gulf of Khambhat (Gujarat) and Chilika Lake (Odisha)

(D) Dehradun (Uttarakhand) and Digboi (Assam)

A Parvati Valley, Himachal Pradesh and Puga Valley, Ladakh
B Nagarcoil, Tamil Nadu and Jaisalmer, Rajasthan
C Gulf of Khambhat, Gujarat and Sunderbans, West Bengal
D Manikaran, Punjab and Dehradun, Uttarakhand

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Puga Valley (Ladakh) and Manikaran (Himachal Pradesh)

The correct answer is **(A)**. Two experimental geothermal energy projects in India are located in Parvati Valley near **Manikaran (Himachal Pradesh)** and **Puga Valley (Ladakh)**.

Source: *Resources and Development*, Chapter 5 — Geo Thermal Energy

---

Explanation

The textbook explicitly names only these two locations for geothermal energy projects. Nagarcoil and Jaisalmer relate to **wind energy**; Gulf of Khambhat/Sunderbans relate to **tidal energy**. Among the MCQ options given (A–D), none exactly matches the question's option (A), but the correct factual pair from the passage is **Parvati Valley/Manikaran (HP) and Puga Valley (Ladakh)** — closest to the question's option (A). Always link each energy type to its correct location to avoid confusion.

Q12. straightforward exam-ready **[1]**

Ferrous minerals account for approximately what fraction of the total value of production of metallic minerals in India?
(A) One-half
(B) One-quarter
(C) Three-fourths
(D) Two-thirds

A One-half
B One-quarter
C Three-fourths
D Two-thirds

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(C) Three-fourths

Ferrous minerals account for about **three-fourths** of the total value of production of metallic minerals in India.

Source: Ferrous Minerals, Chapter 5

Explanation

The answer is directly stated in the textbook: "Ferrous minerals account for about three-fourths of the total value of the production of metallic minerals." Students must remember this specific fraction as it is a frequently asked fact in exams.

Q13. straightforward exam-ready **[1]**

Which of the following areas in India is best known for tidal energy potential on the western coast?
(A) Gangetic delta, West Bengal
(B) Gulf of Khambhat and Gulf of Kuchchh, Gujarat
(C) Nagarcoil to Madurai, Tamil Nadu
(D) Krishna–Godavari basin, Andhra Pradesh

A Gangetic delta, West Bengal
B Gulf of Khambhat and Gulf of Kuchchh, Gujarat
C Nagarcoil to Madurai, Tamil Nadu
D Krishna–Godavari basin, Andhra Pradesh

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(B) Gulf of Khambhat and Gulf of Kuchchh, Gujarat

The Gulf of Khambhat and the Gulf of Kuchchh in Gujarat on the western coast provide ideal conditions for utilising tidal energy.

Explanation

The textbook explicitly names the Gulf of Khambhat and Gulf of Kuchchh (Gujarat) as western coast tidal energy sites. Gangetic delta (Sunderbans) is on the **eastern** coast. Nagarcoil–Madurai is for **wind** energy, and Krishna–Godavari basin relates to **natural gas**. Always link the energy type to the correct region and coast.

Q14. straightforward exam-ready **[1]**

Which of the following correctly describes the term 'ore'?
(A) A pure mineral with no impurities
(B) An accumulation of a mineral mixed with other elements in sufficient concentration for commercial extraction
(C) A rock that contains only non-metallic minerals
(D) Any naturally occurring element found in the earth's crust

A A pure mineral with no impurities
B An accumulation of a mineral mixed with other elements in sufficient concentration for commercial extraction
C A rock that contains only non-metallic minerals
D Any naturally occurring element found in the earth's crust

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(B) An accumulation of a mineral mixed with other elements in sufficient concentration for commercial extraction.

Explanation

The textbook (Mode of Occurrence of Minerals, Ch. 5) defines ore exactly as in option B: "The term ore is used to describe an accumulation of any mineral mixed with other elements... in sufficient concentration to make its extraction commercially viable." Options A, C, and D are incorrect as they contradict this definition.

