Very Short Answer Questions

Q. 1. Define minerals.

Ans. Minerals are naturally occurring substances that have a definite chemical composition.

Q. 2. Write the properties of minerals

Ans. The properties of minerals are:

(i) Hardness
(ii) Solubility
(iii) Colour
(iv) Density

Q. 3. What are power resources?

Ans. Power resources are the resources which provide power or energy for industry, agriculture, transport, communication and defence.

Q. 4. What do you mean by conventional sources?

Ans. Conventional sources of energy are those sources which are likely to get exhausted very soon. For example: oil, gas and coal.

Q. 5. What is smelting?

Ans. Smelting is the process of separating metal from their ores by the use of heat.

Short Answer Questions

Q. 1. Name the types of minerals.

Ans. There are two types of minerals:

(i) Metallic and **(ii)** Non-metallic.

(i) Metallic minerals: These minerals contain metal in raw form and are hard substances that conduct heat and electricity and have lustre or shine. For example, iron ore and bauxite.

(ii) Non-metallic minerals: These minerals do not contain metal. For example, coal and petroleum.

Q. 2. Describe the types of mining.

Ans. There are two types of mining:

(i) Open cast mining,
(ii) Shaft mining

(i) Open cast mining: Minerals which lie at shallow depths are taken out by removing the surface layer.

(ii) Shaft mining: Deep bores called shafts, are made to reach minerals deposits that lie at great depth.

Q. 3. Describe the type of minerals found in Europe.

Ans. Europe is the leading producer of iron ore in the world. Russia, Ukraine, Sweden and France are the countries having large deposits of iron-ore. Copper, lead, zinc, manganese and nickel are found in Eastern Europe and European Russia.

Q. 4. What are the uses of minerals?

Ans. Uses of minerals:

(i) They are the backbone of industrialisation.
(ii) Minerals that are usually hard are used as gems in making jewellery.
(iii) Minerals like copper are used in almost everything from coins to pipes.

Q. 5. Which mineral deposits are found in Australia?

Ans. Australia is the largest producer of bauxite in the world. It is a leading producer of gold, diamond, iron-ore, tin and nickel. It is rich in copper, manganese, zinc and lead.

Kargoorlie, Coolgardie are rich in gold deposits.

Q. 6. How can we conserve minerals?

Ans. We can conserve minerals in the following ways:

(i) By reducing wastage in the process of mining.
(ii) By recycling of metals.
(iii) By finding biodegradable substitutes of iron, aluminium and other minerals.

Q. 7. Write the advantages and disadvantages of firewood.

Ans. Advantages of firewood

(i) They are easy to access.
(ii) They provide energy to a large number of people.

Disadvantages of firewood

(i) Collection of firewood is time-consuming.
(ii) It is a polluting source.
(iii) It causes deforestation.

Q. 8. Describe coal as a conventional source.

Ans. (i) Coal is the most abundantly found fossil fuel.
(ii) It is used as a domestic fuel.
(iii) Thermal power is generated from coal.
(iv) It is also known as 'buried sunshine'.

Q. 9. Describe how petroleum is obtained.

Ans. Petroleum is found between the layers of rocks and is drilled from oil fields located in offshore and coastal areas. Then it is sent to refineries which process the crude oil and produce a variety of products like diesel, petrol, kerosene, wax, plastics and lubricants.

Q. 10. Explain the features of natural gas.

Ans. (i) Natural gas is found with petroleum deposits and is released when crude oil is brought to the surface.
(ii) It can be used as a domestic and industrial fuel.

Q. 11. What is CNG?

Ans. CNG refers to Compressed Natural Gas which is a popular eco-friendly automobile fuel. It causes less pollution than petroleum and diesel.

Q. 12. What do you mean by non-conventional sources of energy?

Ans. Non-conventional sources of energy mean those sources which can be used for long time and are inexhaustible and renewable. For example, solar energy, wind energy, tidal energy, etc.

Q. 13. How is solar energy obtained?

Ans. Solar energy is obtained from the rays of the sun. Solar energy is trapped in solar collectors and converted into electricity with the help of solar cells. For example, solar energy is used in solar heaters, solar cookers, solar dryers, etc.

Q. 14. Explain wind energy and give the names of windfarms.

Ans. For generating wind energy, windmills have been used. The high speed winds rotate the windmill which is connected to a generator to produce electricity. Windfarms are found in Netherlands, Germany, Denmark, UK, USA and Spain.

Q. 15. What is nuclear power?

Ans. Nuclear power is generated by splitting atomic minerals. These elements are uranium and thorium. These fuels undergo nuclear fission in nuclear reactors and emit power.

The nuclear power stations in India are located in Kalpakkam in Tamil Nadu and Tarapur in Maharashtra.

Q. 16.What is geothermal energy?

Ans. Geothermal energy is heat energy which is obtained from the earth. This heat energy can be used to generate power. Hot springs is the form of geothermal energy which is used for cooking, heating and bathing.

In India, geothermal plants are located in Manikaran in Himachal Pradesh and Puga Valley in Ladakh.

Q. 17. Explain how tidal energy generates electricity?

Ans. Tidal energy can be harnessed by building dams at narrow openings of the sea. During high tide the energy of the tides is used to turn the turbine installed in the dam to produce electricity.

