TEACHER'S HANDBOOK

STELLAR LEARNING

GEOGRAPHY

10

On Board! BOOKS

An imprint of Ratna Sagar P. Ltd.

Contents

1

Resources and Development

Check Your Progress

Multiple-Choice Questions

1. Which of the following is a renewable natural resource?

(a) Water (b) Iron ore
(c) Fossil fuel (d) Technology

Ans. (a) Water

2. Which of the following is a biotic resource?

(a) Minerals (b) Sunlight
(c) Grasses (d) Land

Ans. (c) Grasses

3. Prevention of land degradation can be done by

(a) afforestation. (b) cutting of trees.
(c) overgrazing. (d) removing the top soil.

Ans. (a) afforestation.

4. A student made a list of natural resources for a project. She put wind energy under one column and coal under another column. On what basis did she classify the resources?

(a) On the basis of origin
(b) On the basis of ownership
(c) On the basis of exhaustibility
(d) On the basis of status of development

Ans. (c) On the basis of exhaustibility

5. Which of the following is NOT true about alluvial soil?

(a) This soil is found only in deltas.
(b) This has been deposited by the Himalayan Rivers.
(c) This soil covers the largest area in the country.
(d) This soil is good for wheat and rice cultivation.

Ans. (a) This soil is found only in deltas.

6. Read the following characteristics of a soil and identify the soil from the given options.

- It is widely spread and important soil.
- Northern plains are made of it.
- It consists of sand, silt and clay.

Options:

(a) Yellow soil (b) Black soil
(c) Laterite soil (d) Alluvial soil

(CBSE 2024)

Ans. (d) Alluvial soil

7. On the basis of ownership, resources can be classified into

(a) biotic and abiotic.
(b) potential, developed, and stock and reserves.
(c) individual, community, national and international.
(d) renewable and non-renewable.

Ans. (c) individual, community, national and international.

8. Read the given statements and choose the correct option with regard to resource utilisation from the following.

I. Resources are vital for any development.
II. Large-scale use of resources in a short span of time is the best way to achieve sustainable development.
III. Proper technology is necessary to use natural resources.
IV. All regions of India are not equally endowed with natural resources.

Options:

(a) I, II and III (b) I, II and IV
(c) I, III and IV (d) II, III and IV

Ans. (c) I, III and IV

9. Human beings have used resources indiscriminately and this has led which of the following major problems. Choose the correct option accordingly.

I. Depletion of resources
II. Equal distribution of resources
III. Ecological crises
IV. Division in society between haves and have nots

Options:

(a) I, II and III (b) I, II and IV
(c) I, III and IV (d) II, III and IV

Ans. (c) I, III and IV

10. Identify the soil with the help of following information.

- It develops in area with high temperature.
- It is red to brown in colour.
- Humus content is low.

Soils:

(a) Arid soil
(b) Yellow soil
(c) Laterite soil
(d) Black soil **(CBSE 2023, 2024)**

Ans. (c) Laterite soil

Very Short Answer Type Questions

11. Classify resources on the basis of origin. **(CBSE 2018)**

Ans. Resources can be classified on the basis of origin as biotic and abiotic resources.

12. Why are resources called gifts of nature?

Ans. Resources are called gifts of nature because they are necessary for human survival.

13. What would happen if the global oil supply gets exhausted?

Ans. It would cause tremendous energy crisis which will affect all aspects of human life – food production, travel and transport, health care, economic activity, etc. In fact, the modern world is dependent on this source of energy to a great extent.

14. What is sustainable economic development?

Ans. Sustainable economic development refers to progress that meets current needs without compromising the ability of future generations to meet their own needs, balancing economic growth, environmental protection, and social equity.

15. Name the type of soil found in Kerala. Write one feature of that soil.

Ans. The main type of soil found in Kerala is laterite soil. Mostly found in southern states, lateritic soils are deep to very deep, acidic (pH < 6.0), and typically lacking in plant nutrients. This soil is the result of intense leaching due to heavy rain.

16. Write two main characteristics of laterite soil.

Ans. The two main characteristics of laterite soil are:

(i) Laterite soils are mostly deep to very deep, acidic (pH < 6.0).
(ii) They are generally deficient in plant nutrients.

17. Identify the soil which is saline in nature and sandy in texture. What is its colour and in which area it is found?

Ans. Arid soils are generally sandy in texture and saline in nature. These soils range from red to brown in colour. The arid soil is mainly found in parts of western Rajasthan. Due to faster evaporation this soil lacks moisture and humus.

18. Suggest any two ways to solve the problem of land degradation. **(CBSE 2024)**

Ans. To some extent, grazing control and afforestation can be beneficial. Some strategies to prevent land degradation in dry regions include planting plant shelter belts, limiting excessive grazing, and stabilising sand dunes by growing thorny bushes.

19. Suggest any two ways for the conservation of resources. **(CBSE 2024)**

Ans. Wasteful consumption and overuse of resources can cause significant social, economic, and environmental issues. Some of the important measures to conserve the resources are choosing reusable goods, using renewable energy, using less paper, promoting sustainable farming, avoid non-recyclable packaging, etc.

Short Answer Type Questions

20. Why is alluvial soil known as the most important soil in India?

Ans.

- Alluvial soils are the most fertile of all other soils.
- Regions of alluvial soils are intensively cultivated and densely populated.
- Alluvial soils are widely spread over the northern plain which makes it the most productive region of the country.
- Alluvial soil contains adequate proportions of potash, phosphoric acid and lime which are ideal for the growth of sugarcane, paddy, wheat, pulses and other cereals.

21. How is the issue of sustainability important for development? Explain with examples. **(CBSE 2018)**

Ans.

- The issue of sustainable development is important because of the depletion of resources due to their over-use. This may result in the exhaustion of resources.
- Sustainable is the capability to use the resources and maintain the ecological balance. It lays emphasis on environmental protection and environmental degradation such as over-use of resources.

- We know that development should take place without damaging the environment. It should not compromise with the needs of the future generation.

22. Mention the factors responsible for soil erosion.

Ans. The factors responsible for soil erosion are:

(a) Human activities such as deforestation, over-grazing, construction and mining are responsible for soil erosion.

(b) Natural forces such as wind, glacier and water lead to soil erosion.

(c) Other factors such as ploughing in a wrong way and defective methods of farming results in soil erosion.

23. Identify the measures taken to protect land from degradation.

Ans. There are many ways to solve the problems of land degradation:

- Afforestation and proper management of grazing.
- Planting of shelter belts of plants, control on over-grazing, stabilisation of sand dunes by growing thorny bushes.
- Proper management of waste lands, control of mining activities.
- Proper discharge of industrial effluents and wastes after treatment can reduce land and water degradation in industrial areas.

24. Why is resource planning essential in a country like India?

Ans. Resource planning is essential in India due to the country's diverse resource availability. Some regions are rich in certain resources, like Jharkhand has a lot of minerals and Arunachal Pradesh has abundant supply of water, while others face shortages. Given this diversity, balanced resource planning is crucial to remove these disparities and ensure that all regions can develop efficiently and sustainably.

Long Answer Type Questions

25. Explain 'Resources'. Classify the different types of resources.

Ans. Resources are everything that are available in our environment to satisfy human needs.

Resources can be classified in the following ways:

On the Basis of Origin:

- Biotic resources can be obtained from the biosphere such as humans, flora and fauna, livestock, etc.
- Abiotic resources are non-living things such as rocks and metals.

On the Basis of Exhaustibility:

- Renewable resources can be renewed by physical, chemical or mechanical processes such as solar and wind energy, forests and wildlife, water, etc.
- Non-renewable resources occur over very long geological time such as minerals and fossil fuels.

On the Basis of Ownership:

- Individual resources are owned privately by individuals such as land owned by farmers, people owned plots, houses and other properties in urban areas.
- Community owned resources are accessible to all the members of the community such as public parks, picnic spots, etc.
- National resources belong to the nation such as roads, canals, water resources, etc.
- International resources are resources regulated by international institutions.

On the Basis of Status of Development:

- Potential resources are those found in a region but which have not been utilised yet.
- Developed resources are those which have been surveyed and their quantity and quality have been determined for utilisation.
- Stocks are materials in the environment with the potential to satisfy human needs but there is no appropriate technology to access these.
- Reserves are the stocks which can be used in the future such as water in the dams, forests, etc.

26. Give a brief account of the soils found in India.

Ans. Alluvial Soils:

- Alluvial soil is widely spread over the northern plains.
- Alluvial soils are very fertile and are ideal for cultivation of paddy, sugarcane, wheat, pulses and other cereals.

Black Soils:

- Black soil is black in colour and is made up of extremely fine clayey material.
- Cotton crop thrives in this soil hence it is called the Black cotton soil.

Red and Yellow Soils:

- Red soil is found in the less rainfall areas of the eastern and southern parts of Deccan Plateau.
- The red colour of the soil is due to the high percentage of the iron oxide.

Laterite Soil:

- Laterite soil is formed in the tropical and subtropical climate with alternate wet and dry seasons.
- This soil is useful for growing tea, coffee and cashew nuts.

Arid Soils:

- Arid soil is sandy in texture and saline in nature.
- These soils are red to brown in colour.

Forest Soils:

- This soil is mostly found in hilly and mountainous regions.

27. Write a brief note on land degradation and conservation of resources.

Ans. Human beings have brought about lot of degradation to land and have caused lot of damage. Abandoned mining sites, over irrigation, mineral processing like grinding of limestone for cement industry, etc. lead to degradation of land.

The cause of land degradation varies from one state to another. For example, in Punjab, Haryana and western Uttar Pradesh, over irrigation is responsible for land degradation; in Odisha, Chhattisgarh, Jharkhand and Madhya Pradesh deforestation due to mining resulted in land degradation; in states like Rajasthan, Gujarat, Maharashtra and Madhya Pradesh, overgrazing is responsible for land degradation.

There are various methods to solve the problems of land degradation such as afforestation, control of mining activities, disposal of industrial effluents, etc.

28. 'There are several methods to solve the problems of land degradation.' Substantiate the statement with examples.

Ans. Land degradation affects agricultural productivity, ecological balance, and livelihoods. Several methods are used to tackle the problem of land degradation:

- Afforestation and controlled grazing: Roots of plants and trees bind the soil and save the fertile top layer from being washed away or blown away. Controlled grazing too helps in a similar way.
- Creating shelter belts: Shelter belts created using thorny bushes have helped to check land degradation in arid areas of Rajasthan.
- Controlling mining activities and proper management of waste lands: Using right technique of mining can help to control the spread of waste land to a large extent.

Discouraging factories and small manufacturing units from discharging effluents on land is another important step in this regard. For example, shifting of industrial units out of Delhi has helped to improve the health of the land along the Yamuna on whose banks the city is situated.

Self-Assessment

Multiple-Choice Questions

1. We can conserve resources by

(a) recycling. (b) reusing.
(c) reducing consumption. (d) all of these.

Ans. (d) all of these.

2. Which of the following is not a biotic resource?

(a) Human beings (b) Livestock
(c) Rock (d) Fish

Ans. (c) Rock

3. What type of resource is solar energy?

(a) Biotic (b) Abiotic
(c) Renewable (d) Non-renewable

Ans. (c) Renewable

4. Choose the correct option to fill the blank.

Non Metallic Mineral : Mica

Energy Mineral : .....

(a) Natural Gas
(b) Bauxite
(c) Manganese
(d) Platinum **(CBSE 2023, 2024)**

Ans. (a) Natural Gas

5. On the basis of exhaustibility, resources can be classified into

(a) biotic and abiotic.
(b) individual and community owned.
(c) potential and developed.
(d) renewable and non-renewable.

Ans. (d) renewable and non-renewable.

6. On the basis of status of development, resources are classified as

(a) biotic and abiotic.
(b) renewable and non-renewable.
(c) individual, community, national, and international.
(d) potential, developed stock, and reserves.

Ans. (d) potential, developed stock, and reserves.

7. Identify the soil with the help of the following information by choosing the correct option.

- This soil is ideal for growing cotton.
- It is also known as regur soil.
- This soil is spread over northwest Deccan plateau.

Options:

(a) Black soil (b) Laterite soil
(c) Alluvial soil (d) Arid soil

Ans. (a) Black soil

8. Read the given statements and choose the correct option from the following with regard to soil erosion.
   I. Human activities like deforestation, over-grazing, construction and mining, etc. cause soil erosion.
   II. Natural processes like wind, glacial movement, and running water help to control soil erosion.
   III. Ploughing up and down the slope cause soil erosion.
   IV. Terrace cultivation restricts soil erosion.

   Options:

   (a) I, II and III (b) I, II and IV
   (c) I, III and IV (d) II, III and IV

Ans. (c) I, III and IV

9. Resource planning is a complex process which involves
   I. identification and inventory of resources across the country.
   II. an evolving planning structure.
   III. matching the resource development plans with overall national development plans.
   IV. exploiting resources quickly to increase national wealth.

   Choose the correct option according to the above information.

   (a) I, II and III (b) I, II and IV
   (c) I, III and IV (d) II, III and IV

Ans. (a) I, II and III

10. "M" gave his friend clues about a type of soil that suits for growing cotton. Which of the following clues provided by "M" would be most useful in identifying the ideal type of soil?
   I. It is well-known for its capacity to hold moisture.
   II. It turns yellow when it is hydrated.
   III. It is rich in kankur and bhanger nodules.
   IV. It is a well-drained loamy soil.

   Options:

   (a) Clue I (b) Clues I and III
   (c) Clues I and II (d) Clue IV **(CBSE SP 2024)**

Ans. (a) Clue I

Assertion-Reason Type Questions

For question numbers 11 to 17, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

11. **Assertion (A):** Abiotic resources are composed of rocks and metals.

    Reason (R): Biotic resources are obtained from the biosphere and have life such as human beings, flora and fauna, fisheries, livestock, etc.

Ans. (b) Both A and R are true, but R is not the correct explanation of A.

12. **Assertion (A):** If the present trend of resource depletion by a few individuals and countries continues, the future of our planet is in danger.

    Reason (R): The trend is creating two different groups of people – the rich and the poor.

Ans. (b) Both A and R are true, but R is not the correct explanation of A.

13. **Assertion (A):** Sustainable development is desirable.

    Reason (R): It ensures development for the future generations too.

Ans. (a) Both A and R are true, and R is the correct explanation of A.

14. **Assertion (A):** Public parks, picnic spots, playgrounds are known as community owned resources.

    Reason (R): These resources are accessible to all the members of the community.

Ans. (a) Both A and R are true and R is the correct explanation of A.

15. **Assertion (A):** The Rio Convention endorsed the global Forest Principles and adopted Agenda 21 for achieving Sustainable Development in the 21st century.

    Reason (R): In July 1996, more than 127 heads of states met in Rio de Janeiro in Brazil, for the first International Earth Summit.

Ans. (c) A is true but R is false.

16. **Assertion (A):** Irrational consumption and over-utilisation of resources lead to socio-economic and environmental development.

    Reason (R): India has made concerted efforts for achieving the goals of resource planning since the First Five Year Plan was launched after Independence.

Ans. (d) A is false but R is true.

17. **Assertion (A):** The net sown area is over 80 per cent of the total area in Punjab and Haryana and less than 10 per cent in Arunachal Pradesh, Mizoram, Manipur and Andaman Nicobar Islands.

Reason (R): People in Arunachal Pradesh, Mizoram, Manipur and Andaman Nicobar Islands are not interested in growing crops.

Ans. (c) A is true but R is false.

Match the Following

18. Match the items given in Column A with those in Column B. Choose the correct answer from the given options:

Column A (Soils)	Column B (Areas)
A. Alluvial soil	1. Semi-arid areas
B. Black soil	2. Eastern coastal plains
C. Red and yellow soil	3. Deccan Plateau
D. Laterite Soil	4. Western Ghats

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	2	3	4	1

Ans. (d) 2 3 4 1

Find the Incorrect Option

19. (a) Total geographical area of India is 3.31 million sq km.

(b) Land use data, however, is available only for 93 per cent of the total geographical area.

(c) Forest area in the country is far lower than the desired 33 per cent of geographical area, as it was outlined in the National Forest Policy (1952).

(d) The pattern of net sown area varies greatly from one state to another. It is over 80 per cent of the total area in Punjab and Haryana and less than 10 per cent in Arunachal Pradesh, Mizoram, Manipur and Andaman Nicobar Islands.

Ans. (a) Total geographical area of India is 3.31 million sq km.

Find the Correct Option

20. Which of the following statements defines sustainable development?

(a) Sustainable use of natural resources without considering the need of the future generation.

(b) Present generation fulfills its needs while considering the needs of the future generation as well.

(c) Utilization of natural resources by the past, present and forthcoming future generation.

(d) Meeting the needs of the future generations even if the needs of the present generation.

Ans. (b) Present generation fulfills its needs while considering the needs of the future generation as well.

Correct and Rewrite the Following Statement

21. About 52 per cent of the land area is plain. Mountains account for 25 per cent of the total surface area of the country. About 23 per cent of the area of the country is the plateau region.

Ans. About 43 per cent of the land area is plain. Mountains account for 30 per cent of the total surface area of the country. About 27 per cent of the area of the country is the plateau region.

Fill in the Blanks

22. **Alluvial** soil consists of various proportions of sand, silt and clay.

23. **Resources** are vital for human survival as well as maintaining the quality of life.

24. Human activities such as deforestation, overgrazing and mining have contributed in **land degradation**.

Very Short Answer Type Questions

25. What is Net Sown Area?

Ans. Net sown area is the total area sown with crops. It represents an area in which total crops are grown only once in a year.

26. What is gross cropped area?

Ans. Area sown more than once in an agricultural year plus net sown area is known as gross cropped area.

27. What are the factors responsible for soil formation?

Ans. Relief, parent rock or bed rock, climate, vegetation and other forms of life and time are important factors in the formation of soil.

28. Land use data is available only for 93 per cent of the total geographical area of India. Why?

Ans. This is because the land data for most of the north-east and some areas of Jammu and Kashmir occupied by Pakistan and China is not available.

29. Mention the factors on which the land-use pattern of India depends. **(CBSE 2012)**

Ans. The use of land is determined by physical factors such as topography, climate, soil types and human factors such as population density, culture, tradition and technology.

30. When and where was the first International Earth Summit held and what was the main objective of this Summit?

Ans. The first International Earth Summit was held in June 1992 at Rio de Janeiro in Brazil. More than 100 heads of States participated in this summit.

The Summit was convened for addressing urgent problems of environmental protection and socioeconomic development at the global level.

31. According to Gandhiji, which are the two main causes of resource depletion?

Ans. According to Gandhiji, selfish and greedy individuals and exploitative nature of modern technology are the main root causes of resource depletion.

Short Answer Type Questions

32. Write a short note on resource planning.

Ans. Resource planning involves:

(i) Identification and inventory of resources across the regions of the country.

(ii) Evolving a planning structure endowed with appropriate technology, skill and institutional set-up.

(iii) Matching the resource development plans with overall national development plans.

33. Based on their age, what are the different types of alluvial soils? Describe them.

Ans. According to their age alluvial soils can be classified as old alluvial (bangar) and new alluvial (khadar). The bangar soil has higher concentration of kanker nodules than the khadar. Khadar has more fine particles and is more fertile than the bangar. These soils contain adequate proportion of potash, phosphoric acid and lime which are ideal for the growth of crops.

34. Which soil is called 'regur soil'? Mention any four characteristics of this type of soil. **(CBSE 2012, 2014)**

Ans. Regur soil is popularly known as black soil.

Four main characteristics of regur soil are:

(i) It is made up of extremely fine clayey material.

(ii) It has a great moisture retention capacity.

(iii) Regur soil is rich in soil nutrients like calcium carbonate, magnesium, potash and lime.

(iv) These soils are generally poor in phosphoric contents.

35. Write a short note on laterite soil and give two features of laterite soil.

Ans. Laterite has been derived from the Latin word 'later' which means brick. This soil is the result of intense leaching due to heavy rain. Lateritic soils are mostly deep to very deep, acidic (pH < 6.0), generally deficient in plant nutrients and occur mostly in southern states. These soils are prone to erosion and degradation due to their position on the landscape.

36. Write any four human activities which are mainly responsible for land degradation in India.

Ans. Following are the four human activities which are mainly responsible for land degradation:

- Over irrigation is responsible for land degradation.
- Deforestation due to mining resulted in land degradation.
- Overgrazing is responsible for land degradation.
- The mineral processing like grinding of limestone for cement industries has also contributed to land degradation.

37. Explain any five methods of soil conservation suitable to Indian conditions. **(CBSE 2013)**

Ans. Five methods of soil conservation are:

(i) Contour ploughing slow down the speed of water flowing down the slopes.

(ii) Terrace cultivation controls soil erosion.

(iii) Strip cropping in which strips of grass are left to grow between the crops which breaks up the force of the wind.

(iv) By creating shelter belts. Trees are planted to create shelter.

(v) Afforestation is the best way to conserve soil to increase area under the forests.

Paragraph Based Questions

38. Read the sources given below and answer the questions that follow:

Source A – Development of Resources

An equitable distribution of resources has become essential for a sustained quality of life and global peace. If the present trend of resource depletion by a few individuals and countries continues, the future of our planet is in danger.

(a) Why there is a need to sustain natural resources?

Source B – Soil as a Resource

Soil is the most important renewable natural resource. It is the medium of plant growth and supports different types of living organisms on the earth. The soil is a living system.

(b) Why is soil called a living system?

Source C – Alluvial Soil

Alluvial soils as a whole are very fertile. Mostly these soils contain adequate proportion of potash, phosphoric acid and lime which are ideal for the growth of sugarcane, paddy, wheat and other cereal and pulse crops.

(c) In which part of India alluvial soil is found?

Ans. (a) Resources are important for human survival and we need to sustain them for future generations.

(b) Soil is called a living system because it take many years to form. Relief, parent rock, climate, vegetation and time are some factors that are important for the formation of soil.

(c) Alluvial soil is found in the northern part of India.

Case Based Questions

39. Resources are vital for human survival as well as for maintaining the quality of life. It was believed that resources are free gifts of nature. As a result, human beings used them indiscriminately and this has led to major problems like depletion of resources for satisfying the greed of a few individuals, accumulation of resources in few hands, which, in turn, divided the society into two segments i.e. haves and have nots or rich and poor. Indiscriminate exploitation of resources has led to global ecological crises such as, global warming, ozone layer depletion, environmental pollution and land degradation. An equitable distribution of resources has become essential for a sustained quality of life and global peace. If the present trend of resource depletion by a few individuals and countries continues, the future of our planet is in danger. Therefore, resource planning is essential for sustainable existence of all forms of life. Sustainable existence is a component of sustainable development. Sustainable economic development means 'development should take place without damaging the environment, and development in the present should not compromise with the needs of the future generations.' In June 1992, more than 100 heads of states met in Rio de Janeiro in Brazil, for the first International Earth Summit. The Summit was convened for addressing urgent problems of environmental protection and socio-economic development at the global level. The assembled leaders signed the Declaration on Global Climatic Change and Biological Diversity. The Rio Convention endorsed the global Forest Principles and adopted Agenda 21 for achieving Sustainable Development in the 21st century.

39.1 In which year was the first International Earth Summit held and where?

Ans. The first International Earth Summit was held in 1992 at Rio de Janeiro in Brazil. More than 100 heads of States participated in this summit.

39.2 Describe any one problem caused by over-exploitation of natural resources.

Ans. Indiscriminate exploitation of resources has led to global ecological crises such as, global warming, ozone layer depletion, environmental pollution and land degradation.

39.3 What does sustainable economic development mean? Elaborate in 40 words.

Ans. Sustainable economic development represents a comprehensive strategy for growth that takes into account economic, social, and environmental factors, ensuring that the requirements of the current population do not hinder the ability of future generations to meet their own needs.

40. Conservation of Resources: At the international level, the Club of Rome advocated resource conservation for the first time in a more systematic way in 1968. Subsequently, in 1974, Gandhian philosophy was once again presented by Schumacher in his book Small is Beautiful. The seminal contribution with respect to resource conservation at the global level was made by the Brundtland Commission Report, 1987. This report introduced the concept of 'Sustainable Development' and advocated it as a means for resource conservation, which was subsequently published in a book entitled Our Common Future. Another significant contribution was made at the Earth Summit at Rio de Janeiro, Brazil in 1992.

(CBSE 2024)

40.1 Explain the meaning of sustainable development.

Ans. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

40.2 In which international conference was 'Agenda-21' accepted?

Ans. Agenda 21 was adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, from June 3–14, 1992.

40.3 Explain any two outcomes of the Summit.

Ans. Two important outcomes of the 1992 Rio Earth Summit:

(i) Agenda 21: A list of development practices to achieve sustainable development in the 21st century.

(ii) The Rio Declaration on Environment and Development: A declaration that called for environmental protection to be central to sustainable development.

41. Human activities have not only brought about degradation of land but have also aggravated the pace of natural forces to cause damage to land. Some human activities such as deforestation, over grazing, mining and quarrying too have contributed significantly in land degradation. Mining sites are abandoned after excavation work is complete leaving deep scars and traces of over-burdening. In states like Jharkhand, Chhattisgarh,

Madhya Pradesh and Odisha deforestation due to mining have caused severe land degradation. In states like Gujarat, Rajasthan, Madhya Pradesh and Maharashtra overgrazing is one of the main reasons for land degradation. In the states of Punjab, Haryana, western Uttar Pradesh, over irrigation is responsible for land degradation due to water logging leading to increase in salinity and alkalinity in the soil. The mineral processing like grinding of limestone for cement industry and calcite and soapstone for ceramic industry generate huge quantity of dust in the atmosphere. It retards the process of infiltration of water into the soil after it settles down on the land.

41.1 In which state is overgrazing one of the main reasons for land degradation?

Ans. Overgrazing is one of the main reasons for land degradation in states like Gujarat, Rajasthan, Madhya Pradesh and Maharashtra.

41.2 What is/are the reason/s that slow/s down the process of infiltration of water into the soil?

Ans. The mineral processing like grinding of limestone for cement industry and calcite and soapstone for ceramic industry generate huge quantity of dust in the atmosphere. It retards the process of infiltration of water into the soil.

41.3 In which state has deforestation due to mining caused severe land degradation? State one measure undertaken to prevent further to land degradation.

Ans. Deforestation due to mining have caused severe land degradation in states like Jharkhand, Chhattisgarh, Madhya Pradesh, and Odisha. Using mulch or cover crops is one of the measures to prevent further land degradation. These practices help the land regain nutrients and save topsoil from erosion.

42. Soil is an essential natural resource. It is the medium of plant growth and supports different types of living organisms on the earth. The soil is a living system. It takes millions of years to form soil upto a few centimetres in depth. Relief, parent rock or bed rock, climate, vegetation and other forms of life and time are important factors in the formation of soil. Various forces of nature such as change in temperature, actions of running water, wind and glaciers, activities of decomposers, etc. contribute to the formation of soil. Chemical and organic changes which take place in the soil are equally important. Soil also consists of organic (humus) and inorganic materials.

42.1 Why is soil important?

Ans. Soil is important because it makes it possible to grow plants. It provides habitat different types of living organisms on the earth.

42.2 Name a few factors that affect soil formation.

Ans. Soil formation depends on relief, parent rock or bed rock, climate and vegetation.

42.3 Why is it necessary to control soil erosion?

Ans. There are two reasons why it is necessary to control soil erosion:

(a) Soil is important for growing plants – thus it is important for agriculture for food.

(b) Soil takes million of years to form and therefore, we cannot afford its loss.

43. Black soil is ideal for growing cotton and is also known as black cotton soil. It is believed that climatic condition along with the parent rock material are necessary for the formation of black soil. This type of soil is characteristic of the Deccan trap (Basalt) region spread over northwest Deccan plateau and is made up of lava flows. They cover the plateaus of Maharashtra, Saurashtra, Malwa, Madhya Pradesh and Chhattisgarh and extend in the south east direction along the Godavari and the Krishna valleys. The black soils are made up of extremely fine i.e. clayey material. They are well-known for their capacity to hold moisture. In addition, they are rich in soil nutrients, such as calcium carbonate, magnesium, potash and lime.

43.1 Why is black soil considered good for growing cotton?

Ans. It is rich in nutrients and can retain moisture.

43.2 What caused the formation of black soil?

Ans. Lava from volcanic eruption caused the formation of black soil.

43.3 Explain why black soil is important in India.

Ans. Black soil covers a large part of the country, where agriculture is an important source of livelihood. It supports the cultivation of cotton, which is also a major input of the textile industry.

44. **Conservation of Resources:** Resources are vital for any developmental activity. But irrational consumption and over-utilisation of resources may lead to socio-economic and environmental problems. To overcome these problems, resource conservation at various levels is important. This had been the main concern of the leaders and thinkers in the past. For example, Gandhiji was very apt in voicing his concern about resource conservation in these words: "There is enough for everybody's need and not for any body's greed." He placed the greedy and selfish individuals and exploitative nature of modern technology as the root cause for resource depletion at the global level. He was against mass production and wanted to replace it with the production by the masses. **(CBSE 2024)**

44.1 Define the term 'Resource Planning'.

Ans. Resource planning involves the identification, acquisition, and allocation of resources to various projects within an organisation.

44.2 Explain the need for conservation of resources.

Ans. Resources need to be conserved because they are available in limited quantities and the rate at which the resources are consumed exceeds the rate at which these resources are replenished.

44.3 Why did Gandhiji say – "There is enough for everybody's need and not for any body's greed"? Analyse any two reasons.

Ans. Gandhiji gave this statement to express his concern about the conservation of resources. He said that the nature has provided enough resources for everyone, but people are using more than what is needed. He believed that the root cause of resource depletion was the greedy and selfish nature of individuals and the exploitative nature of modern technology. He was against mass production and wanted to replace it with production by the masses.

Long Answer Type Questions

45. Describe in detail the land use pattern in India.

Ans.
- Physical factors such as topography, climate, type of soils and human factors such a population, culture and tradition, etc. determine the use of land.
- In India, the net sown area varies from one state to another. About 80 per cent of the total area in Punjab and Haryana accounts the net sown area, whereas in Arunachal Pradesh, Mizoram, Manipur and Andaman and Nicobar Islands net sown area comprise less than 10 per cent of the total area.
- The National Forest Policy(1952), recommended that 33 per cent of the area of the country be brought under forest cover which is considered essential for maintenance of the ecological balance.
- Waste land is mostly rocky, arid and non-agricultural. This land is used for buildings, roads, railways and industries.

46. Explain the role of terrace cultivation in hilly regions.

Ans. Terrace cultivation plays a very important role in hilly regions. Terrace cultivation along the mountain slopes is one of the oldest methods of soil conservation. The slope of the hill is cut into series of terraces. There is enough level land on terrace for cultivation. It checks the flow of water by soil and thus reduces erosion. Western and central Himalayas have well developed terrace farming.