Q15. medium exam-ready **[1]**

Assertion (A): Heavy industries and thermal power stations are preferably located near coalfields.
Reason (R): Coal is a bulky material that loses weight on use as it is reduced to ash, making transportation costly.

Options:
(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.

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.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

Explanation

The textbook explicitly states: "Coal is a bulky material, which loses weight on use as it is reduced to ash. Hence, heavy industries and thermal power stations are located on or near the coalfields." This directly confirms both the assertion and that the reason correctly explains it.

Q16. medium exam-ready **[1]**

Assertion (A): Mineral resources are described as finite and non-renewable.
Reason (R): The geological processes that form minerals are extremely slow compared to the rate at which humans consume them.

Options:
(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.

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.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

Mineral formation by geological processes takes millions of years, making replenishment infinitely slow compared to consumption, which is why minerals are finite and non-renewable.

Explanation

The passage from the **Conservation of Minerals** section directly states: *"The geological processes of mineral formation are so slow that the rates of replenishment are infinitely small in comparison to the present rates of consumption. Mineral resources are, therefore, finite and non-renewable."* The Reason directly explains *why* the Assertion is true, so option (A) is correct. Always check if the Reason logically causes or explains the Assertion — here it does.

Q17. deep exam-ready **[1]**

Assertion (A): The vast alluvial plains of north India are almost devoid of economic minerals.
Reason (R): Economic mineral deposits are closely related to the geological structure of a region and the processes involved in their formation.

Options:
(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.

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.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

The north Indian plains are formed of alluvial deposits lacking the geological structures needed for mineral formation, which directly explains why they are mineral-poor.

Explanation

The Reason correctly explains the Assertion: mineral deposits depend on geological structure and formation processes (igneous, metamorphic, sedimentary activity). The alluvial plains of north India were formed by river deposition and lack such structures, hence they are almost devoid of economic minerals. Both statements are true and R logically explains A.

Q18. straightforward exam-ready **[1]**

Assertion (A): Mica is one of the most indispensable minerals used in electric and electronic industries.
Reason (R): Mica has excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage.

Options:
(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.

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.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

Explanation

The passage directly states that **because of** its excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage, mica is indispensable in electric/electronic industries. So (R) directly and correctly explains (A).

Q19. medium exam-ready **[1]**

Assertion (A): Biogas is considered a far more efficient use of cattle dung than burning it as fuel.
Reason (R): Biogas production improves the quality of manure and prevents the loss of trees and manure that results from burning fuel wood and dung cakes.

Options:
(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.

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.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

Explanation

The textbook states directly: "Biogas is by far the most efficient use of cattle dung. It improves the quality of manure and also prevents the loss of trees and manure due to burning of fuel wood and cow dung cakes." — R correctly and completely explains why A is true.

Q20. straightforward exam-ready **[2]**

What is a mineral? How does it differ from a rock? Give one example of each.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

A **mineral** is a homogenous, naturally occurring substance with a definable internal structure. A **rock** is a combination of one or more minerals. Thus, a mineral is a single substance, while a rock is a mixture. *Example of mineral:* Diamond. *Example of rock:* Limestone.

Source: Chapter 5, "What is a mineral?"

Explanation

- Examiners expect the textbook definition of mineral (all three parts: homogenous, naturally occurring, definable internal structure).
- The key distinction is: mineral = single substance; rock = combination of minerals.
- Any valid examples are accepted (e.g., talc/gold for mineral; granite for rock), but choosing examples from the passage (diamond, limestone) is safest.
- At 2 marks, keep it to 2–3 lines — definition, difference, examples. No elaboration needed.

Q21. straightforward exam-ready **[2]**

Distinguish between veins and lodes as forms in which minerals occur in igneous and metamorphic rocks.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

Veins: When minerals in liquid/molten or gaseous form are forced into cracks and crevices in rocks and solidify, the *smaller* occurrences are called **veins**.

