Very Short Answer Questions

Q. 1. What are rocks?

Ans. Rocks are the combinations of homogenous substances called minerals.

Q. 2. What is the role of a geologist in studying about a mineral?

Ans. A geologist is interested in the formation of minerals, their age and physical and chemical composition.

Q. 3. What is an 'ore'?

Ans. The term 'ore' is used to describe an accumulation of any mineral mixed with other elements. The mineral content of the ore must be in sufficient concentration to make its extraction commercially viable.

Q. 4. What are 'veins' and 'lodes'?

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

Q. 5. How are minerals formed in veins and lodes?

Ans. In most cases, they are formed when minerals in liquid molten and gaseous forms are forced upwards, through cavities towards the earth's surface. They cool and solidify as they rise.

Q. 6. Name the minerals obtained from veins and lodes.

Ans. Major metallic minerals like tin, copper, zinc and lead, etc. are obtained from veins and lodes.

Q. 7. In what form do minerals occur in sedimentary rocks?

Ans. In sedimentary rocks, minerals occur in the form of 'beds' and 'layers'.

Q. 8. How are minerals formed in sedimentary rocks?

Ans. They are formed as a result of deposition, accumulation and concentration in horizontal states.

Q. 9. Name the minerals formed in beds and layers.

Ans. Sedimentary minerals include iron ore, coal, gypsum, potash salt and sodium salt.

Q. 10. What are 'placer deposits'?

Ans. When minerals occur as alluvial deposits in sands of valley floors and the base of hills, then deposits are called 'placer deposits'.

Q. 11. Name minerals formed as ‘placer deposits’.

Ans. Gold, silver, tin and platinum are the most important ones among minerals formed as ‘placer deposits’.

Q. 12. Which minerals are derived from oceanic waters?

Ans. Common salt, magnesium and bromine are largely derived from ocean waters.

Q. 13. Which factors affect the economic viability of a reserve?

Ans. The concentration of minerals in the ore, the ease of extraction and closeness to the market play an important role in affecting the economic viability of a reserve.

Q. 14. What are ferrous minerals?

Ans. Minerals which contain iron-content in it are called ferrous minerals.

Q. 15. What is Magnetite?

Ans. Magnetite is the finest iron ore with a very high content of iron upto 70 per cent. It has excellent magnetic qualities, especially valuable in the electrical industry.

Q. 16. What is Haematite?

Ans. Haematite ore is the most important industrial iron ore in terms of the quantity used, but has a slightly lower iron content than magnetite, i.e., 50-60 per cent.

Q. 17. Name the two types of iron-ore found in India.

Ans. Magnetite and Haematite.

Q. 18. In which places of Odisha-Jharkhand belt is iron ore found?

Ans. High grade Hematite iron ore is found in Badampahar mines in Mayurbhanj and Kendujhar district and in Singhbhum District of Jharkhand, iron-ore is mined in Gua and Noamundi.

Q. 19. Where are Bailadila hills located and why are they called so?

Ans. Bailadila hills are located in the Bastar District of Chattisgarh. These Bailadila hills look like the ‘hump of an ox’, hence they are called so.

Q. 20. Name the countries to which iron-ore is exported from Bailadila hills.

Ans. Iron-ore from these mines is exported to Japan and South Korea via Vishakhapatnam port.

Q. 21. Name the regions having iron-ore deposits in Karnataka.

Ans. Bellary, Chitradurga, Chikmaglur and Tumkur are the locations of iron-ore in Karnataka.

Q. 22. Where are ‘Kudremukh’ mines located?

Ans. The Kudremukh mines located in the Western Ghats of Karnataka are a 100 per cent export unit. Kudremukh deposits are known to be one of the largest in the world. It is one of the largest iron ore mines.

Q. 23. Why are they called ‘Kudremukh’ mines?

Ans. ‘Kudre’ in Kannada means horse. The highest peak in Western Ghats of Karnataka resembles the face of a horse.

Q. 24. What do you know about iron-ore deposits of the Maharashtra Goa belt?

Ans. This belt includes the state of Goa and Ratnagiri District of Maharashtra. Though the ores are not of a very high quality, yet they are efficiently exploited and exported through Marmagao port.

Q. 25. What are the uses of Manganese?

Ans. Manganese is mainly used in the manufacturing of steel and ferro-manganese alloy. It is also used in manufacturing of bleaching powder, insecticides and paints.

Q. 26. Which state is the major manganese producing state of India?

Ans. Orissa is the largest producer of Manganese ore in India. Other producer states are Madhya Pradesh and Karnataka.

Q. 27. What are the non-ferrous minerals produced by India?

Ans. India’s reserves and production of non-ferrous minerals is not very satisfactory. However, these minerals include copper, bauxite, lead, zinc and gold.

Q. 28. What are the uses of copper?

Ans. Being malleable, ductile and a good conductor, copper is mainly used in electrical cables, electronics and chemical industries.

Q. 29. Name the leading producer of copper.

Ans. Balaghat mines in Madhya Pradesh, Singhbhum district of Jharkhand and the Khetri Mines in Rajasthan are the leading producers of copper in India.

Q. 30. How is aluminium obtained?

Ans. Bauxite, a clay like, substance that has alumina in it, later forms aluminium.

Q. 31. What is the importance of aluminium?

Ans. Aluminium is an important metal because it combines the strength of metals such as iron with extreme lightness and also with good conductivity and great malleability.

Q. 32. Which is the largest producing state of bauxite?

Ans. Odisha is the largest bauxite producing state in India. Panchpatmali deposits in Koraput district are the most important bauxite deposits of Odisha.

Q. 33. Which mineral can split easily into thin sheets?

Ans. Mica is a mineral made up of a series of plates or leaves.

Q. 34. What are the uses of mica?

Ans. Due to its excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage, mica is one of the most indispensable minerals used in electric and electronic industries.

