

Lesson -5

Minerals and power resources

A. MCQ

1. smelting 2. mining 3.magnetite
4. bauxite 5. Exhaustible

B. Match the following:

- | | |
|--------------|--------------|
| 1. Bauxite | aluminium |
| 2. Petroleum | fossil fuel |
| 3. Haematite | iron ore |
| 4. Mica | metallic |
| 5. Gold | non-metallic |
| 6. Tin | Malaysia |

C. Distinguish between the following

1. Ferrous minerals- ferrous minerals contain iron - like elements, such as maganese and chromites.

Non- ferrous minerals- minerals that do not contain iron -like elements, but contain some other metals like gold, silver and copper.

2. Metallic- minerals that contain metal in raw form. Iron ore, bauxite and Maganese are metallic minerals. These are found as ores, in the form of loads or veins in the cracks of igneous and metamorphic rocks. Metallic minerals may be ferrous and non-ferrous.

Non- metallic minerals- the non metallic minerals like mica, gypsum and limestone do not contain metals. Coal and petroleum are fossil fuels . They are also called energy fuels. They occur in sedimentary rocks as layers or beds. Some minerals may occur as Alluvial deposits, known as placer deposits.

3. Non renewable - the non renewable resources of energy such as Coal, Petroleum and natural gas are known as conventional sources of energy. These sources need to be used judiciously and also conserved for future use. Firewood and hydel power are also conventional sources.



Non conventional - Non conventional sources of energy are solar energy, wind energy, tidal energy , biogas and geothermal energy. They are inexhaustible and renewable.

D. Fill in the blanks:

1. Organic
2. Photovoltaic
3. Hydel
4. Anthracite
5. Persian Gulf
6. Bronze

E. Short answers-

1. Minerals are naturally occurring inorganic substances, which consists of one or more elements. They include all organic and inorganic materials that are extracted from the earth by mining. They have specific chemical compositions and physical properties that help us identify them. All rocks are composed of one or more minerals. A Rock which has a large concentration of a particular mineral is called an ore of that mineral. for example iron ore and copper ore.

2. The different uses of natural gas are it consists mainly of methane and other gases like ethane, propane and Butane. it is a source of energy for the industries. Gas based power plants can be installed faster. it is used as a transport fuel CNG or domestic fuel LPG . Areas with large deposits are called reservoir rocks. It supports the Fertilizer industry. Gas can be transported easily through pipelines.

3. The different types of coal found in the world are Peat , lignite, bituminous and anthracite.

4. All Minerals and conventional sources of energy are exhaustible, once they are consumed. They cannot be replaced or renewed. It is necessary to reduce wastage of minerals. Rapid consumption of mineral and power resources by rich industrial countries has already caused great concern. Metallic minerals are recyclable. Recycling means using discarded materials once again. Their use is possible through physical, chemical or other changes. Reducing our consumption is another option. We should utilise suitable substitutes and alternatives to conserve minerals. Efforts should be made to avoid wastage in mining, extraction and processing.

5. Two uses of copper are that it is largely used for making wires in the electrical industry due to its property of electrical conductivity. It is also used for making utensils and alloys like brass , bronze and German Silver.



F. Long answers-

1. The force of flowing water is used to produce hydroelectricity. The advantages of Hydel power are that it is a clean non-polluting source which gives electricity at a much cheaper cost than other sources. Many developed countries of the world are sustaining their industry on Hydel power like Brazil, Paraguay, China and Norway.

2. Bituminous is considered to be of very good quality coal because it has 70 to 80% carbon content and form 80% of the available Coal variety. Anthracite is also considered a good quality coal as it has so 90% of carbon. It burns without is smoke. It contributes 5% of the world's total reserves. As coal is a fuel, it is used for making steel, generating electricity and in the chemical industry. This makes coal an important industrial resource. It is abundantly found in USA, China, Russia, Ukraine, Poland, South Africa, India, Australia, Germany, UK , France and Canada . Coal found in India is used by railways and the iron and steel industry.

3. Solar energy is the most abundant, non polluting and inexhaustible source of energy. It has a huge potential especially in tropical countries. It has been successfully tapped for cooking , water heating, water desalinisation, crop drying and generating electricity. Use of solar energy has increased by seven times with the help of the photovoltaic cell.

4. Extraction of a mineral from an area depends on sufficient concentration of the ore, easy accessibility of the area and availability of the required Technology . When it is ascertained that it is economically suited for carrying out extraction , the area is turned into a mine. The method used for extraction depends on the depth at which the minerals are located. The different ways of minerals extraction are:

A. Minerals that lies near the surface are cut up or dug out by the process of quarrying. Cutting of surface rocks to put in a stone Crusher is one such example. When a mineral Ore is located close to the Earth's surface it is taken out by removing the surface layer. This is called an open pit mine.

B. When mineral deposits occur under the Earth's surface, a deep hole called a shaft has to be dug to reach them. Such a deep hole is called a shaft mine. Miners use lifts to reach down the shaft into the underground Chambers. The process of separating minerals from their ores, by heating beyond melting point, is known as smelting.

C. Oil and gas are extracted from deep Wells, which are made by drilling into the Earth.

5. Gujarat, Tamilnadu, Maharashtra in Odisha have tremendous potential for development of wind energy because of steady high speed winds. It is used to for providing water (wind mills) for irrigation and to generate electricity. It is safe, clean and non polluting source of energy.



