

1 Marks points to remember

1. Minerals are an indispensable part of our lives. Almost everything we use, from a tiny pin to a towering building or a big ship, all are made from minerals.
2. All living things need minerals and life processes cannot occur without minerals.
3. The hardest mineral is diamond and the softest is talc.
4. Minerals are usually found in "ores" which is an accumulation of any mineral mixed with other elements.
5. In north-east the coal mining is done by tribal family members in the form of a long narrow tunnel, known as 'Rat-hole' mining.
6. Hematite ore from Bailadila (hump of ox) and Kudermukh (horse peak) mines are exported.
7. This ore is transported from Kudremukh as slurry through a pipeline to a port near Mangalore.
8. Nearly 10 kg of manganese is required to manufacture one tonne of steel. It is also used in manufacturing bleaching powder, insecticides and paints.
9. The Balaghat mines in Madhya Pradesh, Khetri mines in Rajasthan produce most of India's copper.
10. Aluminium, obtained from bauxite, has the strength of metals such as iron, with extreme lightness and with good conductivity and great malleability.
11. Mica has excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage
12. Mining activity is often called a "killer industry" due to high risks involved.

Q.1 Describe the main types of formations in which the minerals occur.

Ans. Minerals generally occur in rocks of these forms:

- i. In **igneous and metamorphic rocks** minerals occur in the veins and the lodes. Major metallic minerals like tin, copper, zinc and lead etc. are obtained from these veins and lodes.
- ii. In **sedimentary rocks** minerals occur in layers. Coal and some forms of iron ore are found like this. Minerals such as gypsum, potash salt and sodium salt are formed because of evaporation especially in arid regions.
- iii. In the **decomposed surface rocks** (a residual mass of weathered material) Bauxite is formed.
- iv. In **alluvial deposits** or 'placer deposits' minerals which are not corroded by water are found. Such as Gold, silver, tin and platinum.
- v. In **ocean floor** vast quantities of manganese nodules are found. Common salt, magnesium and bromine are largely derived from ocean waters.

Q.2 Describe the distribution of minerals in India.

Ans. India is fortunate to have fairly rich and varied mineral resources.

- i. In Peninsular plateau the reserves of coal, metallic minerals, mica and many other non-metallic minerals are found.
- ii. In the sedimentary rocks of Gujarat and Assam most of the petroleum deposits are found.
- iii. In Rajasthan reserves of many non-ferrous minerals are found.
- iv. The alluvial plains of north India are almost devoid of economic minerals.

Q.3 Mention the factors which play an important role in affecting the economic viability of a reserve.

Ans. The factors are:

- i. The concentration of mineral in the ore: The mineral content of the ore must be in sufficient concentration to make its extraction commercially viable.
- ii. The ease of extraction: The cost of extraction depends on the type of formation or structure in which minerals are found.
- iii. Closeness to the market.

Q.4 What are the two types of iron ore found in India?

Ans. India is rich in good quality iron ores.

- i. Magnetite: It is the finest iron ore, high content of iron up to 70 per cent, excellent magnetic qualities, especially valuable in the electrical industry.
- ii. Hematite: is an industrial iron ore, has slightly lower iron content than magnetite. (50-60 per cent).

Q.5 What are the impacts of mining on the health and the environment?

Ans. The impacts of mining on the health of the miners and the environment are:

- i. The dust and noxious fumes inhaled by miners make them vulnerable to pulmonary diseases.
- ii. The risk of collapsing mine roofs, inundation and fires in coalmines are a constant threat to miners.
- iii. The water sources in the region get contaminated due to mining.
- iv. Dumping of waste and slurry leads to degradation of land, soil, and increase in stream and river pollution.

Q.6 Explain why the conservation of minerals is necessary.

Ans. Minerals are important for every country for its development and they need to be conserved because:

- a. Industry and agriculture depend upon minerals and the substances manufactured from them.
- b. Workable minerals are in insufficient quantities. (Just one per cent of the earth's crust)
- c. We are rapidly consuming mineral resources that require millions of years to be renewed.
- d. The natural rate of replenishment is very small in comparison to the present rates of consumption.
- e. Mineral resources are finite and non-renewable.
- f. Mineral deposits in our country will get exhausted in the future.
- g. Due to decrease in good quality and they comes from great depths the costs of mineral extraction is increasing.

Q.7 State how minerals can be conserved for the future generations.

Ans. Mineral conservation can be done by:

- i. Use our mineral resources in a planned and sustainable manner.
- ii. Improve technology to allow use of low grade ores at low costs.
- iii. Recycle metals.
- iv. Use scrap metals and other substitutes.

