

# MINERALS AND ENERGY RESOURCES

## VERY SHORT ANSWER TYPE QUESTIONS [1 MARK]

1. What are placer deposits?

**Answer:**

Certain mineral deposits that occur in sands of valley floors and the base of the hills as alluvial deposits are called placer deposits.

2. Which state of India is the largest producer of Bauxite?

**Answer:**

Odisha is the largest producer of Bauxite in India.

3. Name the most abundantly available fossil fuel in India.

**Answer:**

Coal is the most abundantly available fossil fuel in India.

4. Which is the highest petroleum-producing area in India?

**Answer:**

Mumbai High is the highest petroleum-producing area in India.

5. Name the gulf that provides ideal conditions for utilising tidal energy in India.

**Answer:**

Gulf of Khambhat and Gulf of Kutch in Gujarat provide ideal conditions for utilising tidal energy in India.

6. Which rock consists of single mineral only?

**Answer:**

Limestone consists of single mineral.

7. How do minerals occur in sedimentary rocks?

**Answer:**

Minerals in sedimentary rocks occur in beds or layers. They are accumulated and concentrated in horizontal strata, for example coal.

8. What are the two types of minerals according to occurrence in igneous and metamorphic rocks?

**Answer:**

In igneous and metamorphic rocks, minerals may occur in cracks, crevices, faults or joints. The smaller occurrences are called veins while the larger are called lodes.

9. Why is there a wide range of colours, hardness, crystal forms, lustre and density found in minerals?

**Answer:**

A wide range of colours, hardness, crystal forms, lustre and density is found in minerals because a particular mineral is formed from a certain combination of elements and depends upon the physical and chemical conditions under which the material forms.

10. How do minerals occur in igneous and metamorphic rocks?

**Answer:**

In igneous and metamorphic rocks minerals occur in the cracks, crevices, faults or joints. The smaller occurrences are called veins and the larger ones are called lodes.



**11. How do minerals occur in sedimentary rocks?**

**Answer:**

In sedimentary rocks, minerals occur in beds or layers. They are deposited in horizontal stratas.

**12. Why should the use of cattle cake as fuel be discouraged?**

**Answer:**

The use of cattle cake as fuel should be discouraged because huge loss of trees will be there when we burn cattle cake and use it as source of fuel. It must be consumed in biogas plants for its effective usage.

**13. How are gobar gas plants beneficial to the farmers?**

**Answer:**

Gobar gas plants are beneficial to the farmers because they provide energy and improved quality of manure.

**14. Why does aluminum metal have great importance?**

**Answer:**

Aluminium metal has great importance because it combines the strength of metals such as iron, with extreme lightness and also with good conductivity and great malleability. It can be used as a substitute for steel.

**15. How is iron ore transported from Kudremukh mines to a port near Mangalore?**

**Answer:**

From Kudremukh mines to a port near Mangalore, the iron ore is transported as slurry through a pipeline.

**16. How does mining affect the health of miners?**

**Answer:**

Mining produces dust and noxious fumes, which are inhaled by the miners. It makes them vulnerable to pulmonary diseases.

**SHORT ANSWER TYPE QUESTIONS [3 MARKS]**

**17. Mention any three major iron-ore belts in India. Write any three characteristics of the southernmost iron-ore belt.**

**Answer:**

The three major iron-ore belts in India are: (any three)

- Orissa-Jharkhand belt.
- Durg-Bastar-Chandrapur belt
- Ballari-Chitradurga-Chikkamagaluru-Tumakuru belt
- Maharashtra-Goa belt

The three characteristics of the southern-most belt, Ballari-Chitradurga- Chikkamagaluru-Tumakuru belt, are as follows.

- It has large reserves of iron ore.
- The Khudremukh mines, located in the Western Ghats of Karnataka, are a hundred per cent export unit.
- Khudremukh deposits are one of the largest mines in the world.

**18. What is the use of manganese? Name the largest manganese-ore producing state in India.**

**OR**



**Which state is the largest producer of manganese in India? Mention any four uses of manganese.**

**Answer:**

Odisha is the largest producer of manganese in India.