Q. 35. Name the mica deposits regions of India.

Ans. (i) Chotanagpur Plateau, Koderma, Gaya-Hazaribagh belt of Jharkhand.

(ii) Ajmer in Rajasthan.

(iii) Nellore in Andhra Pradesh.

Q. 36. Name the major limestone producing states of India.

Ans. Andhra Pradesh, Madhya Pradesh, Rajasthan, Gujarat and Tamil Nadu are the major limestone producing states of India.

Q. 37. What is the impact of mining on the health of miners?

OR

How does mining affect the health of miners? [CBSE (F) 2016]

Ans. (i) The dust and various 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.

Q. 38. What is the impact of mining on the environment?

Ans. (i) The water sources in the region get contaminated due to mining.

(ii) Dumping of waste and slurry leads to degradation of land, soil and increase in stream and river pollution.

Q. 39. What can be done to prevent mining from becoming a 'killer industry'?

Ans. Stricter safety regulations and implementation of environmental laws are essential to prevent mining from becoming a killer industry.

Q. 40. What is the result of continued extraction of ores?

Ans. Continued extraction of ores leads to increasing costs as mineral extraction comes from greater depths along with reduction in quality.

Q. 41. How can we conserve minerals?

Ans. (i) Use of minerals in a planned and sustainable manner.

(ii) Improved technology can allow to use low grade ores at low costs.

(iii) Recycling of metals.

Q. 42. Why do we need energy?

OR

Why is energy needed? Write one reason. [CBSE (Comptt.) 2017]

Ans. (i) It is needed to cook, to provide light and heat.

(ii) To propel vehicles.

(iii) To drive machinery in industries.

Q. 43. What are the conventional sources of energy?

Ans. It includes firewood, cattle dung cake, coal, petroleum, natural gas and electricity.

Q. 44. What do non-conventional sources include?

Ans. Non-conventional sources include solar, wind, tidal, geothermal, bio-gas and atomic energy.

Q. 45. What are the common sources of energy in rural India?

Ans. Firewood and cattle dung cakes are the most common sources of energy in rural India.

Q. 46. What problems do we face with the continued use of sources of energy in rural India?

Ans. (i) Continuation of these is increasingly becoming difficult due to decreasing forest area.

(ii) Using dung cakes too is being discouraged because it consumes most valuable manure which could be used in agriculture.

Q. 47. What are the uses of coal?

Ans. Coal is used for power generation to supply energy to industry as well as domestic needs.

Q. 48. How is coal formed?

Ans. Coal is formed due to the consumption of plant material over millions of years.

Q. 49. Name the types of coal found in India.

Ans. (i) Peat

(ii) Lignite or brown coal

(iii) Bituminous

(iv) Anthracite

Q. 50. What kind of coal is peat?

Ans. Decayed plants in swamps produce peat, which has low carbon and high moisture content and low heating capacity.

Q. 51. What is lignite?

Ans. Lignite is a kind of coal which is called brown coal. It is basically used for generation of electricity since it has low coal content.

Q. 52. How is bituminous coal formed?

Ans. Coal that has been buried deep and subjected to increased temperature is bituminous coal. It is metallurgical coal, which has special value for smelting iron in blast furnaces.

Q. 53. Where do we find Gondwana age coal in India?

Ans. In Damodar Valley, West Bengal, Jharkhand, Jharia, Raniganj and Bokaro. The river valleys of the Godavari, the Mahanadi, the Son and the Wardha also contain these coal deposits.

Q. 54. Where does tertiary coal occur in India?

Ans. Tertiary coal occurs in the North Eastern States of Meghalaya, Assam, Arunachal Pradesh and Nagaland.

Q. 55. What are the uses of mineral oil?

Ans. It provides fuel for heat and lighting, lubricants for machinery and raw material for a number of manufacturing industries.

Q. 56. What is the role of petroleum refineries in a ‘nodal industry’?

Ans. Petroleum are used for synthetic textiles, fertilisers and numerous chemical industries.

Q. 57. Name the oil bearing regions of India.

Ans. Mumbai high, Gujarat, Ankleshwar and Assam, which is the oldest oil producing state produces it in Digboi, Naharkatiya and Moran-Hugrijan.

Q. 58. In which region is natural gas found in India?

Ans. Natural gas is found in Krishna-Godawari basin, Mumbai high, Gulf of Cambay and Andaman and Nicobar Islands.

Q. 59. Who are the key users of natural gas?

Ans. The power and fertiliser industries are the key users of natural gas.

Q. 60. What are the full forms of CNG and LPG?

Ans. CNG: Compressed natural gas, used in Vehicles. LPG: Liquified Petroleum Gas, used as cooking medium.

Q. 61. Why is electricity considered as an index to development.

Ans. Electricity has such a wide range of applications in today's world that its per capita consumption is considered as an index to development.

Q. 62. In which two main ways is electricity generated?

Ans. (i) By running water, which drives hydro turbines to generate hydroelectricity.

(ii) By burning fuels such as coal, petroleum and natural gas to drive turbines to produce thermal power.

Q. 63. How is nuclear or atomic energy obtained?

Ans. Nuclear Energy is obtained by altering the structure of atoms. When such an alteration is made, much energy is released in the form of heat and this is used to generate electric power.

Q. 64. Where do in India we find atomic minerals?

Ans. Uranium and thorium are available in Jharkhand and Aravalli range of Rajasthan and Monazite sands of Kerala are rich in thorium.

Q. 65. Name the best variety of iron-ore found in India. [CBSE (AI) 2017]

Ans. Best variety of Iron Ore in India: Magnetite

Q. 66. What is the effect of rising prices of oil and gas?

Ans. Rising prices of oil and gas and their potential shortages have raised uncertainties about the security of energy supply in future which, in turn, has serious repercussions on the growth of national economy.