For example, Russia, France, and the Gulf of Kachchh in India have huge tidal mill farms.

Q. 18. What are the uses of biogas?

Ans. Biogas is an excellent fuel for cooking and lighting and produces huge amount of organic manure each year.

Biogas is generated from the organic waste such as dead plant and animal materials, animal dung and kitchen waste can be converted into a gaseous fuel.

Long Answer Questions

Q. 1. Briefly describe the extraction of minerals.

Ans. Minerals are mainly extracted by mining, drilling or quarrying.

Mining: The process of taking out minerals from rocks buried under the earth's surface is called mining. There are two types of mining:

(i) Open cast mining
(ii) Shaft mining

(i) Open cast mining: Open cast mining refers to the method of extraction in which minerals lying at shallow depths are taken out by removing the surface layer.

(ii) Shaft mining: Shaft mining refers to the method of extraction in which deep bores called shafts, have to be made to reach mineral deposits that lie at great depths

Drilling: Deep wells are bored to take minerals out, is called drilling.
Quarrying: In process of quarrying, minerals that lie near the surface are simply dug out.

Q. 2. Explain the distribution of minerals.

Ans. Minerals occur in different types of rocks. There are three types of rocks:

(i) Igneous rocks
(ii) Sedimentary rocks
(iii) Metamorphic rocks

In igneous and metamorphic rocks, metallic minerals are found. Iron ore in North Sweden, copper and nickel deposits in Ontario Canada, iron, nickel, chromite and platinum in South Africa are examples of minerals found in igneous and metamorphic rocks.

Sedimentary rock formations of plains and young fold mountains contain non-metallic minerals like limestone.

For example, limestone deposits of Caucasus region of France, Manganese deposits of Georgia and Ukraine and phosphate beds of Algeria and mineral fuels like coal and petroleum are found in the sedimentary strata.

Q. 3. What are the advantages and disadvantages of conventional source of energy?

Ans. Advantages:

(i) Oil is easier to transport and coal is extensively available.
(ii) Firewood is easy to access.

(iii) Firewood provides energy to a large number of people.

Disadvantages:

(i) Firewood causes greenhouse effect and leads to deforestation and is a source of pollution.
(ii) Hydel Power causes displacement of local community is expensive to setup.

Q. 4. How can minerals be conserved?

Ans. (i) Minerals are a non-renewable resource.

(ii) It takes thousands of years for the formation and concentration of minerals.

(iii) The rate of formation is much smaller than the rate at which the humans consume these minerals.

(iv) It is necessary to reduce wastage in the process of mining.

(v) Recycling of metals is another way in which the mineral resources can be conserved.

Q. 5. How nuclear power is obtained and utilised in India for peaceful purpose?

Ans. (i) Nuclear power is obtained from energy stored in the nuclei of atoms naturally occurring radioactive elements like uranium and thorium.

(ii) These fuels undergo nuclear fission in nuclear reactors and emit power.

(iii) The greatest producers of nuclear power are USA and Europe.

(iv) In India, Rajasthan and Jharkhand have large deposits of uranium.

(v) Thorium is found in large quantities in the monazite sands of Kerela.

(vi) The nuclear power stations in India are located in Kalpakkam in Tamil Nadu, Tarapur in Maharashtra, Kota in Rajasthan, Narora in Uttar Pradesh and Kaiga in Karnataka.

Q. 6. What is the future of geothermal energy in India? How is it generated?

Ans. (i) Heat energy obtained from the earth is called geothermal energy.

(ii) The temperature in the interior of the earth rises steadily as we go deeper.

(iii) Sometimes, this heat energy may surface itself in the form of hot springs.

(iv) This heat energy can be used to generate power.

(v) Geothermal energy in the form of hot springs has been used for cooking, heating and bathing for several years.

(vi) In India, its plants are located in Manikaran in Himachal Pradesh and Puga Valley in Ladakh.

Hots (Higher Order Thinking Skills)

Q. 1. How is hydel power generated?

Ans. Hydel power is generated by the force of falling water through dams at heights. The falling water flows through pipes inside the dam over turbine blades placed at the bottom of the dam. The moving blades then turn the generator to produce electricity.

Q. 2. What are the disadvantages of hydel power?

Ans. Disadvantages of Hydel Power:

(i) It causes displacement of local community.
(ii) It inundates low lying areas.
(iii) It is expensive to set up.

Q. 3. Why is petroleum called 'Blackgold'?

Ans. (i) Petrol keeps one's car running as well as the oil that keeps one's cycle from squeaking, both began as a thick black liquid called petroleum.

(ii) It is found in between the layers of rocks and is drilled from oil fields located in off-shore and coastal areas.

(iii) This is then sent to refineries which process the crude oil and produce a variety of products like diesel, petrol, kerosene, wax, plastics and lubricants.

(iv) Petroleum and its derivatives are called 'Black Gold' as they are valuable.

Q. 4. What is the result of excessive use of fossil fuels?

Ans. (i) The sharp increase in our consumption of fossil fuels has led to their depletion at an alarming rate.

(ii) The toxic pollutants released from burning these fuels are also cause for concern.

(iii) Unchecked burning of fossil fuel is like an unchecked dripping tap which will eventually run dry.

(iv) This has led to the tapping of various non-conventional sources of energy that are cleaner alternatives to fossil fuels.