

# Minerals and Energy Resources

## Question 1.

Define the term 'mineral'.

Answer:

Geologists define mineral as a "homogeneous, naturally occurring substance with a definable internal structure." They have physical and chemical properties by which they can be identified.

## Question 2.

Define the term 'rock'.

Answer:

Rocks are combinations or aggregates of minerals in varying proportions. Some rocks consist of a single mineral, e.g., limestone while most rocks consist of several minerals.

## Question 3.

Define the term 'ore'.

Answer:

The term 'ore' is used to describe an accumulation of any mineral mixed with other elements.

## Question 4.

Name the finest quality of iron ore.(2011 D)

Answer:

Magnetite is the finest quality of iron ore.

## Question 5.

Orissa is the leading producer of which mineral?(2011 OD)

Answer:

Manganese ore.

## Question 6.

Name one fossil fuel which is considered environment friendly.(2012 D)

Answer:

Natural gas.

## Question 7.

Which is the main source of energy in India?(2012 D)

Answer:

The main source of energy in India is fossil fuels especially coal.

## Question 8.

In which non-conventional source of energy is India referred to as a super power?(2013 D)

Answer:

Wind Power.

## Question 9.

Which mineral is formed by decomposition of rocks, leaving a residual mass of weathered material ?

Answer:

Bauxite

## Question 10.

Name the state where the largest wind farm cluster is located? (2014 D)

### Question 11.

In which State are the 'Balaghat' Copper mines located?(2014 D)

Answer:

Madhya Pradesh.

### Question 12.

Which is the most abundantly available fossil fuel in India? Name its four major forms.(2014 D)

Answer:

Coal;

- 1 Anthracite
- 2 Lignite
- 3 bituminous
- 4 peat

### Question 13.

Which rock consists of a single mineral only? (2015 D)

Answer:

Limestone consists of a single mineral only.

### Question 14.

How do minerals occur in sedimentary rocks ? (2015 OD)

Answer:

In sedimentary rocks a numbers of minerals occur in beds or layers. They have been formed as a result of deposition, accumulation and concentration in horizontal strata.

For example, coal, iron ore.

### Question 15.

Why are there a wide range of colours, hardness, crystal forms, lustre and density found in minerals? (2016 D)

Answer:

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.

### Question 16.

How do minerals occur in igneous and metamorphic rocks? (2016 D)

Answer:

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

### Question 17.

How do minerals occur in sedimentary rocks? (2016 D)

Answer:

In sedimentary rocks a number of minerals occur in beds or layers. They have been formed as a result of deposition, accumulation and concentration in horizontal stratas.

### Question 18.

Why should the use of cattle cake as fuel be discouraged? (2016 OD)

Answer:

Using dung cake or cattle cake as fuel is being discouraged because it consumes most valuable manure which could be used in agriculture.

### Question 19.

How are 'Gobar gas plants' beneficial to the farmers? (2016 OD)

Answer:

"Gobar Gas Plants" are beneficial to the farmers in the form of energy and improved quality of manure.

### Question 20.

Where is the largest solar plant located in India?(2009 OD)

Answer:

The largest solar plants located at Madhapur near Bhuj in Gujarat.

### Question 21.

Name the industry which uses limestone as its main raw material.(2010 D)

Answer:

Cement industry.

### Question 22.

How is energy an indispensable requirement of our modern life? Explain with three examples. (2011 D)

Answer:

Modern life is highly governed by technology and revolves around it. Modern technology is driven by energy and is highly automated. Every sector of National economy — agriculture, industry, transport and commerce need greater inputs of energy. In the domestic sector also, energy demands, in the form of electricity, are growing because of increasing use of electric gadgets and appliances. Energy is the basic requirement for economic development.

### Question 23.

Mention any three characteristics of ferrous group of minerals found in India.(2011 D)

Answer:

Metallic minerals that have iron in them are called ferrous minerals. For example, iron ore, manganese, nickel, cobalt etc.

Three characteristics of ferrous group of minerals found in India are:

- 1 Ferrous minerals account for about three fourths of the total value of the production of metallic minerals.
- 2 They provide a strong base for the development of metallurgical industries.
- 3 India exports substantial quantities of ferrous minerals to Japan and South Korea after meeting her internal demands.

### Question 24.

Why is there a pressing need to use non-conventional sources of energy in India? Explain any three reasons. (2011 D)

Answer:

1 The growing consumption of energy has resulted in India becoming increasingly dependent on fossil fuels such as coal, oil and gas which are found in limited quantity on the earth.