Four uses of manganese are as follows:

- Manganese is used in manufacture of steel and ferro-manganese alloy.
- It is used in manufacturing bleaching powder.
- It is a raw material in manufacturing insecticides.
- It is also used in making paints.

**19. Classify energy resources into two categories. Give two examples of each.**

**Answer:**

Energy resources can be classified into the following categories.

(a) Conventional sources—firewood, coal and petroleum

(b) Non-conventional sources—Solar energy, wind power and tidal energy

**20. How is solar energy becoming popular in rural and remote areas of India? Explain.**

**Answer:**

Solar energy is becoming popular in rural and remote areas of India because of the following reasons:

- It has reduced the dependence of rural households on firewood and dung cakes.
- It has been able to reduce environment pollution to a great extent.
- Dung cakes used earlier are now utilised for increasing fertility of the soil.
- Being abundant in nature it is available all through the year.
- Moreover tapping of solar energy is not expensive and thus is preferred by all.
- It can be stored and used later.

**21. 'We have to adopt a cautious approach for the judicious use of our limited energy resources.' Support the statement with three examples.**

**Answer:**

We have to adopt a cautious approach for the judicious use of our limited energy resources because of the following reasons.

- They are non-renewable, once consumed we will not be able to get them back.
- Energy is required for all our activities—to cook, to provide light and heat, to drive vehicles and machinery, so, it should be used judiciously.
- Keeping in mind the needs of our future generation, we have to adopt the policy of sustainable development.

**22. Why is energy required for all activities? How can energy be generated?**

**Answer:**

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

Energy can be generated from conventional and non-conventional sources. Conventional resources include fire wood, cattle dung cake, fuel minerals like coal, petroleum etc. Non-conventional resources include solar, wind, tidal, atomic energy, etc.

**23. What are the two main ways of generating electricity? How are they different from each other? Explain.**

**Answer:**

Electricity is generated:

- by running water which drives hydro turbines to generate hydro electricity.
- by burning fuels such as coal, petroleum and natural gas to drive turbines to produce thermal power.



They are different from each other in the sense that hydroelectricity is generated by water, which is a renewable source, whereas thermal electricity is generated using non-renewable fossil fuels.

**24. Name the non-metallic mineral which can split easily into thin sheets. Mention its uses.**

**Answer:**

Mica can easily split into thin sheets. It has excellent di-electric strength, low- power loss factor, insulating properties and resistance to high voltage.

The following are the uses of mica.

- It is used in electronics and electric industries as insulators.
- It is used in paints.
- It is used in toothpaste and cosmetics to give them shiny appearance.

**25. Which is the most abundantly available fossil fuel in India? Mention its different forms.**

**Answer:**

The most abundantly available fossil fuel in India is coal. Coal is used as a domestic fuel for generation of thermal power and to supply energy to industries.

The following points show the importance of different types of coal.

- **Lignite:** It is a low-grade brown coal, which is soft and has a high moisture content. It is used for generation of electricity.
- **Bituminous:** The most popular variety of commercial and metallurgical coal is bituminous. It is formed due to high temperature deep in the interior. It has a special value in smelting of iron in blast furnaces.
- **Anthracite:** The highest quality of hard coal is known as Anthracite. It has the highest content of carbon and is mainly used for power generation in metallurgy.

**26. Explain any three factors affecting the economic viability of a reserve of minerals.**

**Answer:**

Factors affecting the economic viability of a reserve of mineral are:

- concentration of mineral in an ore.
- how easily can the mineral be extracted.
- closeness to the market.

**27. Explain any three values which inspire us to conserve our energy resources.**

**Answer:**

Three values which inspire us to conserve our energy resources are as follows:

- Consciousness towards environment and its protection is required. Excess and careless use of resources will degrade the environment. Use of renewable power resources will address global issues of pollution.
- We should adopt a responsible attitude towards the use of power resources as they are in limited quantity. Wise use of these resources can be the only remedy.
- We have to be accountable towards future generation. We should adopt sustainable development so as to preserve the resources for use by our generations to come.

