

Minerals and Energy Resources

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Objective Section _____ (1 mark each)

Q. 1. Choose the correct option from columns A and B. [CBSE Delhi, Set 1, 2020]

A	B
(a) Chandrapur Thermal power plant	(i) Odisha
(b) Mayurbhanjiron ore mines	(ii) Amarkantak
(c) Kalol oil fields	(iii) Gujarat
(d) Bauxite mines	(iv) Jharkhand

Ans. (c) Kalol oil fields (iii) Gujarat

Q. 2. In which one of the following States is Rawatbhata Nuclear Energy Plant located? [CBSE Delhi, Set 2, 2020]

- (a) Gujarat (b) Kerala
(c) Punjab (d) Rajasthan

Ans. (d)

Q. 3. In which one of the following states is Kaigas Nuclear Energy plant located? [CBSE Delhi, Set 3, 2020]

- (a) Gujarat (b) Karnataka
(c) Punjab (d) Kerala

Ans. (b)

Q. 4. In which of the following states is Kalpakkam Nuclear Power Plant located? [CBSE Delhi, Set 1, 2020]

- (a) Gujarat (b) Odisha
(c) Kerala (d) Tamil Nadu

Ans. (d)

Very Short Answer Type Questions _____ (1 mark each)

Q. 1. Name the best variety of iron-ore found in India.

[CBSE OD, Term 2, Set 2, 2017]

Ans. 'Magnetite' is the finest iron ore with a very high content of iron upto 70%.

Q. 2. Where do minerals occur in igneous and metamorphic rocks?

[CBSE OD, Term 2, Set 3, 2017]

Ans. In igneous and metamorphic rocks, minerals are formed due to effects of heat and pressure when magma or lava cools. Minerals in these rocks are present in cracks and joints. There are various type of minerals found in these rocks like tin, copper, zinc, lead, diamond etc.

Q. 3. How are 'Gobar Gas Plants' beneficial to the farmers?

[CBSE OD, Term 2, Set 2, 2016]

Ans. Gobar Gas Plants are beneficial to farmers in the following ways:
(i) It provides energy by functioning as fuel.

(ii) It acts as an improved quality of manure.

(iii) It saves natural gas and coal.

Q. 4. Why does aluminium metal have great importance?

[CBSE OD, Term 2, Set 3, 2016]

Ans. Aluminium is light, resistant to corrosion, malleable and becomes stronger when mixed with other metals.

Q. 5. Why are there a wide range of colours, hardness, crystal forms, lustre and density found in minerals?

[CBSE Delhi, Term 2, Set 1, 2016]

Ans. A mineral that will be formed from a certain combination of elements depends upon the physical and chemical conditions under which the mineral forms. It is because of these physical and chemical conditions that minerals possess a wide range of colours, crystal forms, lustre and density.

Q. 6. How do minerals occur in Igneous and Metamorphic rocks?

[CBSE Delhi, Term 2, Set 2, 2016]

Ans. In igneous and metamorphic rocks, minerals occur in cracks, crevices, faults and joints.

Q. 7. How do minerals occur in sedimentary rocks? [CBSE OD, Term 2, Set 1, 2015]

Ans. Minerals are formed in the sedimentary rocks due to deposition, accumulation

and concentration in horizontal strata over long periods under great heat and pressure or coal.

Q. 8. Which rock consists of single mineral only? [CBSE Delhi, Term 2, Set 1, 2015]

Ans. Rocks like limestone or quartzite are composed primarily of one mineral.

Short Answer Type Questions-II _____ (3 marks each)

Q. 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.
[CBSE OD, Set 1, 2020]

Ans. We must make use of minerals in a planned and sustainable manner.

- (i) Improved technologies need to be constantly evolved to allow the use of low grade ores at low cost.
- (ii) Recycling of metals, using scrap metals and other substitutes are steps in conserving ore mineral resources for the future.
- (iii) Try to reuse the waste to reduce the production cost.

Q. 2. Natural gas is considered an environmental friendly fuel. Suggest and explain any three ways to make it popular. [CBSE OD, Set 2, 2020]

Ans. Natural gas is considered as an environmental friendly fuel because of following reasons:

- (i) Natural gas is the cleanest fossil fuel.
- (ii) When burned, natural gas produces about 45 per cent less carbon dioxide than coal, and 30 per cent less than oil and 15 per cent less than wood which makes environment friendly fuel.
- (iii) Natural gas is extremely efficient when it combusts.

Q. 3. Suggest and explain any three ways to reduce the use of petrol.
[CBSE OD, Set 3, 2020]

Ans. The three ways to reduce the use of petrol are given below:

- (i) Switching to alternative sources such as solar energy in the forms of solar heater, solar cookers, use of natural

gas and wind energy are some ways to reduce their usage. We can also reduce the use of these natural resources by using public transport and carpool.