Q. 67. What are the renewable sources of energy?

Ans. Solar energy, wind, tide, biomass and energy from waste material are all renewable sources of energy and are also called non-conventional sources of energy.

Q. 68. How is solar energy trapped and used?

Ans. Photovoltaic technology converts sunlight directly into electricity.

Q. 69. What are the advantages of solar energy in India?

Ans. It is expected that use of solar energy will be able to minimise the dependence of rural households on firewood and dung cakes which, in turn, will contribute to environment conservation and adequate supply of manure in agriculture.

Q. 70. What is India's status in the use of wind power?

Ans. India now ranks as a 'wind super power' in the world.

Q. 71. Which state in India has the largest wind farm clusters?

Ans. The largest wind farm cluster is located in Tamil Nadu from Nager coil to Madurai.

Q. 72. Which other states of India are well known for effective use of wind energy?

Ans. Andhra Pradesh, Karnataka, Gujarat, Kerala, Maharashtra and Lakshadweep have important wind farms.

Q. 73. What is used to produce biogas?

Ans. Shrubs, farm waste, animals and human waste are used to produce biogas for domestic consumption in rural areas.

Q. 74. What are the two benefits of Gobar Gas Plants for the farmers?

Ans. Twin benefits to the farmers are:

(i) Energy and

(ii) Improved quality of manure.

Q. 75. What are the benefits of biogas?

Ans. Biogas is by far the most efficient use of cattle dung. It improves the quality of manure and also prevents the loss of trees and manure due to burning of fuel wood and cow dung cakes.

Q. 76. In which region is tidal energy generated in India?

Ans. In India, the Gulf of Kachchh, provides ideal conditions for utilising tidal energy. A 900 MW tidal energy power plant is set up here by the National Hydropower Corporation.

Q. 77. How is Geo-thermal energy produced?

Ans. Geothermal Energy refers to the heat and electricity produced by using the heat from the interior of the earth.

Q. 78. Why does geothermal energy exist in the earth?

Ans. Geothermal energy exists because the earth grows progressively hotter with increasing depth, where the geothermal gradient is high, high temperature are found at shallow depth.

Q. 79. Which are the two experimental projects of geothermal energy in India?

Ans. (i) Parvati Valley near Manikaran in Himachal.

(ii) Puga Valley in Ladakh.

Q. 80. How can we say that energy is a basic requirement for economic development?

Ans. Energy is a basic requirement for economic development as every sector of the national economy, agriculture, industry, transport, commercial and domestic needs inputs of energy. The economic development plans since independence require energy for operation.

Q. 81. What are the twin measures of sustainable energy?

Ans. (i) Promotion of energy conservation.

(ii) Increased use of renewable energy.

Q. 82. What are your duties as a concerned citizen to save energy?

Ans. (i) By using public transport system instead of individual vehicles.

(ii) Switching off electricity when not in use.

(iii) Using power saving devices.

(iv) Using non-conventional sources of energy.

Q. 83. Why is copper mainly used in electrical cables and electronic industries? [CBSE Sample Paper 2016]

Ans. Copper is mainly used because of being malleable, ductile and a good conductor of heat and electricity.

Q. 84. Why are there a wide range of colours, hardness, crystal forms, lustre and density found in minerals? [CBSE Delhi 2016]

Ans. The ranges found in minerals are due to: Physical and Chemical conditions.

Q. 85. How do minerals occur in igneous and metamorphic rocks? [CBSE Delhi 2016, CBSE (AI) 2017]

Ans. Occurrence of minerals: In igneous and metamorphic rocks minerals may occur in cracks, crevices, faults and joints.

Q. 86. How do minerals occur in sedimentary rocks? [CBSE Delhi 2016]

Ans. Occurrence of minerals in sedimentary rocks: In sedimentary rocks, a number of minerals occur in beds or layers. They have been formed as a result of deposition, accumulation and concentration in horizontal strata.

Q. 87. Why should the use of cattle cake as fuel be discouraged? [CBSE (AI) 2016]

Ans. (i) It creates pollution.

(ii) It consumes most valuable manure which could be used in agriculture.

Q. 88. How are 'Gobar gas plants' beneficial to the farmers? [CBSE (AI) 2016]

Ans. 'Gobar Gas Plants' are beneficial to the farmers in the form of energy and improved quality of manure.

Short Answer Questions

Q. 1. Why is conservation of mineral resources essential? Explain any three reasons.
[CBSE (Comp) 2017]

Ans. Conservation of mineral resources is essential because:

(i) Minerals are indispensable part of our life.

(ii) It is available in limited quantity.

(iii) Takes millions of years to get formed.

(iv) They are finite and nonrenewable resources.

(v) Continued extraction leads in increasing costs.

Q. 2. How can minerals be conserved?

Ans. (i) We must make use of minerals in a planned and sustainable manner.

(ii) Improved technologies need to be constantly evolved to allow the use of low grade ores at low cost.

(iii) Recycling of metals, using scrap metals and other substitutes are steps in conserving mineral resources for the future.

Q. 3. What is the importance of ferrous minerals?

Ans. Importance of ferrous minerals:

(i) They account for about three-fourth of the total value of the production of metallic minerals.

(ii) They provide a strong base for the development of metallurgical industries.

(iii) India also exports substantial quantities of ferrous minerals after meeting the internal demands.

Q. 4. Differentiate between ferrous and non-ferrous minerals, with examples.
[CBSE (F) 2017]

Ans. Difference between ferrous and nonferrous minerals:

Ferrous Minerals(Containing Iron Context)	Ferrous Minerals(Non-Iron Context)
(i) Ferrous minerals account for about three fourth of the total value of metallic minerals.	(i) India's reserves and production of nonferrous minerals is not very satisfactory.