**28. Why is solar energy fast becoming popular in rural and remote areas of India? Explain.**

**Answer:**

Solar energy is fast becoming popular in rural and remote areas of India because of the following reasons.

- It is one of the best forms of non-conventional sources of energy.
- It is not very expensive to install photovoltaic technology which converts solar light into solar energy.
- Tapping solar energy will reduce the dependence of dung cakes and will provide adequate manure for agriculture.



**29. How is the mining activity injurious to the health of the miners and environment? Explain.**

**Answer:**

Mining activity is injurious to the health of miners due to the following reasons.

- Inhalation of poisonous gases and dust make them vulnerable to pulmonary diseases.
- The risk of collapse of mine roofs may risk the life of miners.
- Inundation and fires in coalmines are a constant threat to the miners.

The following points show how mining affects the environment.

- It results in contamination of water.
- Dumping of waste and slurry leads to degradation of land and soil.
- It results in air and water pollution.

**30. In the present day energy crisis, what steps will you like to take for saving energy?**

**Answer:**

We can save the energy by the following ways.

- Switching off the electrical appliances when not in use
- Use of energy efficient devices like CFC bulbs and appliances
- Car pooling or use of public transport instead of private vehicles
- Use of alternate sources of energy (non-conventional/renewable sources)

**31. How can solar energy solve the energy problem to some extent in India? Give your opinion.**

**Answer:**

Solar energy can solve the energy problem in India to some extent in the following ways:

- India is a tropical country and it has enormous possibilities of tapping solar energy.
- It is the cleanest form of energy available free of cost.
- It minimises dependence of rural households on firewood and dung cakes.

**32. Describe any three features of ferrous minerals found in India.**

**Answer:**

Three features of ferrous minerals are as follows.

- Ferrous minerals account for about three-fourths of the total value of the production of metallic minerals.
- They provide the base for the development of metallurgical industries.
- India is rich in ferrous minerals and exports substantial quantities after meeting the local demands.

**33. How can biogas solve the energy problem mainly in rural India? Give your suggestions.**

**Answer:**

Biogas is produced from shrubs, farm waste, animal and human waste mainly for domestic consumption in rural areas. It can solve the energy problem in rural India in the following ways.

- Decomposition of organic matter yields gas, which has higher thermal efficiency than kerosene, dung cake and charcoal.
- It provides the farmers with energy and improved quality of manure.
- It prevents the loss of trees and manure due to burning of fuel coal and cowdung cakes.

**34. '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.**

**Answer:**

The following are the measures to solve this burning problem.

- We should use public transport instead of personal vehicles as much as possible.
- We should switch off electricity when not in use.
- We should switch to power-saving devices.



- We should keep our power equipment well maintained.
- Above all, use of non-conventional sources of energy would be of great help in overcoming the problem.

**35. 'There is a pressing need to use renewable energy resources.' Justify the statement with suitable arguments.**

**OR**

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

**Answer:**

The given statement can be justified by the following arguments.

- Increased consumption of energy resources has increased our dependence on fossil fuels like coal, oil and gas.
- There are uncertainties about the energy supplies in future because of their potential shortages.
- Use of non-renewable sources have serious consequences on the growth of national economy as they are getting expensive day by day.
- Above all, non-renewable sources pose a great threat in the form of pollution and other environmental issues.
- Solar, wind, tide, biomass and energy from waste material can thus, be proved advantageous in long run.

**36. How is energy an indispensable requirement of our modern life? Explain with three examples.**

**Answer:**

Energy is an indispensable requirement of our modern life. The following points explain the statement.

- Energy is needed for all activities like to provide heat and light, to drive machinery and to cook.
- Every sector of the national economy like agriculture, industry, transport, communication, etc. requires energy to operate.
- The developmental plans require energy to remain operational. With the time, consumption of energy has been on steady rise, which again makes it a necessary requirement for our day-to-day life.

**37. Make a distinction between hydroelectricity and thermal electricity stating three points of distinction.**

**Answer:**

Hydroelectricity and thermal electricity differ from each other in the following ways.