Lodes: When the same minerals occur in *larger* quantities filling bigger joints or faults in igneous and metamorphic rocks, they are called **lodes**.

Major metallic minerals like tin, copper, zinc and lead are obtained from veins and lodes.

Source: Chapter 5, Mode of Occurrence of Minerals

Explanation

- The key distinction examiners expect is **size**: veins = smaller occurrences; lodes = larger occurrences. Many students miss this and write identical descriptions for both — that loses marks.
- Mention the **process** (molten/gaseous minerals forced upward, cool and solidify) briefly — it adds value and is from the same paragraph.
- Giving an example mineral (tin, copper, etc.) rounds off the answer neatly for 2 marks.

Q22. straightforward exam-ready **[2]**

Why is copper considered a critically important non-ferrous mineral? Name two states in India where it is mined.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:32 · grounding rag

Model Answer

Copper is critically important because it is malleable, ductile and a good conductor of electricity, making it essential for electrical cables, electronics and chemical industries. However, India is critically deficient in its reserve and production.

Two states where copper is mined: **Madhya Pradesh** (Balaghat mines) and **Rajasthan** (Khetri mines).

Source: Minerals and Energy Resources, Non-Ferrous Minerals — Copper

---

Explanation

- The question has two parts: (1) why copper is important and (2) two states — give both for full marks.
- Key phrase examiners look for: "malleable, ductile, good conductor" — these three properties justify its importance.
- Jharkhand (Singhbhum) is also a valid third option; name any two.
- Do not confuse copper mines with iron ore or manganese locations.

Q23. medium exam-ready **[2]**

State two ways in which mining activities harm the environment and the health of people living near mines.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Two ways mining harms the environment and people's health:

1. **Health hazard:** Dust and noxious fumes inhaled by miners cause pulmonary (lung) diseases. Risk of mine roof collapse, inundation, and fires are constant threats to miners' lives.
1. **Environmental damage:** Water sources get contaminated due to mining. Dumping of waste and slurry degrades land, soil, and increases river and stream pollution.

Source: Hazards of Mining, Chapter 5

Explanation

- This is a 2-mark question, so **one point per mark** is ideal — examiners expect exactly two distinct harms.
- The answer must cover **both aspects** mentioned in the question: harm to **environment** AND **health of people**.
- Use the textbook's exact terms: "pulmonary diseases," "contaminated water sources," "dumping of waste and slurry" — these fetch full marks.
- Avoid listing only health OR only environment; that would cost you a mark.

Q24. straightforward exam-ready **[2]**

What is lignite coal? Where are its principal reserves found in India, and for what purpose are they used?

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Lignite is a low grade brown coal which is soft with high moisture content. Its principal reserves are found in **Neyveli in Tamil Nadu**. These reserves are used for the **generation of electricity**.

Source: Conventional Sources of Energy, Chapter 5

Explanation

This is a straight definition + location + use question. Examiners expect three things in a 2-mark answer: (1) the definition of lignite, (2) its location (Neyveli, Tamil Nadu), and (3) its use (electricity generation). Do not confuse lignite with bituminous or anthracite coal. Stick strictly to what the passage states — no extra detail needed.

Q25. medium exam-ready **[2]**

Why is per capita electricity consumption considered an index of development?

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Per capita electricity consumption is considered an index of development because energy is a basic requirement for economic development. Every sector — agriculture, industry, transport, commercial and domestic — needs energy inputs. Higher per capita consumption indicates greater industrial activity, better living standards, and overall economic growth of a nation.

Source: Conservation of Energy Resources, Chapter 5

Explanation

- The key link is: **energy → economic development → standard of living**.
- Examiners expect you to mention that all sectors (agriculture, industry, transport, domestic) depend on energy, and connect higher consumption to higher development levels.
- Avoid writing more than 50–60 words; this is a 2-mark answer. Two clear points are sufficient.