47. Analyse the factors responsible for land degradation in India.

Ans. The problem of land degradation in India is mainly a result of several human activities such as deforestation, over grazing, mining and quarrying:
- Mining sites are abandoned after when mineral extraction is over, leaving deep holes and pits. In states like Jharkhand, Chhattisgarh, Madhya Pradesh and Odisha deforestation due to mining have caused severe land degradation.
- In states like Gujarat, Rajasthan, Madhya Pradesh and Maharashtra, overgrazing is the cause of land degradation. In the states of Punjab, Haryana, western Uttar Pradesh, over irrigation is responsible for land degradation due to water logging.
- Mineral processes such as grinding of limestone for cement industry and calcite and soapstone for ceramic industry generate huge quantity of dust in the atmosphere. It reduces the rate of infiltration of water into the soil after it settles down on the land.
- Discharge of industrial effluents as waste on land is also a major source of land and water pollution in many parts of the country.

48. 'There are several methods of utilisation of land resources'.

Substantiate the above statement with some examples.

Ans. Land is a natural resource of utmost importance. It supports natural vegetation, wild life, human life, economic activities, transport and communication systems.

Several methods of utilisation of land resources:
- Forests
- Land not available for cultivation:
  - (a) Barren and waste land
  - (b) Land put to non-agricultural uses, e.g. buildings, roads, factories, etc.
- Other uncultivated land (excluding fallow land)
  - (a) Permanent pastures and grazing land,
  - (b) Land under miscellaneous tree crops groves (not included in net sown area),
  - (c) Culturable waste land (left uncultivated for more than 5 agricultural years).
- Fallow lands
  - (a) Current fallow (left without cultivation for one or less than one agricultural year),
  - (b) Other than current fallow (left uncultivated for the past 1 to 5 agricultural years).

- Net sown area: The physical extent of land on which crops are sown harvested is known as net sown area. Area sown more than once in an agricultural year plus net sown area is known as gross cropped area.

Let's Compete

Multiple-Choice Questions

1. On the basis of origin, resources can be classified into
(a) renewable and non-renewable.
(b) individual and community.
(c) biotic and abiotic.
(d) potential and developed stock.

Ans. (c) biotic and abiotic.

2. Renewable resources are also called
(a) replenishable resources.
(b) biotic resources.
(c) non-renewable resources.
(d) none of these.

Ans. (a) replenishable resources.

3. Which of the following is an example of abiotic resources?
(a) Rocks
(b) Flora and fauna
(c) Fisheries
(d) None of these

Ans. (a) Rocks

4. Individual resources are those resources which are owned by
(a) a nation.
(b) members of the community.
(c) privately by individuals.
(d) international organisations.

Ans. (c) privately by individuals.

5. Which one of the following states have the potential for wind and solar energy?
(a) Madhya Pradesh (b) Maharashtra
(c) Rajasthan (d) Punjab

Ans. (c) Rajasthan

6. The main reason for land degradation in Punjab is
(a) overgrazing. (b) deforestation.
(c) over–irrigation. (d) over-cultivation.

Ans. (c) over–irrigation.

7. Bangar soils have high concentration of
(a) sand. (b) water.
(c) salt. (d) kanker.

Ans. (d) kanker.

8. Black soil is found in which of the following states?
(a) Gujarat (b) Chhattisgarh
(c) Jharkhand (d) West Bengal

Ans. (a) Gujarat

9. The colour of arid soil is
(a) red to brown. (b) yellow.
(c) black. (d) brown.

Ans. (d) brown.

10. The land with deep channels that is unfit for cultivation is called
(a) waste land.
(b) bad land.
(c) arable land.
(d) fallow land.

Ans. (d) fallow land.

Life Skills

1. Mention the values that make human beings an essential component of resources.

Ans. We know that resources are functions of human activities because they transform the material available in our environment into resources and use them.

2. Justify the statement "There is enough for everyone's need but not for anybody's greed".

Ans. This statement is about resource conservation as Gandhiji was against mass production and wanted to replace it with the production of masses. In this statement he mentioned that there are enough resources which can be used by everyone, but if we overuse them, they will deplete.

2

Forest and Wildlife Resources

Check Your Progress

Multiple-Choice Questions

1. Which of the forests are also known as permanent forests?

(a) Reserved and Protected forests
(b) Reserved and Unclassed forests
(c) Protected and Unclassed forests
(d) None of the above

Ans. (a) Reserved and Protected forests

2. Identify the movement from the given options with the help of the following information.

I. This movement was started to protect the forests of the Himalayas.
II. The movement involved the local community in the conservation of forests.
III. The movement successfully resisted deforestation and promoted community afforestation with indigenous species.

Options:

(a) Chipko movement
(b) Save the Tiger movement
(c) Clean Ganga movement
(d) Social forestry movement

Ans. (a) Chipko movement

3. Read the given statements and choose the correct option with regard to Sacred Groves from the following:

I. The local people believe that these forests are inhabited by gods and goddesses.
II. These patches of forest or parts of large forests that have been left untouched by the local people.
III. Any interference with them is banned.
IV. Interference with these forests is allowed if it is for scientific research.

Options:

(a) I, II and IV (b) I, II and III
(c) I, III and IV (d) II, III and IV

Ans. (b) I, II and III

4. Choose the correctly matched pair from the following.

(a) Corbett National Park – Uttarakhand
(b) Sunderbans National Park – Rajasthan
(c) Bandhavgarh National Park – Kerala
(d) Sariska Wildlife Sanctuary – West Bengal

Ans. (a) Corbett National Park – Uttarakhand

5. In which year was the Indian Wildlife Protection Act implemented?

(a) 1956 (b) 1963
(c) 1972 (d) 1988

Ans. (c) 1972

Very Short Answer Type Questions

6. What is the estimated area of forest and tree cover in India?

Ans. The forest and tree cover in the country is estimated at 79.42 million hectare, which is 24.16 per cent of the total geographical area.

7. Why did India and Nepal become prime targets of tiger poaching?

Ans. Since India and Nepal provide habitat to about two-thirds of the surviving tiger population in the world, these two nations became prime targets for poaching and illegal trading.

8. 'Flora and fauna are well integrated in our lives'. Justify the statement.

Ans. Flora and fauna play a crucial role in sustaining human existence and contributing to the overall health of the planet. For example, plants generate oxygen via the process of photosynthesis, a vital function that animals rely on for respiration. In turn, animals exhale carbon dioxide, which is then utilised by plants in their photosynthetic process.

9. What role do forests play in the ecological system?

Ans. (i) Forests are primary producers and play a key role in the ecological system, supporting all other living beings.

(ii) They provide oxygen, food, shelter, and habitat for countless species, and are essential for maintaining the balance of nature.

10. Mention two benefits of the Chipko Movement.

Ans. Two benefits of the Chipko movement are:

(i) It has saved the Himalayan forests from logging and destruction.

(ii) It has promoted community afforestation with indigenous species and revive traditional conservation methods, ensuring ecological balance and sustainability.

11. Suggest any two ways to conserve wildlife in India. **(CBSE 2024)**

Ans. (i) Establishing conservation zones, including national parks and wildlife sanctuaries, is essential for safeguarding animals within their natural environments.

(ii) Endangered and vulnerable species must be kept in controlled settings, such as zoos, where breeding programmes can be implemented to enhance their populations. Additionally, cutting of trees must be strictly restricted.

Short Answer Type Questions

12. Write a short note on 'Project Tiger'.

Ans. In 1973, the wildlife authorities realised that the population of tigers has come down to 1,827 from an estimated 55,000 in the beginning of 20th century. With an aim to stop illegal hunting of tigers, 'Project Tiger' was launched in the year 1973. Some of the important tiger reserves in India are Corbett National Park in Uttarakhand, Sunderbans National Park in West Bengal, Bandhavgarh National Park in Madhya Pradesh, Sariska Wildlife Sanctuary in Rajasthan, Manas Tiger Reserve in Assam and Periyar Tiger Reserve in Kerala are some of the tiger reserves of India.

13. State reasons that have led to the decline of biodiversity in India.

Ans. Some of the important reasons for the decline of Indian biodiversity are, habitat destruction, hunting, poaching, over-exploitation, environmental pollution, poisoning and forest fires. Other important causes of environmental destruction are unequal access, inequitable consumption of resources and differential sharing of responsibility for environmental well-being. Over-population in third world countries in comparison to the available resources is also one of the causes of environmental degradation.

14. Discuss the focus of any one wildlife conservation project implemented by the government.

Ans. The primary focus of the different projects implemented by the government was the conservation of wildlife and forests. 'Project Tiger' was launched by the government with an aim to stop illegal hunting of tigers in India. The central government also announced several projects for the protection of specific animals like the one-horned rhinoceros, the Kashmir stag or hangul, three types of crocodiles – fresh water crocodile, saltwater crocodile and the Gharial, the Asiatic lion, and others. Most recently, the Indian elephant, black buck (chinkara), the great Indian bustard (godawan) and the snow leopard, etc. have been given full or partial legal protection against hunting and trade throughout India.

15. 'Forests and wildlife are vital to the quality of life and environment'. Justify the statement by giving three reasons.

Ans. Forest and Wildlife are vital to the quality of life and environment because:

(i) They provide essential resources like oxygen, water, and food, which are necessary for human survival.

(ii) They support biodiversity, which is crucial for maintaining ecosystem balance and ensuring the health of our planet.

(iii) They offer natural protection from disasters like floods, landslides, and droughts, and also support local communities by providing livelihoods and economic opportunities.

Long Answer Type Questions

16. Analyse the importance of community-led conservation initiatives in India.

Ans. Community-led conservation initiatives in India have been instrumental in protecting the country's rich biodiversity. These initiatives, often driven by local communities, have demonstrated a deep understanding of the intricate relationships between human and natural systems. For instance, the Chipko movement in the Himalayas, led by local women, successfully resisted deforestation and promoted sustainable forest management. Similarly, the Bishnoi community in Rajasthan has conserved blackbuck, chinkara,

and other wildlife species through their traditional practices and beliefs. These examples highlight the importance of community-led conservation, which not only ensures the protection of natural resources but also supports the well-being of local communities.

17. Write a brief note on the conservation of forests and wildlife in India.

Ans. In the 1960s and 1970s, various national wildlife protection programmes were launched by the government when demanded by the conservationists. The Indian Wildlife (Protection) Act was implemented in 1972, which had provisions for protecting the wildlife habitats. An all India list of protected species was also published. The principal aim of the programme was to protect the remaining population of endangered species by imposing a ban on hunting, giving legal protection to their habitats, and also imposing restriction on trade in wildlife. Later the central and many state governments established national parks and wildlife sanctuaries. Several projects for the protection of specific animals were also launched by the central government, which were gravely threatened, including the tiger, the one-horned rhinoceros, the Kashmir stag or hangul, three types of crocodiles – fresh water crocodile, saltwater crocodile and the Gharial, the Asiatic lion, and others.

Self-Assessment

Multiple-Choice Questions

1. Which of the following options represent potential measures that can be taken to mitigate the threats posed to the tiger population and biodiversity?

I. Banning hunting, giving legal protection to their habitats, and restricting trade in wildlife
II. Prohibiting the visit of public into forest area
III. Establishing wildlife sanctuaries and national parks
IV. Converting forests into Reserved and Protected Forests

Options:

(a) Statements I and II are correct.
(b) Statements II, III and IV are correct.
(c) Statement II is correct.
(d) Statements I, III and IV are correct.

(CBSE SP 2024)

Ans. (d) Statements I, III and IV are correct.

2. Joint Forest Management came into existence in

(a) 1976 (b) 1980
(c) 1988 (d) 1990

Ans. (c) 1988

3. Which of the forest conservation strategy related to community afforestation in the Himalayan region?

(a) Joint Forest Management
(b) Chipko Movement
(c) Beej Bachao Andolan
(d) Navdanya

Ans. (b) Chipko Movement

4. Conservation has become essential due to the rapid decline in wildlife population and forestry. Identify which of the following is not a reason for why we need to conserve our forests and wildlife.

(a) To preserve the genetic diversity of plants and animals for better growth and breeding.
(b) To maintain our life support systems – water, air, and soil.
(c) To increase the urbanization and industrial development in forest areas.
(d) To ensure the sustainability of fisheries through the maintenance of aquatic biodiversity.

Ans. (c) To increase the urbanization and industrial development in forest areas.

Assertion-Reason Type Questions

For question numbers 5 to 12, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

5. **Assertion (A):** Farmers and citizen groups like the Beej Bachao Andolan in Tehri and Navdanya favour agriculture without synthetic chemicals.

Reason (R): Their attempts to revive the traditional conservation methods and developing new methods of ecological farming were successful.

Ans. (a) Both A and R are true and R is the correct explanation of A.

6. **Assertion (A):** Preserving ecological diversity and our life support systems is essential.

Reason (R): Ecological diversity and life support systems maintain the balance of nature and ensure the survival of various species, including humans. **(CBSE 2024)**

Ans. (a) Both A and R are true and R is the correct explanation of A.

7. **Assertion (A):** The famous 'Chipko Movement' in the Himalayas successfully resisted deforestation in several areas.

   Reason (R): Through this, community afforestation campaign with indigenous species was made enormously successful.

Ans. (a) Both A and R are true and R is the correct explanation of A.

8. **Assertion (A):** Forests play a key role in the ecological system.

   Reason (R): Reserved and protected forests occupy most of the area under forest in our country.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

9. **Assertion (A):** Several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species in the notifications under the Wildlife Act of 1980 and 1986.

   Reason (R): The inclusion of these species in the Wildlife Act aims to provide legal protection to them, ensuring their conservation and preventing their decline.

Ans. (a) Both A and R are true and R is the correct explanation of A.

10. **Assertion (A):** This entire habitat that we live in has immense biodiversity.

    Reason (R): The central government has announced several projects for developing amusement parks in the forests so that people can enjoy the natural beauty of the country.

Ans. (c) A is true but R is false.

11. **Assertion (A):** In Sariska Tiger Reserve, Rajasthan, villagers have fought against mining by citing the Wildlife Protection Act.

    Reason (R): Indian society comprises several cultures, each with its own set of traditional methods of conserving nature and its creations.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

12. **Assertion (A):** Reserved and Protected Forests are also referred to as permanent forest estates. These are maintained for the purpose of producing timber and other forest produce, and for protective reasons.

    Reason (R): Assam has the largest area under permanent forests, constituting 75 per cent of its total forest area.

Ans. (c) A is true but R is false.

Match the Following

13. Match the following items given in Column A with those in Column B. Choose the correct answer from the given options:

Column A	Column B
A. Manas Tiger Reserve	1. Uttarakhand
B. Periyar Tiger Reserve	2. Assam
C. Corbett National Park	3. Rajasthan
D. Sariska Wildlife Sanctuary	4. Kerala

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	1	3	4	2

Ans. (b) 2 4 1 3

14. Match the following items given in Column A with those in Column B. Choose the correct answer from the given options:

Column A (National parks)	Column B (States)
A. Kaziranga	1. Madhya Pradesh
B. Jim Corbett	2. Assam
C. Sunderbans	3. Uttarakhand
D. Bandhavgarh	4. West Bengal

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	4	3	2	1
(c)	3	2	4	1
(d)	2	3	4	1

Ans. (d) 2 3 4 1

Find the Incorrect Option

15. (a) In the notification under Wildlife Act of 1972, several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species.
    (b) 'Project Tiger', one of the well-publicised wildlife campaigns in the world, was launched in 1973.
    (c) Unclassed forests are managed by local communities in the North-eastern states and Gujarat.
    (d) It has been finally recognised that local communities everywhere have to be involved in some kind of natural resource management.

Ans. (a) In the notification under Wildlife Act of 1972, several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species.

Correct and Rewrite the Following Statement

16. Alwar district of Rajasthan have declared 1,500 hectares of forest as the Bhairodev Dakav

'Sonchuri', declaring their own set of rules and regulations which allows hunting.

Ans. The inhabitants of five villages in the Alwar district of Rajasthan have declared 1,200 hectares of forest as the Bhairodev Dakav 'Sonchuri', declaring their own set of rules and regulations which do not allow hunting.

Fill in the Blanks

17. Fisheries are dependent on the maintenance of **primary producers** biodiversity.

18. **grazing and fuel-wood collection** are the degrading factors behind the depletion of forest resources.

Very Short Answer Type Questions

19. What are 'sacred groves'?

Ans. Sacred groves are the forests of god and goddesses. Worship of trees is an age old tribal belief based on the premise that all creations of nature have to be protected. Such beliefs have preserved several virgin forests. For example peepal and banyan.

20. What is the Chipko Movement?

Ans. The Chipko movement was started in 1970's in the Himalayan region. Its primary aim was to prevent the illegal deforestation and destruction of forest and trees. Villagers, primarily the women participated in this movement.

21. Define biological diversity.

Ans. Biodiversity or Biological Diversity is immensely rich in wildlife and cultivated species, diverse in form and function but closely integrated in a system through multiple network of interdependencies.

22. Name the insects that are listed under protected species.

Ans. In the notification under Wildlife Act of 1980 and 1986, several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species.

Short Answer Type Questions

23. Name some animals that are categorised as critically endangered species and discuss the measures taken by the government to protect them. Elaborate by using examples.

Ans. The Central Government has unveiled a series of initiatives aimed at safeguarding certain critically endangered species, such as the tiger, the one-horned rhinoceros, the Kashmir stag, and three species of crocodiles: freshwater crocodile, saltwater crocodile, and the Gharial. Recently, the Indian elephant, blackbuck, great Indian bustard, and snow leopard have also received comprehensive or partial legal protections against hunting and trade across India.

24. Write in brief about the strategies implemented for forest conservation.

Ans. The conservationists in the 1960s and 1970s demanded a national wildlife protection programme, as a result of which the Indian Wildlife (Protection) Act was implemented in 1972, in order to protect the habitats. An all India list of protected species was also published. The importance was given to protect the remaining population of certain endangered species by imposing a ban on hunting, giving legal protection to their habitats, and restricting trade in wildlife. Later the central government and many state governments established national parks and wildlife sanctuaries. Several projects for protecting specific animals were also announced by the central government which were gravely threatened.

25. Discuss the significance of the Indian Wildlife Protection Act and include two examples to support your answer.

Ans. The Indian Wildlife (Protection) Act 1972, prohibited the hunting of endangered species. Scheduled animals are prohibited from being traded as per the Act's provisions. The Act provides for licenses for the sale, transfer, and possession of some wildlife species. It provides for the establishment of wildlife sanctuaries, national parks, etc. Project Tiger was started in India under the provisions of the Wildlife (Protection) Act, 1972.

26. Write a short note on the types of forest and wildlife resources, and their distribution.

Ans. Classification of Forests:

(i) **Reserved Forests:** More than half of the total forest land has been declared reserved forests. These are most valuable as far as the conservation of forest and wildlife resources is concerned.

(ii) **Protected Forests:** Almost one-third of the total forest area is protected forest.

(iii) **Unclassed Forests:** Other forests and wastelands belonging to both government and private individuals and communities.

Madhya Pradesh has around 75 per cent of its total forest area under permanent forests. Jammu & Kashmir, Andhra Pradesh, Uttarakhand, Kerala, Tamil Nadu, West Bengal, and Maharashtra have large percentages of reserved forests of its total forest area.

Paragraph Based Questions

27. Read the sources given below and answer the questions that follow:

Source A – Flora and Fauna in India

In India, we have diverse varieties of the flora and fauna. The popular fauna of India includes 500 different varieties of animals, 2000 species of birds, 30,000 types of insects and several varieties of fish, amphibians and reptiles. Elephants, Royal Bengal tigers, rhinos, bisons, lions are some of fauna found in the country's forests.

The variety of flora in India includes the Alpines, temperate forests, deciduous forests, evergreen forests, oaks, rhododendrons, pine, spruce, deodar, laurels, maples, bamboos and tall grasses.

(a) Based on above data, justify that India is rich in biological diversity.

Source B – Conservation of Forest and Wildlife in India

Conservation preserves the ecological diversity and our life support systems – water, air and soil. It also preserves the genetic diversity of plants and animals for better growth of species and breeding. For example, in agriculture, we are still dependent on traditional crop varieties.

(b) What is the importance of conservation?

Source C – Community and Conservation

In India Joint Forest Management (JFM) programme furnishes a good example for involving local communities in the management and restoration of degraded forests. The programme has been in formal existence since 1988 when the state of Odisha passed the first resolution for Joint Forest Management.

(c) What is Joint Forest Management?

Ans. (a) As India is a home to rich fauna including 500 different varieties of animals, 2000 species of birds, 30,000 types of insects and several varieties of fish, amphibians and reptiles. The Alpines, temperate forests, deciduous forests, evergreen forests, are the floral varieties found in India. So, it is true that India is rich in biological diversity.

(b) Conservation means the protection of plants and animals. It also preserves their genetic diversity. The main concern is to preserve the habitats so that the future generations of wildlife and even humans can enjoy it.

(c) Joint Forest Management is a concept based on the jointly defined roles and responsibilities of local communities and the forest department for the protection and development of degraded forests.

Case Based Questions

28. In our country, many societies worship a particular tree which they have revered since ancient times. The Mundas and the Santhal of Chota Nagpur region worship mahua (*Bassia latifolia*) and kadamba (*Anthocaphalus cadamba*) trees, and the tribals of Odisha and Bihar worship the tamarind (*Tamarindus indica*) and mango (*Mangifera indica*) trees during weddings. Similarly, peepal and banyan trees are considered sacred by many people. Indian society consists of several cultures, each with its own age-old methods of conserving nature and its creations. Sacred qualities are often associated with rivers, springs, mountain peaks, plants and animals, which are protected. You may have seen troops of macaques and langurs roaming around many temples. They are fed daily and treated as a part of temple by devotees. In and around Bishnoi villages in Rajasthan, herds of blackbuck (chinkara), nilgai, and peacocks can be seen as an integral part of the community and nobody harms them.

28.1 Which tree is worshiped by the Mundas and the Santhal of the Chota Nagpur region?

Ans. Mahua (Bassia latifolia) and kadamba (Anthocaphalus cadamba) trees.

28.2 Peepal and banyan trees considered sacred. What can one infer from this?

Ans. People realised centuries ago that these trees are beneficial for them.

28.3 Explain why people worship nature like plants and animals.

Ans. People worship nature and natural resources like plants and animals because they provide essential resources for survival such as food, shelter, and oxygen. This respect for the environment promotes conservation and sustainable practices. Also, many cultures believe that nature holds spiritual significance, connecting them to a higher power.

29. Conservation preserves the ecological diversity and our life support systems – water, air and soil. It also preserves the genetic diversity of plants and animals for better growth of species and breeding. For example, in agriculture, we are still dependent on traditional crop varieties. Fisheries too are heavily dependent on the maintenance of aquatic biodiversity. In the 1960s and 1970s, conservationists demanded a national wildlife protection programme. The Indian Wildlife (Protection) Act was implemented in 1972, with various provisions for protecting habitats. An all – India list of protected species was also published.

The thrust of the programme was towards protecting the remaining population of certain endangered species by banning hunting, giving legal protection to their habitats, and restricting trade in wildlife. Subsequently, Central and many State Governments established national parks and wildlife sanctuaries. The Central Government also announced several projects for protecting specific animals, which were gravely threatened, including the tiger, the one-horned rhinoceros, the Kashmir stag or hangul, three types of crocodiles – fresh water crocodile, salt-water crocodile and the Gharial, the Asiatic lion, and others. Most recently, the Indian elephant, black buck (chinkara), the Great Indian bustard (godawan) and the snow leopard, etc. have been given full or partial legal protection against hunting and trade throughout India. The conservation projects are now focusing on biodiversity rather than on a few of its components. Increasingly, even insects are beginning to find a place in conservation planning. In the notification under Wildlife Act of 1980 and 1986, several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species.

29.1 Name an animal that has been given full or partial legal protection against hunting and trade throughout India.

Ans. The Indian elephant, black buck (chinkara), the Great Indian bustard (godawan) and the snow leopard, etc. have been given full or partial legal protection against hunting and trade throughout India.

29.2 Name an insect that has been added under the Wildlife Act of 1980 and 1986.

Ans. In the notification under Wildlife Act of 1980 and 1986, several hundred butterflies, moths, beetles, and one dragonfly have been added to the list of protected species.

29.3 Analyse any two steps taken by the Indian government to protect endangered species of wildlife in the country.

Ans. (i) Under the National Wildlife Protection Programme, the remaining population of certain endangered species was protected by banning hunting, giving legal protection to their habitats, and restricting trade in wildlife.

(ii) National Parks and Wildlife Sanctuaries were also established by the Central and many State Governments for their protection.

30. In India, much of the forest and wildlife resources are either owned or managed by the government through the Forest Department or other government departments and are classified under the following categories.

- **Reserved Forests:** More than half of the total forest land has been declared reserved forests. Reserved forests are regarded as the most valuable as far as the conservation of forest and wildlife resources are concerned.
- **Protected Forests:** Almost one-third of the total forest area is protected forest, as declared by the Forest Department. This forest land are protected from any further depletion.
- **Unclassed Forests:** These are other forests and wastelands belonging to both government and private individuals and communities.

Reserved and Protected Forests are also referred to as permanent forest estates maintained for the purpose of producing timber and other forest produce, and for protective reasons. Madhya Pradesh has the largest area under Permanent Forests. Jammu and Kashmir, Andhra Pradesh, Uttarakhand, Kerala, Tamil Nadu, West Bengal, and Maharashtra have large percentages of reserved forests of its total forest area whereas Bihar, Haryana, Punjab, Himachal Pradesh, Odisha and Rajasthan have a bulk of it under Protected Forests. All North-eastern states and parts of Gujarat have a very high percentage of their forests as Unclassed Forests managed by local communities.

30.1 Which type of forest is maintained for growing timber?

Ans. Reserved and protected forests are maintained for the purpose of producing timber.

30.2 Which state/UT has large percentage of reserved forests?

Ans. Madhya Pradesh has the largest percentage of reserved forests.

30.3 Explain why permanent forests are important.

Ans. Reserved forests, also referred to as the permanent forests, are regarded as the most valuable as far as the conservation of forests and wildlife is concerned. These forests are maintained for the purpose of producing timber and other forest produce, and for protective reasons.

31. Project Tiger: Tiger is one of the key wildlife species in the faunal web. In 1973, the authorities realised that the tiger population had dwindled to 1,827 from an estimated 55,000 at the turn of the 20th century. The major threats to tiger population are numerous, such as poaching for trade, shrinking habitat, depletion of prey base species, growing human population, etc. The trade of tiger skins and the use of their bones in traditional medicines, especially in the Asian countries left the tiger population on the verge

of extinction. Since India and Nepal provide habitat to about two-thirds of the surviving tiger population in the world, these two nations become prime targets for poaching and illegal trading.

"Project Tiger", one of the well publicised wildlife campaigns in the world, was launched in 1973. Tiger conservation has been viewed not only as an effort to save an endangered species but with equal importance as a means of preserving biotypes of sizeable magnitude. Corbett National Park in Uttarakhand, Sunderbans National Park in West Bengal, Bandhavgarh National Park in Madhya Pradesh, Sariska Wildlife Sanctuary in Rajasthan, Manas Tiger Reserve in Assam and Periyar Tiger Reserve in Kerala are some examples of the tiger reserves in India.

31.1 Why was 'Project Tiger' considered a significant step for Tiger Conservation?

Ans. 'Project Tiger' was a significant step for tiger conservation in India because it helped in increasing the tiger population in India. The project established dedicated tiger reserves to protect the Bengal tiger and its habitats.

31.2 What role did India play in the global tiger population?

Ans. Project Tiger was a major wildlife conservation initiative launched in 1973 by the Indian government. The project established tiger reserves to protect the habitat of tigers (as of December 2024, 57 tiger reserves in India).

31.3 Mention any two major threats to the wildlife species. **(CBSE 2024)**

Ans. Two major threats to wildlife species are the loss of their natural habitats, coupled with the impacts of climate change.

(i) The increase in human population has resulted in the transformation of ecosystems for purposes such as agriculture, urban development, and infrastructure establishment.

(ii) Rising temperatures, droughts, and altered weather patterns disrupt the life cycles of wildlife.

32. Sacred Groves: A wealth of diverse and rare species

Nature worship is an age old tribal belief based on the premise that all creations of nature have to be protected. Such beliefs have preserved several virgin forests in pristine form called Sacred Groves (the forests of God and Goddesses). These patches of forest or parts of large forests have been left untouched by the local people and any interference with them is banned.

Certain societies revere a particular tree which they have preserved from time immemorial. The Mundas and the Santhal of Chota Nagpur region worship mahua (*Bassia latifolia*) and kadamba (*Anthocaphalus cadamba*) trees, and the tribals of Odisha and Bihar worship the tamarind (*Tamarindus indica*) and mango (*mangifera indica*) trees during weddings. To many of us, peepal and banyan trees are considered sacred.

Indian society comprises several cultures, each with its own set of traditional methods of conserving nature and its creations. Sacred qualities are often ascribed to springs, mountain peaks, plants and animals which are closely protected. You will find troops of macaques and langurs around many temples. They are fed daily and treated as a part of temple devotees. In and around Bishnoi villages in Rajasthan, herds of blackbuck, (chinkara), nilgai and peacocks can be seen as an integral part of the community, and nobody harms them.

32.1 How do sacred groves relate to the belief in nature worship?

Ans. Sacred groves are intrinsically linked to the practice of nature worship, as they represent the areas of forest that are protected for religious purposes and are seen as sacred spaces where deities or spirits reside.

32.2 How do communities incorporate trees into their cultural practices? Explain with an example.

Ans. Certain communities hold a specific tree in high esteem for example, the Mundas and Santhal people of the Chota Nagpur region worship the mahua and kadamba trees, while the tribal groups in Odisha and Bihar worship the tamarind and mango trees during wedding ceremonies.

32.3 Explain the cultural values that contribute to the coexistence of nature. **(CBSE 2024)**

Ans. Cultural values may encompass the religious importance attributed to various plants and animals. This includes the belief in the sanctity of specific species. Such values can promote respect for the environment, potentially resulting in harmonious coexistence between nature and human communities. Additionally, they can cultivate a spiritual bond with the natural world.

Long Answer Type Questions

33. Write a note on the different categories of forests managed by government departments.

Ans. Forests are classified under the following categories:

(i) **Reserved Forests:** More than half of the total forest land has been declared reserved forests.

Reserved forests are regarded as the most valuable as far as the conservation of forest and wildlife resources are concerned.

(ii) **Protected Forests:** Almost one-third of the total forest area is protected forest, as declared by the Forest Department. These forest lands are protected from any further depletion.

(iii) **Unclassed Forests:** These are other forests and wastelands belonging to both government and private individuals and communities.