- (ii) Preference of alternative resources should be given for using renewable natural resources such as the sun and the wind. Windmills use wind energy to produce electricity. The solar energy is used to heat water, cook food and to generate electricity.
- (iii) Environmental education plays an important role in creating awareness. Through environmental education, people come to know about their rights and duties towards nature.

Q. 4. Describe any three characteristics of Durg-Bastar-Chandrapur Iron-ore belt in India.
[CBSE OD, Term 2, Set 1, 2017]

Ans. The characteristics of Durg-Bastar-Chandrapur Iron-ore belt in India are as follows:

- (i) The Durg-Bastar-Chandrapur belt of high grade haematite iron-ore. This high quality iron ore is suitable for steel-making.
- (ii) The steel made from this ore is used to produce automobiles, railway equipments and in defence sector.
- (iii) Half of the iron ore is exported to Japan and South Korea from the Vishakhapatnam port as building new steel plant is a very costly affair.

Q. 5. "Minerals are unevenly distributed in India." Support the statement with examples.
[CBSE OD, Term 2, Set 3, 2017]

Ans. "Minerals are unevenly distributed in India." Following examples are:

- (i) Minerals in Deccan: The peninsular rocks contain most of the reserves of coal, metallic mineral, mica, and many other non-metallic minerals.
- (ii) Minerals in western and eastern regions of India :
Sedimentary rocks of western and eastern part of India i.e., Gujarat and Assam have most of the petroleum deposits.
- (iii) Minerals in Rajasthan: Rajasthan with the rock systems of the peninsular have reserves of many non-ferrous minerals.
- (iv) Minerals in North India: The vast alluvial plains of North India are almost devoid of economic minerals. These variations exist largely because of the differences in the geological structure, processes and time involved in the formation of minerals.

Q. 6. Describe any three characteristics of 'Odisha-Jharkhand belt' of iron ore in India. [CBSE Delhi, Term 2, Set 1, 2017]

Ans. The Odisha-Jharkhand belt produced best quality of iron-ore. Its main characteristics are:

- (i) In Odisha, high grade haematite ore is found.
- (ii) It is found in Badampahar mines in Mayurbhanj and Kendujhar districts.
- (iii) In the adjoining Singhbhum district of Jharkhand, haematite iron-ore is mined in Gua and Noamundi.

Q. 7. 'Consumption of energy in all forms has been rising all over the country. There is an urgent need to develop a sustainable path of energy development and energy saving'. Suggest and explain any three measures to solve this burning problem. [CBSE OD, Term 2, Set 1, 2016]

Ans. Consumption of energy in all forms has been rising. To take care of this concern various measures that need to be adopted are as follows:

- (i) We need to increase the use of renewable energy resources like-solar, wind, biogas, tidal and geothermal energies. This will decrease the dependence on non-renewable sources.
- (ii) Judicious use of our limited energy resources. Use of public transport system in place of individual vehicle.
- (iii) Energy conservation, for example, switching off electrical devices when not in use, using power saving devices etc.

Q. 8. In the present day of energy crisis, what steps will you like to take for saving energy?

[CBSE Delhi, Term 2, Set 1, 2015]

Ans. The following steps can be undertaken for saving energy—

- (i) Stop cutting off the trees and practice plantation of trees.
- (ii) Practice reuse and recycle of resources. For example, scraps of iron can be re-used for other purposes.
- (iii) Waste minimum amount of water and practice rainwater harvesting.
- (iv) Avoid using vehicles for short distance. Instead, walk or use cycle to cover short distance. To cover the long distances, take a public transport instead of using personal vehicle.
- (v) Switch off the electrical appliances when not in use.
- (vi) Use alternate sources of energy like solar energy, thermal energy etc instead of non-renewable resources like coal and petroleum as the latter can be exhausted easily.



Long Answer Type Questions _____ (5 marks each)

Q. 1. Why is it necessary to conserve mineral resources? Explain any four ways to conserve mineral resources. [CBSE OD, Term 2, Set 1, 2017]

Ans. Minerals require millions of year to form. These are non-renewable resources and their stock is limited. Continuous extraction of minerals raises the cost of extraction

as they have to be dug from greater depths. Minerals may also be low in quality.

- (i) A concerned effort has to be made in order to use our mineral resources in a planned and sustainable manner.
- (ii) Use of substitutes in order to save minerals should be encouraged.
- (iii) Improved technologies need to be constantly evolved to allow the use of low grade ores at low costs.
- (iv) Recycling of minerals using scrap metals and other substitutes are some steps in conserving our mineral resources for the future.

Q. 2. 'Energy saved is energy produced.' Assess the statement.

[CBSE Delhi, Term 2, Set 1, 2017]

Ans. We agree with the statement that "Energy saved is energy produced".