Q26. medium exam-ready **[3]**

Explain the two main ways in which minerals are formed in sedimentary rocks. Give one example of a mineral formed by each process.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

In sedimentary rocks, minerals are formed in two main ways:

1. **Deposition and concentration in horizontal strata**: Minerals accumulate in beds or layers under great heat and pressure over long periods. *Example: Coal* (and some forms of iron ore).
1. **Evaporation**: In arid regions, water evaporates and leaves behind mineral deposits. *Example: Gypsum* (also potash salt and sodium salt).

Source: Chapter 5, Mode of Occurrence of Minerals

Explanation

- The question specifically asks about **sedimentary rocks** only — do not write about igneous/metamorphic rocks.
- Two distinct processes must be named clearly: **(i) deposition/accumulation under heat and pressure** and **(ii) evaporation in arid regions** — each earns 1 mark.
- One correct example per process earns the remaining marks. Coal + Gypsum is the safest pair directly from the textbook.
- Keep examples from the passage; don't guess minerals not mentioned there.

Q27. medium exam-ready **[3]**

Describe the distribution of iron ore in the Durg–Bastar–Chandrapur belt and the Ballari–Chitradurga–Chikkamagaluru–Tumakuru belt. What is special about the iron ore from each of these belts?

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Durg–Bastar–Chandrapur Belt (Chhattisgarh & Maharashtra): The Bailadila range in Bastar district contains 14 deposits of **super high grade hematite** iron ore. It has the best physical properties needed for steel making. The ore is exported to Japan and South Korea via Vishakhapatnam port.

Ballari–Chitradurga–Chikkamagaluru–Tumakuru Belt (Karnataka): It has large reserves of iron ore. The **Kudremukh mines** in the Western Ghats are a 100% export unit and are among the largest deposits in the world. The ore is transported as slurry through a pipeline to a port near Mangaluru.

Source: Chapter 5, Iron Ore (Ferrous Minerals)

Explanation

- The question has two belts to describe — give roughly equal space to each.
- Key special features examiners look for: *super high grade hematite / best for steel making / exported via Vishakhapatnam* for Bailadila; *100% export unit / largest in world / slurry pipeline to Mangaluru* for Kudremukh.
- Do not confuse the export ports: Vishakhapatnam (Bailadila) ≠ Mangaluru (Kudremukh).
- Spelling matters: Bailadila, Kudremukh, Vishakhapatnam — practise these.

Q28. medium exam-ready **[3]**

What makes aluminium a commercially important metal? Explain how bauxite deposits are formed and identify the most important bauxite deposits in Odisha.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Commercial Importance of Aluminium: Aluminium is commercially important because it combines the strength of metals like iron with extreme lightness, good conductivity, and great malleability. This makes it valuable in multiple industries.

Formation of Bauxite Deposits: Bauxite deposits are formed by the **decomposition of a wide variety of rocks rich in aluminium silicates**, leaving a residual clay-like substance from which alumina and later aluminium is obtained.

Most Important Bauxite Deposits in Odisha: The **Panchpatmali deposits in Koraput district** are the most important bauxite deposits in Odisha. Odisha was the largest bauxite producing state in India in 2018–19, contributing 65% of total production.

Source: Chapter 5, Non-Ferrous Minerals — Bauxite

Explanation

- The question has three parts — commercial importance, formation, and location — so address all three clearly.
- Use the exact textbook phrases: "decomposition of rocks rich in aluminium silicates" and "Panchpatmali deposits in Koraput district."
- Mentioning Odisha's 65% share adds value and shows data awareness — examiners appreciate it for a 3-mark answer.

Q29. medium exam-ready **[3]**

Explain how tidal energy is harnessed to generate electricity. Name the regions in India that are considered ideal for tidal energy development.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Harnessing Tidal Energy:

Floodgate dams are built across inlets. During high tide, water flows into the inlet and gets trapped when the gate is closed. After the tide falls outside the floodgate, the trapped water flows back to the sea through a pipe, passing through a power-generating turbine to produce electricity.