(ii) They provide a strong base for the development of metallurgical industries.	(ii) They play a vital role in a number of metallurgical engineering electrical industries.
(iii) Iron, manganese etc. are the examples.	(iii) Bauxite, lead, gold etc. are the examples.

Q. 5. What types of iron ore are found in India?

Ans. India is rich in good quality iron ores.

(i) Magnetite: It is the finest iron ore with a very high content of iron up to 70 per cent. It has excellent magnetic qualities and is valuable in the electrical industry.

(ii) Haematite: It is the most important industrial iron ore in terms of the quantity used but has a slightly lower iron content than magnetite, i.e., 50 per cent.

Q. 6. How is mineral oil found?

Ans. It is an odorless and colourless oil that's made from petroleum as a by product of the distillation of petroleum to produce gasoline. In regions of folding, anticlines or domes, petroleum occurs where oil is trapped in the crest of the unfold. The oil bearing layer is a porous limestone or sandstone through which oil may flow.

Q. 7. What are the various uses of petroleum?

Ans. (i) Petroleum or mineral oil is the next major energy resource in India after coal.

(ii) It provides fuel for heat and lighting, lubricants for machinery and raw material for a number of manufacturing industries.

(iii) Petroleum refineries act as nodal industry for synthetic textile, fertilizer and numerous chemical industries.

Q. 8. Give a brief description of the HVJ pipeline.

Ans. (i) The 1,700-km long Hazira–Vijaipur–Jagdishpur cross country gas pipeline links Mumbai High and Bassien with fertilizer, power and industrial complexes in Western and Northern India.

(ii) This artery has provided an impetus to India's gas production.

(iii) The power and fertilizer industries are the key users of natural gas.

Q. 9. How is nuclear energy or atomic energy produced?

Ans. Nuclear energy is obtained by altering the structure of an atom.

When such an alteration is made, much energy is released in the form of heat and this is used to generate electricity.

Uranium and thorium, which are available in Jharkhand and the Aravali ranges of Rajasthan, are used for generating atomic or nuclear power.

The Monazite sands of Kerala is also rich in thorium.

Q. 10. What is the need of using non-conventional sources of energy?

Ans. (i) The growing consumption of energy has resulted in the country becoming increasingly dependent on fossil fuels such as coal, oil and gas.

(ii) Rising prices of oil and gas and their potential shortages have raised uncertainties about the security of energy supply in future, which has serious repercussions on the growth of the national economy.

(iii) Increasing use of fossil fuels also causes serious environmental problems.

Hence, there is a primary need to use renewable energy sources like solar, wind, tidal, biomass and energy from waste material. They are called non-conventional sources of energy.

Q. 11. State the difference between a mineral and a rock.

Ans. Mineral: A mineral is a homogeneous naturally occurring substance with a definable internal structure.

For example: Limestone, cuprite, etc.

Rock: A rock is an aggregate of different minerals. For example: The rock granite contains the minerals—quartz, feldspar and mica.

Q. 12. What is Rat-hole mining?

Ans. Most of the minerals in India are nationalised and they can be extracted with due permission of the government. But in most of the tribal areas of north-east India, minerals are owned by individuals or communities. Mining of minerals like coal, iron ore, limestone, dolomite, etc., is done by family members in the form of a long narrow tunnel, known as ‘Rat-hole Mining’.

Q. 13. Describe any three characteristics of ‘Odisha-Jharkhand belt’ of iron ore in India. [CBSE Delhi 2017]

Ans. Odisha- Jharkhand Belt:

(i) In Odisha high grade hematite ore is found.

(ii) It is found in Badampahar mines in the Mayurbhauj and Kendujhar districts.

(iii) In the adjoining Singbhum district of Jharkhand hematite iron ore is mined in Gua and Noamundi.

Q. 14. Which factors affect the economic viability of a reserve?

Ans. (i) The concentration of mineral in the ore.
(ii) The ease of extraction.
(iii) Closeness to the market.

Q. 15. What is biogas? Where in India are biogas plants set up and why?

Ans. (i) Shrubs, farm waste, animal and human waste are used to produce biogas.

(ii) Biogas plants are set up at municipal, cooperative and individual levels.

(iii) These plants are set up in rural areas since they provide twin benefits to the farmer—

a. They provide energy to the farmer.
b. Improved quality of manure is available.

Q. 16. What are rocks? How are they associated with minerals?

Ans. (i) Rocks are combinations of homogeneous substances called minerals.

(ii) Some rocks like limestone, consist of single minerals only, but the majority of the rocks consists of several minerals in varying proportions.

(iii) Although over 2,000 minerals have been identified, only a few are abundantly found in most of the rocks.

Q. 17. What is the role of a geographer and a geologist in the study of minerals?

Ans. (i) Geographers study minerals as part of the earth's crust for a better understanding of landforms. The distribution of mineral resources and associated economic activities are of interest to geographers.

(ii) A geologist is interested in the formation of minerals, their age and physical and chemical composition.

Q. 18. What are 'placer deposits'?

Ans. Certain minerals may occur as alluvial deposits in sands of valley floors and the base of hills.

The deposits are called 'placer deposits', and generally contain minerals, which are not corroded by water.

Gold, silver, tin and platinum are the most important among such minerals.

Q. 19. What are the chief characteristics of bauxite?

Ans. Though several ores contain aluminium, it is from bauxite that a clay-like substance alumina and later aluminium are obtained.

Bauxite deposits are formed by the decomposition of a wide variety of rocks rich in aluminium silicates.

Aluminium is an important metal because it combines the strength of metals such as iron with extreme lightness and also with good conductivity and great malleability.

Q. 20. What are the chief characteristics of mica?

Ans. (i) It is a mineral made up of a series of plates or leaves.

(ii) It splits easily into thin sheets.

(iii) These sheets can be so thin that a thousand plates can be layered into a mica sheet of a few centimetres high.

