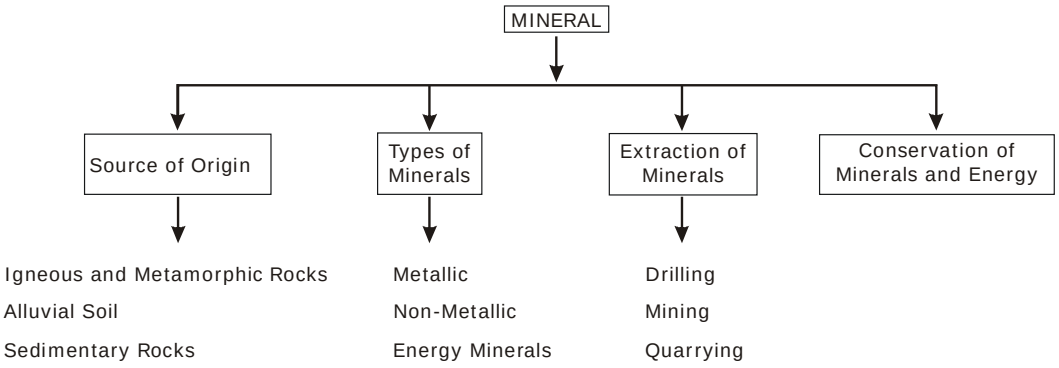
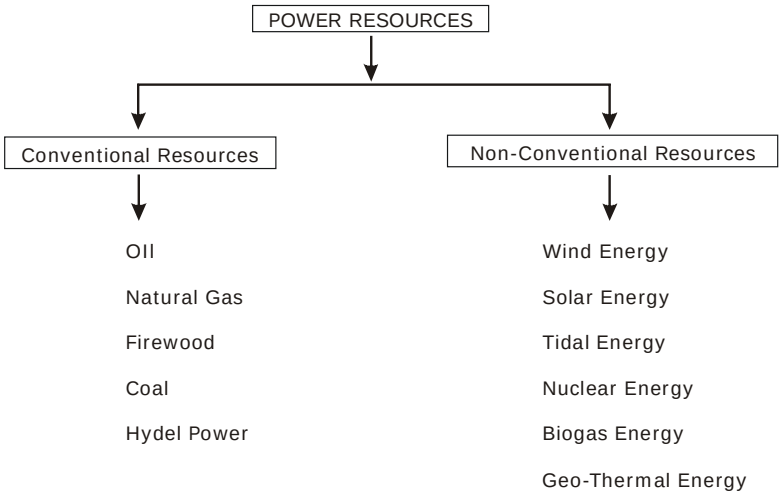
MINERALS AND ENERGY RESOURCES

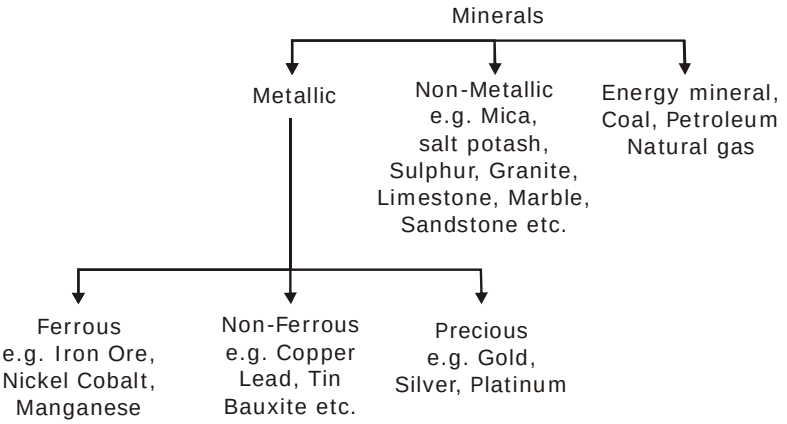




IMPORTANT TERMS AND CONCEPTS

- Minerals Natural inorganic substances, which consist of one or more elements.
- Ductility : It is the ability of a metal to be drawn into thin wire without breaking.
- Smelting : The process of separating of metals from their ores by the use of heat.
- Mining : Extracting commercially valuable minerals from the earth.
- Quarrying : Mining of ores from the surface of the land.
- Shaft Mining : Mining of ores at great depths below the ground.
- Open Cast Mining : Mining of ores from shallow depth by removing the overlying rocks.