<b>Hydro electricity</b>	<b>Thermal electricity</b>
1. Hydro electricity is generated by the force of running water falling on turbines.	1. Thermal electricity is generated by coal or Petroleum.
2. It does not cause any atmospheric pollution.	2. It causes atmospheric pollution.
3. Hydroelectricity is an unlimited resource i.e water is perennial or inexhaustible.	3. It is a limited resource. Its sources are exhaustible or nonrenewable like coal and petroleum.
4. It is cheaper in the long run.	4. It is expensive in the long run.

**38. Explain the use of petroleum as an energy resource and as an industrial raw material.**

**Answer:**

Petroleum is a major source of energy next to the coal in India.

The use of petroleum as an energy resource:



- It provides fuel for lighting and heating.
- It also provides lubricants for machinery to reduce friction.

The use of petroleum as an industrial raw material:

- It provides raw material for petro-chemical industries and a large numbers of manufacturing industries.
- Petroleum refineries act as a nodal industry for synthetic textiles, fertilisers and chemical industries.

**39. Explain any three steps to be taken to conserve the energy resources.**

**Answer:**

Energy is needed for economic development.

- It is required for cooking.
- It is required to provide heat and light.
- It is used for running the machines in industries.
- It is used to propel the vehicles.
- It is essential for the development of agriculture, industry, transport for commercial and domestic purposes

**40. 'Solar energy is expected to play an important role in India.' Give three arguments in support of the statement.**

**Answer:**

Solar energy is expected to play an important role in India because of the following reasons:

- India being a tropical country gets sufficient amount of sunlight throughout the year.
- It has enormous possibilities of tapping solar energy and converting it directly into electricity.
- It can reduce the dependence on fossil fuels for energy consumption.
- Its set up is low cost and it can provide sufficient amount of energy for daily needs of people in India.

**41. Explain any three methods of conservation of mineral resources in India.**

**Answer:** Minerals conservation is essential because:

- Minerals are non-renewable or finite in nature.
- The rate of formation of minerals is very slow in comparison to the rate of consumption. The geological processes of mineral formation takes place over millions of years.
- They are valuable and short-lived possessions of a country. Continued extraction leads to increasing costs as they are taken from greater depths along with decrease in quality.

The following are the three methods of conserving minerals.

- Minerals have to be used in a planned and sustainable manner.
- Improved technologies should be evolved to make use of low grade ores at low costs.
- Recycling of metals, using scrap metals and other substitutes would help in the conservation of minerals.
- Using better mining methods will also help to reduce waste

**42. Why is coal called the most important source of energy even today in India? Explain giving three reasons.**

**Answer:**

Coal is called the most important source of energy even today in India because:

- India has abundant reserves of coal which meets a greater part of our energy requirements.
- It is used for generation of electricity in thermal power plants.
- It is used as energy resources both for domestic and industrial purposes.

**LONG ANSWER TYPE QUESTIONS [5 MARKS]**



**43. Differentiate between metallic and non-metallic minerals with examples**

**Answer:**

The difference between metallic and non-metallic minerals are:

<b>Metallic Minerals</b>	<b>Non Metallic Minerals</b>
<ul style="list-style-type: none"><li>• Metallic minerals contain metal in the raw form.</li></ul>	<ul style="list-style-type: none"><li>• Non metallic minerals do not contain metals.</li></ul>
<ul style="list-style-type: none"><li>• These minerals are malleable and ductile.</li></ul>	<ul style="list-style-type: none"><li>• These minerals are neither malleable nor ductile.</li></ul>
<ul style="list-style-type: none"><li>• These metals are generally associated with igneous and metamorphic rocks.</li></ul>	<ul style="list-style-type: none"><li>• These metals are generally associated with sedimentary rocks.</li></ul>
<ul style="list-style-type: none"><li>• They are usually hard and have a shine of their own.</li></ul>	<ul style="list-style-type: none"><li>• They are not usually hard and have no shine of their own.</li></ul>
<ul style="list-style-type: none"><li>• Examples: iron, copper, bauxite and tin.</li></ul>	<ul style="list-style-type: none"><li>• Examples: salt, coal, mica and clay.</li></ul>