(iv) Due to its excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage, mica is one of the most indispensable minerals used in electric and electronic industries.

Q. 21. Describe any three characteristics of Bellary-Chitradurga, Chikmaglur-Tumkur iron- ore belt in India. [CBSE (F) 2017]

Ans. Durg-Bastar-Chandrapur Belt

It lies in Chhattisgarh and Maharashtra.

(i) Very high grade hematite's are found in the famous Bailadila range of hills in the Bastar district of Chhattisgarh.

(ii) The range of hills comprises of 14 deposits of super high grade hematite iron ore.

(iii) It has the best physical properties needed for steel making. Iron ore from these mines is exported to Japan and South Korea via Vishakhapatnam port.

Q. 22. Where do we find limestone and what are its uses?

Ans. (i) It is found in association with rocks composed of calcium carbonates or calcium and magnesium carbonates.

(ii) It is found in sedimentary rocks of most geological formations.

(iii) Limestone is the basic raw material for the cement industry. It is essential for smelting iron ore in the blast furnace.

Q. 23. What are the uses of energy resources?

Ans. (i) Energy is required for all activities. It is needed to cook, to provide light and heat.

(ii) It is used to propel vehicles.

(iii) It is also used to drive machinery in industries.

Q. 24. What are the various uses of coal?

Ans. (i) In India, coal is the most abundantly available fossil fuel.

(ii) It provides a substantial part of the nation's energy needs.

(iii) It is used for power generation, to supply energy to industry as well as for domestic needs. India is highly dependent on coal for meeting its commercial energy requirements.

Q. 25. Which State is the largest producer of manganese in India? Mention any two uses of manganese. [CBSE (Comp) 2017]

Ans. Odisha is the largest producer of manganese:

Uses of manganese in India:

(i) It is used in manufacturing of steel and ferro- manganese alloy.

(ii) These alloys are strong and are used in making giant machines.

(iii) It is also used in manufacturing bleaching powder.

(iv) It is also used in insecticides.

(v) It is also used in manufacturing of paints.

Q. 26. In which two geological ages did coal occur in India?

Ans. In India, coal occured in two geological ages—Gondwana and tertiary deposits.

(i) Gondwana is a little over 200 million years in age. The major resources of Gondwana coal, which are metallurgical coal, are located in Damodar Valley (West Bengal, Jharkhand). Jharia, Raniganj, Bokaro are important coalfields.

(ii) Tertiary deposits are only 55 million years old. Tertiary coals occur in the north-eastern states of Meghalaya, Assam, Arunachal Pradesh and Nagaland.

Q. 27. What are the uses of petroleum or mineral oil in India?

Ans. Petroleum is also an important energy source in India after coal.

It provides fuel for heat and lighting, lubricants for machinery and raw materials to a number of manufacturing industries. Mineral oil is used in lotions and moisturiser.

Petroleum refineries act as a 'nodal industry' for synthetic textile, fertiliser and numerous chemical industries.

Q. 28. What are the uses or importance of natural gas as a fuel?

Ans. (i) It is an important and clean energy resource found in association with or without petroleum.

(ii) It is used as a source of energy as well as an industrial raw material in the petrochemical industry.

(iii) As a source of energy, it is used in vehicles as Compressed Natural Gas (CNG). For cooking purposes, it is used as liquefied petroleum gas (LPG).

(iv) It is considered an environment friendly fuel because of low carbon-dioxide emissions.

Q. 29. Why do we need to conserve mineral resources?

Ans. (i) Mineral resources are basic requirements for economic development.

(ii) Every sector of the national economy— agriculture, industry, transport, commercial and domestic — needs inputs of mineral resources.

(iii) The economic development plans implemented since independence necessarily required increasing amounts of minerals to remain operational.

As a result, consumption of minerals in all forms has been steadily rising all over the country and we need to conserve it for the future.

Q. 30. How is mining activity injurious to the health of the miners and environment? Explain. [CBSE, 2015]

OR

What are the hazards of mining?

Ans. (i) The dust and various fumes inhaled by miners make them vulnerable to pulmonary diseases.

(ii) The risk of collapsing mine roofs, inundation and fires in coal mines are a constant threat to miners.

(iii) The water resources in the regions 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. 31. Give a short account of the major iron ore belts in India.
[CBSE Sample Question 2016]

Ans. Odisha-Jharkhand belt

Durg-Bastar-Chandrapur belt

Bellary-Chitradurga-Chikkamagaluru-Tumakuru belt

Q. 32. '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.
[CBSE (AI) 2016]

OR

There is an urgent need to develop a sustainable path of energy development. Give two broad measures for it. As concerned citizens, how can you help to conserve energy?
[CBSE Sample Question 2016]

Ans. (i) "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."

(ii) Energy sector of the National economy, agriculture, industry, transport, commercial and domestic needs input of energy.

(iii) With increasing population and changing lifestyles, energy consumption is increasing very fast.

(iv) We are not self-sufficient in energy according to demands therefore judicious use of limited resources is essential.

Three measures to solve this burning problems are:

(i) We can do one bit by using public transport systems instead of individual vehicle.

(ii) Switching off electricity when not in use.

(iii) Using power saving devices or using non-conventional sources of energy.

(iv) Checking the power equipments regularly can help in saving of energy.

Q. 33. "India is an important iron and steel producing country in the world. Yet we are not able to perform to our full potential." Suggest and explain any three measures to get full potential. [CBSE (F) 2016]

Ans. India is an important iron and steel producing country in the world yet, we are not able to perform to our full potential largely due to:

(i) High costs and limited availability of coking coal.

(ii) Lower productivity of labour.

(iii) Irregular supply of energy, and

(iv) Poor infrastructure.