34. Evaluate how the destruction of forests and wildlife is not just a biological issue. Give appropriate reasons.

Ans. The destruction of forests and wildlife is not just a biological issue because biological loss is strongly correlated with the loss of cultural diversity. Destruction of forests and wildlife have marginalised and impoverished many original and forest-dependent communities, who are directly dependent on the various components of the forest and wildlife for food, drink, medicine, culture, spirituality, etc. Among the poor, women are affected more in comparison to men. In many societies, it is the responsibility of women to fulfill the major responsibilities like collection of fuel, fodder, water and other basic subsistence needs. Due to depletion of these resources, the hard work of women increases and sometimes they have to walk for more than 10 km to collect these resources which results in the serious health issues for women and negligence of home and children because of the increased working hours. The indirect impact of environmental degradation also results in severe drought or deforestation-induced floods, etc. also hits the poor the hardest.

35. Explain the evolution of India's conservation efforts, from the early days of wildlife protection to the current focus on community-led conservation and sustainable development.

Ans. The country's first wildlife protection laws were enacted in the early 20th century, with the establishment of national parks and wildlife sanctuaries. In the 1970s and 1980s, conservation efforts expanded to include the protection of endangered species and the promotion of sustainable forest management. The 1990s saw a shift towards community-led conservation, with the introduction of joint forest management programme and other initiatives that empowered local communities to take ownership of conservation efforts. Today, India's conservation efforts prioritise sustainable development, recognising the complex relationships between human and natural systems. This evolution reflects a growing understanding of the importance of inclusive and participatory approaches to conservation.

Let's Compete

Multiple-Choice Questions

1. IUCN stands for

(a) International Union for Conservation of Nature and Natural Resources.

(b) International University for Conservation of Nature.

(c) International Union for Conservation of Natural Resources.

(d) International United Conservation of Nature.

Ans. (a) International Union for Conservation of Nature and Natural Resources.

2. ..... was declared extinct in the year 1952.

(a) Pink-headed duck (b) Asiatic cheetah

(c) Blue sheep (d) Indian rhino

Ans. (b) Asiatic cheetah

3. Which forests and wastelands belongs to both government and private individuals and communities?

(a) Permanent forests (b) Unclassed forests

(c) Reserved forests (d) Protested forests

Ans. (b) Unclassed forests

4. Which of the following Conservation strategies that directly involve community participation?

(a) Chipko Movement (b) Beej Bachao Andolan

(c) Navdanya (d) All of these

Ans. (d) All of these

5. Which of the following is considered as rare species?

(a) Wild Asiatic buffalo (b) Nicobar pigeon

(c) Blue sheep (d) Sangai

Ans. (a) Wild Asiatic buffalo

6. Which of the following species is not vulnerable?

(a) Asiatic elephant

(b) Blue sheep

(c) Indian rhinoceros

(d) Gangetic dolphin

Ans. (c) Indian rhinoceros

7. What is the scientific name of mango?

(a) *Mangnifera indica*

(b) *Bassia latifolia*

(c) *Tamarindus indica*

(d) *Anthocaphalus cadamba*

Ans. (a) *Mangnifera indica*

8. The focus of conservation projects has shifted to
(a) individual species.
(b) a few components of biodiversity.
(c) biodiversity as a whole.
(d) only endangered animals.

Ans. (c) biodiversity as a whole.

9. Which of the following activities directly depends on the maintenance of aquatic biodiversity?
(a) Mining
(b) Fisheries
(c) Urban development
(d) Deforestation

Ans. (b) Fisheries

10. *Taxus Wallachiana* is the scientific name of
(a) Rhododendron.
(b) Himalayan Oak.
(c) Himalayan Yew.
(d) Chir Pine.

Ans. (c) Himalayan Yew.

Life Skills

1. 'Overpopulation is one of the reasons for environmental destruction.' Give your views.

Ans. Yes, it is true to say because with the increase in population the natural resources are being consumed indiscriminately without any control. With the increase in population there is an increase in demand for finished goods which results in the increase in industrial production and in turn the industrial production results in the depletion of environment as the industrial waste is poured into fresh water sources and soil.

2. Do you agree with the statement 'Conservation helped in increasing the dense forest cover in India?' Give your views.

Ans. Yes the above given statement is true because, according to the State of Forest Report (2015), the dense forest cover has increased by 3,775 sq km since 2013. However, this apparent increase in the forest cover is due to conservation measures, management interventions and plantation, etc. by different agencies.

3

Water Resources

Check Your Progress

Multiple-Choice Questions

1. Which place in India has an artificial lake to conserve water that dates to 11th century?

(a) Delhi (b) Bhopal
(c) Mumbai (d) Kolhapur

(CBSE SP 2023)

Ans. (b) Bhopal

2. In which of the following states in the Tungabhadra Dam located?

(a) Tamil Nadu (b) Kerala
(c) Andhra Pradesh (d) Karnataka

(CBSE 2023)

Ans. (d) Karnataka

3. In Rajasthan rooftop rainwater harvesting system is called

(a) *kuls.* (b) *guls.*
(c) *tankas.* (d) *baolis.*

Ans. (c) *tankas.*

4. How much percentage of Earth is covered with water?

(a) 61 per cent (b) 81 per cent
(c) 71 per cent (d) 51 per cent

Ans. (c) 71 per cent

5. In which one of the following states is 'bamboo drip irrigation system' prevalent?

(a) Tamil Nadu (b) West Bengal
(c) Meghalaya (d) Odisha **(CBSE 2024)**

Ans. (c) Meghalaya

6. Identify the dam from the given options with the help of the following information.

- This dam has been built over the Narmada River in Gujarat.
- This is one of the largest water resource projects of India covering four states – Maharashtra, Madhya Pradesh, Gujarat and Rajasthan.
- This project would meet the requirement of water in drought-prone and desert areas of Gujarat.

Options:

(a) Tehri Dam (b) Sardar Sarovar Dam
(c) Bhakra-Nangal Dam (d) Hirakud Dam

Ans. (b) Sarder Sarovar Dam

7. 'N' gave his friends clues about the reason behind many new environmental movements like the Narmada Bachao Andolan, which were in reaction to multi-purpose projects and large dams. Which of the following clues provided by 'N' would be most useful in identifying the reason? Choose the correct option.

Clues:

I. Resistance to these projects has primarily been due to the large-scale displacement of local communities.
II. Local people often had to give up their land.
III. Locals had to give their limited access and control over resources.
IV. The projects were funded by foreign banks.

Options:

(a) Clue I (b) Clues I and III
(c) Clues I, II and III (d) Clue IV

Ans. (c) Clues I, II and III

8. Read the given statements and choose the correct option with regard to rooftop rainwater harvesting from the following.

I. Rooftop rainwater is collected using a PVC pipe.

II. Rainwater is filtered using a mixture of cement and lime.

III. Underground pipe takes water to sump for immediate usage.

IV. Excess water from the sump is taken to the well.

Options:

(a) I, II and IV (b) I, II and III

(c) I, III and IV (d) II, III and IV

Ans. (c) I, III and IV

9. Choose the correctly matched pair from the following.

(a) Underground Tanks – Jharkhand

(b) Dams aggravated flood situation – Rajasthan and Gujarat

(c) Colonial India witnessed – Intensive industrialisation

(d) Jal Jeevan Mission – Rural Household

Ans. (d) Jal Jeevan Mission – Rural Household

Very Short Answer Type Questions

10. What is the need of rainwater harvesting? **(CBSE 2009)**

Ans. Rainwater harvesting is needed to solve the shortage of surface water and to fulfil the domestic needs of water.

11. Explain rainwater harvesting.

Ans. The storage of rainwater for further domestic and other water needs is called rainwater harvesting. People having knowledge of rainfall regimes and soil types developed different techniques to harvest rainwater.

12. Name the two social movements against the construction of dams and give details about the aim of both movements.

Ans. Narmada Movement started in the 1980s with the objective of halting the construction of the Sardar Sarovar Dam on the Narmada River in Gujarat. This movement was spearheaded by Medha Patkar and adhered to non-violent principles. Similarly, the Tehri movement emerged in the 1990s, aiming to prevent the construction of the Tehri Dam on the Bhagirathi River.

13. Can a region with ample water resources still experience water scarcity? Why?

Ans. The main reasons for this are:

(i) Large and growing population, leading to greater demands for water.

(ii) Unequal access to water, resulting in over-exploitation for domestic and agricultural uses.

14. 'Dams are also referred to as multi-purpose projects.' Justify the statement.

Ans. They serve many purposes such as hydel power production, irrigation and flood control. For examples, the Bhakra-Nangal serves hydel power production and irrigation and Hirakud serves water conservation and flood control.

Short Answer Type Questions

15. How has irrigation changed the cropping pattern in many regions of India? **(CBSE 2012)**

Ans. The cropping pattern has also changed in many regions of India. Farmers are now shifting to commercial crops and water intensive crops.

16. What are the different water harvesting systems adopted in ancient India?

Ans. In ancient India, hydraulic structures were constructed to store water for irrigation and domestic use. During the time of Chandragupta Maurya, dams, lakes and irrigation system were extensively built. In the 11th century, Bhopal lake, one of the largest artificial lakes of its time was built. In 14th century, the tank in Hauz Khas, Delhi was constructed by Iltutmish for supplying water to Siri Fort area.

17. What are the advantages of multi-purpose river projects? **(CBSE 2015)**

Ans. Advantages of multi-purpose projects are as follows:

- To provide water to areas which suffer from water scarcity
- Controlling the flood by regulating the flow of water
- Supplying water for industrial and domestic purpose
- Generation of hydel power
- Irrigation facility.

18. Irrigation has changed the cropping pattern, which has ecological consequences. Do you agree? Substantiate your answer with any two reasons.

Ans. Yes, changed cropping pattern has ecological consequences:

(i) **Salinisation of the soil:** Using water intensively for commercial crops will lead to an increase in salt concentration in the soil, making it less fertile and affecting plant growth.

(ii) **Disruption of natural water cycles:** Water-intensive crops will alter the natural water cycles, potentially leading to water scarcity and impacting the environment.

19. Conserving and managing our water resources is the need of the hour. Evaluate this statement and give appropriate examples.

Ans. The consequences of neglecting water conservation and management are serious:

- **Health hazards:** Neglecting water conservation and management can lead to waterborne diseases.
- **Food insecurity:** Overexploitation and mismanagement of water resources can impair food security.
- **Livelihood and economic impacts:** Depletion of water resources can disrupt livelihoods and productive activities.
- **Ecological crisis:** Mismanagement of water resources can cause degradation of natural ecosystems.

Therefore, it is necessary to conserve water.

Long Answer Type Questions

20. Highlight the advantages and disadvantages of rooftop rainwater harvesting system.

Ans. **Advantages of rainwater harvesting:**

- It reduces soil erosion and occurrence of floods.
- It can be used for drinking and several non-drinking purposes.
- It reduces drought impact.
- No displacement of people is involved in roof top harvesting.
- It reduces demand on ground water.

Disadvantages of rainwater harvesting:

- Not all the places receive same amount of rainfall.
- It requires regular maintenance as it is prone to rodents, algae growth, insects which contaminate rain harvested water.
- Limited storage facility.

21. Describe in detail the four important rainwater harvesting methods.

Ans. The four important rainwater harvesting methods are as follows:

(i) Rooftop Rainwater Harvesting: According to this system, rainwater is collected on rooftops and then stored in tanks. Generally this water is utilised for gardening. In Tamil Nadu, this has been made compulsory for all households. All building plans must have in-built rainwater harvesting system.

(ii) Check Dams: In dry and arid areas like Rajasthan, Western UP, Haryana and Punjab, check dams are used. Check dams are natural catchment dams. In natural depressions the rainwater gets collected and then later used for irrigation and promoting vegetal cover on ground. To prevent water run-off artificial bunds and streams called kuls are erected.

(iii) Recharge of Water through Abandoned Wells: These wells are ideal for rainwater harvesting as they replenish groundwater resources to meet the requirement of summer.

(iv) Recharge through Hand Pumps: The rainwater first gets collected in a pond, tank or reservoir. Planning can be done to allow the rainwater flow directly into the deep wells especially the ones which have dried up. This technique of artificial recharge of water meets the household needs.

22. What is water scarcity? Analyse the reasons that lead to the scarcity of water.

Ans. Water scarcity means there is not enough water to meet the needs of people, animals, and plants. This is often a problem in areas with low rainfall or droughts. However, there are many other reasons why water scarcity occurs, including:

- A growing population, which increases the demand for water for drinking, cooking, and farming.
- The overuse of water in agriculture to grow more food, especially for irrigation and multiple cropping.
- Urbanisation and industrialisation, which require more water for cities and factories.
- Unequal access to water among different social groups.
- Water pollution from domestic and industrial waste, fertilisers, and pesticides.
- Excessive use of water by industries, including those that generate hydroelectric power.
- Over-extraction of groundwater in urban areas, especially by housing societies and colonies.

23. Have intensive industrialisation and urbanisation posed a great pressure on existing fresh water resources in India? Substantiate your answer with suitable examples for each.

Ans. **Industrialisation:**

- Factories need lots of water to operate machines and process goods.
- They also rely on hydropower, which accounts for one-fifth of India's electricity.
- As industries grow, so does their water demand, leading to increased pressure on freshwater resources.
- Additionally, industrial waste pollutes water bodies, making them unsafe for human consumption.

Urbanisation:

- Growing cities have large population with high water demands for domestic use (cleaning, cooking, washing, etc.).

- Cities over-extract groundwater using private pumps, depleting this precious resource.

Urban lifestyles and consumption patterns further exacerbate the problem, leading to water scarcity.

Self-Assessment

Multiple-Choice Questions

1. Which one of the following is the irrigation system in Meghalaya?

(a) Land is irrigated only during rainy season.

(b) Large volumes of water is used for irrigation.

(c) Water is removed from the soil.

(d) Bamboo drip irrigation system is used.

(CBSE 2024)

Ans. (d) Bamboo drip irrigation system is used.

2. Water is a renewable resource because

(a) the process of precipitation renews it.

(b) water is renewed and recharged by the hydrological cycle.

(c) it is available abundantly.

(d) it is an important source of freshwater.

Ans. (b) water is renewed and recharged by the hydrological cycle.

3. Which of the following areas suffer from water scarcity?

(a) Areas with low annual rainfall

(b) Areas with high annual rainfall and large population

(c) Areas with heavy rainfall and highly polluted water

(d) Areas of low rainfall and low population

Ans. (a) Areas with low annual rainfall

4. Which of the following statement is not an argument in favour of multi-purpose river valley projects?

(a) Multi-purpose projects help to control floods by regulating water flow.

(b) Multi-purpose projects lead to loss of livelihood and large scale displacements.

(c) Multi-purpose projects bring water to those areas suffering from water scarcity.

(d) Multi-purpose projects generate electricity for our homes and industries.

Ans. (b) Multi-purpose projects lead to loss of livelihood and large scale displacements.

5. Which of the following options represents potential measures that can be taken to mitigate the threats posed on water?

I. Implementing water conservation techniques, such as efficient irrigation systems and rainwater harvesting.

II. Encouraging public awareness and education on water scarcity and conservation.

III. Promoting water-efficient technologies and practices in industries and households.

IV. Increasing the use of fossil fuels to desalinate seawater and meet the growing demand for water.

Options:

(a) Statements I and II are correct.

(b) Statements II, III and IV are correct.

(c) Statement II is correct.

(d) Statements I, II and III are correct.

Ans. (d) Statments I, II and III are correct.

6. Read the given statements and choose the correct option with regard to dams that how they help us from the following.

I. Dams were traditionally built to impound rivers and rainwater that could be used later to irrigate agricultural fields.

II. They utilise advanced nanotechnology to desalinate seawater and produce freshwater.

III. Dams are built not just for irrigation but for electricity generation, water supply for domestic and industrial uses.

IV. Dams are also helpful for inland navigation and fish breeding.

Options:

(a) I, II and IV (b) I, II and III

(c) I, III and IV (d) II, III and IV

Ans. (c) I, III and IV

7. Identify the irrigation system with the help of the following information. Choose the correct option.

- This irrigation system is famous in Meghalaya.
- A 200-year-old system of tapping streams and spring water.
- It can carry about 18–20 litres of water.

Options:

(a) Bamboo drip irrigation

(b) Sprinkler Irrigation System

(c) Drip Irrigation System

(d) Canal Irrigation System

Ans. (a) Bamboo drip irrigation

8. Choose the correctly matched pair.

(a) Variation in availability of water resources – Variation in seasonal and annual precipitation

(b) Largest consumer of water – Industries

(c) Contribution of hydroelectric power – 45 per cent

(d) Assured supply of potable water through JJM – 75 litres per capita per day

Ans. (a) Variation in availability of water resources – Variation in seasonal and annual precipitation

Assertion-Reason Type Questions

For question numbers 9 to 16, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

9. Assertion (A): Water scarcity may be an outcome of large and growing population and consequent greater demands for water, and unequal access to it.

Reason (R): A large population requires more water not only for domestic use but also to produce more food.

Ans. (a) Both A and R are true and R is the correct explanation of A.

10. Assertion (A): Today, in India hydroelectric power contributes approximately 43 per cent of the total electricity produced.

Reason (R): During the time of Chandragupta Maurya, dams, lakes and irrigation systems were extensively built.

Ans. (d) A is false but R is true.

11. Assertion (A): In the 11th century, Bhopal Lake, one of the largest artificial lakes of its time was built.

Reason (R): In the 14th century, the tank in Hauz Khas, Delhi was constructed by Akbar for supplying water to the Siri Fort area.

Ans. (c) A is true but R is false.

12. Assertion (A): Sardar Sarovar Dam has been built over the Narmada River in Gujarat.

Reason (R): This is one of the largest water resource projects of India covering four states – Maharashtra, Madhya Pradesh, Gujarat and Rajasthan.

Ans. (d) A is false but R is true.

13. Assertion (A): Although three-fourths of the Earth is covered with water, many areas still face water scarcity.

Reason (R): Most of the Earth's water is stored below the surface.

Ans. (c) A is true but R is false.

14. Assertion (A): Today, in India hydroelectric power contributes approximately 22 per cent of the total electricity produced.

Reason (R): This is possible because India has many thermal power stations.

Ans. (c) A is true but R is false.

15. Assertion (A): Dams are often called multi-purpose projects.

Reason (R): They serve many purposes – irrigation, power generation, and flood control.

Ans. (a) Both A and R are true and R is the correct explanation of A.

16. Assertion (A): Rainwater-harvesting is a new practice started to conserve water.

Reason (R): It can help to tackle water scarcity.

Ans. (d) A is false but R is true.

Match the Following

17. Match the following dams given in Column A with the rivers given in Column B. Choose the correct answer from the given options:

Column A (Dams)	Column B (Rivers)
A. Sardar Sarovar	1. Sutlej
B. Hirakud	2. Krishna
C. Bhakra Nangal	3. Narmada
D. Nagarjuna Sagar	4. Mahanadi

Codes:

	A	B	C	D	
(a)	1	2	3	4	
(b)	2	1	4	3	
(c)	3	4	2	1	
(d)	3	4	1	2	**(CBSE 2024)**

Ans. (d) 3 4 1 2

18. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (Hydroelectric Project)	Column B (Rivers)
A. Salal Project	1. Chenab
B. Hirakud Project	2. Mahanadi
C. Mettur Project	3. Kaveri
D. Sardar Sarovar Project	4. Narmada

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	3	1	4	2

Ans. (a) 1 2 3 4

Find the Incorrect Option

19. (a) Rooftop rainwater harvesting is the most common practice in Shillong, Meghalaya.

(b) Kerala is the first state in India which has made rooftop rainwater harvesting structure compulsory for all the houses across the state.

(c) In Meghalaya, a 200-year-old system of tapping stream and spring water by using bamboo pipes is prevalent.

(d) Today, in western Rajasthan, sadly the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due to the perennial Indira Gandhi Canal.

Ans. (b) Kerala is the first state in India which has made rooftop rainwater harvesting structure compulsory for all the houses across the state.

20. (a) Cherapunjee and Mawsynram situated at a distance of 55 km from Shillong receive the highest rainfall in the world.

(b) Gendathur receives an annual precipitation of 1,000 mm, and with 80 per cent of collection efficiency and of about 10 fillings, every house can collect and use about 50,000 litres of water annually.

(c) In hill and mountainous regions, people built diversion channels like the 'guls' or 'kuls' of the Eastern Himalayas for agriculture.

(d) The Krishna-Godavari dispute is due to the objections raised by Kerala and Tamil Nadu governments.

Ans. (b) Gendathur receives an annual precipitation of 1,000 mm, and with 80 per cent of collection efficiency and of about 10 fillings, every house can collect and use about 50,000 litres of water annually.

Correct and Rewrite the Following Statement

21. In the semi-arid and arid regions of Gujarat, particularly in Surat and Vadodara, almost all the houses traditionally had underground tanks or tankas for storing drinking water.

Ans. In the semi-arid and arid regions of Rajasthan, particularly in Bikaner, Phalodi and Barmer, almost all the houses traditionally had underground tanks or tankas for storing drinking water.

Fill in the Blanks

22. The technique of storing rainwater in pits or on the rooftops is called **rooftop rainwater harvesting**.

23. The rainwater that flows or gets collected on the land surface in the form of rivers, lakes, streams, etc. is called **surface runoff**.

24. A **dam** is a barrier across flowing rivers to make a reservoir.

Very Short Answer Type Questions

25. What is a multi-purpose project? Name any two.

Ans. Dams are referred to multi-purpose projects where the many uses of the impounded water are integrated with one another. Bhakra – Nangal project and Hirakud project are the two multi-propose projects.

26. Which Indian leader said – 'Dams are the temples of modern India'?

Ans. Pandit Jawaharlal Nehru.

27. What made ancient India's rainwater harvesting techniques successful? Substantiate your answer with an example.

Ans. Ancient Indians understood their local environment and designed harvesting systems that fit their specific needs. For example, in the Western Himalayas, they built "guls" and "kuls" (diversion channels) to collect and use rainwater for agriculture.

28. The availability of water resources varies over space and time, mainly due to variations in seasonal and annual precipitation. Apart from this, what are two more factors that affect the availability of water?

Ans. Apart from this, two more factors that affect the availability of water are:

(i) Over-exploitation and excessive use

(ii) Unequal access to water among different social groups

29. How is the goal of JJM (Jal Jeevan Mission) to enable every rural household get assured supply of potable piped water being achieved?

Ans. The goal of JJM is being achieved through:

(i) installation of functional tap water connections.

(ii) regular maintenance and repair of water supply infrastructure.

Short Answer Type Questions

30. With the help of examples, highlight the ill-effects of irrigation.

Ans. Ill-effects of irrigation:

- Excess of water leads to water logging.
- Seeds do not grow properly in water logged fields.
- Excess irrigation destroys standing crops.
- It may reduce the quantity and quality of crops.
- It may cause damages to the fertility of soil.

31. Explain the problems poor people face due to the construction of dams.

Ans. The poor often had to give up their land, livelihood and their meagre access and control over resources for the greater good of the nation.

32. 'Multi-purpose projects and large dams have also caused problems'. Justify the statement with three relevant points.

Ans. Multi-purpose projects and large dams have faced opposition because of the following reasons:

(i) They disrupt the natural flow of rivers, causing sedimentation and poor habitats for aquatic life.

(ii) They fragment rivers, making it difficult for aquatic fauna to migrate and spawn.

(iii) They submerge existing vegetation and soil, leading to decomposition and loss of ecosystems.

33. 'The introduction of new irrigation systems has significant ecological and social impacts'. Justify this statement with three relevant points.

Ans. The reasons are as follows:

(i) The new irrigation systems have led to salinisation of the soil due to water-intensive and commercial crops, causing ecological damage.

(ii) They have increased the social gap between rich landowners and landless poor, transforming the social landscape.

(iii) They have created conflicts between different groups of people over the use and benefits of water resources.

34. 'Traditional communities had a deep understanding of local ecological conditions and developed innovative techniques to harvest and manage water resources'. Evaluate this statement with examples.

Ans. Traditional communities used innovative techniques to harvest and manage water resources:

(i) Built diversion channels like guls or kuls in the Western Himalayas to support agriculture.

(ii) Practised rooftop rainwater harvesting in Rajasthan to store drinking water.

(iii) Created inundation channels in the floodplains of Bengal to irrigate fields, and converted agricultural fields into rain-fed storage structures.

35. 'In traditional Rajasthan households, rainwater harvesting is done'. Substantiate this statement.

Ans. The traditional Rajasthan households had the following features to harvest rainwater:

(i) **Large underground storage:** Tanks or tankas were built inside the main house or courtyard, to provide a large storage capacity for rainwater.

(ii) **Rooftop rainwater harvesting:** Tankas were created to collect rainwater from subsequent showers after the first spell of rain had cleaned the roofs and pipes.

Paragraph Based Questions

36. Read the sources given below and answer the questions that follow:

Source A – Rainwater Harvesting

In ancient India, along with the sophisticated hydraulic structures, there existed an extraordinary tradition of water-harvesting system. People had in-depth knowledge of rainfall regimes and soil types and developed wide ranging techniques to harvest rainwater, groundwater, river water and flood water in keeping with the local ecological conditions and their water needs. In hill and mountainous regions, people built diversion channels like the 'guls' or 'kuls' of the Western Himalayas for agriculture.

(a) What are the techniques of rainwater harvesting in India?

Source B – Multi-Purpose River Projects and Integrated Water Resources Management

Irrigation has also changed the cropping pattern of many regions with farmers shifting to water intensive and commercial crops. This has great ecological consequences like salinisation of the soil.

(b) What do you understand by salinisation of the soil?

Source C – Water Scarcity and the Need For Water Conservation and Management

Lately, there has been a growing concern that even if there is ample water to meet the needs of the people, much of it may be polluted by domestic and industrial wastes, chemicals, pesticides and fertilisers used in agriculture, thus, making it hazardous for human use.

(c) Why should we conserve water resources? Give one reason.

Ans. (a) Following are the rainwater harvesting techniques used in different areas:
- Rooftop rainwater harvesting is practised in Rajasthan.
- Diversion channels are made to irrigate the fields in West Bengal.
- Guls and kuls are diversion channels built in the mountainous regions of Western Himalayas.

(b) Salinisation of soil is the reduction of soil fertility due to the accumulation of soluble salts. Change in the cropping pattern is one of the major factor responsible for the salinisation of soil.

(c) We should conserve water resources to safeguard ourselves from health hazards and to ensure our food security.

Case Based Questions

37. Maharashtra is a state located in western India, with a population of over 110 million people. The state is home to several large cities, including Mumbai, and has a significant agricultural sector. However, the state is facing a severe water crisis, with its water resources coming under increasing pressure due to climate change, industrialisation, and urbanisation. The main challenges faced by water resource management in Maharashtra are:
- **Over exploitation of groundwater:** Maharashtra is one of the most ground water stressed states in India, with the demand for water exceeding the supply. Overexploitation of groundwater for agriculture and urban use has led to a decline in water levels, which has severe implications for the sustainability of water resources.
- **Pollution of surface water:** Industrialisation and urbanisation have led to the pollution of surface water bodies such as rivers and lakes. The pollution has led to water quality degradation, which poses risks to human health and the environment.
- **Inefficient irrigation practices:** The agricultural sector is the largest user of water in Maharashtra, accounting for around 80 per cent of total water use. However, traditional irrigation practices such as flood irrigation are inefficient and lead to the wastage of water.

37.1 Mention any one reason for the water crisis faced by the state of Maharashtra.

Ans. The state is facing a severe water crisis due to climate change, industrialisation, and urbanisation.

37.2 Propose any one solution to mitigate the water crisis faced by Maharashtra state.

Ans. Need to adopt efficient irrigation practices such as drip irrigation or sprinkler irrigation to save water and increase crop productivity.

37.3 'Despite being the second highest rainfall-receiving state of the country, Maharashtra still faces water crisis'. Substantiate this statement in 40 words. **(CBSE SP 2024)**

Ans. Although Maharashtra experiences the second-highest rainfall in the nation, conventional irrigation methods such as flood irrigation contribute to water scarcity in the region. This method utilises an excessive amount of water, which is often lost through runoff, resulting in diminished availability for alternative uses.

38. Most of the objections to the projects arose due to their failure to achieve the purposes for which they were built. Ironically, the dams that were constructed to control the floods have triggered floods due to sedimentation in the reservoir. Moreover, the big dams have mostly been unsuccessful in controlling floods at the time of excessive rainfall. You may have seen or read how the release of water from the dams during heavy rains aggravated the flood situation in Maharashtra and Gujarat in 2006. The floods have not only devastated life and property but also caused extensive soil erosion. Sedimentation also meant that the flood plains were deprived of silt, a natural fertiliser, further adding on to the problem of land degradation. It was also observed that the multi-purpose projects induced earthquakes, caused water-borne diseases and pests and pollution resulting from excessive use of water.

38.1 Name the movement against the river project in Gujarat.

Ans. Narmada Bachao Andolan (NBA) was a social movement that opposed the construction of dams on the Narmada River, including the Sardar Sarovar Dam in Gujarat.

38.2 How have the big dams mostly been unsuccessful in controlling floods at the time of excessive rainfall?

Ans. The dams that were constructed to control the floods have triggered floods due to sedimentation in the reservoir.

38.3 Analyse any two merits of multi-purpose river projects. **(CBSE 2023)**

Ans. Merits of Multi-purpose River Projects:
- Major source of hydroelectric power, which is a clean and cheap energy source for agriculture and industry.
- Provide water for drinking, domestic, and industrial use.

- Provide a continuous supply of water for irrigation.

39. Post-independent India witnessed intensive industrialisation and urbanisation, creating vast opportunities for us. Today, large industrial houses are as common place as the industrial units of many MNCs (Multinational Corporations). The ever increasing number of industries has made matters worse by exerting pressure on existing freshwater resources. Industries, apart from being heavy users of water, also require power to run them. Much of this energy comes from hydroelectric power. Today, in India hydroeclectric power contributes approximately 22 per cent of the total electricity produced. Moreover, multiplying urban centres with large and dense populations and urban lifestyles have not only added to water and energy requirements but have further aggravated the problem. If you look into the housing societies or colonies in the cities, you would find that most of these have their own groundwater pumping devices to meet their water needs. Not surprisingly, we find that fragile water resources are being overexploited and have caused their depletion in several of these cities. Another problem is that water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity. This scarcity may be due to bad quality of water. Lately, there has been a growing concern that even if there is ample water to meet the needs of the people, much of it may be polluted by domestic and industrial wastes, chemicals, pesticides and fertilisers used in agriculture, thus, making it hazardous for human use. A large population requires more water not only for domestic use but also to produce more food. Hence, to facilitate higher food-grain production, water resources are being over-exploited to expand irrigated areas for dry-season agriculture. Irrigated agriculture is the largest consumer of water. Now it is needed to revolutionise the agriculture through developing drought resistant crops and dry farming techniques.

39.1 Which of the following is not the cause of water scarcity – rainwater harvesting or overpopulation?

Ans. Rainwater harvesting is not the cause of water scarcity.

39.2 Name the largest consumer of water in India.

Ans. Irrigated agriculture is the largest consumer of water in India.