## ENERGY RESOURCES

Q.8 Differentiate between conventional and non-conventional sources of energy.

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

- a. Conventional sources of energy are in use from the past whereas the non-conventional sources are in use from recent times.
- b. Conventional sources are mostly polluting in nature whereas non-conventional sources are eco-friendly.
- c. Conventional sources include: firewood, cattle dung cake, coal, petroleum, natural gas and electricity (both hydel and thermal) whereas non-conventional sources include solar, wind, tidal, geothermal, biogas and atomic energy.

Q.9 Describe the four different forms of coal found in India.

Ans. Coal is found in a variety of forms.

- a. **Peat**: Decaying plants in swamps produce peat. It has a low carbon and high moisture contents and low heating capacity.
- b. **Lignite** is a low grade brown coal, which is soft with high moisture content. The principal lignite reserves are in Neyveli in Tamil Nadu.
- c. **Bituminous** coal is buried deep and subjected to increased temperatures. It is the most popular coal in commercial use.
- d. **Metallurgical coal** is high grade bituminous coal which has a special value for smelting iron in blast furnaces.
- e. **Anthracite** is the highest quality hard coal.

Q.10 Why the use of renewable especially non-conventional sources of energy is becoming necessary in our country?

Ans. The use of non-conventional sources of energy is becoming necessary because:

- i. The growing consumption of energy in the country has made us dependent on fossil fuels such as coal, oil and gas.
- ii. Rising prices of oil and gas has eroded our foreign currency reserves.
- iii. Shortages in the supply of oil. Gas and coal have increased uncertainties about the security of energy supply in future,
- iv. The growth of the national economy is getting hampered by it.
- v. Moreover, increasing use of fossil fuels also causes serious environmental problems.

Q.11 Explain why there is urgent need to conserve energy resources in India.

Ans. Energy resources are very essential for the economic development of India.

- a. Every sector of the national economy – agriculture, industry, transport, commercial and domestic – needs inputs of energy.
- b. The success of economic development plans depend on energy resources.
- c. Consumption of energy in all forms has been steadily rising all over the country.
- d. India is presently one of the least energy efficient countries in the world.

Q.12 Mention steps to conserve energy resources in India.

Ans. Energy resources must be judiciously used because our energy resources are limited.

- a. We must use public transport systems instead of individual vehicles;
- b. Switching off electricity when not in use,
- c. Using power-saving devices and
- d. Using non-conventional sources of energy.

Q.13 What are the immediate benefits of using solar energy in our country?

Ans. The benefits are:

- i. Solar energy is fast becoming popular in rural and remote areas.
- ii. Solar energy is used to sterilise milk cans.
- iii. Use of solar energy will be able to minimise the dependence of rural households on firewood and dung cakes,
- iv. Solar energy thus will contribute to environmental conservation and adequate supply of manure in agriculture.

Q.14 What are the benefits of using biogas in rural areas of our country?

Ans. Gobargas and biogas provide many benefits to the farmer:

- i. They provide energy to household.
- ii. They provide good quality of manure.
- iii. Biogas is by far the most efficient use of cattle dung.
- iv. It also prevents the loss of trees and manure due to burning of fuel wood and cow dung cakes.

### **1 Marks points to remember**

1. Coal is a bulky material, which loses weight on use. Hence, heavy industries and thermal power station are located on or near the coalfields.
2. Petroleum refineries act as a "nodal industry" for synthetic textile, fertiliser and numerous chemical industries.
3. Petroleum and Natural gas are used as a source of energy as well as an industrial raw material in the many industries.
4. The power and fertilizer industries are the key users of natural gas.
5. Per-capita consumption of electricity is considered as an index of development.
6. Electricity is generated mainly in two ways: by dams to produce hydro power; and by coal, petroleum and natural gas to produce thermal power.
7. India is a tropical country. It receives abundant sunshine through out the year with little cloud cover. Therefore, it has enormous possibilities of tapping solar energy.
8. The largest wind farm cluster is located in Tamil Nadu from Nagarcoil to Madurai.
9. Biogas has higher thermal efficiency in comparison to kerosene, dung cake and charcoal.
10. In India, the Gulf of Kuchchh, provides ideal conditions for utilising tidal energy.
11. Geothermal energy projects at Parvati valley near Manikarn in Himachal Pradesh and Puga Valley, Ladakh produce electricity by using the heat from the interior of the Earth.