Q. 34. 'Natural gas is an important source of clean energy'. Support the statement with examples. [CBSE Sample Question 2017]

Ans. Natural gas

In a power deficient country, natural gas is a precious gift.

(i) It can be used as a source of energy. It takes less time to build a power plant based on natural gas.

(ii) It can be used as an industrial raw material in petro-chemical industry.

(iii) It can be used in building the fertilizer plants and thereby encouraging the use of fertilizers. It can boost agricultural production.

(iv) Through easy transportation of pipelines, its utility is further increased

(v) Use of Compressed Natural Gas (CNG) for vehicles to replace liquid fuels is gaining wide popularity in the country.

Q. 35. Discuss the hazards of mining on the life of miners and on environment. [CBSE Sample Question 2017]

Ans. (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. Dumping of waste and slurry leads to degradation of land, soil and increase in stream and river pollution.

Q. 36. How we have to adopt a cautious approach for the judicious use of our limited energy resources? Explain. [CBSE (Comp) 2017]

Ans. Steps to adopt for judicious use of our limited energy resources:

(i) Use public transport.

(ii) Switch off electricity when not in use.

(iii) Use power saving devices.

(iv) Use non-conventional sources of energy.

Long Answer Questions

Q. 1. How are bauxite deposits formed? In which regions is bauxite found?

Ans. Bauxite deposits are formed by the decomposition of a wide variety of rocks, rich in aluminium silicates.

It is an important metal because it combines the strength of metals such as iron with extreme lightness, with good conductivity.

They are mainly found in Amarkantak plateau, Maikal hills and the plateau region of Bilaspur.

Odisha is the largest bauxite producing state. Panchpatmali deposits in Koraput district (Odisha) are the most important bauxite deposits in the state.

Q. 2. How is tidal energy produced?

Ans. Oceanic tides can be used to generate electricity.

Floodgate dams are built across inlets.

During high tide, water flows into the inlet and gets trapped when the gate is closed.

After the tide falls outside the floodgate, the water retained by the floodgate flows back to sea via a pipe that carries it through a power-generating turbine.

Q. 3. Why should we use renewable energy resources? Explain with arguments. [CBSE (F) 2017]

Ans. We should use renewable energy resources because of the:

(i) Exhaustibility of nonrenewable resources.

(ii) Long years of geological formation of nonrenewable resources.

(iii) Causes less pollution.

(iv) Available in abundance.

(v) Environmental friendly.

(vi) Strong dependence on fossil fuels such as coal, oil and gas is a threat to our environment.

(vii) Rising prices of oil and gas and their potential shortages.

(viii) Uncertainties about the security of energy supply in future.

(ix) There is a pressing need to use renewable energy sources like solar energy, wind, tide, biomass and energy from waste material.

Q. 4. In what forms do minerals occur?

Ans. Minerals generally occur in these forms:

(i) Igneous and metamorphic rocks: Minerals may occur in the cracks, crevices, faults or joints. The smaller occurrences are called veins or lodes. In most cases, they are formed when minerals in liquid, molten and gaseous forms are forced upward through cavities towards the earth's surface. They cool and solidify as they rise.

Example: Metallic minerals like tin, copper, zinc and lead, etc., are obtained from the veins and lodes.

(ii) In sedimentary rocks: A number of minerals occur in beds or layers. They have been formed as a result of deposition, accumulation and concentration in horizontal strata. Coal and some forms of iron ore and sedimentary minerals include gypsum, potash salt and sodium salt.

(iii) Another mode of formation involves the decomposition of surface rocks, and the removal of soluble constituents, leaving a residual mass of weathered material containing ores. Bauxite is formed in this way.

(iv) Certain minerals may occur as alluvial deposits in the sands of valley floors and the base of hills. These deposits are called 'placer deposits' and generally contain minerals which are not corroded by water.

Example: Gold, silver, tin and platinum are most important among such minerals.

(v) The ocean waters contain vast quantities of minerals, but most of these are too widely diffused to be of economic significance.

Example: Common salt, magnesium and bromine are largely derived from the ocean waters. The ocean beds, too, are rich in manganese nodules.

Q. 5. What are the major iron ore belts in India?

Ans. (i) *Odisha–Jharkhand Belt:* In Odisha, high grade haematite ore is found in Badampahar mines in the Mayurbhanj and Kendujhar districts. In the adjoining Singhbhum district of Jharkhand, haematite iron ore is mined in Gua and Noamundi.

(ii) *Durg–Bastar–Chandrapur Belt:* It lies in Chhattisgarh and Maharashtra. Very high grade haematite are found in the famous Bailadila range of hills in the Bastar district of Chhattisgarh. It has the best physical properties needed for steel making; iron ore from these mines is exported to Japan, South Korea via the Vishakhapatnam port.

(iii) *Bellary–Chitradurga-Belt Chikkamagaluru:* Tumakuru belt in Karnataka has large reserves of iron ore. The Kudermukh mines located in the western ghats of Karnataka are a 100 per cent export unit. Kudermukh deposits are known to be one of the largest in the world.

(iv) *Maharashtra–Goa belt:* It includes the state of Goa and Ratnagiri district of Maharashtra. Though the ores are not of very high quality, yet they are efficiently exploited. Iron ore is exported through the Marmagao port.

Q. 6. What are the four main types of coal found in India?

Ans. (i) Anthracite: It is the highest quality hard coal. It is found in parts of Jammu and Kashmir.

(ii) Bituminous: This coal has been buried deep and subjected to increased temperatures. It is the most popular coal in commercial use. Metallurgical coal is high grade bituminous coal which has a special value for smelting iron in blast furnaces.

(iii) Lignite: It is a low grade brown coal, which is soft with high moisture content. The lignite reserves are in Neyveli in Tamil Nadu. It is used for the generation of electricity.

(iv) Peat: Decaying plants in swamps produce peat, which has low carbon content and high moisture content resulting in low heating capacity.