CLASSIFICATION OF MINERALS



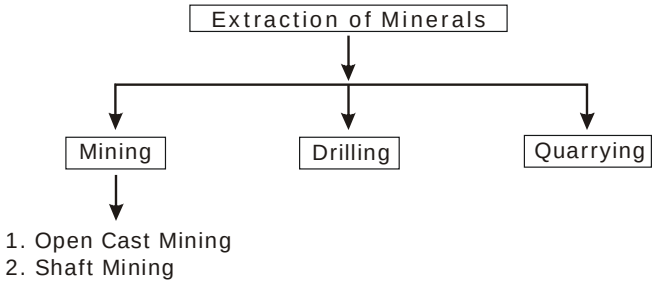
õ Metallic Minerals : We get metals from these minerals metallic minerals further be divided into ferrous and non-ferrous.

(i) Ferrous minerals : The minerals which contain Iron ore are called ferrous minerals. e.g. Iron Ore, Nickel, Cobalt etc.

(ii) Non Ferrous : Minerals containing metals other than iron ore are known as non-ferrous minerals. Gold, Silver, Platinum etc.

(iii) Precious Mineral : The minerals which have very high economic value are known as Precious minerals e.g. Gold, Silver etc.

(iv) Energy Minerals : The minerals which provide energy or power are known as energy minerals. e.g. Coal, Petroleum, Natural gas etc.



1. Mining : The process of taking out minerals from rocks buried under the earth surface is called mining.
   - õ Open Cast Mining :- Mineral that lies at shallow depths are taken out by removing the surface layer. This is open Cast Mining.
   - õ Shaft Mining :- Extraction of Minerals from deep bores i.e. shaft of deep depth is called shaft mining.
2. Drilling : The process of digging wells and extracting mineral oil is known as 'drilling'. In this deep wells are dug for extracting oil and natural gas.
3. Quarrying : It is the process used to extract mineral that lie near the surface. In this an open pit is dug. Such an open pit mine is called a 'quarry'.

NON-METALLIC-MINERALS

- Mica :

  It is a non metallic mineral. India is the largest producer of mica and it produces more than 60% word's mica.

- Main Properties and Uses of Mica :

  (i) It is made up of a series of plates or leaves.
  (ii) It can be converted into thin sheets.
  (iii) It can be black, green, red yellow or brown.
  (iv) It has excellent di-electric strength, low powerless factor, insulating properties and high resistance.
  (v) It is indispensable minerals used in electric and electronic industries.

- Production :

  Northern edge : Chotta Nagpur Plateau Koderma Gaya-Hazaribagh belt of Jharkhand.
  Rajasthan : Ajmer
  Andhra Pradesh : Nellore Mica belt.

ROCK MINERALS

- Lime stone :

  Uses and Properties

  (i) It is associated with rocks composed of either calcium carbonate of magnesium, or mixture of these two.
  (ii) It is found in sedimentary rocks.
  (iii) It is used for variety of purposes.
  (iv) It is a basic input in cement Industry.
  (v) It is also used by chemical, iron and steel industry.

- Distrubition :

  Madhya Pradesh, Andhra Pradesh, Rajasthan, Tamil Nadu and Gujarat.

CONSERVATION OF MINERALS

Minerals are considered back bone of of an economy. Most of the mineral are non-renewable. So there is urger need to conserve them.

- Measures to conserve the minerals :

  (i) Minerals should be used in a planned and judicious way.
  (ii) Wastage of minerals should be minimised.
  (iii) Modern technology should be used for the exploitation of minerals.
  (iv) Export of minerals should be minimised.
  (v) We should think about the use of substitutes in order to save minerals.
  (vi) We should encourage recycling of metals.

ENERGY RESOURCES

- Energy resources : The resources which are used for generating energy are known as energy resources e.g. Coal, Petrolem etc.

CLASSIFICATION OF ENERGY RESOURCES

- Conventionial Resource : Conventional power resources are those which are exhautible.

  (i) Once they have been used up, they cannot be replaced e.g. coal, petrolem

minaly confined to the extre peninsula. Important area of tertiary coal include parts of Assam Meghalaya, Arunchal Pradesh, Nagaland.

PETROLEUM

The word 'petroleum' has been derived from two Latin words, Petra (meaning rock) and oleum (meaning oil). Thus petrolem is oil obtained from rocks, particularly sedimentary rocks of the earth. Therefore, its also called mineral oil. Petroleum is an inflamble liquid that is composed of hydrocarbons.