39.3 What causes depletion or scarcity of water quality?

Ans. Multiplying urban centres with large and dense populations and urban lifestyles have not only added to water and energy requirements but have further aggravated the problem. Over exploitation of fragile water resources have depleted water resources.

40. Floods – Basic safety precautions to be taken:

- Listen to radio/TV for the latest weather bulletins and flood warnings. Pass on the information to others.
- Make a family emergency kit which should include; a portable radio/transistor, torch, spare batteries, a first aid box along with essential medicines, ORS, dry food items, drinking water, matchboxes, candles and other essential items.
- Keep hurricane lamp, ropes, rubber tubes, umbrella and bamboo stick in your house. These could be useful.
- Keep your cash, jewellery, valuables, important documents etc. in a safe place.
- If there is a flood, move along with your family members and cattle to safe areas like relief camps, evacuation centers, elevated grounds where you can take shelter.
- Turn off power and gas connections before leaving your house.

During floods:

- Don't enter into flood waters; it could be dangerous.
- Don't allow children to play in or near flood waters.
- Stay away from sewerage line, gutters, drains, culverts etc.
- Be careful of snakes; snakebites are common during floods.
- Stay away from electric poles and fallen power-lines to avoid electrocution.
- Don't use wet electrical appliances – get them checked before use.
- Eat freshly cooked and dry food. Always keep your food covered.
- Use boiled and filtered drinking water.
- Keep all drains, and gutters near your house clean.
- Stagnation of water can breed vector/water-borne diseases. In case of sickness, seek medical assistance.
- Use bleaching powder and lime to disinfect the surroundings. **(CBSE 2024)**

40.1 Mention any two essential items that should be included in a 'family emergency kit.'

Ans. Family emergency kit should include a portable radio/transistor and a first aid box along with essential medicines.

40.2 Why are the items of family emergency kit important during flood situation?

Ans. Emergency kit is important because it can help you and your family. It can help reduce uncertainty and stress during a crisis.

40.3 In case of a flood, what are the recommended actions to ensure the safety of your family and belongings? Describe any two.

Ans. If there is a flood, move along with your family members and cattle to safe areas like relief camps, evacuation centres, elevated grounds where you can take shelter. Turn off power and gas connections before leaving your house.

41. Multi-purpose projects, launched after independence with their integrated water resources management approach, were thought of as the vehicle that would lead the nation to development and progress, overcoming the handicap of its colonial past. Jawaharlal Nehru proudly proclaimed the dams as the 'temples of modern India'; the reason being that it would integrate development of agriculture and the village economy with rapid industrialisation and growth of the urban economy. In recent years, multi-purpose projects and large dams have come under great scrutiny and opposition for a variety of reasons. Regulating and damming of rivers affect their natural flow causing poor sediment flow and excessive sedimentation at the bottom of the reservoir, resulting in rockier stream beds and poorer habitats for the rivers' aquatic life. Multi-purpose projects and large dams have also been the cause of many new environmental movements like the 'Narmada Bachao Andolan' and the 'Tehri Dam Andolan' etc. Resistance to these projects has primarily been due to the large-scale displacement of local communities. Narmada Bachao Andolan or Save Narmada Movement is a Non Governmental Organisation (NGO) that mobilised tribal people, farmers, environmentalists and human rights activists against the Sardar Sarovar Dam being built across the Narmada river in Gujarat. It originally focused on the environmental issues related to trees that would be submerged under the dam water. Recently it has re-focused the aim to enable poor citizens, especially the oustees (displaced people) to get full rehabilitation facilities from the government.

41.1 Why were dams proclaimed as 'temples of modern India'?

Ans. Dams were proclaimed as 'temples of modern India' because they would integrate development of agriculture and the village economy with rapid industrialisation and growth of the urban economy.

41.2 Which organisation mobilised the 'Narmada Bachao Andolan'?

Ans. Tribal people, farmers, environmentalists and human rights activists were mobilised against the Sardar Sarovar Dam being built across the Narmada River in Gujarat.

41.3 Many dams were constructed to control flood but they triggered flood. Why?

Ans. The dams that were constructed to control the floods have triggered floods due to sedimentation in the reservoir.

42. Nowadays, in western Rajasthan, the practice of rooftop rainwater harvesting is declining as sufficient water is available due to the perennial Indira Gandhi Canal, though some houses still have the tankas since they do not like the taste of supply water. In fact, in many parts of rural and urban India, rooftop rainwater harvesting is being successfully done to obtain water for future use. In Gendathur, a village in Mysuru, Karnataka, people have put up rainwater harvesting system on the rooftops of their houses to meet their requirements of water. About 200 households have installed this system and the village has earned the unique status of being rich in rainwater.

Rooftop rainwater harvesting is also popular in Shillong, Meghalaya. It is surprising because Cherapunjee and Mawsynram, two other places in the state close to Shillong receive the highest rainfall in the world. Yet the state capital Shillong faces acute shortage of water. Almost all households in the city has a rooftop rainwater harvesting facility. About one-fifth of the total water requirement of the household comes from rooftop water harvesting.

42.1 Why is rainwater harvesting on the decline in western Rajasthan?

Ans. The practice of rooftop rainwater harvesting is on the decline in western Rajasthan because plenty of water is available due to the perennial Indira Gandhi Canal.

42.2 How does the adoption of rooftop rainwater harvesting in Gendathur village, Karnataka, contribute to water conservation and sustainability?

Ans. The adoption of rooftop rainwater harvesting meets the water needs of nearly 200 households

and has earned the village the rare distinction of being rich in rainwater.

42.3 What lessons can be learned from the success of rooftop rainwater harvesting in Gendathur village and Shillong? Explain in 40 words.

Ans. The success of rooftop rainwater harvesting in Gendathur village and Shillong proves that people can adopt sustainable water practices by adopting rainwater harvesting. This practice can be promoted and replicated in other areas to meet water needs. It is cost effective and also easy to install.

43. A dam is a barrier across flowing water that obstructs, directs or retards the flow, often creating a reservoir, lake or impoundment. "Dam" refers to the reservoir rather than the structure. Most dams have a section called a spillway or weir over which or through which it is intended that water will flow either intermittently or continuously.

In the past, dams were built to impound rivers and rainwater that could be used later for irrigation. Today, dams are built not just for irrigation but for generating hydroelectricity, water supply for domestic and industrial uses, flood control, picnic spots, inland navigation and fish breeding. Therefore, dams are also called multi-purpose projects where the many uses of the impounded water are integrated with one another. For example, in the Sutluj-Beas river basin, the Bhakra-Nangal project water is being used both for hydel power production and irrigation.

Dams are classified according to structure, intended purpose or height. Based on structure and the materials used, dams are classified as timber dams, embankment dams or masonry dams, with several subtypes. According to the height, dams can be categorised as large dams and major dams or alternatively as low dams, medium height dams and high dams.

43.1 What is the primary purpose of a dam?

Ans. The primary purpose of a dam is to arrest the flow of water to create a reservoir or lake. This allows for control over water flow and its storage for various future uses.

43.2 Classify the type of dams on the basis of their structure and materials used.

Ans. Dams are classified into three main categories based on their structure and materials: timber dams, embankment dams, and masonry dams, with several subtypes.

43.3 Jawaharlal Nehru proudly proclaimed that dams are the 'temples of modern India'. Justify this statement in 40 words.

Ans. Though in recent years, large dams have faced opposition for various reasons, Nehru was right when he said 'dams are temples of modern India' – dams helped to integrate development of agriculture and the village economy with rapid industrialisation and growth of the urban economy.

Long Answer Type Questions

44. Is there any need for conservation of water resources? Discuss it, giving suitable reasons.

Ans. We need to conserve water resources because:

- Our water resources are limited, but our needs are growing every day.
- Water is not evenly distributed, and most of our resources, especially in cities, are polluted and unsafe for drinking and other uses.
- Conserving water is crucial for our health and well-being, as well as for maintaining our livelihoods and the natural environment.
- We need water to grow food, support economic activities, and preserve the natural ecosystem.
- If we don't conserve water, we risk degrading our environment, threatening our food security, and harming our livelihoods.

45. 'Conflicts and issues associated with multi-purpose river valley projects have affected people and the environment'. Substantiate the statement with examples.

Ans. Multipurpose projects have created conflicts between different groups of people who want to use the same water resources for various purposes. For example, in Gujarat, farmers were upset because priority was given to supplying water to urban areas during droughts, leading to agitation and near-riots. Also, there are inter-state disputes over sharing the costs and benefits of these projects.

Many of these projects have failed to achieve their intended purposes, and some have even made things worse. For instance, dams built to control floods have actually caused floods due to sedimentation, and have been unsuccessful in controlling floods during heavy rainfall. Overall, multipurpose river valley projects have significant social and environmental implications that need to be carefully considered.

46. Do a comparative study on the advantages and disadvantages of multi-purpose river valley projects.

Ans. **Advantages of multi-purpose projects are as follows:**

- Supply of water is maintained due to water storage capacity.

- Help to generate electricity.
- Strong irrigation system.
- Sufficient water supply for domestic and industrial use.
- They integrate conservation of water with flood control.

Disadvantages of multi-purpose projects are as follows:

- Regulating and damming of rivers affect their natural flow causing poor sediment flow and excessive sedimentation at the bottom of the reservoir.
- Dams fragment rivers making it difficult for the aquatic fauna to migrate, especially for spawning.
- The reservoirs created on the floodplains submerge the existing vegetation and soil leading to its decomposition over a period of time.

47. Discuss in detail how the rainwater harvesting is carried out in the semi-arid regions of Rajasthan.

Ans.
- In arid and semi-arid regions, agricultural fields were converted into rain fed storage structures which allowed water to stand and moisten the soil like 'khadins' in Jaisalmer and 'Johads' in other parts of Rajasthan.
- In the semi-arid and arid regions of Rajasthan, particularly in Bikaner, Phalodi and Barmer, almost all the houses had well-developed rooftop rainwater harvesting system. The sloping roofs of the houses were connected to underground tanks or tankas through a pipe. The rain falling on the roofs would flow through the pipe and get stored in the underground tanks.

48. Explain the working of underground tanks as a part of rooftop rainwater harvesting system practised in Rajasthan. **(CBSE 2015)**

Ans. The underground tanks or tankas were part of the well-developed rainwater harvesting system. They were built inside the main house or the courtyard. The tanks could be as large as one big room. The tanks were connected to the sloping roofs of the houses through a pipe. The rain falling on the rooftops would travel down the pipe and was stored in the underground tanks. The first spell of the rain was not collected and rainwater from the subsequent showers were collected.

Let's Compete

Multiple-Choice Questions

1. The first state to make rooftop rainwater harvesting compulsory is
(a) Kerala. (b) Rajasthan.
(c) Tamil Nadu. (d) Uttar Pradesh.

Ans. (c) Tamil Nadu.

2. On which one of the following rivers is the Sardar Sarovar Dam built?
(a) Kaveri River (b) Satluj River
(c) Krishna River (d) Narmada River

Ans. (d) Narmada River

3. Which of the following is not the adverse effect of dam construction?
(a) Population displacement
(b) Flood control
(c) Excessive sedimentation of the resources
(d) Interstate water disputes

Ans. (b) Flood control

4. Which of the following methods of rainwater harvesting is not used in Rajasthan?
(a) *Guls* (b) *Tankas*
(c) *Khadins* (d) *Johads*

Ans. (a) *Guls*

5. Who proclaimed the dams as 'the temples of modern India'?
(a) Mahatma Gandhi
(b) Dr Rajendra Prasad
(c) Mrs Indira Gandhi
(d) Jawaharlal Nehru

Ans. (d) Jawaharlal Nehru

6. The diversion channels of the Himalayas are called
(a) reservoirs. (b) *kuls.*
(c) *tankas.* (d) *khadins.*

Ans. (b) *kuls.*

7. The largest artificial lake built in the 11th century is
(a) Chilika Lake. (b) Bhopal Lake.
(c) Sambhar Lake. (d) Dal Lake.

Ans. (b) Bhopal Lake.

8. Power plants need water for
(a) irrigation purpose. (b) cooling the machines.
(c) drinking purpose. (d) agriculture.

Ans. (b) cooling the machines.

9. 'Narmada Bachao Andolan' is a
(a) multi-purpose project.
(b) social movement against construction of dams.
(c) rainwater harvesting method.
(d) irrigational method.

Ans. (b) social movement against construction of dams.

10. Which of the following village in Mysuru installed household rooftop rainwater harvesting?
(a) Vanasthalipuram (b) Tirumakudal
(c) Narsipur (d) Gendathur

Ans. (d) Gendathur

Life Skills

1. Water is a very important asset. How can we contribute to save water?

Ans. We can contribute to save water by following the given measures:

- Make proper arrangements for recycling and reuse of water.
- Stop the reckless use of water resources and reduce the wastage of water.
- Adopt measures and make people aware about increasing the level of underground water.
- Storing rainwater for use during the dry season, i.e. rainwater harvesting.
- Develop and construct the water storage reservoirs in different parts of the country.

2. Why is water scarcity increasing day by day? What factors are responsible for it?

Ans. Factors responsible for increase water scarcity in India:

(i) Water shortage is a common and regular problem in the areas which are drought prone and have desert like topography.

(ii) Certain metropolitan cities like Mumbai and Kolkata are facing acute water shortage because of dense population and urban lifestyles requiring more water and power consumption.

(iii) Massive depletion of water takes place because multi-storeyed buildings and housing complexes or colonies have their own ground water pumping devices which lead to over-exploitation of water resources.

4

Agriculture

Check Your Progress

Multiple-Choice Questions

1. Which one of the following is not a cropping season?

(a) Kharif (b) Rabi
(c) Zaid (d) None of these

Ans. (d) None of these

2. Shifting agriculture in the north-eastern region is known as

(a) *bringa.* (b) *kuruwa.*
(c) *jhumming.* (d) *penda.*

Ans. (c) *jhumming.*

3. Which of the following is an example of leguminous crop?

(a) Millet (b) Wheat
(c) Pulses (d) Rice

Ans. (c) Pulses

4. Choose the correctly matched pair from the following.

(a) Milpa – Conuco
(b) Roca – Brazil
(c) Masole – Vietnam
(d) Ladang – China

Ans. (b) Roca – Brazil

5. Identify the crop with the help of the following information and choose the correct option.

- This is the second most important Cereal Crop.
- This is a Rabi crop.
- It requires a cool growing season and bright sunshine at the time of ripening.
- It requires 50 to 75 cm annual rainfall.

Options:

(a) Wheat (b) Maize
(c) Rice (d) Sugarcane **(CBSE 2023)**

Ans. (a) Wheat

6. 'A' gave his friend clues about a staple crop. Which of the following clues provided by 'A' would be most useful in identifying the staple food for the majority of India? Choose the correct option.

I. Our country is the second-largest producer in the world, after China.
II. It is a *kharif* crop.
III. It requires a high temperature above 25 degrees and high humidity with rainfall above 100 cm.
IV. In areas with less rainfall, it grows with the help of irrigation.

Options:

(a) Clue I (b) Clues I and II
(c) Clue III (d) Clues I and III

Ans. (c) Clue III

7. Which of the following options were given priority to bring about institutional reforms in the country after Independence? Choose the correct option.

I. Privatisation of agriculture
II. Consolidation of holdings
III. Cooperation
IV. Abolition of Zamindari

Options:

(a) I and II (b) II, III and IV
(c) II and III (d) I and IV

Ans. (b) II, III and IV

Very Short Answer Type Questions

8. Which are the two fibre crops of India? Name two major producing states of each.

Ans. (i) Cotton: Maharashtra and Gujarat.
(ii) Jute: West Bengal and Bihar.

9. What is plantation agriculture? Which crops are grown under it?

Ans. Plantation agriculture is also a type of commercial farming. In this type of farming, a single crop is grown on a large area. Tea, coffee, rubber, sugarcane and banana are some of the important plantation crops.

10. Why is rice called the principal crop in Assam?

Ans. Agriculture in Assam is popularly known as rice culture, because it is dominated by rice as the most important cereal crop in terms of area, production and productivity. Rice is the principal crop in Assam because of its importance to the state's economy, food security, and people's diet.

11. What are *rabi* crops? Give two examples of *rabi* crops.

Ans. *Rabi* crops are sown in winter from October to December and harvested in summer from April to June. Wheat, barley, peas, gram and mustard are some important *rabi* crops.

12. Name the three millet crops grown in India.

Ans. Jowar, Bajra and Ragi

13. What type of crops are cotton and wheat, and in which season these are grown?

Ans. Cotton is *kharif* crop. *Kharif* crops are grown with the onset of monsoon in different parts of the country and these are harvested in September-October. Wheat is a *Rabi* crop. *Rabi* crops are sown in winter from October to December and harvested in summer from April to June.

14. Name the three cropping seasons of India. Mention their months.

Ans. *Rabi*, *kharif* and *zaid* are the three cropping seasons of India. *Rabi* crops are sown from October to December, *kharif* crops are sown in June and July, *zaid* is a short season between the *rabi* and *kharif* season.

15. Name the state which has the highest percentage of cultivated area. Explain the reason behind it.

Ans. Punjab has the highest percentage of cultivated area in India. It is often referred to as the "granary of India" and the "food basket of the country". Punjab has the highest percentage of land under irrigation in India. The state is a significant contributor to the production of wheat, rice, and sugarcane.

Short Answer Type Questions

16. Explain why Indian agriculture is subsistence type.

Ans. Most of the farmers in India practise subsistence agriculture because the land holdings are small and scattered. In subsistence farming, the total production is just enough to meet the requirements of the farmer's family and there is no surplus production for sale. Traditional tools are used for farming.

17. Give reasons why the area under food crops is decreasing.

Ans. The main reason for decreasing the area under food crop is as follows:

- Due to the excessive use of pesticides, the fertility of soil is decreasing.
- Drying up of wells and tube wells because of water shortage.
- Farmers are shifting towards commercial farming.
- Reduction of agricultural land for non-agricultural purposes.

18. Identify the two main food crops of India. Mention areas producing these crops.

Ans. Wheat and rice are the two main crops of India.

The major wheat producing states are Punjab, Haryana, Rajasthan, Uttar Pradesh and parts of Madhya Pradesh.

The major rice producing areas are Bihar, West Bengal, Odisha, Chhattisgarh and Assam.

19. Write a short note on the Green Revolution.

Ans. Green Revolution was based on the use of package technology to improve the lot of Indian agriculture. The green revolution was successful in Punjab, Haryana and western Uttar Pradesh. There are certain components of green revolution like large scale use of high yielding variety of seeds, chemical fertilizers, pesticides, herbicides and insecticides. With this India not only became self-sufficient in food production but also exported some food grains for the first time in 1977.

20. 'Pulses are an important group of crops in India'. Justify this statement with any three relevant points.

Ans. Pulses are an important crop in India due to the following reasons:

(i) Protein-rich: Pulses are a major source of protein in a vegetarian diet.

(ii) Drought-tolerant: Pulses require less moisture and can survive in dry conditions.

(iii) Soil fertility restoration: Most pulses fix nitrogen from the air, restoring soil fertility and making them a valuable crop for rotation with other crops.

21. 'India is a significant player in global oilseed production'. Justify this statement with three relevant points.

Ans. India is a significant player in global oilseed production for the following three reasons:

(i) India is the second-largest producer of groundnut in the world.

(ii) India is the third-largest producer of rapeseed in the world.

(iii) Different oilseeds are grown in India, covering around 12 per cent of the total cropped area. Oilseeds are used for edible purposes and as raw materials for industries.

22. Describe any three impacts of globalisation on Indian agriculture.

Ans. Globalisation has had both beneficial and detrimental effects on Indian agriculture. The introduction of advanced technologies, innovative seeds, and diverse agricultural products has resulted in increased production and productivity levels. The liberalisation of the economy, along with the green revolution, has contributed to a growing share of agriculture within the Indian economic framework. Additionally, farmers have gained greater awareness of available opportunities and alternatives.

Long Answer Type Questions

23. How is energy a basic requirement for economic development? Explain.

Ans. Energy serves as a fundamental necessity for economic development, acting as a crucial element across various sectors of the economy. Each sector – primary, secondary, and tertiary – relies on energy to facilitate its operations. It fuels machinery, production lines, and the transportation of goods. Energy is essential for various modes of transport, including vehicles, airplanes, trains, and ships. Additionally, it is vital for the construction and upkeep of infrastructure such as roads, bridges, airports, and telecommunications systems. Energy also plays a significant role in irrigation, the operation of machinery, and processing facilities. Furthermore, it is indispensable for technological advancements and innovations that propel economic growth.

OR

23. Why is commercial farming more capital intensive and exploitative than subsistence farming?

Ans. In commercial agriculture, adequate irrigation systems are established. This type of farming relies less on human labour or animal power. It is predominantly found in developed nations. The primary objective of commercial agriculture is profit generation, in contrast to subsistence farming, which focuses on meeting the needs of the farmer and their family. Subsistence farming typically relies on seasonal rainfall and is more reliant on animal labour and human effort. It is primarily practiced in less developed or developing regions. A defining feature of commercial agriculture is the application of substantial amounts of modern agricultural inputs, such as high-yielding variety (HYV) seeds, chemical fertilisers, insecticides, and pesticides, to enhance productivity. The extent of agricultural commercialisation differs across various regions.

24. Compare 'intensive subsistence farming' with that of 'commercial farming' practiced in India.

(CBSE 2018)

Ans.

Intensive subsistence farming	Commercial farming
(i) Pressure of population on land is high.	(i) Pressure of population on land is low.
(ii) Low capital investment.	(ii) High capital investment.
(iii) Farmers produce for their own consumption.	(iii) Production is mainly for the market.
(iv) Land holdings are small.	(iv) Land holdings are large.
(v) Labour intensive farming is used.	(v) Mechanized form of farming is used.

25. How was the 'Silk Route' an example of vibrant pre-modern trade? Explain. **(CBSE 2023)**

Ans. The Silk Route constituted a series of trade pathways linking Asia, Europe, and Africa, serving as a significant illustration of dynamic pre-modern commerce for various reasons. This route enabled the transfer of commodities such as silk, spices, and gemstones among different regions, highlighting economic interdependence. Additionally, technological advancements, including papermaking and printing, disseminated from China to the Islamic world and Europe. It also facilitated the transmission of ideas, religions, and philosophies, notably Buddhism, from India to China and Japan. Furthermore, empires and kingdoms forged diplomatic connections, enhancing relations and promoting cultural integration.

26. How did food promote long-distance cultural contacts in the pre-modern world? Explain.

(CBSE 2023)

Ans. Food facilitated long-distance cultural interactions in the pre-modern world through various means. Merchants and explorers brought new agricultural products to the regions they encountered. For instance, noodles, which originated in China, evolved into spaghetti in Western cuisine. In the

5th century, Arab traders introduced pasta to Sicily. Numerous staple foods, including potatoes, tomatoes, maize, chilies, soybeans, groundnuts, and sweet potatoes, were previously unknown to earlier generations. These items were brought to Europe and Asia following Christopher Columbus's discovery of the Americas. When individuals move from one cultural background to another, their culinary traditions also transition to the new area.

27. What initiatives have been taken by the government to ensure an increase in agriculture production?

Ans. The steps taken by the government to ensure the increase in agriculture production are as follows:

- A comprehensive programme has been initiated which included both institutional and technical reforms.
- Provision for crop insurance against drought, flood, cyclone, fire and diseases, establishment of Grameen banks, cooperative societies and banks for providing loan facilities to the farmers at lower rates of interest.
- Some other schemes like Kissan Credit Card and Personal Accident Insurance Scheme are introduced by Government of India.
- Special weather bulletins and agricultural programmes for farmers were introduced on the radio and television.
- The government also announces minimum support price for important crops to check the exploitation of farmers by speculators and middlemen.

28. Describe the climate conditions required for the growth of sugarcane and tea crops.

Mention any two important sugarcane and tea producing states.

Ans. Climatic condition required for the growth of sugarcane:

- Sugarcane is a tropical plant and grows well in hot and humid climate.
- The average temperature during the growing period should range between 21 °C to 27 °C.
- The average rainfall should range between 75 cm and 100 cm.
- Sugarcane need frost-free growing season.

The two major sugarcane producing states are Uttar Pradesh, Maharashtra.

Climatic conditions required for the growth of tea:

- It grows well in tropical and sub-tropical climates.
- The soil should be deep, fertile and well-drained. It should be rich in humus and organic matter.
- Tea bushes require warm and moist frost-free climate all through the year.
- Frequent showers evenly distributed over the year ensure continuous growth of tender leaves.

The two major tea producing states are Assam and West Bengal.

29. Which fibre is known as the golden fibre? Where is it grown in India? Describe its various uses.

Ans. Jute is known as the golden fibre.

It grows well in the well drained soil, in the flood plains where the soil renews every year. High temperature is required during the time of growth. West Bengal, Bihar, Assam, Odisha and Meghalaya are the major jute producing states.

It is used for making gunny bags, mats, ropes, yarn, carpets and other artefacts.

30. What are non-food crops? Explain why they are also important.

Ans. Non-food crops are those crops that are not eaten but are used to make things like clothes, bags, and tires. They play a vital role in the economy, providing employment opportunities, generating export earnings, and meeting the demand for various products:

- Rubber: It is used in the production of tires, tubes, and other rubber products.
- Cotton: It is used in the production of textiles, clothing, and fabric.
- Jute: It is used in the production of gunny bags, mats, ropes, and other packaging materials. It is also used in the manufacturing of various industrial products such as carpets, curtains, and upholstery.
- Silk: It is used in the production of high-quality textiles, clothing, and fabric.

Self-Assessment

Multiple-Choice Questions

1. When a single crop is grown on a large area it is called

(a) intensive agriculture. (b) plantation agriculture.
(c) shifting agriculture. (d) mixed farming.

Ans. (b) plantation agriculture.

2. Green Revolution was based on the use of

(a) mixed farming.
(b) Operation Flood.
(c) package technology.
(d) slash and burn.

Ans. (c) package technology.

3. Rearing silk worms for the production of silk fibre is called
   (a) horticulture. (b) sericulture.
   (c) monoculture. (d) silviculture.

Ans. (b) sericulture.

4. Read the given statement and choose the correct option with regard to *rabi* cropping season from the following.
   I. *Rabi* crops are sown in winter.
   II. Sown from October to December and harvested from April to June.
   III. Important crops are maize, cotton, jute.
   IV. Punjab, Haryana, Uttar Pradesh are important for the production of wheat.

   Options:
   (a) I, III, and IV (b) II, III and IV
   (c) I, II and IV (d) I, II and III

(CBSE 2024)

Ans. (c) I, II and IV

5. Read the following informations and identify the crop.
   - It is the staple food crop of majority of people in India.
   - India is the second largest producer of this crop.
   - It is a *kharif* crop.
   - It requires high humidity with 100 cm of annual rainfall.

   Crops:
   (a) Ragi (b) Bajra
   (c) Wheat (d) Rice **(CBSE 2024)**

Ans. (d) Rice

6. Read the given statements and choose the correct option with regard to *kharif* cropping pattern from the following.
   I. Kharif crops are grown with the onset of monsoon.
   II. These are harvested in September and October.
   III. Important crops grown during this season are wheat, barley and peas.
   IV. Assam, West Bengal, Coastal Region of Odisha are important regions for the production of rice.

   Options:
   (a) I, III and IV (b) II, III and IV
   (c) I, II and IV (d) I, II and III

Ans. (c) I, II and IV

7. Choose the correctly matched pair from the following.
   (a) Rice – 20 °C
   (b) Maize – 21 °C to 27 °C
   (c) Rubber – 11 °C
   (d) Wheat – 51 °C

Ans. (b) Maize – 21 °C to 27 °C

8. Identify the type of farming with the help of the following information and choose the correct option.
   - This type of farming is still practised in a few pockets of India.
   - It is practised on small patches of land with primitive and family / community labour.
   - This type of farming depends upon monsoon, the natural fertility of the soil and suitability of other environmental conditions to the crops grown.

   Farming:
   (a) Primitive subsistence farming
   (b) Intensive subsistence farming
   (c) Commercial farming
   (d) Plantation farming

Ans. (a) Primitive subsistence farming

9. Read the given statements and choose the correct option with regard to plantation farming from the following.
   I. Plantation farming is also a type of commercial farming.
   II. In this type of farming, many crops are grown in a large area. The plantation has an interface of agriculture and industry.
   III. Plantations cover large tracts of land, using capital intensive inputs, with the help of migrant labourers.
   IV. All the produce is used as raw material in respective industries.

   Options:
   (a) I, III and IV (b) II, III and IV
   (c) I, II and IV (d) I, II and III

Ans. (a) I, III and IV

Assertion-Reason Type Questions

For question numbers 10 to 19, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

10. **Assertion (A):** In India, tea, coffee, rubber, sugarcane, banana, etc., are important plantation crops.

Reason (R): Since the production is mainly for market, a well-developed network of transport and communication connecting the plantation areas, processing industries and markets plays an important role in the development of plantations.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

11. **Assertion (A):** The degree of commercialization of agriculture varies from one region to another.

Reason (R): Rice is a commercial crop in Haryana and Punjab, but in Odisha, it is a subsistence crop.

Ans. (a) Both A and R are true and R is the correct explanation of A.

12. **Assertion (A):** *Rabi* crops are sown in winter from October to December and harvested in summer from April to June.

Reason (R): Important crops grown during this season are paddy, maize, jowar, bajra, tur (arhar), moong, urad, cotton, jute, groundnut and soyabean.

Ans. (c) A is true but R is false.

13. **Assertion (A):** India is the largest producer of rice in the world.

Reason (R): Rice is a *kharif* crop which requires high temperature, (above 25 °C) and high humidity with annual rainfall above 100 cm.

Ans. (d) A is false but R is true.

14. **Assertion (A):** Government of India introduces schemes to support farmers.

Reason (R): Government of India has started schemes like KCC, PAIS, and support prices, and also broadcasts weather bulletins and agricultural programmes.

Ans. (a) Both A and R are true and R is the correct explanation of A.

15. **Assertion (A):** India is a leading producer of cotton.

Reason (R): It has the ideal climate and soil for cotton growth.

Ans. (a) Both A and R are true and R is the correct explanation of A.

16. **Assertion (A):** Plantation farming is a type of commercial farming.

Reason (R): In India, tea, coffee, rubber, sugarcane, banana, etc., are important plantation crops.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

17. **Assertion (A):** Intensive subsistence farming is practised in areas of low population.

Reason (R): It is labour intensive farming, where high doses of biochemical inputs and irrigation are used for obtaining higher production.

Ans. (d) A is false but R is true.

18. **Assertion (R):** Major bajra producing states are Rajasthan, Uttar Pradesh, Maharashtra, Gujarat and Haryana.

Reason (R): Bajra grows well on sandy soils and shallow black soil.

Ans. (a) Both A and R are true and R is the correct explanation of A.

19. **Assertion (A):** Indian agriculture is in need of transformative change.