Presently, India is one of the least energy efficient country in the world. We have to adopt a cautious approach for judicious use of our limited energy resources.

- (i) As concerned citizens we can do our bit by using public transport systems such as buses, metro etc., instead of individual vehicles, so that petrol, diesel and CNG can be saved.
- (ii) Switching off the electrical appliances when not in use. This will reduce the electricity bill and save energy simultaneously.
- (iii) By using power saving devices, meaning in place of ordinary bulbs, and tubelight, we can use LED bulbs, similarly AC and other units which consume less power, should be used.
- (iv) Using non-conventional source of energy *i.e.*, as far as possible water heating and cooking can be done through solar energy.

In view of above statements, "Energy saved is energy produced."

Q. 3. Explain the importance of conservation of minerals. Highlight any three measures to conserve them.

[CBSE OD, Term 2, Set 1, 2016]

Ans. Importance of Conservation:

- (i) Mineral resources are being rapidly consumed which takes millions of years to be created and concentrated.

- (ii) Mineral resources are finite and non-renewable.

- (iii) Continued extraction of ores leads to increasing costs as mineral extraction comes from greater depths along with decreasing quality.

Three measures to conserve them are:

- (i) It should be used in a planned and sustainable manner.
- (ii) Improved technology needs to be constantly evolved to allow use of low grade ores at low costs.
- (iii) Recycling of metals.
- (iv) Using scrap metals.
- (v) Finding substitutes.
- (vi) Any other relevant point.

Q. 4. Highlight the importance of petroleum. Explain the occurrence of petroleum in India. [CBSE Delhi, Term 2, Set 1, 2016]

Ans. Importance of petroleum:

- (i) Petroleum is the major energy source in India.
- (ii) It provides fuel for heat and lighting.
- (iii) It provides lubricant for machinery.
- (iv) It provides raw material for a number of manufacturing industries.
- (v) Petroleum refineries act as nodal industry for synthetic, textile, fertilizer and chemical industries

Its occurrence:

- (i) Most of the petroleum occurrences in India are associated with anticlines and fault traps.
- (ii) In regions of folding, anticline or dams, it occurs where oil is trapped in the crest of the upfold.
- (iii) Petroleum is found in fault traps between porous and non-porous rocks.

Q. 5. Why is conservation of mineral resources essential? Explain any three methods to conserve them.

[CBSE Delhi, Term 2, Set 1, 2015]

Ans. Minerals are important for every country for its development and they need to be conserved because industry and agriculture depends upon minerals and the substances manufactured from them. Mineral resources are finite resources and require millions of years to be renewed. The natural rate of replenishment is very small in comparison to the present rates

of consumption. Mineral deposits in our country will get exhausted in the future. In search of good quality, they come from great depths so, the cost of mineral extraction is increasing.

Minerals can be conserved by the following measures:

- (i) Use of improved technologies need to be constantly evolved to allow use of low-grade minerals at low costs.
- (ii) Recycling of metals is a good way in which the mineral resources can be conserved.
- (iii) Usage of mineral resources should be planned in a sustainable manner.

Q. 6. Why energy is needed? How can we conserve energy resources? Explain.

[CBSE Delhi, Term 2, Set 2, 2015]

Ans. Energy is needed for the generation of power that aids in industrial production by the combustion of fossil fuels. Energy is always required as a fuel for vehicles

We should take the following steps to conserve non-renewable resources:

Prohibiting wastage of resources: Wastage of resources should be reduced. Switching off fans, lights and electronic appliances when not in use, using cooking gas economically, use of pressure cookers, using tubelights in place of electric bulbs are some ways of conserving non-renewable resources which could help in a big way.

Use of substitutes: Alternative sources of energy like solar energy, wind energy, tidal energy, energy from biomas (biogas), etc., can be used on a large scale as a substitute of fossil fuels. *For example;* use of solar cookers for domestic uses.

Recycling resources: All types of metal wastes, glass, paper and plastic can be recycled and used again. *For example;* Recycling of paper helps to conserve forests.

Q. 7. Which is the most abundantly available fossil fuel in India? Assess the importance of its different forms.

[CBSE OD, Term 2, Set 1, 2015]

Ans. In India, coal is the most abundantly available fossil forms depending on the degrees of compression and the depth and time of burial. Decaying plants in swamps produces Peat. It has a low carbon and high moisture contents and low heating capacity. Lignite is a low grade brown coal, which is soft with high moisture content. The principal lignite reserves are in Neyveli in Tamil Nadu and are used for generation of electricity. Coal that has been buried deep and subjected to increased temperatures in Bituminous coal. It is the most popular coal grade bituminous coal which has a special value for smelting iron in blast furnaces. Anthracite is the highest quality hard coal.