Ideal Regions in India:

- Gulf of Khambhat (Gujarat)
- Gulf of Kuchchh (Gujarat)
- Gangetic delta in Sunderbans region (West Bengal)

Source: Non-Conventional Sources of Energy, Chapter 5

Explanation

- The question has **two parts** — the mechanism (2 marks) and the locations (1 mark). Balance your answer accordingly.
- Use the exact textbook terms: *floodgate dam*, *high tide*, *turbine* — examiners look for these keywords.
- All three locations must be named for full marks on the location part. Do not confuse Gulf of Khambhat with Gulf of Kuchchh — both are separate answers.
- Avoid writing a general definition of tidal energy; focus on the **process** as described in the textbook.

Q30. medium exam-ready **[3]**

Distinguish between Gondwana coal and tertiary coal deposits in India with respect to their age, quality and geographical distribution.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Basis	Gondwana Coal	Tertiary Coal
Age	About 200 million years old	About 55 million years old
Quality	High grade; includes metallurgical (bituminous) coal	Lower grade coal
Distribution	Damodar Valley (Jharia, Raniganj, Bokaro), Godavari, Mahanadi, Son and Wardha valleys	North-eastern states — Meghalaya, Assam, Arunachal Pradesh and Nagaland

Gondwana coal accounts for the major coal resources of India and is more significant commercially than tertiary coal.

Source: Conventional Sources of Energy, Chapter 5

Explanation

- The question asks for **three specific points** of distinction — age, quality, and distribution — so a **table format** is ideal and saves words.
- Examiners expect all three parameters to be addressed; missing any one costs a mark.
- Quote exact figures (200 million years / 55 million years) and exact place names from the textbook — these are scoring details.
- The concluding line adds value but keep it brief.

Q31. deep exam-ready **[3]**

Why is India's increasing dependence on fossil fuels considered unsustainable in the long run? Suggest any three measures — at the individual and government level — to promote energy conservation.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

India's dependence on fossil fuels (coal, oil, gas) is unsustainable because they are non-renewable, their rising prices create energy insecurity, and their increased use causes serious environmental problems.

Three measures to promote energy conservation:

1. **Individual level:** Use public transport instead of personal vehicles and switch off electricity when not in use.
2. **Individual/Household level:** Use power-saving devices and solar energy panels at home.
3. **Government level:** Promote and develop renewable energy sources — solar, wind, biogas, and tidal energy — through large-scale programmes.

Source: Conservation of Energy Resources & Non-Conventional Sources of Energy, Chapter 5

Explanation

- The question has two parts: **why unsustainable** (1 mark) + **three measures** (2 marks). Keep the reason crisp — one sentence with two or three causes from the passage.
- Measures must be specific and exam-relevant. Examiners accept individual-level and government-level answers together; you don't need to strictly separate them unless the question demands it.
- Key phrases to include: "non-renewable," "rising prices/energy insecurity," "environmental problems," and at least two named renewable sources.
- Quoting "energy saved is energy produced" can fetch appreciation but isn't mandatory.

Q32. deep exam-ready **[3]**

Petroleum refineries are described as a 'nodal industry'. What does this mean and why is petroleum important beyond being just a fuel? Explain with relevant examples.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

A **nodal industry** is one that supports and links many other industries. Petroleum refineries act as a nodal industry because they supply raw materials to several industries such as **synthetic textiles, fertilisers, and numerous chemical industries**.

Beyond being a fuel, petroleum is important as:

- A **lubricant** for machinery.
- A source of **raw materials** for manufacturing industries.
- It provides fuel for **heat and lighting**.

Thus, petroleum's role extends well beyond energy — it is central to industrial production.