Reason (R): With over 60 per cent of the population relying on agriculture for livelihood, it requires comprehensive technical and institutional reforms to enhance productivity, efficiency, and sustainability, ensuring a secure and prosperous future for millions.

Ans. (a) Both A and R are true and R is the correct explanation of A.

Match the Following

20. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (Types of Cultivations)	Column B (Countries)
A. Milpa	1. Mexico
B. Conuco	2. Venezuela
C. Roca	3. Brazil
D. Ladang	4. Indonesia

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	2	3	4	1

Ans. (a) 1 2 3 4

Find the Correct Option

21. (a) Bajra grows well on red soil.

(b) Wheat requires 50 to 75 cm of annual rainfall evenly distributed over the growing season.

(c) Maize is a *rabi* crop which requires temperature between 21 °C to 27 °C.

(d) Major maize-producing states are West Bengal and Tripura.

Ans. (b) Wheat requires 50 to 75 cm of annual rainfall evenly distributed over the growing season.

Correct and Rewrite the Following Statement

22. *Kharif* crops are grown with the onset of winter in different parts of the country and these are harvested in March-April.

Ans. Kharif crops are grown with the onset of monsoon in different parts of the country and these are harvested in September-October.

Fill in the Blanks

23. **Wheat** and **rice** are the two staple food crops of India.

24. India ranks **second** in the production of rice in the world after China.

25. **Pulses** is a leguminous crop.

Very Short Answer Type Questions

26. Name the different types of agricultural practices in India. Mention any one reason why agriculture is important in India.

Ans. Some important types of agricultural practices in India are mixed farming, intensive farming, organic farming, industrial agriculture, subsistence farming, extensive farming, plantation farming and dry land farming. Agriculture is important because it contributes 18.2% in the country's GDP and provides livelihood support to about 42.3% of the population.

27. Differentiate between Primitive Subsistence and Commercial Farming. **(CBSE 2024)**

Ans. Primitive subsistence agriculture is practised on small patches of land with the help of primitive tools like hoe, dao and digging sticks, and family/community labour. The main characteristic of commercial farming is the use of higher doses of modern inputs, e.g. high yielding variety (HYV) seeds, chemical fertilisers, insecticides and pesticides in order to obtain higher productivity.

28. Differentiate between *Rabi* and *Kharif* cropping seasons. **(CBSE 2024)**

Ans. *Rabi* crops are sown in winter from October to December and harvested in summer from April to June. Important *Rabi* crops are wheat, barley, peas, gram and mustard. *Kharif* crops are grown with the onset of monsoon and these are harvested in September-October. Important crops are paddy, maize, jowar, bajra, tur (arhar), moong, urad, cotton, jute, groundnut and soyabean.

29. Which variety of coffee is grown extensively in India? Where was it initially introduced?

Ans. The Arabica variety is grown extensively in India and its cultivation was initially introduced on the Baba Budan Hills.

30. State two uses of oil seeds.

Ans. (i) Oilseeds are edible and used as cooking mediums.

(ii) These are used as raw material in the production of soaps, cosmetics and ointments.

31. Mr John from Assam wishes to cultivate either tea or sugarcane. Which one of the crops out of the two can he cultivate in his state? Why?

Ans. Mr John can cultivate tea in Assam due to its favourable climate, with high rainfall, warm temperatures, and fertile soil, creating ideal conditions for tea plants to thrive.

32. What are the main factors that contribute to the success of *rabi* crops in states such as Punjab and Haryana?

Ans. Rainfall during winter months due to western temperate cyclones and the success of the Green Revolution are two important reasons for the success of wheat cultivation.

33. Mention two main characteristics of commercial farming.

Ans. Commercial farming relies on extensive use of HYV seeds, chemical fertilisers, and pesticides to increase productivity and profitability. This is seen in regions like Haryana and Punjab, where rice is a commercial crop and farmers heavily rely on these inputs.

34. Mention two drawbacks of shifting cultivation.

Ans. The drawback of shifting cultivation are low productivity and inefficient use of resources. It also causes deforestation and loss of biodiversity.

35. What are the main factors that affect farming in India?

Ans. Main factors affecting farming in India are physical factors (terrain, topography, climate, and soil), technological factors, economic factors, environmental factors (rainfall, temperature, air, relative humidity, and wind), government policies, land fragmentation, soil fertility, access to irrigation systems, etc.

36. Is agriculture important for India? Justify your response.

Ans. Agriculture is important for India for two main reasons:

(i) It is the largest source of livelihood.

(ii) It ensures food security and raw materials for industries.

Short Answer Type Questions

37. Name the crop which is used both as food as well as fodder. Mention the geographical conditions required for the growth of the crop.

Ans. Maize is a crop which is used both as food and fodder. It is a kharif crop which requires temperature between 21 °C to 27 °C. It grows well in old alluvial soil.

38. Mention the geographical conditions required for cultivation of rubber. Name two areas where it is grown.

Ans. Rubber is an equatorial crop but under special conditions it is grown in tropical and sub-tropical regions. It requires humid and moist climate. It grows well in those areas where rainfall in more than 200 cm and temperature is above 25 °C. Rubber is mainly grown in Kerala, Tamil Nadu, Karnataka and Andaman and Nicobar islands.

39. Describe any three features of cultivation of millets in India. **(CBSE 2024)**

Ans. Millets exhibit remarkable adaptability to diverse ecological environments and flourish in rain-fed, arid climates, requiring minimal amounts of water, fertilisers, and pesticides. Their growing season is relatively short, lasting between 70 to 100 days, in contrast to the 120 to 150 days needed for wheat and rice. Additionally, millets serve dual purposes as both food and fodder, contributing to food security and economic viability.

40. Mention the challenges the jute crop faces in India.

Ans. Jute is the second most important fibre crop in India after cotton. It is widely used in making of gunny bags, ropes, strings, carpets, cloth and various decoration material. At present, jute is facing tough competition from synthetic fibres and plastics. Due to its high cost, it is losing market to synthetic fibres and packing materials, particularly the nylon.

41. 'Cotton is the backbone of the textile industry in India.' Justify the statement.

Ans. Cotton is the backbone of the textile industry which can be justified by the following three points:

- Cotton is one of the main raw materials in India.
- Many large states like Maharashtra, Gujarat and Madhya Pradesh cultivate cotton. Thus, a large population is engaged in its cultivation.
- India is the second-largest producer of cotton globally. A large number of people worked in the textile industry.

42. What makes millets vital for India? Give three suitable reasons.

Ans. Millets are vital due to the following reasons:

- Their exceptional nutritional value, adaptability, and widespread cultivation make them important.
- Jowar, bajra and ragi are nutrient-rich millets that provide essential micro-nutrients like iron, calcium and roughage.
- Millets are cultivated in many states, demonstrating the versatility of millets in different climates and soil types.

43. Describe the geographic conditions necessary for rice cultivation.

Ans. Rice requires the following climatic conditions to thrive:

- High temperature (above 25 °C)
- High humidity – annual rainfall above 100 cm. Development of dense network of canal irrigation and tubewells have made it possible to grow rice in areas of less rainfall such as Punjab, Haryana and western Uttar Pradesh and parts of Rajasthan.
- Alluvial soil – it is grown in deltaic and coastal regions.

Paragraph Based Questions

44. Read the sources given below and answer the questions that follow:

Source A – Commercial Farming

Plantation is also a type of commercial farming. In this type of farming, a single crop is grown on a large area. The plantation has an interface of agriculture and industry. Plantations cover large tracts of land, using capital intensive inputs, with the help of migrant labourers.

(a) Write two characteristics of this commercial farming.

Source B – Cropping Pattern

Some of the most important rice growing regions are Assam, West Bengal, coastal regions of Odisha, Andhra Pradesh, Telangana, Tamil Nadu, Kerala and Maharashtra, particularly the (Konkan coast) along with Uttar Pradesh and Bihar. Recently, paddy has also become an important crop of Punjab and Haryana.

(b) Name the cropping seasons in India. Which one is the best sowing season for rice?

Source C – Food Crops Other Than Grains

It is a tropical as well as a subtropical crop. It grows well in hot and humid climate with a temperature of 21 °C to 27 °C and an annual rainfall between 75 cm and 100 cm. Irrigation is required in the regions of low rainfall.

(c) Name the crop that has been discussed in the above given paragraph.

Ans. (a) The two characteristics are:

- Use of high yielding variety of seeds.
- A single crop is grown on a large area.

(b) There are three cropping seasons in India – Rabi, Kharif and Zaid.

Rice is a kharif crop. Kahrif crops are grown with the onset of monsoon in India.

(c) Sugarcane has been discussed in the above given paragraph.

Case Based Questions

45. India has three cropping seasons – *rabi*, *kharif* and *zaid*. *Rabi* crops are sown in winter from October to December and harvested in summer from April to June. Some of the important *rabi* crops are wheat, barley, peas, gram and mustard. Though, these crops are grown in large parts of India, states from the north and north-western parts such as Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Uttarakhand and Uttar Pradesh are important for the production of wheat and other *rabi* crops. Availability of precipitation during winter months due to the western temperate cyclones helps in the success of these crops. *Kharif* crops are grown with the onset of monsoon in different parts of the country and these are harvested in September–October. Important crops grown during this season are paddy, maize, jowar, bajra, tur (arhar), moong, urad, cotton, jute, groundnut and soyabean. Some of the most important rice growing regions are Assam, West Bengal, coastal regions of Odisha, etc. In states like Assam, West Bengal and Odisha, three crops of paddy are grown in a year. These are *Aus*, *Aman* and *Boro*. In between the *rabi* and the *kharif* seasons, there is a short season during the summer months known as the *zaid* season. Some of the crops produced during '*zaid*' are watermelon, muskmelon, cucumber, vegetables and fodder crops. Sugarcane takes almost a year to grow.

45.1 Name the three major paddy crops harvested in India.

Ans. Aus, Aman and Boro are the three major paddy crops harvested in India.

45.2 In which months are the *rabi* crops sown?

Ans. *Rabi* crops are sown in winter from October to December.

45.3 What is the name of a short season cropping between the *rabi* and *kharif* seasons? Name any two crops grown in that season.

Ans. In between the *rabi* and the *kharif* seasons, there is a short season during the summer months known as the *zaid* season. Some of the crops produced during *zaid* are watermelon, muskmelon, cucumber, vegetables and fodder crops.

46. India was the second largest producer of fruits and vegetables in the world in 2018—only China produced more than India. In India, both tropical as well as temperate fruits are produced. Mangoes of Maharashtra, Andhra Pradesh, Telangana, Uttar Pradesh and West Bengal; oranges of Nagpur and Cherrapunji (Meghalaya); bananas of Kerala, Mizoram, Maharashtra and Tamil Nadu; litchi and guava of Uttar Pradesh and Bihar; pineapples of Meghalaya; grapes of Andhra Pradesh, Telangana and Maharashtra; apples, pears, apricots and walnuts of Jammu and Kashmir and Himachal Pradesh are in great demand all over the world.

46.1 What is the importance of India being the second-largest producer of fruits and vegetables globally, in terms of its economic and food security?

Ans. India's high production volume contributes significantly to its economic growth, and also ensures a stable food supply for its large population.

46.2 How do India's varied climate and soil conditions impact fruit production?

Ans. India's diverse geography enables the cultivation of a wide range of fruits, from tropical mangoes and bananas to temperate apples and pears.

46.3 What are the benefits of horticulture for India?

Ans. Horticulture generates employment opportunities for rural communities, increase farmers' income, and contribute to country's economic growth. It also enables the production of a variety of fruits such as mangoes, oranges and grapes, which provide raw materials for agro-based industries producing jams, juices, and several other products.

47. The Government of India initiated agricultural reforms to improve Indian agriculture in the 1960s and 1970s. The Green Revolution, which relied on the use of modern technology, and the White Revolution (Operation Flood) were some of the strategies adopted to improve the state of Indian agriculture. However, this too led to the concentration of development in a few selected areas. Therefore, in the 1980s and 1990s, a comprehensive land development programme was started, which included both institutional and technical reforms. Provision for crop insurance against drought, flood, cyclone, fire and disease, establishment of Grameen banks, cooperative societies and banks for providing loan facilities to the farmers at lower rates of interest were some

important steps towards achieving agricultural reforms.

47.1 What were the main objectives of the Green Revolution and White Revolution initiatives introduced, and how did they impact Indian agriculture?

Ans. The main objective was to improve Indian agriculture through modern technology and increase productivity; however, it led to concentration of development in selected areas.

47.2 What was the significance of the comprehensive land development programme initiated in the 1980s and 1990s?

Ans. The programme aimed to promote inclusive development through institutional and technical reforms, addressing the concentration of development in selected areas.

47.3 How did the provision of crop insurance and loan facilities through Grameen banks, cooperative societies, and banks support the farmers?

Ans. Crop insurance protected farmers from crop failures due to natural disasters, while loan facilities provided access to capital at lower interest rates, enabling farmers to invest in their farms and improve productivity.

Long Answer Type Questions

48. Discuss in detail the steps taken by the government to increase farm yields.

Ans. The steps taken by the government to increase farm yields are as follows:

- A comprehensive programme has been initiated which included both institutional and technical reforms.
- Provision for crop insurance against drought, flood, cyclone, fire and diseases, establishment of grameen banks, cooperative societies and banks for providing loan facilities to the farmers at lower rates of interest.
- Some other schemes like Kissan Credit Card and Personal Accident Insurance Scheme are introduced by Government of India.
- Special weather bulletins and agricultural programmes for farmers were introduced on the radio and television.
- Government announces minimum support price for important crops to check the exploitation of farmers by speculators and middlemen.

49. Explain the conditions of growth and areas of production of cotton in India.

Ans. Cotton grows well in drier parts of the black cotton soil of the Deccan plateau.

It requires

- high temperature
- light rainfall or irrigation
- 210 frost-free days, and
- bright sun-shine for its growth.

50. How did the technological and institutional reforms introduced in India help to enhance agricultural development?

Ans. India introduced various technological and institutional reforms to enhance agricultural development, which helped the farmers of the country:

(i) Land reforms (1950s–60s): Helped to abolish zamindari, consolidate holdings, and provide a ceiling on landholdings to promote equitable distribution of land.

(ii) Green Revolution (1960s–70s): Introduced high-yielding variety seeds, fertilisers, and irrigation to increase crop productivity, particularly in wheat and rice. It transformed India from a wheat-importing country to a self-sufficient one.

(iii) White Revolution (Operation Flood, 1970s): Improved dairy farming and milk production through cooperative societies and dairy development programmes.

(iv) Kissan Credit Card (KCC) and Personal Accident Insurance Scheme (PAIS) (2000s): Provided financial support and insurance to farmers, enabling them to access credit and manage risks.

51. 'Vinoba Bhave's Bhoodan-Gramdan movement is significant in Indian history'. Justify the statement.

Ans. Vinoba Bhave's Bhoodan-Gramdan movement is significant in Indian history because:

- It was aimed to redistribute land to the landless poor.
- It was inspired by Mahatma Gandhi's concept of gram swarajya.
- The movement led to many landowners voluntarily donating part of their land to poor farmers – thus many farmers benefitted from it.
- It spread widely across India through Vinoba Bhave's padyatras and lectures, promoting a peaceful and voluntary transfer of land for economic empowerment.
- This Bhoodan-Gramdan movement initiated by Vinoba Bhave was a Blood-less Revolution.
- Though it is said that many land-owners chose to provide some part of their land to the poor farmers due to the fear of land ceiling act,

it is a fact that it helped many poor landless farmers.

52. Explain the importance of agriculture in the Indian Economy.

Ans. Agriculture serves as the primary provider of food and fodder within the nation. Ensuring that all individuals have access to sufficient nutritious food is of paramount importance. This sector generates employment opportunities for both rural and non-agricultural workers. Additionally, it supplies essential raw materials to various industries, including sugar, jute, cotton textiles, and vanaspati. The food processing sector also relies heavily on agricultural outputs. Furthermore, agriculture constitutes a significant source of revenue for both central and state governments, with income derived from land taxes and the trade of agricultural products. Promoting sustainable agricultural practices can enhance India's economic growth and stability by increasing farm productivity, minimising waste, and diversifying crop production. Moreover, agriculture contributes to India's international trade through import and export activities.

Let's Compete

Multiple-Choice Questions

1. ..... is an equatorial crop.
(a) Tea (b) Rice
(c) Rubber (d) Wheat

Ans. (c) Rubber

2. After Brazil, India is the second largest producer of .....
(a) jute. (b) oilseeds.
(c) sugarcane. (d) coffee.

Ans. (c) sugarcane.

3. The total cropped area under oilseeds is
(a) 20 per cent. (b) 10 per cent.
(c) 12 per cent. (d) 15 per cent.

Ans. (c) 12 per cent.

4. The main focus of the first Five Year Plan was .....
(a) minimum support price.
(b) land reform.
(c) public distribution system.
(d) providing subsidies.

Ans. (b) land reform.

5. The crop which is used for packing material is
(a) cotton. (b) jute.
(c) silk. (d) rubber.

Ans. (b) jute.

6. India is the largest producer and consumer of which crop?
(a) Maize (b) Wheat
(c) Pulses (d) Rice

Ans. (c) Pulses

7. Raising of crops in association with each other at the same time to conserve soil fertility is called
(a) mixed farming. (b) inter-cropping.
(c) subsistence farming. (d) plantation farming.

Ans. (b) inter-cropping.

8. In Bihar, the Champaran Movement started in
(a) 1947. (b) 1960.
(c) 1917. (d) 1929.

Ans. (c) 1917.

9. The name given to 'slash and burn' agriculture in Madhya Pradesh is
(a) *milpa.* (b) *bewar.*
(c) *roca.* (d) *podu.*

Ans. (b) *bewar.*

10. In which months are the *rabi* crops harvested?
(a) April to June
(b) October to December
(c) June to July
(d) January to March

Ans. (a) April to June

Life Skills

1. Keeping the interest of farmers in mind, what valuable steps have been taken up by the government? What more could be done?

Ans. The Government of India initiated agricultural reforms during the 1960s and 1970s aimed at enhancing the agricultural sector. Key strategies included the Green Revolution and the White Revolution (Operation Flood), which sought to elevate the conditions of Indian agriculture.

In the following decades, specifically the 1980s and 1990s, a comprehensive land development programme was launched, encompassing both institutional and technical reforms. Significant measures included the introduction of crop insurance to protect against drought, floods, cyclones, fires, and diseases, as well as the establishment of Grameen banks and cooperative societies to offer farmers loans at lower interest rates.

Additionally, the Government of India introduced various schemes such as the Kisan Credit Card

and the Personal Accident Insurance Scheme to support farmers. The government also provided special weather bulletins and agricultural programmes through radio and television. Furthermore, it announced minimum support prices, remunerative prices, and procurement prices for key crops to safeguard farmers from exploitation by speculators and middlemen.

2. Give reasons why it has been imperative to provide educational facilities to our farmers and make them literate.

Ans. Some of the important reasons for providing education facilities to farmers are as follows:

- Farmers will be able to avail the loan facilities provided by the cooperative banks and nationalised banks.
- Village moneylenders will not be able to exploit them anymore.
- They will know about the importance of modern equipment used for cultivation.
- They will use better quality of fertilizers and hybrid seeds which leads to increased productivity.

5

Minerals and Energy Resources

Check Your Progress

Multiple-Choice Questions

1. In which one of the following states of India are the Khetri copper mines located?

(a) Jharkhand (b) Punjab
(c) Madhya Pradesh (d) Rajasthan

Ans. (d) Rajasthan

2. Which of the following minerals is obtained from bauxite?

(a) Mica (b) Copper
(c) Iron (d) Aluminium

Ans. (d) Aluminium

3. Which one of the following is the highest bauxite producing state of India?

(a) Maharashtra (b) Jharkhand
(c) Gujarat (d) Odisha **(CBSE 2024)**

Ans. (d) Odisha

4. Which of the following types of coal is best for commercial use?

(a) Anthracite (b) Lignite
(c) Bituminous (d) None of these

Ans. (c) Bituminous

5. Identify the conventional sources of energy with the help of the following information and choose the correct option.

- It is the most abundantly available fossil fuel in India.
- It provides a substantial part of the nation's energy needs.
- It is used for power generation.

Options:

(a) Petroleum (b) Natural Gas
(c) Coal (d) Copper

Ans. (c) Coal

6. Read the given statements and choose the correct option with regard to mica from the following.

I. Mica 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 can be layered into a mica sheet of a few centimeters high.
IV. Mica deposits are found at several places in Odisha.

Options:

(a) I, III and IV (b) II, III and IV
(c) I, II and IV (d) I, II and III

Ans. (d) I, II and III

7. Choose the correctly matched pair from the following.

(a) Rock Minerals – Limestone
(b) Ferrous Minerals – Mica
(c) Non-Ferrous – Iron Ore
(d) Energy Minerals – Bauxite

Ans. (a) Rock Minerals – Limestone

Very Short Answer Type Questions

8. Name the rock which consists of a single mineral. Mention the use of this mineral.

Ans. Certain types of rocks, such as limestone, are composed of only one mineral. Limestone can be utilised in the creation of fire-resistant and thermally stable structures. When limestone is heated with clay to produce cement. Limestone plays a role in steel manufacturing by aiding in the removal of impurities.

9. Mention any two uses of manganese ore.

Ans. Two uses of manganese are as follows:

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

(ii) It is also used in manufacturing bleaching powder, insecticides and paints.

10. What are the smaller occurrences like crevices, faults or joints in the rock called? How do they form?

Ans. In igneous and metamorphic rocks, minerals can be found within cracks, crevices, faults, or joints. The smaller formations are referred to as veins, while the larger ones are known as lodes. These formations arise when minerals in liquid or gaseous states are propelled upward through cavities toward the Earth's surface.

11. What is geothermal energy? Mention any one use of it.

Ans. Geo thermal energy refers to the heat and electricity produced by using the heat from the interior of the Earth. 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 and turns into steam. This steam is used to drive turbines and generate electricity.

12. Where is geothermal energy generated in India?

Ans. The experimental projects set-up in India are located at:

(i) Manikaran in Himachal Pradesh.

(ii) Pugga Valley in Ladakh.

13. India is fortunate to have fairly rich and varied mineral resources, however, these are unevenly distributed. How does it impact country's development?

Ans. The uneven distribution of mineral resources has one major drawback — it entails expenditure to transport minerals from where they present to the areas where they can be processed.

14. Suggest any two measures for the conservation of minerals.

Ans. Improved technologies to process minerals into useful products and recycling of metals are measure to conserve minerals. Finding substitutes of metallic products can also be useful.

Short Answer Type Questions

15. 'India has varied mineral resources'. Explain with examples.

Ans. India is rich in mineral resources. The peninsular rocks has rich deposits of coal, metallic minerals, mica and many other non-metallic minerals.

The sedimentary rocks of the western and eastern regions of the peninsular region in Gujarat and Assam have most of the petroleum deposits. The northern part of the India is devoid of economic minerals. Rajasthan has reserves of many non-ferrous minerals.

16. Differentiate between thermal power and hydel power.

Ans.

Thermal Power	Hydel Power
• Thermal energy is generated by using coal, natural gas and petroleum.	• Hydel power is generated by fast flowing water.
• Thermal energy use non-renewable resources for generating electricity.	• Hydel power stations use renewable resources for generating electricity.

17. Give reasons why it is necessary to conserve mineral resources.

Ans. The geological process of mineral formation is very slow and the rate of replenishment is very small as mineral resources are non-renewable. A concerted effort has to be made in order to use our mineral resources in a planned and sustainable manner. Recycling of metals using scrap metals and other substitutes is done to conserve our mineral resources for future.

18. Identify and explain three conventional sources of energy.

Ans. Coal, petroleum and natural gas are three conventional sources of energy.

Coal:

The most abundantly occurring fossil fuel in India is coal. The compression of plant material over millions of years produces coal. Depending on the degrees of compression and the depth and time of burial, coal is of different types: Peat, Lignite, Bituminous and Anthracite.

Petroleum:

Petroleum is the second major energy source in India after coal. The oil is trapped in the crest of the upfold in the regions of folding, anticlines or domes. It is also found in the fault traps between the porous and non-porous rocks. Petroleum refineries are considered as a 'nodal industry' for synthetic textile, fertiliser and various chemical industries.

Natural gas:

It is an important clean energy source and it is used as an industrial raw material in the petrochemical industry. It is the fuel of the century because it is environment-friendly owing to its low carbon dioxide emission capacity.

19. Consumption of all forms of energy has been rising in the country. There is an urgent need to

develop a sustainable way to use energy. Suggest three suitable measures in this regard.

Ans. With increasing population and changing lifestyle, our energy needs are increasing. Here are three ways by which we can reduce our energy consumption:

(i) Use public transport or carpool instead of driving individual vehicles.

(ii) Turn off electricity when not in use and use energy-efficient devices.

(iii) Explore alternative energy sources like solar and wind power, and regularly maintain our energy equipment to reduce waste.

20. Distinguish between peat and coal.

Ans. Peat is decaying plant material found in swamps. It has a low carbon and high moisture contents and low heating capacity. Coal is a sedimentary rock formed from compressed peat over millions of years under high pressure and temperature. Peat is less carbon-rich and energy-dense compared to coal, which is used as a fossil fuel.

21. Describe the different types of coal found in India.

Ans. The different types of coal found in India are:

(i) Anthracite: High-quality coal with very high carbon content (over 80%), producing minimal smoke.

(ii) Bituminous: The most widely used coal, with a carbon content of 60–80%. Metallurgical coal is high-grade bituminous coal used for smelting iron in blast furnaces.

(iii) Lignite: Low-grade brown coal, soft and high in moisture content.

22. Geologists define mineral as a 'homogenous, naturally occurring substance with a definable internal structure.' Justify the statement with three relevant points.

Ans. (i) Uniform Composition: Minerals are made up of a single substance with a consistent chemical composition.

(ii) Natural Origin: Minerals are formed through natural processes and are not created artificially.

(iii) Distinct Crystal Structure: Minerals have a unique internal arrangement of atoms and molecules, resulting in a definable crystal structure that gives each mineral its distinct properties, such as colour, hardness, crystal form, lustre, and density.

Long Answer Type Questions

23. How is energy a basic requirement for economic development? Explain. **(CBSE 2024)**

Ans. Energy serves as a fundamental necessity for economic development, acting as a crucial element across various sectors of the economy. Each sector – primary, secondary, and tertiary – relies on energy to facilitate its operations. It fuels machinery, production lines, and the transportation of goods. Energy is essential for various modes of transport, including vehicles, airplanes, trains, and ships. Additionally, it is vital for the construction and upkeep of infrastructure such as roads, bridges, airports, and telecommunications systems. Energy also plays a significant role in irrigation, the operation of machinery, and processing facilities. Furthermore, it is indispensable for technological advancements and innovations that propel economic growth.

24. How are conventional sources of energy different from non-conventional sources? Explain. **(CBSE 2024)**

Ans. Conventional energy sources and non-conventional energy sources exhibit significant differences across various dimensions. Conventional sources are finite in availability, whereas non-conventional sources are plentiful. The cost of conventional sources tends to be high due to their early discovery, in contrast to non-conventional sources, which are generally more affordable due to their easier accessibility. While conventional sources offer a reliable power supply, non-conventional sources may prove to be inconsistent, as their output is often influenced by climatic conditions. Additionally, conventional sources contribute to atmospheric pollution and the degradation of natural ecosystems, whereas non-conventional sources are typically more sustainable and environmentally friendly. For instance, fossil fuels, categorised as a conventional source, possess a high energy density, facilitating compact storage and effective energy generation.

25. 'Promotion of energy conservation is important plank of sustainable energy.' Explain the statement with examples. **(CBSE 2024)**

Ans. Promoting energy conservation plays a crucial role in sustainable energy practices, as it aids in minimising the reliance on non-renewable resources, such as fossil fuels, while also decreasing greenhouse gas emissions. The regeneration of non-renewable resources, including fossil fuels, is a lengthy process, and the rate at which humans consume energy often surpasses the rate of production. By conserving energy, we can help safeguard these vital resources. Additionally, the adoption of more efficient energy sources leads to a reduction in greenhouse gas emissions, which are significant

contributors to climate change. Furthermore, energy conservation diminishes the necessity for fossil fuel extraction, potentially lowering the costs of goods and services for consumers. This practice also provides researchers with additional time to explore and develop alternative energy solutions.

26. 'Energy is required for all kinds of activities.' Explain this statement with examples.

(CBSE 2023, 2024)

Ans. Energy plays a crucial role in numerous activities, including transportation, industrial operations, residential needs, information technology, and agriculture.

(i) Transportation: Various modes of transportation, such as cars, buses, trains, ships, and airplanes, depend on energy. It powers engines and facilitates the movement of individuals and goods, thereby enhancing both local and global connectivity.

(ii) Industrial operations: Energy is utilised in a wide range of production activities within industries, including the operation of machinery, processing of materials, and assembly of products.

(iii) Residential heating and cooling: Energy is vital for maintaining comfortable living conditions, providing heating during colder months and cooling in warmer climates. Sources such as electricity and natural gas are essential for these purposes.

(iv) Information technology and communication: The functioning of electronic devices, data centres, and communication networks is heavily reliant on energy.

(v) Agricultural practices: Energy is fundamental to agriculture, supporting irrigation, machinery operation, and processing activities. It powers essential equipment, including tractors and pumps.

27. Identify the most abundantly found fossil fuel in India. Name the three major varieties of it. Explain one feature of each variety.

Ans. Coal is the most abundantly found fossil fuel in India.

The three major varieties of coal are:

(i) Lignite: It is a low grade brown coal, which is soft with high moisture content. Carbon contents vary from 40 to 60 per cent. Its value has increased due to its use in thermal power plants.

(ii) Bituminous: It is high grade coal. It is hard and compact variety of coal. Coal is formed at great depths when subjected to increased temperature. The moisture content is less.

(iii) Anthracite: It is the highest grade hard coal. It has the highest heating capacity. It burns for a long time and leaves little or no ash.

28. Highlight the importance of petroleum. Explain the occurrence of petroleum in India.

Ans. Petroleum is the second major energy source in India after coal. The oil is trapped in the crest of the upfold in region of folding, anticlines or domes. It is also found in the fault traps between the porous and non-porous rocks. The oil bearing layer is a porous limestone or sandstone, while the rising or sinking of the oil is prevented by the intervening non-porous layer.

Petroleum acts as a fuel for heat and lighting, lubricants for machinery and raw materials for a number of manufacturing industries. Petroleum refineries are considered as a 'nodal industry' for synthetic textile, fertiliser and various chemical industries.

About 63 per cent of India's petroleum production comes from Mumbai High, 18 per cent from Gujarat and 16 per cent from Assam.

29. Why it is important to conserve minerals? Highlight any three measures to conserve them.

Ans. We know that minerals are non-renewable resources. Rich mineral deposits are extremely valuable but short lived. Continued extraction of ores leads to increasing cost and decrease the quality. We need to make some effort to save our resources for future generation.