Q. 7. Differentiate between hydel power and thermal power.

Ans. Hydel power:

(i) It is generated by fast flowing water.

(ii) It uses renewable resources.

(iii) Initially, its cost was high but later it became cheaper.

(iv) It does not cause any pollution.

Example: Bhakra Nangal project.

Thermal power:

(i) It is generated by using coal, petroleum and natural gas.

(ii) It uses all non-renewable resources.

(iii) Its cost is very high and its production is expensive.

(iv) It does cause pollution.

Example: Badarpur thermal plant of Delhi.

Q. 8. How are minerals formed in sedimentary rocks?

Ans. In sedimentary rocks, a number of minerals occur in beds or layers.

They have been formed as a result of deposition, accumulation and concentration in horizontal strata.

Coal and some forms of iron ore have been concentrated as a result of long periods under great heat and pressure.

Another group of sedimentary minerals includes gypsum, potash salt and sodium salt. These are formed as a result of evaporation especially in arid regions.

Q. 9. "India is fortunate to have fairly rich and varied mineral resources. However, these are unevenly distributed." Comment.

OR

''Minerals are unevenly distributed in India.'' Support the statement with examples.
[CBSE (AI) 2017]

Ans. Minerals are unevenly distributed in various regions of India.

Peninsular rocks contain most of the reserves of coal, metallic minerals, mica and many other non-metallic minerals.

Sedimentary rocks on the western and eastern flanks of the peninsula, in Gujarat and Assam have most of the petroleum deposits.

Rajasthan with the rock systems of the peninsula, has reserves of many non-ferrous minerals.

The vast alluvial plains of North India are almost devoid of economic minerals.

Q. 10. What are the uses of copper? Give distribution of copper in India.

Ans. (i) India is critically deficient in the reserve and production of copper.

(ii) Being malleable, ductile and a good conductor, copper is mainly used in electrical cables, electronics and chemical industries.

(iii) The Balaghat mines in Madhya Pradesh produce 52 per cent of India's copper.

(iv) The Singhbhum district of Jharkhand is also a leading producer of copper.

(v) The Khetri mines in Rajasthan are also famous for copper reserves.

Q. 11. In which regions does petroleum occur in India?

Ans. Most of the petroleum occurrences in India are associated with 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 rising or sinking by intervening non-porous layers.

Petroleum is also found in fault traps between porous and non-porous rocks.

Q. 12. Which regions are known for petroleum production in India?

Ans. (i) About 63 per cent of India's petroleum production is from Mumbai High.

(ii) 18 per cent from Gujarat and 16 per cent from Assam.

(iii) There are three major offshore fields of western India, where oil is produced.

(iv) Ankleshwar is the most important oil field of Gujarat.

(v) Assam is the oldest oil producing state of India. Digboi, Naharkatiya and Moran-Hugrijan are the important oilfields in the state.

Q. 13. India now ranks as a 'wind superpower of the world.' Is it true?

Ans. India is one of the world's wind superpowers at present.

The largest wind farm cluster is located in Tamil Nadu from Nagercoil to Madurai.

Apart from these, Andhra Pradesh, Karnataka, Gujarat, Kerala, Maharashtra and Lakshadweep have important wind farms.

Nagercoil and Jaisalmer are well known for effective use of wind energy in the country.

Since India has a long coastline, the coasts can easily be used for setting up effective windmills.

Q. 14. What is geothermal energy? In which regions have experimental projects been set up in India?

Ans. Geothermal energy refers to the heat and electricity produced by using the heat from the interior of the earth.

It exists because the earth grows progressively hotter with increasing depth.

Where the geothermal gradient is high, high temperatures are found at shallow depths.

Groundwater in such areas absorbs heat from the rocks and becomes hot.

It is so hot that when it rises to the earth's surface, it turns into steam. This steam is used to drive turbines and generate electricity.

Two experimental projects: One is located in the Parvati valley near Manikaran in Himachal Pradesh and the other is located in the puga valley, Ladakh.

Q. 15. Highlight the importance of petroleum. Explain the occurrence of petroleum in India.[CBSE Delhi 2016]

Ans. Importance of Petroleum:

(i) Petroleum is the major energy source in India.

(ii) Provides fuel for heat and lighting.

(iii) Provides lubricant for machinery.

(iv) Provides raw material for a number of manufacturing industries.

(v) Petroleum refineries act as nodal industry for synthetic, textile, fertilizer and chemical industries.

Its occurrence:

(i) Most of the petroleum occurrences in India are associated with anticlines and fault traps.

(ii) In regions of folding, anticline or domes, it occurs where oil is trapped in the crest of the upfold.

(iii) Petroleum is also found in fault traps between porous and non-porous rocks.

Q. 16. Explain the importance of conservation of minerals. Highlight any three measures to conserve them. [CBSE (AI) 2016]

Ans. Importance of conservation of Minerals:

(i) Mineral resources are being rapidly consumed which takes millions of years to be created and concentrated.
(ii) Mineral resources are finite and non-renewable
(iii) Continued extraction of ores leads to increasing costs as mineral extraction comes from greater depths along with decreasing quality.

The three measures to conserve minerals are:

(i) It should be used in a planned a sustainable manner.
(ii) Improved technology needs to be constantly evolved to allow use of low grade ores at low costs.
(iii) Some of the metals are recyclables.
(iv) Scrap of metal can be used and some other substitute can be found.

Hots (Higher Order Thinking Skills)

Q. 1. "Minerals are indispensable part of our lives." Support this statement with suitable examples. [CBSE (F) 2016, CBSE (Comp) 2017]

Ans. Minerals are indispensable part of our lives:

(i) Almost everything we use, from a tiny pin to a towering building or a big ship, all are made from minerals.

(ii) The railway lines and tarmac (paving) of the roads are made from minerals.