2 Rising prices of oil and gas and their potential shortages have raised uncertainties about the security of energy supply in future, which in turn has serious repercussions on the growth of the national economy.

3 Increasing use of fossil fuels also causes serious environmental degradation like air pollution, water pollution etc.

So there is an urgent need to use sustainable energy resources like solar, water, wind, tide biomass etc.

### Question 26.

“Minerals are an indispensable part of our lives.” Comment. (2011 OD)

Answer:

Almost everything we use, from a tiny pin to a towering building or a ship, all are made from minerals. All means of transport are manufactured from minerals and run on power resources derived from the earth. Even the food that we eat contains minerals. Human beings have used minerals for their livelihood, decorations, festivities and in all stages of development.

### Question 27.

Mention any three major iron-ore belts of India. Write any three characteristics of the southern most iron-ore belt. (2012 D)

Answer:

The three major iron-ore belts of India are as follows:

- 1 Orissa-Jharkhand belt.
- 2 Durg-Bastar-Chandrapur belt in Chhattisgarh and Maharashtra.
- 3 Bellary-Chitradurga-Chikmagalur-Tumkur belt in Karnataka.
- 4 Maharashtra-Goa belt.

Bellary-Chitradurga-Chikmagalur-Tumkur belt is the southern most iron-ore belt.

Characteristics:

- This belt in Karnataka has large reserves of iron-ore.
- Kudremukh mines in the Western Ghats are known to be one of the largest in the world.
- Kudremukh is a 100 per cent export unit and the ore is transported as slurry through a pipeline to a port near

Mangalore.

**Question 28.**

Classify energy resources into two categories. Give two examples of each. (2012 D)

Answer:

Energy resources can be classified as conventional and non-conventional sources.

Conventional sources include—firewood, cattle-dung cake, coal, petroleum, natural gas, etc. Non-conventional sources include—solar, wind, tidal, geothermal energy and biogas.

**Question 30.**

Differentiate between ferrous and non-ferrous minerals with examples. (2013 D)

Answer:

Ferrous minerals:

- 1 Ferrous minerals account for about three fourths of the total value of the production of metallic minerals.
- 2 They provide a strong base for the development of metallurgical industries.
- 3 India exports substantial quantities of ferrous minerals to Japan and South Korea after meeting her internal demands.

Non-ferrous minerals:

- 1 India's reserves and production of non-ferrous minerals is not very satisfactory.
- 2 Non-ferrous minerals include copper, bauxite, lead, zinc and gold.
- 3 They provide a strong base for the development of metallurgical, engineering and electrical industries.
- 4 Non-ferrous minerals like copper and bauxite are mainly found in Madhya Pradesh and Odisha respectively.

**Question 31.**

Explain the use of petroleum as an energy resource and as an industrial raw material. (2011 OD)

Answer:

The use of petroleum as a source of energy:

- 1 It is used as a fuel for internal combustion engines in automobiles.
- 2 It is used as a fuel for railways and aircrafts.
- 3 It provides fuel for heat and lighting.

The use of petroleum as an industrial raw material:

- 1 It is used as lubricant for machinery.
- 2 It is used as raw material for a number of manufacturing industries, for example, chemical industry.
- 3 Its numerous by-products are used in petrochemical industries such as fertilizer, synthetic rubber, synthetic fibre, medicines, vaseline wax, soap, cosmetics etc.

**Question 33.**

Explain any three steps to be taken to conserve the energy resources. (2011 OD)

Answer:

- 1 We need to develop a sustainable path of energy development, i.e., increased use of renewable or non-conventional energy resources.
- 2 We have to adopt a cautious approach for the judicious use of our limited energy resources.
- 3 As concerned citizens we can do our bit by using public transport systems instead of individual vehicles, switching off electricity when not in use, using power saving devices etc.

### Question 34.

What is the use of manganese? Name the largest manganese-ore producing state of India. (2012 D)

Answer:

Manganese is mainly used in the manufacturing of the following items:

- 1 Steel (nearly 10 kg of manganese is required to manufacture 1 tonne of steel).
- 2 Ferro-manganese alloy
- 3 Bleaching powder
- 4 Insecticides and paints

Odisha (Orissa) is the largest producer of manganese-ore in India.

### Question 35.

Why is energy required for all activities? How can energy be generated? Explain. (2014 D)

Answer:

Energy is needed to cook, to provide light and heat, to propel vehicles and to drive machinery in industries. Energy is a basic requirement for economic development. Every sector of the national economy—agriculture, industry and transport—commercial and domestic needs inputs of energy.