Measures to conserve mineral resources:

- Recycling of the metals, using scrap metals for the conservation of resources.
- Improved technologies need to be constantly evolved to allow use of low grade ores at low costs.
- We can do our bit by using public transport, switching off electricity when not in use.
- We can use power-saving devices and use non-conventional sources of energy.

30. Conventional energy resources are not the best option for sustainable development. Substantiate this statement with examples.

Ans. (i) Limited supply: Conventional energy resources, such as fossil fuels (coal, oil, and gas), are finite and non-renewable. Once depleted, they cannot be replenished in a person's lifetime.

(ii) Environmental degradation: The use of conventional resources has severe environmental consequences, including air and water pollution, deforestation, and climate change. For instance, the burning of fossil fuels

releases greenhouse gases, contributing to global warming.

(iii) Water scarcity: Conventional resources often require significant water resources for extraction, processing, and cooling, causing water scarcity.

(iv) Uneven distribution: Conventional resources are often concentrated in specific regions. This can result in supply disruptions and conflicts over resources.

(v) Economic costs: The extraction, processing, and consumption of conventional resources has significant economic costs, including healthcare expenses due to pollution.

Self-Assessment

Multiple-Choice Questions

1. The largest wind farm cluster in India is located in

(a) Kerala. (b) West Bengal.

(c) Tamil Nadu. (d) Uttar Pradesh.

Ans. (c) Tamil Nadu.

2. Which of the following places is known for lignite deposits?

(a) Bokaro (b) Neyveli

(c) Khetri (d) Bailadila

Ans. (b) Neyveli

3. Which is the finest quality of iron ore?

(a) Limonite (b) Siderite

(c) Magnetite (d) Haematite

Ans. (c) Magnetite

4. Choose the correctly matched pair from the following.

(a) Ferrous – Natural Gas

(b) Non-Ferrous – Nickel

(c) Non-Metallic Minerals – Limestone

(d) Energy Minerals – Cobalt **(CBSE 2024)**

Ans. (a) Ferrous – Natural Gas

5. Choose the correct option for the following states' share (in percentage) in the production of 'manganese' in India from the highest to the lowest order.

(a) Madhya Pradesh, Maharashtra, Karnataka, Odisha

(b) Madhya Pradesh, Maharashtra, Odisha, Karnataka

(c) Maharashtra, Madhya Pradesh, Karnataka, Odisha

(d) Maharashtra, Odisha, Madhya Pradesh, Karnataka **(CBSE 2024)**

Ans. (b) Madhya Pradesh, Maharashtra, Odisha, Karnataka

6. Which of the following option/s represent/s potential measures that can be taken to conserve mineral resources?

I. Improving technologies to use low-grade ores, recycling metals, and using scrap metals and substitutes.

II. Reducing consumption and increasing efficiency.

III. Exploring new mineral deposits and increasing extraction rates.

IV. Allowing unregulated mining and extraction.

Options:

(a) Statements I and II are correct.

(b) Statements II, III, and IV are correct.

(c) Statement I is correct.

(d) Statements I, II, and IV are correct.

Ans. (a) Statements I and II are correct.

7. Read the given statements and choose the correct option with regard to petroleum from the following.

I. Petroleum or mineral oil is the next major energy source in India after coal.

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

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

IV. Goa, Kolkata and Arunachal Pradesh are major petroleum production areas in India.

Options:

(a) I, III and IV (b) II, III and IV

(c) I, II and IV (d) I, II and III

Ans. (d) I, II and III

8. "A" explained to her friend about the formation of different types of coal. Which of the following clues provided by "A" would be most useful in identifying anthracite coal?

Clues:

I. It is used for generation of electricity.

II. It is soft and has high moisture content.

III. It is formed from bituminous coal under high pressure.

IV. It is a hard, shiny coal with very high carbon content and low moisture.

Options:

(a) Clue IV (b) Clues I and III

(c) Clues II and III (d) Clues I and II

Ans. (a) Clue IV

9. Identify the mineral with the help of the following information and choose the correct option.
   - Though several ores contain aluminium, it is from this mineral, a clay-like substance that alumina and later aluminium is obtained.
   - Its 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.

   Options:

   (a) Bauxite (b) Manganese
   (c) Mica (d) Limestone

Ans. (a) Bauxite

10. "C" told her friend about the uses of a conventional source of energy because it is considered an environment friendly fuel. Which of the given clues provided by "C" would be most useful in identifying it?

    Clues:

    I. It generally found with coal.
    II. It has emerged as a preferred transport fuel and a cooking fuel in the last 2–3 decade.
    III. The Mumbai High has large reserves of it.
    IV. India is a major exporter of this fuel.

    Options:

    (a) Clue II (b) Clues I and III
    (c) Clues II and III (d) Clues I and IV

Ans. (c) Clues II and III

Assertion-Reason Type Questions

For question numbers 11 to 19, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

11. **Assertion (A):** Minerals are usually found in ores.

    Reason (R): The term ore is used to describe an accumulation of any mineral mixed with other elements.

Ans. (a) Both A and R are true and R is the correct explanation of A.

12. **Assertion (A):** Iron ore is the basic mineral and the backbone of industrial development.

    Reason (R): It has excellent magnetic qualities, especially valuable in the electrical industry.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

13. **Assertion (A):** A concerted effort has to be made in order to use our mineral resources in a planned and sustainable manner.

    Reason (R): Improved technologies need to be constantly evolved to allow use of high grade ores at low costs.

Ans. (c) A is true but R is false.

14. **Assertion (A):** The largest wind farm cluster is located in West Bengal.

    Reason (R): India has great potential of wind power.

Ans. (d) A is false but R is true.

15. **Assertion (A):** Geothermal energy is a viable source of electricity generation.

    Reason (R): The Earth's interior heat, harnessed through geothermal energy, can produce steam that drives turbines to generate electricity, making it a reliable and renewable energy source.

Ans. (a) Both A and R are true and R is the correct explanation of A.

16. **Assertion (A):** Rich mineral deposits are our country's extremely valuable but short-lived possessions.

    Reason (R): Mineral extraction plays a crucial role in the country's economic growth and development.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

17. **Assertion (A):** Mica is a versatile mineral with unique properties.

    Reason (R): Mica is used in the construction industry due to its strength and durability.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

18. **Assertion (A):** India's reserves and production of non-ferrous minerals are not very satisfactory.

    Reason (R): This is because the country's deposits of copper, bauxite, lead, zinc, and gold are limited, leading to a significant gap between demand and domestic supply.

Ans. (a) Both A and R are true and R is the correct explanation of A.

19. Assertion (A): Limestone is found in association with rocks composed of calcium carbonates or calcium and magnesium carbonates.

Reason (R): It is found in sedimentary rocks of most geological formations.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

Match the Following

20. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A	Column B
A. Solar Energy	1. Himachal Pradesh
B. Wind Energy	2. Rajasthan
C. Geothermal Energy	3. Gujarat
D. Tidal Energy	4. Tamil Nadu

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	3	1	4	2

Ans. (d) 3 1 4 2

21. Match the minerals given in Column A with their examples in Column B. Choose the correct answer from the options given below.

Column A (Minerals)	Column B (Examples)
A. Ferrous	1. Coal
B. Non-Ferrous	2. Granite
C. Non-Metallic	3. Bauxite
D. Energy	4. Cobalt

Codes:

	A	B	C	D
(a)	2	4	3	1
(b)	4	3	2	1
(c)	1	2	4	3
(d)	3	4	2	1

(CBSE 2024)

Ans. (b) 4 3 2 1

Find the Correct Sequence

22. Choose the correct sequence according to their quality of coal from high to low grade:

(a) Peat – Bituminous – Lignite – Anthracite

(b) Anthracite – Peat – Lignite – Bituminous

(c) Anthracite – Bituminous – Lignite – Peat

(d) Bituminous – Lignite – Anthracite – Peat

Ans. (c) Anthracite – Bituminous – Lignite – Peat

Find the Incorrect Option

23. (a) Hydroelectricity is a non-renewable resource.

(b) Thermal electricity is generated by using coal, petroleum and natural gas.

(c) Nuclear energy is obtained by altering the structure of atoms.

(d) The steam in geothermal energy is used to drive turbines and generate electricity.

Ans. (a) Hydroelectricity is a non-renewable resource.

Correct and Rewrite the Following Statement

24. Lignite is a high grade brown coal which is the hardest with no moisture content. It is mainly found in Nayveli in Andhra Pradesh.

Ans. Lignite is a low grade brown coal which is soft with moisture content. It is mainly found in Nayveli in Tamil Nadu.

Fill in the Blanks

25. Monazite sands of Kerala is rich in **thorium**.

26. Limestone is a raw material used in **cement** industry.

27. **Anthracite** is the best variety of coal.

28. The largest manganese producing state of India is **Odisha**.

29. The Balaghat mines are located in **Madhya Pradesh**.

30. A mixture of minerals is called **rock**.

31. **Mineral** is formed by decomposition of rocks, leaving a residual mass of weathered material.

32. Jharia is famous for **coal mines**.

Very Short Answer Type Questions

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

(CBSE 2024)

Ans. Each sector – primary, secondary, and tertiary – relies on energy to facilitate its operations. It fuels machinery, production lines, and the transportation of goods. Energy is essential for various modes of transport, including vehicles, airplanes, trains, and ships. Energy also plays a significant role in irrigation, the operation of machinery, and processing facilities.

34. 'Minerals occur in igneous and metamorphic rocks.' Explain the statement with example.

(CBSE 2024)

Ans. Minerals are found in igneous and metamorphic rocks as a result of the influence of heat and pressure on magma or lava. Granite, an igneous rock, comprises minerals such as quartz, feldspar, and mica. Schist, a type of metamorphic rock, includes minerals like biotite and garnet, whereas

gneiss is characterised by its bands of quartz and feldspar.

35. 'The ocean waters contain vast quantities of minerals'. Explain the statement with example. **(CBSE 2024)**

Ans. The seabed is rich in mineral deposits, including copper, zinc, nickel, gold, silver, and phosphorus. The distribution of these minerals is often too dispersed to hold economic value. Salt constitutes over 80% of the dissolved chemical elements present in the ocean. Petroleum originates from the remains of deceased flora and fauna that have been buried beneath the ocean floor.

36. Where are natural gases reserves found in India?

Ans. Natural gas reserves are found in Krishna – Godavari basin, Mumbai high, Andaman and Nicobar islands.

37. Name the industries for which petroleum refineries act as a nodal point.

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

38. What is an ore?

Ans. The term ore is used to describe an accumulation of any mineral mixed with other elements.

Short Answer Type Questions

39. 'Energy is required for all activities.' Explain the statement with examples. **(CBSE 2023)**

Ans. Various modes of transportation, such as cars, buses, trains, ships, and airplanes, depend on energy. Energy is used in industries, including the operation of machinery, processing of materials, and assembly of products. Energy is fundamental to agriculture, supporting irrigation, machinery operation, and processing activities. It powers essential equipment, including tractors and pumps. Energy is vital for maintaining comfortable living conditions, providing heating during colder months and cooling in warmer climates.

OR

39. 'India is the least energy efficient country in the world.' Justify this statement.

Ans. India ranks as the third-largest energy consumer globally, however, its per capita energy consumption and emissions are less than 50 per cent of the worldwide average. Additionally, India holds the position of the third-largest energy importer, contending with constrained markets and escalating risks to energy security. The rise in commodity prices has rendered energy less accessible. While India has implemented a strong energy efficiency programme, it continues to encounter various challenges.

40. Explain the use of petroleum as an energy resource and as a raw material.

Ans. Petroleum is the major energy resource after coal.

- It provides heat and light, lubrication for machinery and raw materials for industries.
- Petroleum refineries act as the nodal industry for synthetic textiles, fertilisers and chemical industries.

41. Differentiate between ferrous and non-ferrous minerals with examples.

Ans.

Ferrous minerals	Non-Ferrous minerals
(i) Ferrous minerals have iron content, such as iron ore and manganese.	(i) Non-ferrous minerals do not contain iron content such as copper, bauxite, zinc, lead and gold.
(ii) Ferrous minerals provide strong base for the development of metallurgical industries.	(ii) Non-Ferrous minerals plays vital role in a metallurgical, engineering and electrical industries.

42. Why is there an absence of minerals in the northern plains?

Ans. India is rich in mineral resources, but these resources are unevenly distributed. The northern plains of India have thick layer of alluvium deposits by the rivers. This region is very poor in mineral resources. These variations exist largely because of the differences in the geological structure, processes and time involved in the formation of minerals.

Paragraph Based Questions

43. Read the sources given below and answer the questions that follow:

Source A – Conservation of Energy Resources

Promotion of energy conservation and increased use of renewable energy sources are the twin planks of sustainable energy. India is presently one of the least energy efficient countries in the world. We have to adopt a cautious approach for the judicious use of our limited energy resources.

(a) What steps can we take to conserve energy in our daily lives?

Source B – Electricity

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

(b) What are the two primary ways of generating electricity?

Source C – Energy Resources

Energy can be generated from fuel minerals like coal, petroleum, natural gas, uranium and electricity. Energy resources can be classified as conventional and non-conventional sources.

(c) What do you understand by the non-conventional energy resources?

Ans. (a) We can conserve energy by following steps:
- By using power-saving devices.
- By using public transport systems.

(b) The two ways of generating electricity are as follows:
- By running water which drives hydro turbines to generate hydro electricity.
- By burn fuels to drive turbines to produce thermal power.

(c) The non-conventional energy resources are those which are renewable which includes solar energy, wind energy, tidal energy, biogas, etc.

Case Based Questions

44. Energy is a basic requirement for economic development. Every sector of the national economy – agriculture, industry, transport, commercial and domestic - needs inputs of energy. The economic development plans implemented since independence necessarily required increasing amounts of energy to remain operational. As a result, consumption of energy in all forms has been steadily rising all over the country. In this background, there is an urgent need to develop a sustainable path of energy development. Promotion of energy conservation and increased use of renewable energy sources are the twin planks of sustainable energy. India is presently one of the least energy efficient countries in the world. We have to adopt a cautious approach for the judicious use of our limited energy resources. For example, as concerned citizens we can do our bit by using public transport systems instead of individual vehicles; switching off electricity when not in use, using power-saving devices and using non-conventional sources of energy. At last "Energy Saved is energy produced".

44.1 Why is sustainable energy a key to sustainable development?

Ans. Sustainable energy plays a crucial role in promoting sustainable development as it contributes to the resolution of numerous global issues, such as climate change, air pollution, and energy security.

44.2 Why is consumption of energy rising in all over India?

Ans. Energy consumption in India is increasing as a result of several factors, such as population expansion, economic development, industrialisation, urban growth, and heightened industrial activities.

44.3 Explain 'Energy saved is energy produced'.

Ans. When we save energy, we reduce the overall demand on energy resources. Conserving energy helps to conserve natural resources and reduce greenhouse gas emissions. We can contribute positively by utilising public transportation rather than personal vehicles, turning off electrical appliances when they are not in use, and harnessing alternative energy sources.

45. Iron ore is the basic mineral and the backbone of industrial development. India is endowed with fairly abundant resources of iron ore. India is rich in good quality iron ores. Magnetite is the finest iron ore with a very high content of iron up to 70 per cent. It has excellent magnetic qualities, especially valuable in the electrical industry. Hematite ore is the most important industrial iron ore in terms of the quantity used, but has a slightly lower iron content than magnetite (50–60 per cent). The major iron ore belts in India are:

Odisha–Jharkhand belt: In Odisha high grade hematite ore is found in Badampahar mines in the Mayurbhanj and Kendujhar districts. In the adjoining Singbhum district of Jharkhand haematite iron ore is mined in Gua and Noamundi.

Durg–Bastar–Chandrapur belt lies in Chhattisgarh and Maharashtra. Very high grade hematites are found in the famous Bailadila range of hills in the Bastar district of Chhattisgarh. Iron ore from these mines is exported to Japan and South Korea via Vishakhapatnam port.

Ballari–Chitradurga–Chikkamagaluru–Tumakuru belt in Karnataka has large reserves of iron ore. Kudremukh deposits are known to be one of the largest in the world.

Maharashtra–Goa belt 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 Marmagao port.

45.1 Name any two places in India where haematite ore is found.

Ans. (i) Badampahar mines in the Mayurbhanj and Kendujhar districts.

(ii) Bailadila range of hills in the Bastar district of Chhattisgarh.

45.2 Which is the best iron-ore? Which iron-ore belt is well known and famous for very high-grade haematite ore in India?

Ans. Magnetite is the finest iron ore with a very high content of iron up to 70 per cent. Very high-grade haematite ore is found in the famous Bailadila range of hills in the Bastar district of Chhattisgarh.

45.3 Explain the importance of large reserves of iron ore for India in 40 words.

Ans. India is one of the world's top producers of iron ore, and its large reserves are a key driver of production. Iron ore is a vital component of machine parts for the automotive, aerospace, and other industries. India's iron ore reserves provide a solid foundation for the country's iron and steel industry.

46. Mica is a mineral made up of a series of plates or leaves. It splits easily into thin sheets. These sheets can be so thin that a thousand can be layered into a mica sheet of a few centimeters high. Mica can be clear, black, green, red, yellow or brown. 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. Mica deposits are found in the northern edge of the Chota Nagpur plateau. Koderma Gaya–Hazaribagh belt of Jharkhand is the leading producer. In Rajasthan, the major mica producing area is around Ajmer. Nellore mica belt of Andhra Pradesh is also an important producer in the country. Limestone is found in association with rocks composed of calcium carbonates or calcium and magnesium carbonates. It is found in sedimentary rocks of most geological formations. Limestone is the basic raw material for the cement industry and essential for smelting iron ore in the blast furnace.

46.1 Which state in India is the leading producer of mica? Mention any one use of mica.

Ans. Jharkhand is the leading producer of mica. It is one of the most indispensable minerals used in electric and electronic industries.

46.2 Which mineral is essential as a basic raw material for cement industry and smelting iron ore in the blast furnace?

Ans. Limestone is the basic raw material for the cement industry and essential for smelting iron ore in the blast furnace.

46.3 Why is mica an extremely important mineral for the electric and electronic industries?

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.

47. The rising consumption of energy in India has resulted in the country becoming increasingly dependent on conventional sources of energy such as coal, oil and gas. Mounting cost of oil and gas and their likely shortages have caused uncertainties about the availability of energy supply in future, which in turn has serious consequences on the growth of India's economy. In addition, increasing use of fossil fuels also causes several environmental problems such as air and water pollution, climate change.

Therefore, there is a pressing need to use renewable energy sources like solar energy, geothermal, wind, tide, biogas, and energy from waste material. These are called non-conventional energy sources. India has sufficient sunlight, water, wind, and biogas. It has many plans for the development of these renewable energy resources.

47.1 What is the primary concern regarding India's increasing dependence on fossil fuels?

Ans. The primary concern is the security of energy supply in the future, which has serious repercussions on the growth of the national economy.

47.2 What are the environmental problems caused by the increasing use of fossil fuels?

Ans. The increasing use of fossil fuels causes air and water pollution, climate change, and other environmental issues.

47.3 What is the significance of India's abundance of sunlight, water, wind, and biogas in the context of renewable energy resources?

Ans. India's abundance of sunlight, water, wind, and biomass provides a significant opportunity for the development of renewable energy resources, such as solar energy, wind energy, tidal energy, and biomass energy. This abundance can help reduce India's dependence on fossil fuels, mitigate environmental problems, and ensure a secure energy supply for the future.

Long Answer Type Questions

48. How is coal formed? Explain in detail the qualities of the four different types of coal in India.

Ans. Coal is formed due to the compression of plant material over millions of years. Coal is found in variety of forms depending on the degrees of compression and the depth and time of burial.

Following are the four different types of coal in India.

- Peat: It is the first stage of coal formation. Decaying of plants in swamps produce peat. It has low carbon and high moisture contents with low heating capacity.
- Lignite: It is low grade brown coal, soft but compact than peat. It has high moisture content. Its value has increased due to its use in thermal power plants.
- Bituminous: It is high grade, hard and compact variety of coal. It is most popular coal in commercial use. Moisture content is less in bituminous coal. It is widely used in iron and steel industries.
- Anthracite: It is the hardest and the best quality of coal with the highest heating capacity.

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

Ans. Since energy is the basic requirement, its conservation has become very important. At present, India is the least energy efficient country of the world.

We have to save energy by using non-conventional energy resources, using power saving devices and switching off electricity when not in use.

Increasing use of fossil fuels causes the environment problems.

Use of oil and gas by the large number of population has raised uncertainty about the security of resources for future generation.

The growing consumption of energy has resulted in the excessive of fossil fuels which are non-renewable.

50. Explain the differences between conventional and non-conventional sources of energy.

Ans. Energy can be generated from fuel minerals like coal, petroleum, natural gas, uranium and electricity. Energy resources can be classified into conventional and non-conventional sources.

Conventional sources include: coal, petroleum, natural gas and electricity. Conventional sources are non-renewable sources of energy.

Non-Conventional sources include: solar energy, wind energy, tidal energy, geothermal energy, nuclear energy, biogas, etc. The non-conventional sources of energy are abundant, renewable, pollution free and eco-friendly.

51. Analyse the impact of mining activities on the local environment and the health of the surrounding communities. **(CBSE SP 2024)**

Ans. Mining operations generate waste that may contain hazardous substances and heavy metals, posing a risk of soil, groundwater, and surface water contamination. The extraction process also releases coal mine methane, a greenhouse gas with a potency 20 times greater than that of carbon dioxide. Additionally, mining activities contribute to the generation of atmospheric dust. The ecological balance can be disrupted, leading to the encroachment of invasive species in the area. Individuals working in mines and those residing in proximity are susceptible to respiratory diseases due to the inhalation of dust and harmful gases. Furthermore, the blasting activities associated with mining can result in noise pollution, which may compromise the structural integrity of nearby buildings. There is also a potential danger of roof collapses within mines, as well as risks of flooding and fires in coal mining operations.

52. 'Non-conventional resources are the best option to conserve the natural resources'. Substantiate this statement with examples. **(CBSE SP 2024)**

Ans. Non-conventional resources, often referred to as renewable energy sources, represent an optimal choice for the conservation of natural resources due to their ability to be naturally replenished over time. This characteristic results in a significantly lower environmental impact when compared to traditional resources such as fossil fuels, thereby promoting sustainability for future generations. Examples of these resources include solar energy, wind energy, hydropower, geothermal energy, and biomass. The continuous replenishment of non-conventional resources through natural processes positions them as a viable long-term energy solution. The utilisation of these resources leads to a marked reduction in greenhouse gas emissions and air pollution, fostering cleaner air and aiding in the fight against climate change. Furthermore, many non-conventional resources, such as solar and wind energy, are abundantly available worldwide, offering a variety of energy options tailored to different geographic regions.

Let's Compete

Multiple-Choice Questions

1. The oldest oil producing state of India is

(a) Haryana. (b) Assam.
(c) Maharashtra. (d) None of these.

Ans. (b) Assam.

2. Limestone is found in which rocks?

(a) Sedimentary (b) Metamorphic
(c) Igneous (d) None of these

Ans. (a) Sedimentary

3. Which of the following is formed by decomposition of organic matter?

(a) Nuclear Energy (b) Wind Energy
(c) Solar Energy (d) Biogas

Ans. (d) Biogas

4. The major mica producing region in Rajasthan is

(a) Ajmer. (b) Jaipur.
(c) Kota. (d) Jaisalmer.

Ans. (a) Ajmer.

5. Where are the Kudremukh mines located?

(a) Maharashtra–Goa belt
(b) Odisha–Jharkhand belt
(c) Durg–Bastar–Chandrapur belt
(d) Ballari–Chitradurga–Chikkamagaluru–Tumakuru belt

Ans. (d) Ballari–Chitradurga–Chikkamagaluru–Tumakuru belt

6. Which of the following minerals is non-ferrous?

(a) Copper (b) Manganese
(c) Cobalt (d) Iron ore

Ans. (c) Cobalt

7. What per cent of India's petroleum production is obtained from Mumbai High?

(a) 61 (b) 62
(c) 63 (d) 60

Ans. (c) 63

8. Which state is the largest producer of manganese?

(a) Karnataka (b) Odisha
(c) Goa (d) Maharashtra

Ans. (b) Odisha

9. Which type of energy is obtained by altering the structure of atoms?

(a) Wind energy (b) Nuclear energy
(c) Tidal energy (d) Solar energy

Ans. (b) Nuclear energy

10. Low quality brown coal is called

(a) anthracite.
(b) peat.
(c) lignite.
(d) bituminous.

Ans. (c) lignite.

Life Skills

1. 'Our energy resources are limited.' How can we adopt a cautious approach for the judicious use of our limited resources? Discuss with examples.

Ans. We should start using renewable resources like wind energy, solar energy, hydroelectricity, etc. The present government of India has initiated a bold step in the use of solar energy by establishing ISA (international solar alliance) whose headquarters are located in Gurugram.

2. Explain how the economic development of a nation can be accelerated by the presence of valuable minerals.

Ans. The demand for energy in the domestic sector, agriculture sector, industrial sector, transport sector is increasing at a rapid rate.

The economic development of a nation can be accelerated by the presence of valuable minerals. For example, iron and steel industry will flourish which will lead to the growth of other sectors like construction and infrastructure, automobile industry, etc.

If minerals are available within the nation we will not have to import them from other countries at an exorbitant price which will save the valuable foreign exchange reserves.

6

Manufacturing Industries

Check Your Progress

Multiple-Choice Questions

1. In which one of the following industries is limestone used?

(a) Cement (b) Automobile
(c) Plastic (d) Aluminium

Ans. (a) Cement

2. Which of the following industries use bauxite as a raw material?

(a) Steel (b) Paper
(c) Electronics (d) Aluminium smelting

Ans. (d) Aluminium smelting

3. Among the following industries which manufactures computers, telephones, etc.?

(a) Information technology
(b) Steel
(c) Aluminium smelting
(d) Electronics

Ans. (d) Electronics

4. In which of the following countries was 'mass production' an important feature in the 1920s?

(a) United States of America
(b) Poland
(c) France
(d) Japan

Ans. (a) United States of America

5. "M" gave clues to his friend who wants to set up an iron and steel industry. Which of the following clues provided by 'M' would be most useful for his friend in setting up an industry?

Clues:

I. Low cost of iron ore
II. Abundant water resources
III. Cheap labour
IV. Proximity to airports for easy export

Options:

(a) Clue I (b) Clues I and II
(c) Clues I, II and III (d) Clues I, II, III and IV

Ans. (c) Clues I, II and III

6. Identify the type of industrial pollution with the help of the following information.

'It occurs when hot water from factories and plants is drained into rivers and ponds before cooling.'

Pollutions:

(a) Air pollution (b) Water pollution
(c) Thermal pollution (d) Noise pollution

Ans. (c) Thermal pollution

7. Read the given statements and choose the correct option with regard to cotton textiles from the following.

I. In ancient India, cotton textiles were produced with hand spinning and handloom weaving techniques.
II. After the 18th century, power-looms came into use.
III. India's traditional industries successfully competed with mill-made cloth in the colonial period.
IV. In the early years, the cotton textile industry was concentrated in the cotton-growing belt of Maharashtra and Gujarat.

Options:

(a) I, III and IV (b) II, III and IV
(c) I, II and IV (d) I, II and III

Ans. (c) I, II and IV

8. Choose the correctly matched pair from the following.

(a) Agro based – Fans
(b) Heavy industries – Cotton
(c) Joint sector industries – Oil India Ltd.
(d) Consumer industries – TISCO

Ans. (c) Joint sector industries – Oil india Ltd.

Very Short Answer Type Questions

9. When and where was the first jute mill setup? Mention two uses of jute.

Ans. The first jute mill was established in 1855 in Rishra, located near Kolkata. Jute serves various purposes, including the production of carpets, rugs, chair upholstery, sacks, and other domestic products. Additionally, it plays a role in the manufacturing of pulp and paper.

10. Mention two ways in which industries cause air pollution.

Ans. Industries release airborne particulate matter, including dust, smoke, and mists. The solvents used in chemical manufacturing and metal processing can emit volatile organic compounds (VOCs). The combustion of fossil fuels generates significant quantities of sulfur dioxide and carbon monoxide.

11. List the ways in which industries can be classified on the basis of ownership.

Ans. Public sector, owned and operated by government agencies.

Private sector industries owned and operated by individuals or a group of individuals.

Joint sector industries which are jointly run by the state and individuals or a group of individuals.

Cooperative sector industries are owned and operated by the producers or suppliers of raw materials, workers or both.

12. Name the city which is called the 'electronic capital of India'. Give reason.

Ans. Bengaluru is recognised as the "electronic capital of India." The city is home to numerous public sector organisations, such as ISRO, BHEL, and BEL. Additionally, Bengaluru hosts several state-owned entities in the aerospace and defence sectors, including Bharat Electronics, Hindustan Aeronautics, and National Aerospace Laboratories.

13. From which mineral is aluminium obtained? Give its two uses.

Ans. Aluminium is extracted from Bauxite ore. Aluminium is used to manufacture aircraft, utensils and wires. It has gained popularity as a substitute of steel, copper, zinc and lead in a number of industries. It is light, resistant to corrosion, a good conductor of heat, malleable and becomes strong when it is mixed with other metals.

14. Which public sector iron and steel plant is located near a port? Why?

Ans. The Visakhapatnam Steel Plant, referred to as Rashtriya Ispat Nigam Limited (RINL), is a public sector facility dedicated to iron and steel production in India, strategically positioned near a port. This plant is located along the coastline of the Bay of Bengal in the port city of Visakhapatnam. It is built on the shore to use water from the sea for cooling and other purposes.

15. Name the states where the majority of sugar mills are located. Why are these mills located there?

Ans. The sugar mills are located in Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh. Sixty per cent mills are in Uttar Pradesh and Bihar. Recently, there is a tendency for the mills to shift in the southern and western states, because the cane produced here has a higher sucrose content. The cooler climate also ensures a longer crushing season.

Short Answer Type Questions

16. 'Agriculture gives boost to the industrial sector'. Justify the statement with any three relevant points. **(CBSE SP 2024)**

Ans.
- Agriculture sector supplies essential raw materials such as cotton, jute, and sugarcane to various industries, including textiles, food processing, and pharmaceuticals.
- The agricultural industry generates employment opportunities and enhances purchasing power, resulting in a greater demand for industrial products such as machinery, fertilisers, and processed foods.
- A robust agricultural sector plays a vital role in overall economic growth, potentially fostering increased investments in infrastructure, technology, and education.

17. Explain the role of agro-based industries in the Indian economy.

Ans. The industries which use the agricultural products as their basic raw material are called agro-based industries. Such industries include sugar, textiles, vegetable oil, food processing, etc. These are consumer goods industries. Agro-based industries play an important role in overall development of the economy. It helps in solving the problem of poverty, unemployment and inequality.