(iii) Cars, buses, trains, aeroplanes are manufactured from minerals and run on power resources derived from the earth.

(iv) Even the food that we eat contains minerals.

(v) In all stages of development, human beings have used minerals for their livelihood, decoration, festivities, religions and ceremonial rites.

Q. 2. Which type of minerals has provided a strong base for the development of metallurgical industries in India. Explain with the help of examples.

Ans. (i) Iron ore provides a strong base for the development of metallurgical industries in India. Iron ore is the basic mineral and the backbone of industrial development.

(ii) Manganese is mainly used in the manufacturing of steel and ferro manganese alloy. Nearly 10 kg of manganese is required to manufacture one tonne of steel.

(iii) Aluminium or Bauxite is an important metal because it combines the strength of metals such as iron with extreme lightness and also with good conductivity and great malleability.

(iv) Copper is a good conductor of heat and is therefore used for electric wires. It is also used in metallurgical industry.

Q. 3. "India is fortunate to have fairly rich and varied mineral resources." Elaborate the statement.

Ans. India is endowed with fairly abundant resources of Iron Ore. Iron ore from the mines of DurgBastar-Chandrapur are exported to Japan and South Korea via Vishakhapatnam Port.

Coal is the most abundantly available fossil fuel. Bituminous coal which is most popular coal in commercial use is abundantly available in India.

By exporting these minerals, India is able to earn foreign exchange.

Mica is also abundantly available in India. Due to its excellent di-electric strength, low power loss factor, insulating properties and resistance to high voltage, mica is one of the most indispensable minerals used in electric and electronic industries.

Q. 4. Which is the basic mineral and is the backbone of industrial development?

Or

What is the status of iron ore in India?

Ans. (i) Iron ore is the basic mineral and is the backbone of Industrial development.

(ii) India is endowed with fairly abundant resources of iron ore.

(iii) India is rich in good quality iron ores.

(iv) Magnetite is the finest ore with a very high content of iron up to 70 per cent. It has excellent magnetic qualities, especially valuable in the electrical industries.

(v) Haematite ore is the most important industrial iron ore in terms of quantity used, but has a slightly lower iron content than magnetite. (50-60 per cent).

Q. 5. Which is the second most important energy resource in India after coal? Mention its two uses along with its deposits in India.

Ans. Petroleum or mineral oil is the second most important energy resource in India after coal.

Two uses:

(i) It provides fuel for heat & lighting, lubricants for machinery and raw materials for a number of manufacturing industries.

(ii) Petroleum refineries act as a 'nodal Industry' for synthetic textile fertiliser and numerous chemical industries.

Deposits of Petroleum:

(i) 63 per cent of India's Petroleum production is from Mumbai High, 18 per cent from Gujarat & 16 per cent from Assam.

(ii) Ankleshwar is the most important offshore field of Gujarat.

(iii) Assam is the oldest oil producing state of India.

(iv) Digboi, Naharkatia and Moran-Hugrijan are the important oil fields in the state.

Q. 6. Distinguish between Biogas and Natural Gas.

Ans.

Bio Gas	Natural Gas

(i) Biogas is the man made energy resource.	(i) Natural gas is a natural resource.
(ii) It is prepared by using shrubs, farm waste, animal and human waste.	(ii) It is found beneath the earth usually above the oil.
(iii) It is produced for domestic uses.	(iii) It is basically used in Industries as raw material.
(iv) Biogas is the most efficient use of cow dung, farm waste and animal waste.	(iv) Compressed natural gas (CNG) is used as environment friendly fuel and is gaining popularity in India.

Q. 7. 'Why is there a pressing need to use renewable energy resources in India.' Explain giving any five reasons. [CBSE (Comptt) 2017]

Ans. (i) The growing consumption of energy has resulted in the country becoming increasingly dependent on fossil fuels such as coal, oil & gas.

(ii) Rising prices of oil and gas and their potential shortages have raised uncertainties about the security of energy supply in future, which in turn has serious repercussions on the growth of the national economy.

(iii) Moreover, increasing use of fossil fuels also causes serious environmental problems.

(iv) Hence, there is a pressing need to use renewable energy sources like solar energy, wind, tidal, biomass and energy from waste material. These are called non-conventional energy resources.

Q. 8. "Energy saved is energy produced." Justify the statement by giving any six measures to conserve the energy resources. [CBSE (Delhi) 2017]

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

As concerned citizens, we can do our bit by:

(i) Using public transport systems instead of individual vehicles.

(ii) Switching off electricity when not in use.

(iii) Using power saving devices like stars appearing in electronic industries.

(iv) Using CNG as fuel which is environmental friendly.

(v) Increased use of renewable energy.

(vi) Using of biogas for domestic consumption in the rural areas.

(vii) Using non-conventional sources of energy.

Q. 9. Why is Conservation of mineral resources essential? Explain any three methods to conserve them. [CBSE 2015]

OR

Why is it necessary to conserve mineral resources? Explain any four ways to conserve mineral resources. [CBSE (AI) 2017]

Ans. Need for conservation of Minerals:

(i) We are rapidly consuming mineral resources that require millions of years to be created and concentrated.

(ii) The geological processes of mineral formation are so slow that the rates of replenishment are infinitely small in comparison to its consumption.

(iii) Continued extraction of ores leads to increasing costs as minerals extraction comes from greater depths along with decrease in quality.

(iv) Most of the minerals are unevenly distributed on the Earth's surface.

Mineral resources are therefore finite and non-renewable.

Three methods to conserve Minerals:

(i) We must make use of minerals in a planned and sustainable manner.

(ii) Improved technologies need to be constantly evolved to allow the use of low grade ores at low cost.

(iii) Recycling of metals.

(iv) Using scrap metals and other substitutes are steps in conserving ore mineral resources for the future.