**44. Differentiate between ferrous and non-ferrous minerals with examples.**

**Answer:**

The differentiate between ferrous and non-ferrous minerals are:

<b>Ferrous minerals</b>	<b>Non-Ferrous minerals</b>
<ul style="list-style-type: none"><li>• Metallic minerals containing iron are called ferrous minerals.</li></ul>	<ul style="list-style-type: none"><li>• Metallic minerals that contain metals other than iron are non-ferrous minerals.</li></ul>
<ul style="list-style-type: none"><li>• They account for about three-fourths of the total value of production of metallic minerals in India.</li></ul>	<ul style="list-style-type: none"><li>• India's reserves and production of non-ferrous minerals is not very satisfactory</li></ul>
<ul style="list-style-type: none"><li>• Iron ore, manganese, chromite, tungsten, nickel and cobalt are examples of ferrous minerals.</li></ul>	<ul style="list-style-type: none"><li>• Copper, lead, tin, bauxite, gold are examples of non-ferrous minerals as they do not contain iron.</li></ul>

**45. Differentiate between conventional and non-conventional sources of energy with examples.**

**Answer:** (any five)

<b>Conventional Sources of Energy</b>	<b>Non-conventional Sources of Energy</b>
<ul style="list-style-type: none"><li>• Conventional sources of energy have been in use since time immemorial</li></ul>	<ul style="list-style-type: none"><li>• Non-conventional sources have been put to use in the recent past.</li></ul>
<ul style="list-style-type: none"><li>• Most of them, especially the fossil fuels are limited and exhaustible.</li></ul>	<ul style="list-style-type: none"><li>• They are inexhaustible, renewable resources.</li></ul>
<ul style="list-style-type: none"><li>• They emit smoke and ash on burning and cause environmental pollution.</li></ul>	<ul style="list-style-type: none"><li>• They are environment friendly as they do not cause pollution.</li></ul>
<ul style="list-style-type: none"><li>• As the supply of fossil fuels are limited they are expensive.</li></ul>	<ul style="list-style-type: none"><li>• As they are flow resources, freely found in nature in abundance other than atomic energy, they are less expensive.</li></ul>
<ul style="list-style-type: none"><li>• Simple mining as well as modern technology are involved in their production.</li></ul>	<ul style="list-style-type: none"><li>• Advanced scientific technology is involved in production.</li></ul>
<ul style="list-style-type: none"><li>• Coal, mineral oil, natural gas, and hydel power are examples of conventional sources of energy.</li></ul>	<ul style="list-style-type: none"><li>• Solar energy, wind energy, tidal energy, geothermal energy, biogas and energy from urban waste</li></ul>



**46. Why is there a pressing need for using renewable energy resources in India? Explain any five reasons.**

**Answer:**

The given statement can be justified by the following arguments.

- Increased consumption of energy resources has increased our dependence on fossil fuels like coal, oil and gas.
- There are uncertainties about the energy supplies in future because of their potential shortages.
- Use of non-renewable sources have serious consequences on the growth of national economy as they are getting expensive day by day.
- Above all, non-renewable sources pose a great threat in the form of pollution and other environmental issues.
- Solar, wind, tide, biomass and energy from waste material can thus, be proved advantageous in long run.

**47. 'Minerals are unevenly distributed in India.' Explain with three examples.**

**Answer:**

Minerals are unevenly distributed in India. This can be explained by giving the following examples.

- Peninsular rocks contain most of the reserves of coal, metallic minerals, mica and other non-metallic minerals.
- Sedimentary rocks on the western and eastern sides of the peninsula in Gujarat and Assam have rich petroleum deposits.
- Rajasthan, together with the peninsular region, has reserves of non-ferrous minerals.

**48. Why is conservation of mineral resources essential? Explain any three methods to conserve them.**

**OR**

**Explain the importance of conservation of minerals. Highlight any three measures to conserve them.**

**Answer:**

Minerals conservation is essential because:

- Minerals are non-renewable or finite in nature.
- The rate of formation of minerals is very slow in comparison to the rate of consumption. The geological processes of mineral formation takes place over millions of years.
- They are valuable and short-lived possessions of a country. Continued extraction leads to increasing costs as they are taken from greater depths along with decrease in quality.