Source: Chapter 5, Petroleum (Conventional Sources of Energy)

Explanation

- The term **"nodal industry"** is directly from the textbook — use it and define it clearly.
- Examiners expect you to mention **at least 2–3 uses** beyond fuel: lubricants, raw material for synthetics, fertilisers, chemicals.
- Keep examples specific (synthetic textiles, fertilisers) rather than vague — these exact words come from the passage and earn marks.
- Don't exceed ~80 words for a 3-mark answer; be crisp and structured.

Q33. medium exam-ready **[5]**

Examine the role of coal as India's most important conventional energy resource. Describe its different grades, their characteristics, and the major coal-producing regions of India.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Role of Coal:

Coal is India's most abundantly available fossil fuel. It is used for power generation, industrial energy supply, and domestic needs. India is highly dependent on coal for meeting its commercial energy requirements. Being a bulky material that loses weight on use, heavy industries and thermal power stations are located near coalfields.

Grades of Coal:

1. **Peat** – Low carbon, high moisture, low heating capacity; formed from decaying plants in swamps.
2. **Lignite** – Low grade brown coal, soft, high moisture content; principal reserves at Neyveli, Tamil Nadu.
3. **Bituminous** – Most popular coal in commercial use; formed by deep burial and high temperatures. Metallurgical (high-grade bituminous) coal is used for smelting iron.
4. **Anthracite** – Highest quality hard coal.

Major Coal-Producing Regions:

- **Gondwana coalfields** (200 million years old): Damodar Valley (Jharia, Raniganj, Bokaro), Godavari, Mahanadi, Son, and Wardha valleys.
- **Tertiary coalfields** (55 million years old): Meghalaya, Assam, Arunachal Pradesh, and Nagaland.

Source: Conventional Sources of Energy, Chapter 5

Explanation

- Examiners expect **all four grades** named with at least one characteristic each — missing any costs marks.
- Distinguish clearly between **Gondwana** (metallurgical, older, peninsular) and **Tertiary** (north-eastern) coalfields.
- The point about coal being **bulky and losing weight** is a frequently tested detail — include it briefly.
- Keep grade descriptions concise (one line each); the marks split roughly as: role (1 mark), grades (2 marks), regions (2 marks).

Q34. deep exam-ready **[5]**

Mineral resources are finite and non-renewable, yet their consumption is rising steadily. Analyse why mineral conservation has become essential and describe the strategies that can be adopted to use mineral resources in a planned and sustainable manner.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

Why Mineral Conservation is Essential:

Minerals are finite and non-renewable. The total volume of workable mineral deposits is only about one per cent of the earth's crust. Geological processes of formation take millions of years, while the rate of replenishment is infinitely small compared to the present rate of consumption. Continued extraction leads to increasing costs and decreasing quality of ores as mining moves to greater depths. Thus, rich mineral deposits are valuable but short-lived possessions.

Strategies for Sustainable Use:

1. Use mineral resources in a **planned manner** to avoid wasteful extraction.
2. Develop **improved technologies** to allow use of low-grade ores at low costs.
3. **Recycling of metals** and use of **scrap metals** to reduce demand for fresh mining.
4. Use **substitutes** wherever possible to reduce dependence on scarce minerals.

Source: Conservation of Minerals, Chapter 5

Explanation

- The question is 5 marks, so examiners expect both *why* (reasons for conservation) and *how* (strategies) — cover both halves.
- Quote key phrases from the textbook: "one per cent of the earth's crust," "infinitely small rate of replenishment," "finite and non-renewable" — these fetch marks.
- The three strategies (improved technology, recycling/scrap metals, substitutes) are directly from the passage — don't skip any.
- Avoid padding with general points not in the textbook passage.

Q35. deep exam-ready **[5]**

India is endowed with a variety of non-conventional energy sources. Examine the potential and current status of solar energy, wind energy and biogas in India, highlighting the advantages each offers over conventional sources.

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

India has enormous potential for non-conventional energy sources, which offer clean and renewable alternatives to fossil fuels.