18. Mention three locational factors that have led to the setting up of the cotton textile industry of Mumbai and Ahmedabad.

Ans. Three locational factors that have led to the setting up of the cotton textile industry of Mumbai and Ahmedabad are:

(i) Availability of raw cotton.

(ii) Availability of transport industry accessible port facilities.

(iii) The moist climate is well-suited to the cotton industry market.

19. Highlight any three characteristics of the chemical industry in India.

Ans. Three characteristics of the chemical industry in India are:

- These industries are diverse and fast growing, contributes 3 per cent of the GDP. It is the third largest in Asia. In terms of size, it occupies twelfth place in the world.
- It comprises both large and small scale manufacturing units.
- Rapid growth has been recorded in both inorganic and organic sectors.

20. 'India's prosperity lies in expanding and diversifying its manufacturing industries.' Justify the statement. **(CBSE 2024)**

Ans. Manufacturing industries have the potential to modernise the agricultural sector, which serves as the foundation of the economy. By creating employment opportunities in the secondary and tertiary sectors, these industries can lessen the population's reliance on agricultural income. Furthermore, industrial development can play a significant role in alleviating poverty and unemployment within the nation. The establishment of industries in underdeveloped and tribal regions can also contribute to diminishing regional inequalities.

Long Answer Type Questions

21. Highlight the role of IT industry in modern India. What are software technology parks and where in India are they located?

Ans. Information technology plays a very important role in modern India. From telephone to pagers to computers, this industry covers a wide range of products.

- IT industry has achieved a major breakthrough due to the rapid growth of technically competent manpower.
- This industry has given a boost to employment generation. Thirty per cent of the people employed in this sector are women.
- Information technology industry has been a major foreign exchange earner because of its fast growing Business Processes Outsourcing (BPO) sector.

Software technology parks are clusters of software export units in which IT companies develop and export software. By 2010–11, software Technology Parks have come up across 46 locations. Some major Software Parks are located in Bengaluru, Noida, Mumbai, Chennai, Hyderabad and Pune.

22. 'Manufacturing sector is considered the backbone of development of the country.' Justify the statement. **(CBSE 2024)**

Ans. Manufacturing industries play a crucial role in modernising agriculture while simultaneously alleviating the heavy reliance of individuals on agricultural income by creating employment opportunities in the secondary and tertiary sectors.

The advancement of industrial development is essential for the elimination of unemployment and poverty within our nation. This principle underpinned the establishment of public sector industries and joint sector initiatives in India, with the additional objective of reducing regional inequalities by setting up industries in tribal and underdeveloped areas. The export of manufactured products enhances trade and commerce, contributing significantly to the influx of foreign exchange.

Nations that successfully convert their raw materials into a diverse array of high-value finished goods tend to thrive economically. Therefore, India's path to prosperity is contingent upon the rapid expansion and diversification of its manufacturing sector.

23. 'Agriculture and industry move hand in hand.' Justify the statement. **(CBSE 2024)**

Ans. Agriculture and industry are not exclusive of each other. They move hand in hand. For instance, the agro-industries in India have given a major boost to agriculture by raising its productivity. They depend on the latter for raw materials and sell their products such as irrigation pumps, fertilisers, insecticides, pesticides, plastic and PVC pipes, machines and tools, etc. to the farmers. Agriculture provides food for workers in the industrial sector. It provides a market for industrial goods. Agro-based industries provide employment in rural areas. Thus, development and competitiveness of manufacturing industry has not only assisted agriculturists in increasing their production but also made the production processes very efficient.

24. Why does the north-eastern part of the Indian peninsular plateau region have the maximum concentration of iron and steel industries?

Ans. Mostly all the iron and steel industries are concentrated in the eastern part of Peninsular Plateau.

- Due to the low cost of iron ore.
- High grade raw materials in proximity.
- Cheap labour and immense potential in the domestic market.
- Water is abundantly available.
- Transport facility in this region is well connected which help in the movement of raw material and finished goods to the market area.
- Well developed port facilities are also there in this region which helps in export and import of the finished goods.

25. Give reasons why most of the jute mills of West Bengal are located along the banks of the river Hooghly.

Ans. The most of the jute mills of West Bengal are located along the bank of the river Hugli because of following reasons:

- Closeness of the jute producing areas.
- Inexpensive water transport, good network of railways, roadways and waterways to facilitate movement of raw material.
- Abundant water for processing raw jute.
- Efficient and cheap labour is easily available from adjoining states like Bihar, Odisha and Uttar Pradesh.
- Banking, insurance and port facilities are there for export of jute goods.

26. Suggest any three steps to minimise the environmental degradation caused by industrial development in India.

Ans. To minimise the environmental degradation caused by industrial development we have to:

- Minimise the use of water, practice rainwater harvesting, treating hot water and affluents before releasing them in rivers and ponds.
- Particulate matters in air can be reduced by fitting smoke stacks in factories. Smoke can be reduced by using oil or gas instead of coal in factories.
- Industrial effluents can be treated in three phases:
  - (i) Primary treatment: This is done by mechanical means and involves screening, grinding, flocculation and sedimentation.
  - (ii) Secondary treatment: This is done by biological process.
  - (iii) Tertiary treatment: This is done by biological, chemical and physical processes. Wastewater is recycled.

Self-Assessment

Multiple-Choice Questions

1. In which one of the following states is Bhilai Steel Plant located?

(a) West Bengal
(b) Chhattisgarh
(c) Jharkhand
(d) Bihar

Ans. (b) Chhattisgarh

2. Natural products being changed into other forms is known as

(a) Primary product.
(b) Secondary product.
(c) Tertiary product.
(d) Quaternary product. **(CBSE 2023)**

Ans. (b) Secondary product.

3. Who of the following set up the first Iron and Steel industry in India?

(a) J R D Tata
(b) Purushotam Das
(c) R G Saraiya
(d) Thakur Das **(CBSE 2023)**

Ans. (a) J R D Tata

4. Identify the industry with the help of the following information and choose the correct option.

- It is the second-most important metallurgical industry in India.
- The product is light, resistant to corrosion, a good conductor of heat, malleable and becomes strong when it is mixed with other metals.
- It has gained popularity as a substitute of steel, copper, zinc and lead in a number of industries.

Industries:

(a) Chemical Industries
(b) Aluminium Smelting
(c) Iron and Steel Industry
(d) Cement Industry

Ans. (b) Aluminium Smelting

5. Read the given statements and choose the correct option with regard to the sugar industry from the following.

I. India stands second as a world producer of sugar but occupies the first place in the production of *gur* and *khandsari*.
II. The raw material used in this industry is bulky, and during haulage its sucrose content reduces.

III. The mills are located in Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh.

IV. Eighty per cent of the mills are in Uttar Pradesh and Bihar.

Options:

(a) I, III and IV (b) II, III and IV

(c) I, II and IV (d) I, II and III

Ans. (d) I, II and III

6. Choose the correctly matched pair from the following.

(a) Blast Furnace – Transport of raw material to plant.

(b) Pig Iron – Molten materials poured into moulds.

(c) Shaping Metal – Pig iron is purified by melting.

(d) Steel making – Rolling, pressing, casting.

Ans. (b) Pig Iron – Molten materials poured into moulds.

7. Which of the following option/s represent/s potential measures that can be taken to reduce industrial pollution of freshwater?

I. Minimising water use by reusing and recycling it.

II. Harvesting rainwater to meet water requirements.

III. Treating hot water and effluents before releasing them into rivers and ponds.

IV. Regulating groundwater overdrawing by industry legally.

Options:

(a) Statements I and II are correct.

(b) Statements II, III and IV are correct.

(c) Statement II is correct.

(d) Statements I, II, III and IV are correct.

Ans. (d) Statements I, II, III and IV are correct.

Assertion-Reason Type Questions

For question numbers 8 to 16, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

8. Assertion (A): India's prosperity lies in increasing and diversifying its manufacturing industries as quickly as possible.

Reason (R): Countries that transform their raw materials into a wide variety of finished goods of higher value are prosperous.

Ans. (a) Both A and R are true and R is the correct explanation of A.

9. Assertion (A): India is the largest producer of raw jute and jute goods and stands at second place as an exporter after Bangladesh.

Reason (R): Most of the mills are located in Odisha.

Ans. (c) A is true but R is false.

10. Assertion (A): Iron and steel is a heavy industry.

Reason (R): It is considered a heavy industry because all the raw materials as well as finished goods are heavy and bulky entailing heavy transportation costs.

Ans. (a) Both A and R are true and R is the correct explanation of A.

11. Assertion (A): India is dependent on imports for potash, a key ingredient in fertilisers.

Reason (R): India has no commercially usable potash or potassium reserves.

Ans. (a) Both A and R are true and R is the correct explanation of A.

12. Assertion (A): The automobile industry in India experienced healthy growth after liberalisation.

Reason (R): The introduction of new and contemporary models stimulated demand for vehicles in the market.

Ans. (a) Both A and R are true and R is the correct explanation of A.

13. Assertion (A): The cement industry is a crucial component of the agriculture sector.

Reason (R): The industry requires bulky and heavy raw materials like limestone, silica and gypsum.

Ans. (d) A is false but R is true.

14. Assertion (A): Noise pollution can have physiological effects on humans.

Reason (R): Unwanted sound also affect animals.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

15. Assertion (A): Producing high-quality goods is essential for India's industries to compete globally.

Reason (R): Only goods that meet international quality standards can enhance the prestige of the country in the world.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

16. Assertion (A): Agriculture and industry move hand in hand.

Reason (R): Industrial development is a precondition for eradication of unemployment and poverty from the country. **(CBSE 2023)**

Ans. (b) Both A and R are true but R is not the correct explanation of A.

Match the Following

17. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (Steel Plants)	Column B (States)
A. Tata Steel Plant	1. Chhattisgarh
B. Bhilai Steel Plant	2. Tamil Nadu
C. Salem Steel Plant	3. West Bengal
D. Durgapur Steel Plant	4. Jharkhand

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	3	4	1
(c)	4	1	2	3
(d)	3	1	4	2

Ans. (c) 4 1 2 3

Find the Correct Sequence

18. 1. Transport of raw material
2. Iron ore is melted
3. Rolling, pressing, casting and forging
4. Purified by melting and oxidising

Options:

(a)	1	2	3	4
(b)	2	3	4	1
(c)	3	4	1	2
(d)	4	1	2	3

Ans. (a) 1 2 3 4

Correct and Rewrite the Following Statement

19. Complex fertilizers are a combination of nitrogen (N), phosphate (P), copper (Cu) and zinc (Zn). Gujarat and Tamil Nadu contribute towards 50 per cent of the fertiliser production.

Ans. Complex fertilizers have a combination of nitrogen (N), phosphate (P), and potash (K). Gujarat, Tamil Nadu, Uttar Pradesh, Punjab and Kerala contribute towards half of the fertilizer production.

Fill in the Blanks

20. **Aluminium** industry uses bauxite as a raw material.

21. Air pollution is caused by high proportion of undesirable gases such as **sulphur dioxide** and carbon **monoxide**.

22. **NTPC** is a major power providing corporation in India.

23. Cotton industry was initially concentrated in **Maharashtra** and **Gujarat**.

24. In steel manufacturing, iron ore, coking coal and limestone are required in the ratio of **4 : 2 : 1**

25. **Aluminium smelting** is the second most important metallurgical industry in India.

Very Short Answer Type Questions

26. Which country gives stiff competition to India with regard to jute industry? Define any two factors that favour the location of jute factories.

Ans. Bangladesh is the main competitor to India in the jute industry. Some factors that affect the location of jute factories include availability of water, as jute factories need abundant water for processing raw jute. Availability of cheap labour also plays an important role.

27. What is aluminium smelting?

Ans. Aluminium smelting is the process of extracting aluminium from its oxide.

28. Define Joint Sector industries. Name one industry belonging to the Joint Sector.

Ans. Joint sector industries are enterprises that are collaboratively managed by the government and private individuals or groups. An example of this is Oil India Ltd. (OIL), which is co-owned by both the public and private sectors.

Short Answer Type Questions

29. Give any three reasons to highlight the importance of the chemical industry in the Indian economy.

Ans. (i) The chemical industry is a significant contributor to India's industrial production and GDP.

(ii) The industry provides essential inputs to various sectors, including agriculture, textiles, and pharmaceuticals, making it a crucial supplier for several industries.

(iii) The chemical industry is a major employment generator, providing jobs to a large workforce, both directly and indirectly, across various sectors.

30. 'Energy is required for all activities.' Explain the statement with examples. **(CBSE 2023)**

Ans. Various modes of transportation, such as cars, buses, trains, ships, and airplanes, depend on energy. Energy is used in industries, including the operation of machinery, processing of materials, and assembly of products. Energy is fundamental to agriculture, supporting irrigation, machinery operation, and processing activities. It powers essential equipment, including tractors and pumps. Energy is vital for maintaining comfortable living conditions, providing heating during colder months and cooling in warmer climates.

OR

30. 'From telephone to computer, this industry covers a wide range of products.' Identify this industry, its centres in India, and impact on our life.

Ans. The electronics sector is involved in the manufacturing, design, and sale of a diverse range of products, such as consumer electronics, electronic components, communication devices, medical apparatus, and automotive electronics. In India, the electronics industry has played a significant role in advancing space technology, communication systems, information technology, and the software sector. Bengaluru has emerged as the electronic capital of India. Other important centres for electronic goods are Mumbai, Delhi, Hyderabad, Pune, Chennai, Kolkata, Lucknow and Coimbatore.

31. Suggest measures to minimise environmental degradation due to industrial pollution.

Ans. The following methods can help.

(i) Minimise water usage by reusing and recycling water.

(ii) Harvest rainwater to meet water requirements, reducing the demand on freshwater sources.

(iii) Treat industrial effluents to recycle wastewater.

(iv) Regulate groundwater extraction legally to prevent depletion of reserves and protect groundwater resources.

(v) Implement efficient technologies and practices to reduce particulate matter and noise pollution in industrial processes.

32. 'Manufacturing industries are considered the backbone of economic development.' Justify the statement. **(CBSE 2024)**

Ans. Manufacturing industries play a crucial role in modernising agriculture while simultaneously alleviating the heavy reliance of individuals on agricultural income by creating employment opportunities in the secondary and tertiary sectors. The advancement of industrial development is essential for the elimination of unemployment and poverty within our nation. The export of manufactured products enhances trade and commerce, contributing significantly to the influx of foreign exchange.

33. How do industries pollute water?

Ans.
- Industries pollute water by discharging organic and inorganic wastes into the rivers.
- Contamination of groundwater due to the seepage of rainwater into the soil.
- Chemical industries, refineries, mills and electroplating industries are responsible for contamination of water with dyes, acids, etc.

34. 'The development process of India has experienced transformation due to the significant influence of Information Technology (I.T.) and Electronic Industry.' Explain the statement with examples. **(CBSE 2024)**

Ans. India has witnessed significant growth in the electronic industry, particularly in the manufacturing of consumer electronics, mobile phones, and semiconductors. The "Make in India" initiative launched by the government has aimed to boost domestic manufacturing, including the electronics sector. The expansion of the electronics industry has contributed to job creation, skill development, and technological advancement in India.

Paragraph Based Questions

35. Read the sources given below and answer the questions that follow:

Source A – Aluminium Smelting

Aluminium smelting is the second most important metallurgical industry in India. It is light, resistant to corrosion, a good conductor of heat, malleable and becomes strong when it is mixed with other metals. It is used to manufacture aircraft, utensils and wires.

(a) Write two characteristics of aluminium.

Source B – Iron and Steel Industry

In 2016 with 95.6 million tonnes of crude steel production, India ranked 3rd among the world crude steel producers. It is the largest producer of sponge iron. In 2016 per capita consumption of steel in the country was only around 63 kg per annum against the world average of 208 kg.

(b) What do you understand by crude steel?

Source C – Cement Industry

Cement is essential for construction activity such as building houses, factories, bridges, roads, airports, dams and for other commercial establishments. This industry requires bulky and heavy raw materials like limestone, silica and gypsum.

(c) Where was the first cement plant set up?

Ans. (a) The two characteristics of aluminium are as follows:

- It is a good conductor of heat.
- It is used as a substitute of steel, copper, zinc and lead in various industries.

(b) The steel that is not yet processed and in its natural or raw state is called crude steel.

(c) The first cement plant was set up in Chennai in 1904.

Case Based Questions

36. Water pollution is caused by organic and inorganic industrial wastes and effluents discharged into rivers. The main culprits in this regard are paper, pulp, chemical, textile and dyeing, petroleum refineries, tanneries and electroplating industries that let out dyes, detergents, acids, salts and heavy metals like lead and mercury pesticides, fertilisers, synthetic chemicals with carbon, plastics and rubber, etc. into the water bodies. Fly ash, phospo-gypsum, iron, and steel slags are the major solid wastes in India.

Thermal pollution of water occurs when hot water from factories and thermal plants is drained into rivers and ponds before cooling.

36.1 Name any two industries that cause water pollution.

Ans. Textile and dyeing, petroleum refineries are some of the industries that cause water pollution.

36.2 What is solid waste?

Ans. Solid waste refers to any material that has been discarded, including trash, refuse, or garbage. Fly ash, phospo-gypsum, iron, and steel slags are the major solid wastes.

36.3 What is the difference between water pollution and thermal pollution?

Ans. Water pollution is caused by organic and inorganic industrial wastes and effluents discharged into water bodies. Thermal pollution of water occurs when hot water from factories and thermal plants is drained into rivers and ponds before cooling.

37. In ancient India, cotton textiles were hand spun and made using handloom weaving techniques. After the arrival of the colonising British, powerlooms came into use. India's traditional industries suffered a setback during this period because they could not compete with the mill-made cloth from England. In the early years, the cotton textile industry thrived in the cotton-growing belt of Maharashtra and Gujarat. Availability of raw cotton, market, transport including accessible port facilities, labour, moist climate, etc. were the reasons for its localisation. This industry is closely associated with agriculture and provides a source of income to farmers, cotton boll pluckers and workers engaged in ginning, spinning, weaving, dyeing, designing, packaging, tailoring and sewing. The industry supports many other industries such as chemicals and dyes, packaging materials, and engineering works by using their products. While spinning continues to be centralised in Maharashtra, Gujarat and Tamil Nadu, weaving is widely spread to provide scope for using traditional skills and designs of weaving in cotton, silk, zari, embroidery, etc. India has top grade production in spinning, but weaving produces poor quality of fabric as it cannot use much of the high quality yarn produced in the country. Weaving is done by handloom, powerloom, and in mills. The handspun khadi made at home is a major source of employment to weavers who constitute a cottage industry.

37.1 In which belt was the cotton textile industry concentrated?

Ans. In the initial stages, the cotton textile industry was primarily located in the cotton-producing regions of Maharashtra and Gujarat.

37.2 What is the source of large scale employment to weavers and how?

Ans. The handspun khadi produced domestically serves as a significant source of employment for weavers, who are part of a cottage industry.

37.3 Why was the cotton textile industry set in the Gujarat–Maharashtra belt?

Ans. In the initial years, the cotton textile industry flourished in the cotton-producing regions of Maharashtra and Gujarat. Factors such as the availability of raw cotton, market access, transportation including convenient port facilities, labour supply, and a humid climate contributed to its concentration in these areas.

38. India is the second largest producer of sugar in the world but occupies the first place in the production of *gur* and *khandsari*. The raw material used in this industry is bulky, and its sucrose content reduces during transportation. The mills are spread across Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh. Sixty per cent of the mills are in Uttar Pradesh and Bihar. This industry is seasonal in nature so it is best for the cooperative sector. In the last few years, the mills have shifted to the southern and western states, especially in Maharashtra. This is because the cane produced here has more sucrose. The cooler climate also

allows a longer crushing season. In addition, the cooperatives are more successful in these states.

38.1 At what position does India stand first in the production of sugar, *gur* and *khandsari*?

Ans. India is the second largest producer of sugar in the world but occupies the first place in the production of *gur* and *khandsari*.

38.2 Mention all the states where sugar mills are located in India.

Ans. The sugar mills are spread across Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh.

38.3 What are the two reasons behind the relocation of sugar mills to Maharashtra in recent years?

Ans. In the last few years, the mills have shifted to the southern and western states, especially in Maharashtra. This is because the cane produced here has more sucrose. The cooler climate also allows a longer crushing season.

39. Before some days of Diwali, Riya went to a market with her friends. One of her friends bought shoes and clothes for her. Another friend purchased some household items like bedsheets, curtains and utensils, sugar, ghee, refine oil, tea and diyas (earthen lamps), etc. Riya saw that the market had large quantities of items for sale. She wondered how so many products could be made in such a large amount. One of her friend explained that household items, shoes, clothes, sugar, oil, etc. are manufactured by machines in large industries, some utensils are manufactured in small industries, while items like diyas are made by individual artisans or with the help of their family members in the household/cottage industry.

39.1 What is the main difference between large industries and small industries?

Ans. Large industries use machines to manufacture goods, while small industries may use both machines and manual labour.

39.2 How does the manufacturing process of diyas differ from that of shoes and clothes?

Ans. Diyas are made by individual artisans in household industries, whereas shoes and clothes are manufactured by machines in large industries.

39.3 How does the manufacturing process in large-scale industries impact the quality and consistency of products compared to small-scale industries?

Ans. Large-scale industries produce goods with consistent quality and accuracy due to machine-based manufacturing, whereas small-scale industries may have variations in quality and accuracy due to human involvement.

40. The production of goods in large quantities in factories using machines and raw materials is called manufacturing. For example, paper is manufactured from wood, sugar from sugarcane, iron and steel from iron ore and aluminium from bauxite. You will be surprised to know that some clothes are manufactured from yarn which itself is an industrial product! People employed in the secondary activities manufacture primary materials into finished goods. The workers employed in steel factories, car, breweries, textile industries, bakeries, etc. fall under this category. Some people are employed in providing services. They fall under the tertiary sector. All manufacturing industries fall under the secondary sector. The economic strength of a country is measured by the development of its manufacturing industries.

40.1 What is the primary process involved in manufacturing?

Ans. The primary process involved in manufacturing is the transformation of raw materials into more valuable products.

40.2 Which sector of the economy does manufacturing belong to?

Ans. Manufacturing belongs to the secondary sector.

40.3 What is the significance of manufacturing industries in a country's economy?

Ans. Manufacturing industries are significant in a country's economy as they transform raw materials into finished goods, creating value addition and employment opportunities. The development of manufacturing industries measures a country's economic strength, indicating its ability to produce goods and services that drive economic growth and prosperity.

Long Answer Type Questions

41. Mention the factors responsible for the decentralisation of cotton textile industry in India.

Ans. Following are the factors responsible for decentralisation of cotton textile industry in India:

- Cotton is cultivated on the large area in India, which in turn ensures the easy availability of raw material.
- Cheap labour is available for working in this industry.
- Transportation is another factor behind this as the development of transportation source could be possible.
- For spreading the cotton weaving across the country.
- In order to widen the market in the country this would help the economy of the country to grow.

42. Describe the role of manufacturing industries in the economic development of a country. **(CBSE 2024)**

Ans. Manufacturing industries are essential to a nation's economic progress, as they generate both direct employment opportunities and indirect jobs within supply chains, logistics, transportation, and various services. This sector significantly contributes to the Gross Domestic Product (GDP) and encourages growth in interconnected industries. By transforming raw materials into finished products, manufacturing enhances the economic value. It also promotes innovation and technological progress. Furthermore, it plays a crucial role in modernising agriculture, which serves as the foundation of the economy. By creating employment in diverse sectors, manufacturing lessens the reliance on agriculture. This sector is instrumental in alleviating poverty and reducing unemployment rates. Additionally, the establishment of industries in underdeveloped and tribal regions can help mitigate regional inequalities. The export of manufactured products boosts trade and commerce, thereby generating foreign exchange.

43. Describe any five steps taken to save fresh water from industrial pollution. **(CBSE 2024)**

Ans. (i) Reducing water consumption in processing by implementing reuse and recycling across multiple stages is essential.

(ii) Additionally, the collection of rainwater should be deployed to fulfill water needs.

(iii) It is crucial to treat hot water and wastewater prior to their discharge into rivers and ponds. The treatment of industrial effluents can be categorised into three distinct phases:

- Primary treatment, which utilises mechanical methods such as screening, grinding, flocculation, and sedimentation.
- Secondary treatment, which employs biological processes.
- Tertiary treatment, incorporating biological, chemical, and physical methods, including the recycling of wastewater.

(iv) Furthermore, it is imperative to legally regulate the excessive extraction of groundwater by industries, particularly in areas where groundwater resources are at risk.

(v) Reducing environmental pollution through ash pond management, ash water recycling system and liquid waste management.

44. Explain how industries pollute the environment.

Ans.
- Our environment is polluted by the smoke that is emitted by chemical factories, smelting plants, refineries, burning of fossil fuel. Leakage of toxic gases has long term effects on health.
- Pollution caused by organic and inorganic industrial wastes that is discharged into the rivers.
- Discharge of dyes, detergents, acids into the water bodies.
- Dumping of waste like harmful chemicals, industrial effluents, packaging, salts and garbage results in soil pollution.
- Ground water gets contaminated due to the seepage of rainwater into soil carrying pollutants.

45. Write a brief note about sugar industries in India and give reasons for the concentration of sugar mills in sugarcane producing areas.

Ans.
- In recent years, there is a tendency for the mills to shift and concentrate in the southern and western states, especially in Maharashtra, this is because the cane produced here has a higher sucrose content.
- Sugarcane is bulky and heavy, making it difficult to transport over long distances.
- Sugarcane is highly perishable and loses its sucrose content, so the juice must be extracted from the sugarcane as soon as possible.
- Transporting sugarcane to the mills can be expensive, and any increase in haulage costs can significantly increase production costs.

Let's Compete

Multiple-Choice Questions

1. Which of these is a consumer industry?

(a) Sugar industry (b) Copper smelting
(c) Aluminium smelting (d) Iron and Steel

Ans. (a) Sugar industry

2. Where was India's first jute mill set up?

(a) Bokaro (b) Haldia
(c) Meerut (d) Rishra

Ans. (d) Rishra

3. In which of these states are 60 per cent of India's steel units located?

(a) Uttarakhand and Bihar
(b) Jharkhand and Odisha
(c) Punjab and Haryana
(d) Karnataka and Tamil Nadu

Ans. (b) Jharkhand and Odisha

4. Electronics industry manufactures
   (a) steel. (b) automobiles.
   (c) computers. (d) railway coaches.

Ans. (c) computers.

5. The most important sugar producing state of India is
   (a) Odisha. (b) West Bengal.
   (c) Andhra Pradesh. (d) Uttar Pradesh.

Ans. (d) Uttar Pradesh.

6. Which of the following is not a consumer industry?
   (a) Fans (b) Toothpaste
   (c) Cement (d) Sugar

Ans. (c) Cement

7. Processing of jute falls under which of the following industries.
   (a) Agro-based (b) Mineral-based
   (c) Business-based (d) None of these

Ans. (a) Agro-based

8. Which industries are owned and operated by the producers or suppliers of raw material and workers?
   (a) Cooperative sector industries
   (b) Public sector industries
   (c) Heavy industries
   (d) Light industries

Ans. (a) Cooperative sector industries

9. What kind of pollution of water occurs when dyes, detergents, salts, and acidic water is drained into rivers and ponds?
   (a) Thermal pollution (b) Industrial pollution
   (c) Noise pollution (d) Air pollution

Ans. (b) Industrial pollution

10. Choose the correct option for a mineral based industry.
    (a) Sugar industry
    (b) Tea industry
    (c) Cotton industry
    (d) Petrochemicals industry.

Ans. (d) Petrochemicals industry.

Life Skills

1. Mention a few steps you would suggest to minimise environmental degradation caused by industries.

Ans. Following are a few steps to minimise environmental degradation caused by industries:

- Treating hot water and effluents before releasing them into rivers.
- Harvesting rainwater to meet water requirements.
- Reusing and recycling of water for processing.
- Industrial smoke can be reduced by using oils and gas.

2. What pro-active approach has NTPC taken to preserve our natural environment?

Ans. The Corporation has taken pro-active approach to preserve our natural environment by:

- minimising waste generation by maximising ash utilisation.
- adopting latest techniques for best utilisation of equipment.
- reducing environmental pollution.
- online database management for all its power stations.
- afforestation.

7

Lifelines of National Economy

Check Your Progress

Multiple-Choice Questions

1. Which major port was developed to decongest the Kolkata port?

(a) Marmagao (b) Paradwip
(c) Haldia (d) Deendayal

Ans. (c) Haldia

2. By what name is Sher Shah Suri Marg known as?

(a) NH-6 (b) NH-1
(c) NH-5 (d) NH-7

Ans. (b) NH-1

3. Identify the highway with the help of the following information and choose the correct option.

- The government has launched a major road development project linking Delhi-Kolkata–Chennai–Mumbai and Delhi by six lane Super Highways.
- The major objective of these Super Highways is to reduce the time and distance between the mega cities of India.
- These highway projects are being implemented by the NHAI.

Highways:

(a) National Highways
(b) Golden Quadrilateral Super Highways
(c) State Highways
(d) District Roads

Ans. (b) Golden Quadrilateral Super Highways

4. Choose the correctly matched pair from the following.

(a) Broad Gauge – 63950 km
(b) Metre Gauge – 1,604 km
(c) Narrow Gauge – 2,402 km
(d) Inland navigation waterways – 18,000 km

Ans. (a) Broad Gauge – 63950 km

5. Which of the following regions poses significant challenges for constructing railway lines?

I. Himalayan mountainous regions
II. Sandy plains of western Rajasthan
III. Forested tracks of Madhya Pradesh, Chhattisgarh, Odisha, and Jharkhand
IV. Plains of Punjab

Options:

(a) Statements I and II are correct.
(b) Statements I, III and IV are correct.
(c) Statement II is correct.
(d) Statements I, II, and III are correct.

Ans. (d) Statements I, II and III are correct.

6. Read the given statements and choose the correct option with regard to waterways from the following.

I. Waterways are the cheapest means of transport.
II. They are most suitable for carrying heavy and bulky goods.
III. It is a fuel-efficient and environment friendly mode of transport.
IV. India has inland navigation waterways of 13,500 km in length.

Options:

(a) I, III and IV (b) II, III and IV
(c) I, II and IV (d) I, II and III

Ans. (d) I, II and III

Very Short Answer Type Questions

7. Name the different types of roads in India.

Ans. Different types of roads are as follows:

- Golden quadrilateral Super Highways

- National Highways
- State Highways
- District roads
- Other roads
- Border roads

8. Name the first port to be developed soon after Independence and why?

Ans. Kandla in Kuchchh was the first port developed soon after independence to alleviate the congestion at the Munbai port, following the loss of the Karachi port Pakistan as a result of the Partition.