The following are the three methods of conserving minerals.

- Minerals have to be used in a planned and sustainable manner.
- Improved technologies should be evolved to make use of low grade ores at low costs.
- Recycling of metals, using scrap metals and other substitutes would help in the conservation of minerals.
- Using better mining methods will also help to reduce wastage.

**49. How is energy a basic requirement for the economic development of the country? Explain with examples.**

**Answer:**

Energy is a basic requirement for the economic development of a country in the following ways.

- Every sector of the national economy—agriculture, industry, transport, commercial and domestic—needs inputs of energy.
- The economic development plans implemented since independence require increasing amounts of energy to remain operational.



- Energy is used for all activities. To provide light and heat, to propel vehicles and drive machinery in industries.
- For example, coal provides a large percentage of energy for country's economic needs, supply energy to industries as well as for domestic use.
- Also, natural gas is an important clean energy resource found in association with petroleum. It is used as a source of energy as an industrial raw material in petro-chemical industry.

**50. Why is energy needed? How can we conserve energy resources? Explain.**

**Answer:**

- Energy is needed for economic development.
- It is required for cooking.
- It is required to provide heat and light.
- It is used for running the machines in industries.
- It is used to propel the vehicles.
- It is essential for the development of agriculture, industry, transport for commercial and domestic purposes

We can save the energy by the following ways.

- Switching off the electrical appliances when not in use
- Use of energy efficient devices like CFL bulbs and appliances
- Car pooling or use of public transport instead of private vehicles
- Use of alternate sources of energy (non-conventional/renewable sources)

**51. Highlight the importance of petroleum. Explain the occurrence of petroleum in India.**

**Answer:**

The importance of petroleum is as follows:

- It provides fuel for heating and lighting.
- It provides lubricants for machinery and raw materials for many manufacturing industries.
- Petroleum refineries act as a 'nodal industry' for synthetic textiles, fertiliser and chemical industries. (any two)

The occurrence of petroleum in India:

- Most of the petroleum in India is found in anticlines and fault traps in the rock formations of the tertiary age.
- In regions of folding, anticlines or domes, it occurs where oil is trapped in the crest of the upfold.
- The oil-bearing layer is porous limestone or sandstone through which oil may flow. The oil is prevented from sinking or rising by intervening non-porous layers.

**52. 'Minerals are indispensable part of our lives.' Support the statement with examples.**

**Answer:**

Minerals are indispensable part of our lives. The statement can be supported giving the following examples.

- Almost everything we use, from a tiny pin to a towering building or a big ship, all are made from minerals. The railways lines and the tarmac (paving) of the roads, our implements and machinery too are made of minerals.
- Cars, buses, trains, aeroplanes manufactured from minerals are run by power resources derived from the earth.
- Even the food we eat contains minerals. Although our minerals intake represents only about 0.3% of our total intake of nutrients, they are so potent and so important that without them we would not be able to utilise the other 99.7% of foodstuffs.