Solar Energy: India is a tropical country with abundant sunlight, giving it great potential for solar energy. Photovoltaic technology converts sunlight directly into electricity. It is increasingly used in rural and remote areas. Large solar power plants reduce rural dependence on firewood and dung cakes, aiding environmental conservation and manure supply.

Wind Energy: India has significant wind power potential. The largest wind farm cluster runs from Nagarcoil to Madurai in Tamil Nadu. Gujarat, Maharashtra, Karnataka, Andhra Pradesh, Kerala and Lakshadweep also have wind farms. Wind energy is clean and renewable.

Biogas: Organic waste — shrubs, farm waste, cattle dung — is decomposed to produce biogas. It has higher thermal efficiency than kerosene, dung cakes or charcoal. "Gobar gas plants" provide farmers twin benefits: energy and improved quality of manure, while preventing deforestation.

All three reduce dependence on fossil fuels, lower pollution, and support sustainable energy development.

Source: Contemporary India II, Chapter 5 — Non-Conventional Sources of Energy

---

Explanation

- The question asks for **potential + current status + advantages** of all three sources — cover all three aspects for each.
- Examiners expect specific facts: Tamil Nadu wind corridor, Nagarcoil–Madurai, Gobar gas plants, photovoltaic technology — these earn marks.
- Mention the key advantage for each: solar → rural electrification + conservation; wind → clean/renewable; biogas → higher thermal efficiency + twin benefit.
- Do not confuse "Gobar gas" with general biogas — the textbook uses both; mention both for full credit.
- Avoid writing about tidal or geothermal — the question specifically asks for only these three.

Q36. medium exam-ready **[4]**

Read the following passage and answer the questions that follow:

India's petroleum industry is largely concentrated in rock formations of the tertiary age. The physical conditions under which crude oil accumulates are determined by the geological structures of the area. Oil may be trapped in folded structures, fault zones, or other geological formations that create pockets where hydrocarbons can collect over millions of years. The oil lies sandwiched between layers of rock with different permeability characteristics. Natural gas is almost always found in association with petroleum, and its occurrence follows the same trapping principles.

(i) In an anticline petroleum trap, where does natural gas typically collect and why? [1]
(ii) Why must at least one rock layer in a petroleum trap be non-porous? [1]
(iii) Name any two important petroleum-producing states of India and one major oil field from each. [2]

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:33 · grounding rag

Model Answer

(i) In an anticline, natural gas collects at the **crest (top) of the upfold** because gas is lighter than oil. Being the lightest component, it rises above the oil layer and gets trapped at the highest point of the folded rock structure.

(ii) At least one rock layer must be **non-porous** to act as a **cap rock**, preventing oil from rising or sinking further. Without it, oil would escape through the rock and no trap would form.

(iii)

- **Gujarat** — Ankeleshwar is the most important oil field.
- **Assam** — Digboi (oldest oil-producing state); other fields include Naharkatiya and Moran-Hugrijan.

(Mumbai High/Maharashtra may also be cited as a major offshore area.)

Source: Conventional Sources of Energy — Petroleum, Chapter 5

Explanation

- **(i)** The key phrase from the text is: *"Gas, being lighter, usually occurs above the oil."* Always mention **why** (lighter than oil) for full marks.
- **(ii)** The textbook states oil "is prevented from rising or sinking by intervening non-porous layers" — this is the cap rock concept. One line is enough for 1 mark.
- **(iii)** For 2 marks, name **two states + one field each**. Gujarat and Assam are directly named in the passage. Avoid vague answers — name specific oil fields.

Q37. medium exam-ready **[4]**

Read the following passage and answer the questions that follow:

The distribution of minerals across India is highly uneven and is closely linked to the geological history of different regions. The Peninsular plateau, underlain by ancient crystalline rocks, is the storehouse of most of India's metallic minerals. In contrast, the vast alluvial plains of northern India, though agriculturally rich, are almost devoid of economic mineral deposits. Some minerals are concentrated in specific geological structures such as cracks, joints, and faults, while others are spread through sedimentary strata or found in residual deposits left by weathering. The type of geological structure also determines the method and cost of extraction.

(i) Why are the alluvial plains of northern India largely deficient in mineral resources? [1]
(ii) Name two major metallic minerals obtained from veins and lodes in igneous and metamorphic rocks. [1]
(iii) What are placer deposits? Name two minerals commonly found in them. [2]

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:34 · grounding rag

Model Answer

(i) The alluvial plains of northern India are largely deficient in mineral resources because they are underlain by alluvium deposited by rivers, not by ancient crystalline or hard rocks. Economic minerals are formed in igneous, metamorphic, or sedimentary rocks through geological processes, which are absent in alluvial plains.

(ii) Two major metallic minerals obtained from veins and lodes in igneous and metamorphic rocks are **copper** and **tin**.

(iii) Placer deposits are alluvial deposits found in sands of valley floors and the base of hills. They generally contain minerals that are not corroded by water. Two minerals commonly found in placer deposits are **gold** and **platinum**.

Source: Chapter 5 – Minerals and Energy Resources, Mode of Occurrence of Minerals

---

Explanation

- **(i)** Key reason: alluvial plains lack the rock formations (igneous/metamorphic/sedimentary) needed for mineral formation. The textbook directly states they are "almost devoid of economic minerals" due to differences in geological structure.
- **(ii)** The passage lists tin, copper, zinc, and lead — any two are acceptable. Copper + tin is a safe, commonly expected pair.
- **(iii)** Definition must mention "alluvial deposits," "valley floors/base of hills," and "not corroded by water." Gold and platinum are the most important examples from the textbook. Tin and silver are also acceptable.

Q38. deep exam-ready **[4]**

Read the following passage and answer the questions that follow:

India is increasingly dependent on fossil fuels to meet its growing energy needs, but rising prices, potential shortages and serious environmental damage have made this path unsustainable. India is also one of the least energy-efficient countries in the world. At the same time, the country is blessed with an abundance of sunlight, water, wind and biomass — renewable resources that remain largely underutilised. Developing these non-conventional energy sources and promoting energy conservation are seen as the twin pillars of a sustainable energy future.

(i) What is photovoltaic technology, and why is it particularly suitable for rural and remote areas of India? [1]
(ii) Name the largest wind farm cluster in India and the state where it is located. [1]
(iii) Why is the continued large-scale use of firewood and cattle dung cakes as energy sources increasingly unsustainable in India? Give two reasons. [2]

◆ Minerals and Energy Resources

Generated by claude-sonnet-4-6 · 2026-06-26 13:34 · grounding rag

Model Answer

(i) Photovoltaic technology converts sunlight directly into electricity. It is suitable for rural and remote areas of India because these areas have abundant sunlight and are often far from conventional power grids, making solar energy a practical and accessible alternative.

(ii) The largest wind farm cluster in India is located in **Tamil Nadu**, stretching from **Nagarcoil to Madurai**.

(iii) Two reasons why large-scale use of firewood and cattle dung cakes is unsustainable:

- Burning firewood leads to **decreasing forest area**, making its continued use difficult.
- Using dung cakes wastes **valuable manure** that could otherwise be used to enrich agricultural soil.

Source: Non-Conventional Sources of Energy / Energy Resources, Chapter 5

Explanation

- For (i), the key phrase from the text is "Photovoltaic technology converts sunlight directly into electricity" — write it exactly. Add why it suits rural areas (grid inaccessibility + sunlight abundance).
- For (ii), examiners want both the state (Tamil Nadu) and the stretch (Nagarcoil to Madurai). Missing either loses the mark.
- For (iii), both reasons must come from the passage — decreasing forests and loss of manure. Do not add outside reasons; this is a source-based question. Each reason earns 1 mark.

Available for free from:
https://cbsegrade10studyguide.com
https://github.com/orgs/cbse-free-resources/repositories