9. What are Golden Quadrilateral Express Highways? Name the cities which are connected by this highway.

Ans. The Golden Quadrilateral is a network of national highways that connects the four major cities of india – Delhi, Mumbai, Chennai, and Kolkata. It connects many other major cities and industrial, agricultural, and cultural centres. Its main aim is to reduce travel time between India's major cities. It has a significant impact on the country's economic development.

10. What is the full form of NHAI? Name two projects implemented by NHAI.

Ans. The full form of NHAI is National Highway Authority of India. Golden Quadrilateral, a 5,846 km project that connects the cities of Delhi, Mumbai, Chennai, and Kolkata. North-South and East-West Corridors, a 7,142 km network that connects the country's four extreme points. It links Silchar in the east to Porbandar in the west and Srinagar in the north to Kanyakumari in the south.

11. Which port is called an artificial sea port and why?

Ans. Chennai is an artificial sea port and it is man-made.

12. What is balance of trade?

Ans. The balance of trade of a country is the difference between its value of export and import.

13. Which mode of transportation reduces trans-shipment losses and delays? How?

Ans. Pipeline transport reduces trans-shipment losses and delays because it requires minimal labour and cost to maintain. It is used for transporting crude oil, petroleum products and natural gas from oil and natural gas fields to refineries, fertiliser factories and big thermal power plants. Solids can also be transported through a pipeline when converted into slurry.

14. How many railway gauges are in India? Mention their names.

Ans. There are four types of railway gauges in India.

- Broad Gauge: 1.676 m
- Metre Gauge: 1.000 m
- Narrow Gauge: 0.762 m and 0.610 m
- Standard Gauge: 1.435 m

15. 'Roadways have an edge over railways'. Support the statement with two reasons.

Ans. Roadways have an edge over railways in several ways, including:

(i) The construction and upkeep of roads are generally more economical compared to railways.

(ii) Roadways facilitate door-to-door delivery, thereby minimising loading and unloading expenses.

(iii) For short-distance transportation of goods, road transport is more effective than rail transport.

(iv) Roads can seamlessly connect with other transportation modes, including railway stations, airports, and seaports.

Short Answer Type Questions

16. Mention a few problems faced by the Indian Railways.

Ans. Few problems faced by the Indian railways are as follows:

- Passengers travelling without tickets.
- Theft and damage to railway properties by the people.
- Stopping of the trains and pulling of chains unnecessarily by the people causes heavy damage to the railway.

17. Describe any two National Waterways of India.

Ans. The two National Waterways of India are:

- N.W. No.1: The Ganga River between Prayagraj and Haldia (1620 km). It is navigable up to Patna by mechanised boats.
- N.W. No. 2: The Brahmaputra River between Sadiya and Dhubri (891 km). It is navigable by streamers up to Dibrugarh and is shared by India and Bangladesh.

18. Mention the date when air transport was nationalised in India. Name the agencies which provided air services.

Ans. Air transport was nationalised in 1953.

- Air India and some private airlines provide domestic and international air services.
- Pawanhans Helicopters Ltd. provides helicopter services to Oil and Natural Gas Corporation in its off-shore operations to inaccessible areas and difficult terrains.

19. Which are the twelve major ports of India?

Ans. Following are the twelve major ports of India:

(i) Deendayal Port
(ii) Mumbai Port
(iii) Jawaharlal Nehru (Nhava Sheva) Port
(iv) Marmagao Port
(v) Kochchi Port
(vi) Tuticorin Port
(vii) Chennai Port
(viii) Vishakhapatnam Port
(ix) Paradwip Port
(x) Kolkata Port
(xi) Haldia Port
(xii) New Mangaluru Port

20. 'Railways are the principal mode of transportation for freight and passengers in India'. Substantiate the statement with three reasons.

Ans. (i) Indian Railways form a crucial part of the national infrastructure, connecting distant regions and fostering economic growth.
(ii) With an extensive network, railways provide accessibility across diverse terrains, including difficult-to-reach areas like mountains and plains.
(iii) They support diverse activities such as business, tourism, agriculture, and pilgrimage, thereby integrating economic life across the country.

21. What are the challenges encountered by road transportation in India? Substantiate your answer with three reasons.

Ans. (i) Inadequate Road Network: The road network in India is insufficient compared to the volume of traffic and passengers.
(ii) Poor Road Conditions: Approximately half of the roads are unmetalled, rendering them unusable during the rainy season.
(iii) Lack of Infrastructure on National Highways: National Highways suffer from inadequacies and lack roadside amenities.

Long Answer Type Questions

22. Briefly explain National Highways. State two important fact that highlight the importance of National Highways in India.

Ans. National highways link the extreme parts of the country. These are the primary road systems and are laid and maintained by the Central Public Works Department (CPWD).

Following facts highlight the importance of National Highways in India:

- National Highways link extreme parts of the country.
- A number of major National Highways run in North–South and East–West directions.

23. Define inland waterways. Mention two merits of this transport. Name the rivers which are used for inland water transport.

Ans. The inland waterways refer to using inland water bodies such as rivers, canals, backwaters, etc. for transporting people and goods from one place to another. In order to increase the significance of inland waterways and to improve its efficiency, the Inland Waterways Authority of India was set-up in 1986.

Two merits of this transport are:

(i) Waterways are the cheapest, fuel-efficient and environment friendly mode of transport.
(ii) It is suitable for carrying heavy and bulky goods.

Ganga, Brahmaputra, Mahanadi, Godavari, Krishna, Brahmani and Matai river are the main rivers which are used for inland water transport.

24. Bring out the differences between personal communication and mass communication.

Ans. Differences between personal communication and mass communication are as follows:

Personal Communication	Mass Communication
• It is a communication between one person to another person.	• It is a communication between masses.
• It can be verbal or telephonic communication, a letter, an email or SMS.	• Media is the only source of communication.
• Personal communication includes Indian postal networks, cards and envelops, telephone, etc.	• Mass communication includes radio, television, newspapers, magazines, books and movies.
• To facilitate quick delivery of mails in large towns and cities, six mail channels have been introduced recently.	• Mass communication provides entertainment and creates awareness among people about various national programmes.

25. What is trade? Name the three types of trade. Describe the International trade of India.

Ans. The exchange of goods among people, states and countries is referred to as trade. Trade may take place through land, sea and air routes.

The three types of trades are local trade, national trade and international trade.

- Trade between two different countries is called international trade. International trade of a country is an index to its economic prosperity.

Import and export are the main components of international trade.

- Items of export include agriculture and allied products, base metals, gems and jewellery, chemicals and related products.
- Items of import include petroleum crude and products, gems and jewellery, chemicals and related products, base metals, electronic items, machinery, agriculture and allied products.
- India has trade relations with all the major trading blocks. Lately, India has come up as a software giant and has started earning a lot of foreign exchange through the export of information technology.

26. How does international trade contribute to India's economic prosperity? Substantiate the answer with examples.

Ans. International trade plays a crucial role in India's economic prosperity in various ways:

(i) Export Diversity: India exports a wide range of goods such as gems and jewellery, chemicals, agriculture products, and software services. For instance, the export of information technology has established India as a global software giant, earning significant foreign exchange.

(ii) Employment and Income Generation: Trade fosters employment and income opportunities, particularly in sectors like agriculture, manufacturing, and services. For example, the gems and jewellery sector employs a large workforce across the country.

(iii) Economic Indicator: The favourable balance of trade, where exports exceed imports, signifies a favourable economic position. India's trade relations with major trading blocks and geographical regions underscore its economic integration and growth.

27. 'Efficient means of Transport are pre-requisite for fast development.' Justify the statement. **(CBSE 2023)**

Ans. Various materials and services are utilised in our everyday lives. Some of these resources are readily available in our immediate environment, while others are sourced from distant locations. The transfer of goods and services from their points of origin to areas of demand does not occur spontaneously. This process requires transportation, which is essential for the movement of these items. Individuals who facilitate this transfer are referred to as traders, who ensure that products reach consumers through transportation. Consequently, the rate of a country's development is influenced by both the production of goods and services and their distribution across different regions. Therefore, effective transportation methods are essential for rapid development.

28. 'Roadways have an edge over Railways.' Justify the statement. **(CBSE 2023)**

Ans. Roadways have an edge over Railways due to following reasons.

(i) Cost Efficiency: The operational and construction expenses associated with road transport are lower compared to those of rail transport.

(ii) Accessibility: In hilly regions, roads offer greater accessibility than railways.

(iii) Comprehensive Service: Road transport facilitates door-to-door delivery, thereby minimising loading and unloading expenses.

(iv) Terrain Adaptability: Roads are more capable of accommodating complex and uneven terrains than railways.

(v) Slope Management: Roads are designed to manage steeper gradients more effectively than railways.

(vi) Short-Distance Logistics: For the movement of goods over short distances, road transport is more advantageous than rail transport.

(vii) Intermodal Connectivity: Road transport provides essential links to various other transport modes, including railway stations, airports, and seaports.

Self-Assessment

Multiple-Choice Questions

1. The cheapest means of transport is

(a) roadways. (b) pipelines.
(c) airways. (d) waterways.

Ans. (d) waterways.

2. A place where there is provision of loading and unloading the ships is called a

(a) dock. (b) harbour.
(c) port. (d) hinterland.

Ans. (c) port.

3. Identify the mode of transportation with the help of the following information and choose the correct option accordingly.

- It is the fastest, most comfortable and prestigious mode of transport.
- It can cover very difficult terrains like high mountains, dreary deserts, dense forests and also long oceanic stretches with great ease.
- This means of transportation has made access easier in every region.

Options:

(a) Roadways (b) Airways

(c) Railways (d) Pipelines

Ans. (b) Airways

4. Read the given statements and choose the correct option with regard to pipelines from the following.

I. In the past, these were used to transport natural gas.

II. Solids can also be transported through a pipeline when converted into slurry.

III. Initial cost of laying pipelines is high but subsequent running costs are minimal.

IV. There are three important networks of pipeline transportation in the country.

Options:

(a) I, III and IV (b) II, III and IV

(c) I, II and IV (d) I, II and III

Ans. (b) II, III and IV

5. Choose the correctly matched pair.

(a) N.W. No.1 – The Ganga river between Allahabad and Haldia

(b) N.W. No.2 – The West-Coast Canal in Kerala (Kottappuram-Kollam, Udyogamandal and Champakkara canals)

(c) N.W. No.3 – The Brahmaputra river between Sadiya and Dhubri

(d) N.W. No.4 – Specified stretches of river Brahmani along with Matai river, delta channels of Mahanadi and Brahmani rivers and East Coast Canal

Ans. (a) N.W. No. 1 – The Ganga river between Allahabd and Haldia

Assertion-Reason Type Questions

For question numbers 6 to 13, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option.

Options:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

6. Assertion (A): The historical Sher Shah Suri Marg is called National Highway No.7, between Delhi and Srinagar.

Reason (R): India has one of the largest road networks in the world, aggregating to about 54.7 lakh km.

Ans. (d) A is false but R is true.

7. Assertion (A): Roads linking a state capital with different district headquarters are known as State Highways.

Reason (R): These roads are constructed and maintained by the State Public Works Department (PWD) in States and Union Territories.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

8. Assertion (A): Railways is the principal mode of transportation for freight and passengers in India.

Reason (R): Railways also make it possible for people to conduct multifarious activities like business, sightseeing, pilgrimage along with transportation of goods over longer distances.

Ans. (a) Both A and R are true and R is the correct explanation of A.

9. Assertion (A): Waterways are the cheapest means of transport. They are most suitable for carrying heavy and bulky goods.

Reason (R): India has inland navigation waterways of 17,200 km in length.

Ans. (c) A is true but R is false.

10. Assertion (A): India publishes a large number of newspapers and periodicals annually.

Reason (R): They are of different types depending upon their periodicity.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

11. Assertion (A): Mumbai is the biggest port with a spacious natural and well-sheltered harbour.

Reason (R): The Jawaharlal Nehru port was planned to decongest the Mumbai port and serve as a hub port for the region.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

12. Assertion (A): Pipeline transport is used primarily for transporting crude oil, petroleum products, natural gas, and solids in slurry form.

Reason (R): The initial cost of laying pipelines is high, but they have minimal running costs and eliminate trans-shipment losses or delays.

Ans. (a) Both A and R are true and R is the correct explanation of A.

13. Assertion (A): National Highways link extreme parts of the country and form the primary road systems.

Reason (R): A number of major National Highways run in North-South and East-West directions.

Ans. (b) Both A and R are true but R is not the correct explanation of A.

Match the Following

14. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (Waterways)	Column B (Length of Waterways)
A. N.W. No. 1	1. 1620 km
B. N.W. No. 2	2. 891 km
C. N.W. No. 3	3. 205 km
D. N.W. No. 4	4. 1078 km

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	3	1	4	2

Ans. (a) 1 2 3 4

15. Match the following Ports given in Column A with their types in Column B. Choose the correct answer from the options given below:

Column A (Ports)	Column B (Types)
A. Kandla	1. Riverine port
B. Mumbai	2. Deepest landlocked port
C. Vishakhapatnam	3. Biggest port
D. Kolkata	4. Port developed after Independence

Codes:

	A	B	C	D	
(a)	4	3	2	1	
(b)	2	1	3	4	
(c)	2	4	1	3	
(d)	1	2	4	3	**(CBSE 2023)**

Ans. (a) 4 3 2 1

Find the Incorrect Option

16. (a) Mumbai is the biggest port with a spacious natural and well-sheltered harbour.

(b) Deendayal in Kuchchh was the first port developed soon after Independence to ease the volume of trade on the Mumbai port.

(c) Chennai is the deepest landlocked and well-protected port.

(d) Air transport was nationalised in 1953.

Ans. (c) Chennai is the deepest landlocked and well-protected port.

Correct and Rewrite the Following Statement

17. With a long coastline of 8,317.5 km, India is dotted with 14 major and 159 notified non-major (minor/intermediate) ports. These major ports handle 80 per cent of India's foreign trade.

Ans. With a long coastline of 7,516.6 km, India is dotted with 12 major and 200 notified non-majors (minor/intermediate) ports. These major ports handle 95 per cent of India's foreign trade.

Fill in the Blanks

18. **International trade** is considered the economic barometer of a country.

19. The length of a broad gauge is **1.676** metre.

20. **Airways** is the costliest means of transport.

21. The **Haldia** port was set up to reduce the load on Kolkata sea port.

22. **Kerala** state of India has the highest road density.

23. The Indian railways is divided into **sixteen** zones.

24. **Vishakhapatnam** is the deepest land-locked and well-protected port.

25. **Interstate** trade is carried out between two or more states.

Very Short Answer Type Questions

26. Who implements the Super Highways?

Ans. National Highway Authority of India implements the super highways.

27. Give reasons why India's trade is considered unfavourable.

Ans. India's trade is considered unfavourable because there is unfavourable balance of trade which means there are more imports than exports.

28. What do you understand by an inland riverine port?

Ans. Inland riverine ports are commonly referred as inland ports. They are extension of seaports.

29. Why was the Golden Quadrilateral Super Highways project started? Give two reasons.

Ans. (i) The government started the project to reduce travel time between major cities like Delhi, Kolkata, Chennai and Mumbai.

(ii) These highways would enhance connectivity and facilitate efficient movement across the country.

30. What are the characteristics of metalled and unmetalled roads?

Ans. (i) Metalled Roads: These roads are durable and suitable for all weather conditions.

(ii) Unmetalled Roads: These roads, typically made of gravel or sand, become unusable during the rainy season.

31. Why is the construction of railway tracks not possible in every region? Substantiate your answer with two reasons.

Ans. (i) Difficult terrain and geographical obstacles like sand, rivers and swamps hinder railway track construction.

(ii) Sparse population and limited economic opportunities in these areas make railway construction less feasible.

32. Efficient means of transport are prerequisites for fast development. Substantiate your answer with any two reasons.

Ans. (i) Efficient transport allows for timely delivery of goods, facilitating trade and economic growth.

(ii) It connects remote areas, improving access to resources and markets, boosting development across regions.

33. How are transport, communication and trade complementary to each other? Substantiate your answer with any two reasons.

Ans. Transport, communication, and trade are complementary:

(i) Efficiency in trade: Efficient transport connects producers to consumers, facilitating trade. Communication enables quick decision-making and information flow, enhancing trade opportunities.

(ii) Global connectivity: Transport and communication integrate global markets, fostering economic growth.

Short Answer Type Questions

34. Explain why the distribution of roads is not uniform in India.

Ans. The distribution of road is not uniform in the country due to the following reasons:

- About half of the roads are unmetalled and this limits their usage during the rainy season.
- The National Highways are inadequate too.
- Moreover, the roadways are highly congested in cities and most of the bridges and culverts are old and narrow.

35. Bring out the differences between transport and communication.

Ans. Difference between transport and communication is as follows:

- Transport helps in carrying people from one place to another, whereas communication is a process of sharing ideas between people.
- Transport consists of roadways, railways, airways and waterways whereas communication consists of radio, television, radio and internet.
- Transport connects regions whereas communication connects people.
- Transport fulfils economic needs whereas communication fulfils social needs.

36. Why is Mumbai considered to be the most important port of India?

Ans. Mumbai is considered as the most important port of India because it is the biggest port with a natural harbour on the west coast of India. A new port Nhava Sheva has been developed near this port to decongest traffic at Mumbai port. It handles a large variety of cargo from Middle East and European countries.

37. 'The Indian Railway network is influenced by physiographic, economic and administrative factors'. Substantiate the statement with three examples.

Ans. The India's railway network is influenced by several factors:

(i) Physiographic Factors: The flat northern plains with high population density make running a railway network viable here.

(ii) Economic Factors: Natural resources-rich regions have a denser railway network because they can bear the expenses on this infrastructure.

(iii) Administrative Factors: Administrative and political decisions also play a role in determining the distribution of the railway network in different regions.

38. 'Tourism in India has grown substantially over the last three decades'. Justify the statement with three reasons.

Ans. Tourism has grown primarily due to:

(i) Diverse Tourist Offerings: India offers heritage, eco, adventure, cultural, medical, and business tourism, appealing to a wide range of international tourists.

(ii) Employment Generation: More than 15 million people are directly engaged in the tourism industry, supporting it in various ways.

(iii) Cultural and Economic Benefits: Tourism promotes national integration, supports local handicrafts, and enhances international understanding of India's culture and heritage.

Paragraph Based Questions

39. Read the sources given below and answer the questions that follow:

Source A – Major Sea Ports

Kandla is a tidal port. It caters to the convenient handling of exports and imports of highly productive granary and industrial belt stretching

across the Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan and Gujarat.

(a) What is the new name of Kandla port?

Source B – Pipelines

Pipeline transport network is a new arrival on the transportation map of India. In the past, these were used to transport water to cities and industries. Now, these are used for transporting crude oil, petroleum products and natural gas from oil and natural gas fields to refineries, fertilizer factories and big thermal power plants.

(b) How are solids transported through pipelines?

Source C – Railways

Railways are the principal mode of transportation for freight and passengers in India. Railways also make it possible for people to conduct multifarious activities like business, sightseeing, pilgrimage along with transportation of goods over longer distances.

(c) How many zones are there in Indian Railways?

Ans. (a) Kandla port is renamed as Deendayal port.

(b) Solids are transported through pipeline after converted them into slurry.

(c) There are sixteen zones of Indian railways.

Case Based Questions

40. Railways are the principal mode of transportation for freight and passengers in India. Railways in India bind the economic life of the country as well as accelerate the development of the industry and agriculture. The Indian Railway is now reorganised into 16 zones. The distribution pattern of the railway network in the country has been largely influenced by physiographic, economic and administrative factors. The northern plains with their vast level land, high population density and rich agricultural resources provided the most favourable condition for their growth. However, a large number of rivers requiring construction of bridges across their wide beds posed some obstacles. In the hilly terrains of the peninsular region, railway tracts are laid through low hills, gaps or tunnels. The Himalayan mountainous regions too are unfavourable for the construction of railway lines due to high relief, sparse population and lack of economic opportunities. Likewise, it was difficult to lay railway lines on the sandy plain of western Rajasthan, swamps of Gujarat, forested tracks of Madhya Pradesh, Chhattisgarh, Odisha and Jharkhand.

40.1 Why do the northern plains provide favourable condition for construction of railways?

Ans. The northern plains with their vast level land, high population density and rich agricultural resources provided the most favourable condition for their growth.

40.2 Where are the railway tracks laid in the hilly terrain of the peninsular region of India?

Ans. In the hilly terrains of the peninsular region, railway tracts are laid through low hills, gaps or tunnels.

40.3 Why is it difficult to lay rail lines in the

(a) sandy terrain of Rajasthan?

(b) Himalayan regions?

Ans. (a) It is difficult to lay railway lines in sandy terrain because the sand is too soft to support the weight of the train and the rails.

(b) The Himalayan mountainous regions too are unfavourable for the construction of railway lines due to high relief, sparse population and lack of economic opportunities.

41. Mumbai is the biggest port with a spacious natural and well-sheltered harbour. The Jawaharlal Nehru port was planned with a view to decongest the Mumbai port and serve as a hub port for this region. Marmagao port (Goa) is the premier iron ore exporting port of the country. This port accounts for about fifty per cent of India's iron ore export. New Mangalore port, located in Karnataka caters to the export of iron ore concentrates from Kudremukh mines. Kochchi is the extreme south-western port, located at the entrance of a lagoon with a natural harbour. The extreme south-eastern port of Tuticorin, in Tamil Nadu has a natural harbour and rich hinterland. Thus, it has a flourishing trade handling of a large variety of cargoes to even our neighbouring countries like Sri Lanka, Maldives, etc. and the coastal regions of India. Chennai is one of the oldest artificial ports of the country. It is ranked next to Mumbai in terms of the volume of trade and cargo. Vishakhapatnam is the deepest landlocked and well-protected port. This port was, originally, conceived as an outlet for iron ore exports. Paradwip port located in Odisha, specialises in the export of iron ore. Kolkata is an inland riverine port. This port serves a very large and rich hinterland of Ganga–Brahmaputra basin. Being a tidal port, it requires constant dredging of Hoogly. Haldia port was developed as a subsidiary port, in order to relieve growing pressure on the Kolkata port.

41.1 Which port is the deepest landlocked port in India?

Ans. Vishakhapatnam is the deepest landlocked and well-protected port.

41.2 Which port was developed as a subsidiary port to the Kolkata port?

Ans. Haldia port was developed as a subsidiary port, in order to relieve growing pressure on the Kolkata port.

41.3 Why is dredging of the Hooghly necessary to keep the Kolkata port functional?

Ans. The dredging of the Hooghly River is essential for maintaining the operational capacity of the Kolkata Port, as the river undergoes significant siltation. The accumulation of sediment is particularly pronounced during high tide, when the Hooghly River releases a substantial amount of material.

42. For a long time, trade and transport were restricted to a limited space. With the development in science and technology, the area of influence of trade and transport expanded far and wide. Today, the world has been converted into a large village with the help of efficient and fast-moving transport. Transport has been able to achieve this with the help of equally developed communication system. Therefore, transport, communication and trade are complementary to each other.

Today, India is well-linked with the rest of the world despite its vast size, diversity and linguistic and socio-cultural plurality. Railways, airways, waterways, newspapers, radio, television, cinema and internet, etc. have been contributing to its socio-economic progress in many ways. The trades from local to international levels have added to the vitality of its economy. It has enriched our life and added substantially to growing amenities and facilities for the comforts of life.

42.1 How has science and technology expanded the area of influence of trade and transport?

Ans. Science and technology have expanded the area of influence of trade and transport by enabling efficient and fast-moving transport systems and equally developed communication networks.

42.2 Why are transport, communication, and trade considered complementary to each other?

Ans. Transport, communication, and trade are complementary to each other because efficient transport systems facilitate the movement of goods and services, while communication systems enable the exchange of information and ideas necessary for trade.

42.3 Discuss how India's diverse transport and communication networks contribute to its socio-economic progress.

Ans. India's diverse transport (railways, airways, waterways) and communication (newspapers, radio, television, internet) networks facilitate local and international trade, contributing significantly to its socio-economic progress. These networks enhance connectivity, foster economic growth, and enrich the quality of life by providing essential amenities and facilities.

43. Mass communication provides entertainment and creates awareness among people about various national programmes and policies. It includes radio, television, newspapers, magazines, books and films. All India Radio (Akashwani) broadcasts a variety of programmes in national, regional and local languages for various categories of people, spread over different parts of the country. Doordarshan, the national television channel of India, is one of the largest terrestrial networks in the world. It broadcasts a variety of programmes from entertainment, educational to sports, etc. for people of different age groups.

43.1 Name two types of mass communication channels mentioned in the passage.

Ans. All India Radio (Akashwani) and Doordarshan (national television channel).

43.2 What is the purpose of All India Radio (Akashwani) according to the passage?

Ans. All India Radio broadcasts a variety of programmes in national, regional, and local languages for various categories of people spread over different parts of the country.

43.3 What role does mass communication channels like Doordarshan play in India?

Ans. Mass communication channels like Doordarshan play a crucial role in Indian society by providing entertainment and creating awareness about various national programmes and policies. Doordarshan, as one of the world's largest terrestrial networks broadcasts diverse programmes, including entertainment, education, and sports, catering to all age groups. This enhances societal development and public awareness of critical issues.

Long Answer Type Questions

44. What is trade? Explain the importance of international trade.

Ans. The exchange of goods among people, states and countries is referred to as trade.

Such exchanges take place in market. Trade between two countries is international trade.

Importance of international trade:

- International trade plays an important role as no country can survive without international trade.
- Advancement of international trade of a country is an index to its economic prosperity.

- It is considered economic barometer for a country. The balance of trade of a country is the difference between its export and import.
- India has trade relations with almost all the major trading blocks.
- International trade between different countries helps in raising living standards and provides employment.

45. With the help of examples explain how physiographic and economic factors influence the distribution pattern of railways in our country.

Ans. The distribution pattern of railways in our country has been largely influenced by physiographic and economic factors.

- The northern plains with vast level land, high population density and rich agricultural resources provided the most favourable condition of their growth.
- The Himalayan mountainous regions are unfavourable for the construction of railway lines due to high relief, sparse population and lack of economic opportunities.
- It was difficult to lay railway lines on the sandy plain of western Rajasthan, swamps of Gujarat and forested tracks of Odisha, Jharkand, Chhattisgarh and Madhya Pradesh.

46. Highlight the main characteristic of the Indian Railways.

Ans. The main characteristics of the Indian Railways are as follows:

- Indian Railways plays an important role in the economic, industrial and social development.
- Railways provide the cheapest and convenient mode of communication for goods and passengers.
- Railways have helped the growth and development of industries in India.
- Railways provide a medium of integration.
- Railways are most suited for transporting bulky goods to long distances.
- Railways help in supplying raw materials, machinery and other facilities to factories and finished goods to the market.
- Railways have helped in the growth of agriculture as the farmers can now sell their produce in far off markets and get better prices.

47. How has communication infrastructure in India evolved to support personal and mass communication? Substantiate your answer with examples.

Ans. Communication infrastructure in India has evolved significantly:

(i) Telecom Network: India's extensive telecom network covers over two-thirds of villages with STD facilities, enabled by space and communication technology integration.

(ii) Postal Services: The world's largest postal network handles diverse mail types, using specialised channels for quick delivery.

(iii) Mass Communication: Television, radio, and the press play crucial roles in national integration and cultural promotion.

(iv) Government Initiatives: All villages have 24-hour STD facilities, promoting information flow and connectivity across the country.

48. How do major sea ports contribute to India's economic growth? Substantiate your answer with examples.

Ans. India's major sea ports handle 95 per cent of India's foreign trade and are crucial for both exports and imports:

(i) Kandla in Kuchchh, established to ease Mumbai's trade volume post-Partition, serves as a key hub for exporting and importing goods across a vast agricultural and industrial belt.

(ii) Mumbai Port, with its spacious natural harbour, and Jawaharlal Nehru Port, designed to decongest Mumbai, are vital for trade in western India. Marmagao Port in Goa, which handles half of India's iron ore exports, and New Mangalore Port in Karnataka, which handles iron ore exports from Kudremukh mines, have great economic significance.

(iii) Kochi Port in Kerala, with its natural harbour, plays a crucial role in southwestern India's trade.

Let's Compete

Multiple-Choice Questions

1. The Grand Trunk Road is a

(a) State Highway.
(b) Golden Quadrilateral.
(c) National Highway.
(d) Express National Highway.

Ans. (c) National Highway.

2. In a railway line, the width between two rails is called

(a) locomotive.
(b) gauge.
(c) container.
(d) density.

Ans. (b) gauge.

3. The Border Roads Organisation started in the year
(a) 1970. (b) 1980.
(c) 1990. (d) 1960.

Ans. (d) 1960.

4. Which of the following has the lowest density of roads?
(a) Rajasthan (b) Assam
(c) Goa (d) Jammu and Kashmir

Ans. (d) Jammu and Kashmir

5. The approximate length of Indian coastline is
(a) 5516.5 km. (b) 6516.6 km.
(c) 3516.6 km. (d) 7516.6 km.

Ans. (d) 7516.6 km.

6. Which region provides the most favourable conditions for the growth of railways?
(a) The North-Eastern states
(b) The Indian Desert
(c) The Northern Plains
(d) The Himalayan regions

Ans. (c) The Northern Plains

7. Name the trade which is carried between two or more states.
(a) International Trade
(b) Local Trade
(c) State Level Trade
(d) None of these

Ans. (c) State Level Trade

8. Which of the following sea port was constructed to decongest the Mumbai port?
(a) Deendayal Port
(b) Marmagao Port
(c) Jawaharlal Nehru Port
(d) Goa Port

Ans. (c) Jawaharlal Nehru Port

9. Which of the following caters to 95 per cent of trade volume of India?
(a) Airways
(b) Pipeline
(c) Roadways
(d) Waterways

Ans. (d) Waterways

10. Which port has a natural harbour and rich hinterland?
(a) Cochin (b) Chennai
(c) Mumbai (d) Tuticorin

Ans. (d) Tuticorin

Life Skills

1. How are average human lives impacted by transport and communication systems?

Ans. Transportation and communication infrastructures play a crucial role in fostering economic growth and development. They enable the movement of goods and individuals, thereby enhancing trade and market accessibility. These systems have significantly increased global connectivity, promoting the exchange of culture, ideas, and products across international boundaries. Furthermore, they have simplified access to essential services such as healthcare, education, and recreational activities. The transportation industry has also spurred technological advancements, including autonomous vehicles, GPS technology, and high-speed rail systems. However, the expansion of these transportation networks has brought about environmental issues, including pollution and the depletion of natural resources. Additionally, communication systems ensure that individuals remain informed about global events and emerging trends.

2. Mention the values which make the means of transport and communication lifelines of a nation's economy.

Ans. Transport and communication are called the lifelines of any nation because they are the preconditions for progress and development. They play a major role in the developing economy. They both help in the economic and social growth and development of the country. The transport facilities should be efficient. The means of communication should stress on dignity of an individual, respect of cultural heritage and national integration.