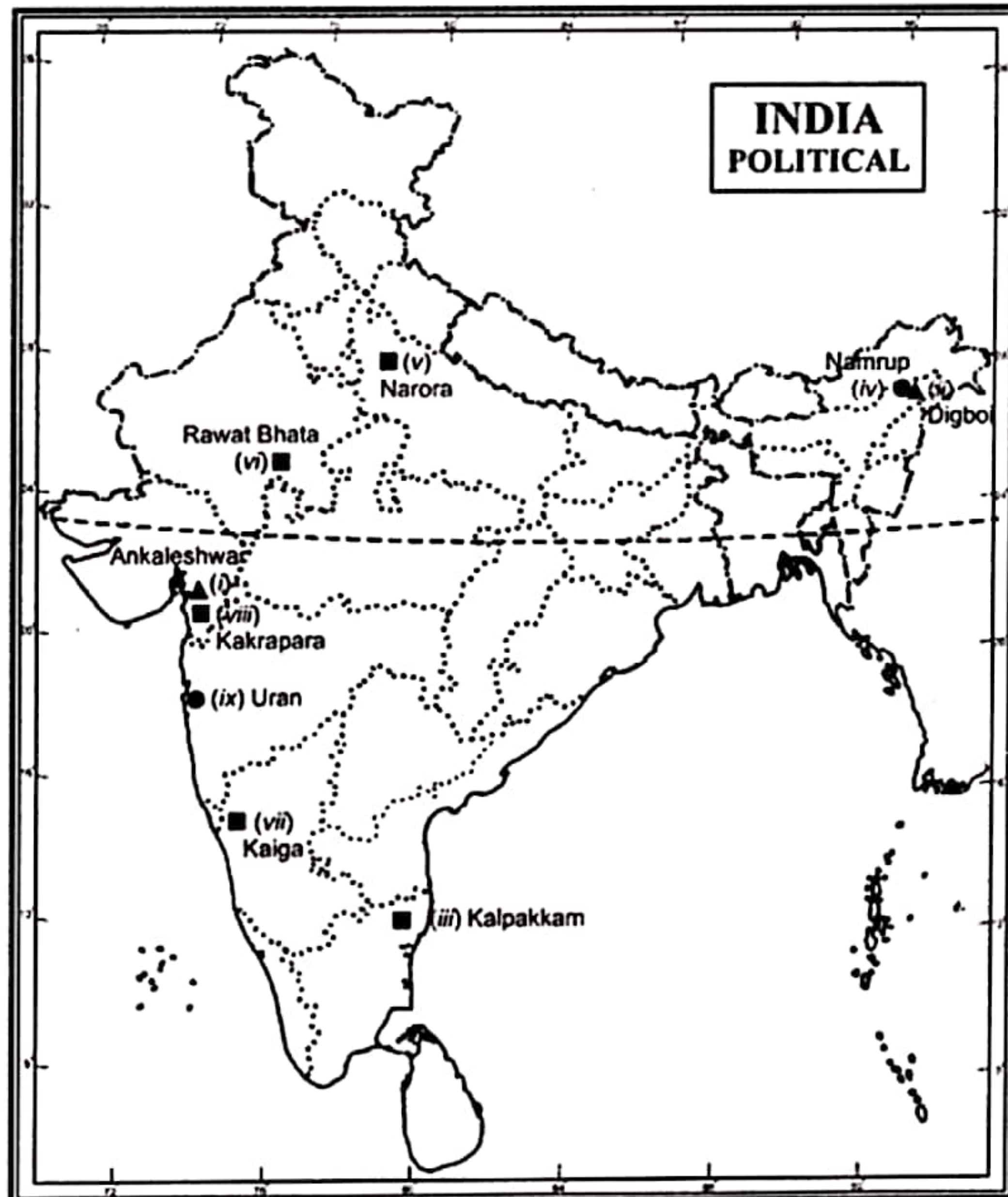
- Human beings have used minerals for their livelihood, decoration, festivities, religious and ceremonial sites. In short, all living things need minerals. Life processes cannot occur without minerals.
- Minerals like coal, petroleum, etc. are important sources of industrial and domestic energy. It is because of these energy resources that the wheel of development is moving.

### IMPORTANT MAP QUESTIONS

1. On the given outline map of India locate and label the following with appropriate symbols.

- (i) Ankaleshwar—Oil Fields
- (ii) Digboi—Oil Fields
- (iii) Kalpakkam—Nuclear power plant
- (iv) Namrup—Thermal power plant
- (v) Narora—Nuclear power plant
- (vi) Rawat Bhata—Nuclear power plant
- (vii) Kaiga nuclear plant
- (viii) Kakrapar—Nuclear power plant
- (ix) Uran—Thermal power station