- Use of Petroleum :

(i) It is the major source of power for vehicles.
(ii) It provides the most important lubricating agents and is used as important raw material.
(iii) Petroleum refineries act as a 'nodel industry' for many industries like textile, fertilizer and chemical industry.

- Formation :

(i) In regions of folding, anticlines or dams, oil is trpped in the crest of the upfold.
(ii) Gas, being lighter usually occurs above the oil.
(iii) 63% of India's petroleum production is from Mumbai high, 18% from Gujarat and 16% from Assam.
(iv) Ankeleshwar is the most important field of Gujarat. Assam is the oldest oil producing state of India.

NATURAL GAS

- Advantages of Natural gas :

(i) It can be used both as source of energy and also as a industrial raw material in petro-chemical industry.
(ii) Natural gas is found in association with or without petroleum.
(iii) It takes less time to built a power plant based on natural gas.
(iv) It is easy to transport gas through gas pipes line.
(v) It is considered an environment friendly fuel because of low carbondioxide emission.
(vi) It is the fuel for the present century.

- Gas pipe lines :

1700km long Hazira-Bijapur-Jagdishur cross country gas pipe line links mumbai-high and Bassin with fertilizer, power and industrial complex in Western and Northern India.

ELECTRICITY

Electricity is generated mainly in two ways
(i) By running water which drives hydro turbines to generate hydro electricity.
(ii) By burning of other fuels such as coal, petroleum and natural gas to drives turbines to produce thermal power.

1. Hydro Electricity :

(i) It is generated by fast flowing water.
(ii) It is a renewable resource of energy.
(iii) India has a number of multi puopose project like the Bhakra Nangala, Damodar Valley Corporation, the Kopili Hydel Power Porject etc. Producing hydro electricity.
(iv) These do not cause any pollution.
(v) These should be near the sources of energy.

2. Thermal Power :

(i) It is generated by coal, petroleum and natural gas.
(ii) These are exhaustible resources of energy.
(iii) These causes pollution.
(iv) These can be set at any place.

3. Nuclear or Atomic Energy :

(i) It is obtaining by altering the structure of atoms energy is released in the form of heat and his is used to generate electric power.

Exercise - I UNSOLVED PROBLEMS

1. What are minerals ?
2. What are ores ?
3. What are ferrous minerals ?
4. What are non ferrous minerals ?
5. Name any two carrier rocks of minerals?
6. What are veins ?
7. What are lodes ?
8. What are placer deposits ?
9. Why is copper used in the electrical and electronic industry ?
10. What is the economic importance of magnetite?
11. How, can the. energy resources be classified ?
12. What is H.BJ. ?
13. Name the important oil fields of Assam & Gujarat.
14. How is nuclear energy Obtained?
15. How is bauxite ore formed?
16. What are conventional resources of energy ?
17. What are non conventional resources of energy?
18. Name the minerals which are used to generate atomic or nuclear energy ?
19. What is a biogas ?
20. What is the importance of petroleum refineries ?
21. Distinguish between the following -

    (A) Ores and minerals

    (B) Ferrous and non-ferrous minerals

    (C) Conventional and non conventional sources of energy

    (D) Thermal and Hydropower
22. What is the importance of the energy resources for an economy ?
23. Why do you think that solar energy has a bright future in India ?
24. What role does power play in the industrialisation of our country ?
25. What are the four types of coal ? Write one feature of each ?
26. What is the utility of manganese ? Describe its distribution ?
27. What is the importance of minerals?
28. What are the uses of copper ? Describe its distribution ?
29. How do minerals occur in sedimentary rocks ?
30. What are the uses of aluminium ?
31. What are the major properties of mica ?
32. Explain the importance of coal as energy resources
33. What are the uses of petroleum ? Explain the formation ?
34. Minerals are indispensable part of our lives. Explain the statements by giving four examples ?
35. Explain the development of non conventional sources of energy in India.
36. What are conventional sources of energy ? Why is water, as a sources of' energy, more important than coal and petroleum? Explain.
37. Describe any six measures for efficient use of energy?
38. Describe the distribution of coal in India.
39. Describe the measures to conserve minerals resources.
40. 'Minerals in India are unevenly distributed'. Explain.
41. Why is there need. to conserve minerals ?
42. "India is rich in mineral resources". Justify the statement by giving four examples.
43. Describe the importance of Coal as a source of energy.
44. Explain the distribution of copper in India.
45. Explain the distribution of Iron ore in India.