Energy can be generated from fuel minerals like coal, petroleum, natural gas, uranium and from electricity. Conventional sources like firewood and cattledung cakes are most commonly used in rural India to generate energy.

### Question 36.

'Environmental degradation has been seen everywhere/ Explain any three values that can help to prevent environment degradation. (2014 D)

Answer:

Three values that can help to prevent Environmental Degradation:

- 1 We must ensure sustainable and equitable use of resources without degrading the environment or risking health or safety.
- 2 We must raise awareness and consciousness among people about the importance of judicious use of resources to prevent degradation of land, water, vegetation and air.
- 3 The following measures must be adopted to prevent environmental degradation:
  - Minimising use of water for processing by reusing and recycling it.
  - Smoke can be reduced by using oil or gas instead of coal in factories.
  - Almost all machinery can be redesigned to increase energy efficiency and reduce noise.

### Question 37.

Which is the most abundantly available fossil fuel in India? Mention its different forms. (2015 OD, 2014 OD, 2008)

Answer:

The most abundantly available fossil fuel is Coal.

There are four types of coal:

- 1 Anthracite. It is the highest quality hard coal. It contains more than 80% carbon content. It gives less smoke.
- 2 Bituminous. It is the most popular coal in commercial use and has 60-80% carbon content. Metallurgical coal is high grade bituminous coal and is of special value for smelting iron in blast furnaces.
- 3 Lignite. It is a low grade brown coal. It is soft with high moisture content.
- 4 Peat. It has a low carbon and high moisture content. It has low heating capacity and gives lot of smoke on burning.

### Question 38.

How is the mining activity injurious to the health of the miners and environment? Explain. (2015 D)

Answer:

Adverse effect on health: 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 a constant threat to miners. Adverse effects on the environment

The water sources in the region get contaminated due to mining.

Dumping of slurry and waste leads to degradation of land, soil and increase in stream and river pollution. Stricter safety regulations and implementation of environmental laws are essential to prevent mining from becoming a 'killer industry'.

### Question 39.

In the present day energy crisis what steps will you like to take for saving energy? (2015 D)

Or

Why is energy needed? How can we conserve energy resources? Explain. (2015 D)

Answer:

Energy is required for all activities. It is needed to cook, to provide light and heat, to propel vehicles and to drive machinery in industries.

- 1 Energy is the basic requirement for economic development.
- 2 Every sector of national economy — agriculture, industry, transport and commerce needs greater inputs of energy.
- 3 In the domestic sector also, energy demands, in the form of electricity, are growing because of increasing use of electrical gadgets and appliances.

We have to adopt a cautious approach for the judicious use of our limited energy resources. So conservation of energy should be done at all levels. Increased use of renewable energy resources, e.g., solar energy, hydel power, etc.

We, as concerned citizens can help conserve energy in the following ways:

- 1 Using more of public transport system instead of individual vehicles.
- 2 Switching off electrical devices when not in use.
- 3 Using power saving devices.
- 4 Using non-conventional sources of energy such as solar energy, wind energy etc.
- 5 Getting the power equipment regularly checked to detect damages and leakages.

### Question 40.

How can solar energy solve the energy problem to some extent in India? Give your opinion. (2015 OD)

Or

Why does solar energy have a bright future in India?

Answer:

Reasons:

- 1 India is a tropical country and gets abundant sunshine.
- 2 It has enormous possibilities of tapping solar energy.
- 3 It is an inexhaustible source of energy which is freely available in nature.
- 4 It is a cheaper source of energy and is fast becoming popular in rural and remote areas.
- 5 Photovoltaic technology is available which converts sunlight directly into electricity.
- 6 Because of its abundant and free availability in all parts of India in addition to its ecofriendly nature, solar energy is called the energy of future.

Also use of solar energy will minimise the dependence of rural households on firewood. It will contribute to environmental conservation and reduce pressure on conventional sources of energy.

### Question 41.

'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. (2016 OD)

Answer:

Every sector of the national economy—agriculture, industry, transport, (commercial and domestic), needs greater inputs of energy.

With increasing population and changing lifestyles energy consumption is increasing very fast. We are not self sufficient in energy according to demands. Therefore we have to adopt a cautious approach for the judicious use of our limited resources.

Conservation of energy should be done at all levels.

Three measures to reduce consumption of energy in all forms:

- 1 We can do our bit by using public transport systems instead of individual vehicles.
- 2 Switching off electricity when not in use.
- 3 Using power saving devices or using non-conventional sources of energy such as solar energy, wind energy etc.
- 4 Checking the power equipments regularly can help in saving of energy