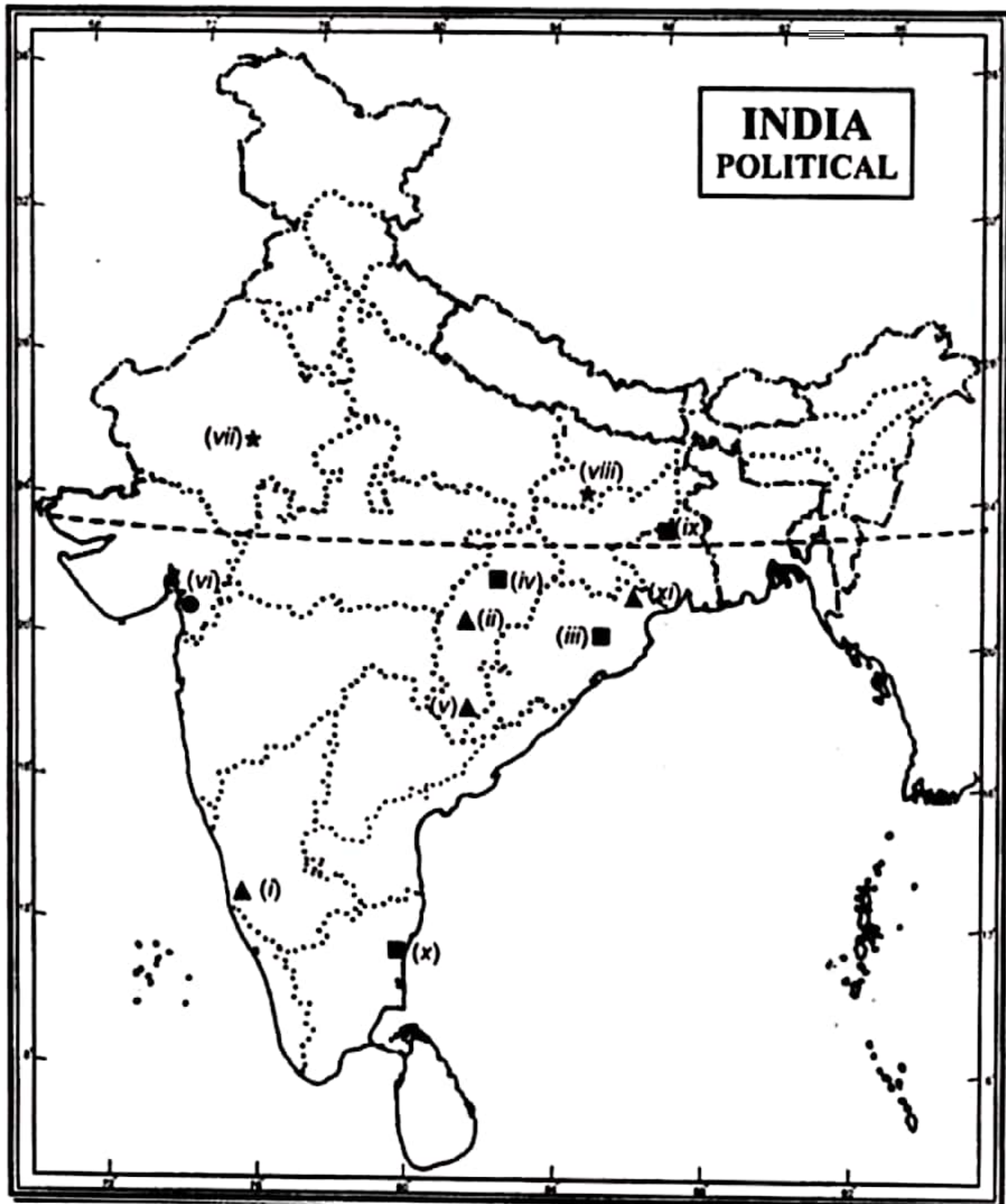
Answer:





2. Some features are marked on the given political outline map of India. Identify them with the help of the following information and write their correct names on the lines marked in the map.

- (i) Iron ore mine
- (ii) Coal mine
- (iii) Coal mine
- (iv) Coal Mine
- (v) Iron ore or mine
- (vi) Oil Field
- (vii) Mica Mine
- (viii) Mica Mine
- (ix) Coal mine
- (x) Coal Mine
- (xi) Iron or Mine





Answer:

