11 Land Resources and Agriculture

Fastrack Revision

- **Land Use Categories**
  Different types of lands are suited to different uses. Human being use land as a resource for production as well as residence and recreation.
  The Land Revenue Department maintain the records of utilisation of land. The following are the land use categories found in the land revenue records:
  - Forest
  - Land put to non-agricultural uses
  - Barren and wastelands
  - Area under permanent pastures and grazing lands
  - Area under miscellaneous tree crops and groves
  - Culturable wastelands
  - Current fallow
  - Net area sown
- **Land use Changes in India**
  Land, unlike other natural resources, is immutable in terms of size and area. Land usage is mostly influenced by economic activities. The following are the three primary economic developments that affect land use:
  - The size of the economy.
  - The composition of an economy (proportion of different sectors).
  - Increasing pressure on agricultural lands.
- Land is categorised in the following categories in terms of increase in the area:
  - Forest-covered land
  - Lands that are currently fallow
  - Non-agriculturally used land
  - Net area sown
- Area Records Decrease in Land use in following categories:
  - Barren and wasteland
  - Culturable wasteland
  - Area under permanent pastures and tree crops
  - Fallow other than current fallow
- **Common Property Resources (CPRs)**
  Land can be divided into two groups based on who owns it:
  - Private owned land
  - Common property resources
  - CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts fibre, medicinal plants etc.
- **Agricultural Land use in India**
  - The majority of Indians rely on agriculture for their livelihood, either directly or indirectly. Unlike the secondary and tertiary industries, agriculture is primarily a land-based business.
  - In agriculture, land quality plays an essential role. The more fertile the soil is, the more output/production it produces.
  - In rural places, land ownership is regarded as a social status symbol.
  - Total agricultural resource availability is computed by adding net planted area, all fallow areas and culturable wastelands together.
  - Cropping Intensity (CI) is calculated as follows:
    Cropping Intensity in Percentage = GCA (Gross Cropped Area)/NSA (Net Sown Area) × 100
- **Types of Farming**
  - **Irrigated Farming:** Irrigation through wells and tubewells is the main source of moisture for farming.
  - **Rainfed Farming (Barani):** Rainfall is the primary source of moisture for this type of farming. There are two types of farming: **dryland** and **wetland.**
  - **Dryland farming** is mostly limited to areas with rainfall of less than 75 cm. Ragi, bajra, moong, gramme and gaur are among the tough and drought-resistant crops grown in these areas. During the rainy season, however, rainfall exceeds the soil moisture needs of plants in **wetland farming.** Flooding and soil erosion are possible concerns in such areas. Rice, jute and sugarcane are among the water-intensive crops grown in these areas.
- **Foodgrains**
  Foodgrains for the agriculture sector is nearly two-third of the country's total planted area.
  - **Cereals:** After China and the United States, India comes third in cereal output. India produces 11% of the world's crop and covers roughly 54% of the country's total planted land. These are the cereals:
  - **Rice:** It is India's most significant food crop, feeding more over half of the country's population. After China, India ranks second in the world with 22.07% of total production. West Bengal, Punjab and Uttar Pradesh were among India's top rice-producing states. It is planted as a Kharif crop in the North-Western and Himalayan regions, whilst farmers in West Bengal grow three types of rice: 'aus', 'aman' and 'boro'.
  - **Wheat:** India produces 12.8% of the world's total wheat crop. It is grown on approximately 14% of the total planted area. In the north and centre sections of the country, the Indo-Gangetic Plain, Malwa Plateau and Himalayas cover around 85% of the land. Uttar Pradesh, Punjab, Haryana, Rajasthan, Madhya Pradesh, Bihar and Jammu and Kashmir are the major wheat-producing states in India.
  - **Coarse Grains:** These crops are cultivated on over 16.50% of the country's total agricultural land.
  - **Jowar/Sorghum:** It accounts for around 5.3 % of all cropped land.

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Maharashtra is India's leading producer of Jowar. The central and southern states of Karnataka, Madhya Pradesh and Andhra Pradesh are the leading producers of Jowar.

- **Bajra:** It accounts for around 5.2% of the country's total cropped area.
- **Maize:** It is grown on around 3.6% of the country's total cropped land.
- **Pulses:** Pulses are grown on around 11% of the total cropped land in India. India is one of the world's largest pulses growers, cultivating over 20% of the world's pulses.
- **Gram:** It accounts for 2.8% of all farmed land. Madhya Pradesh, Uttar Pradesh, Maharashtra, Andhra Pradesh and Rajasthan are the top producers.
- **Tur (Arhar):** This crop is planted in 2% of India's total cropped land. It is the country's second most significant pulse crop.

- **Oil seeds:** Oil seeds are used in the extraction of edible oils. These crops together occupy about 14% of total cropped area in the country. Groundnut (3.6%), rapeseed and mustard (2.5%), soybean, sunflower and other oil seeds are examples.
- **Fibre Crop:**

  Fibre crops are those that provide fibre for the production of fabric.
  - **Cotton:** India ranks second in the world in the production of cotton after China. Cotton occupies about 4.7% of total cropped area in the country. Maharashtra, Gujarat, Andhra Pradesh, Punjab and Haryana are India's top cotton producers.
  - **Jute:** Jute production in India accounts for roughly 60% (three-fifth) of global jute production. West Bengal produces the majority of the country's jute (three-fourth). Bihar and Assam are two other producers.
- **Other Crops**
  - **Sugarcane:** Sugarcane is a valuable cash crop in India. India produces over 19.7% of the world's sugarcane, making it the world's second-largest producer after Brazil. Uttar Pradesh, Maharashtra and Gujarat are the top producers. Uttar Pradesh produces 40% of India's sugarcane, making it the country's top producer.
  - **Tea:** Assam is India's greatest tea grower. India is a leading producer of tea and accounts for about 21.22% of total production in the world 2018. West Bengal and Tamil Nadu are the other two states.
  - **Coffee:** India is the world's seventh largest producer of coffee, accounting for around 3.17% of global production. Karnataka is India's leading coffee grower, producing more than 66% of the country's total coffee.

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Agricultural Development in India

Agriculture employs approximately 54.6% of the population. According to census (2011), India uses roughly 57% of its land for crop cultivation, while the global average is just about 12%.

In India, the land-to-human ratio is only 0.31 hectare, but it is 0.59 hectare in the rest of the globe.

- **Strategy of Development**

  Prior to independence, Indian agriculture was mostly subsistence-based and severe droughts, famines and food shortages were common throughout this time. Pakistan received almost a third of the irrigated land. As a result, the government adopted many efforts to enhance food grain output. To attain this purpose, the following three tactics were used:
  - Making the switch from cash crops to food crops.
  - Cropping intensification on previously cultivated land.
  - Increasing cultivated area by bringing cultivable and fallow land under plough.

  However, Indian agriculture was unable to make significant progress until the government injected modern technologies into the sector. These were the following:
  - High Yielding Variety (HYV) of seeds
  - Fertilizers
  - Mechanisation
  - Improved irrigation and credit marketing facilities
  - Intensive Area Development Programme

  All of the aforementioned inputs were key components in the so-called Green Revolution. The country became self-sufficient in foodgrain production as a result of this agricultural growth approach. However, the green revolution was limited to irrigated areas at first. Until the 1970s, this resulted in regional differences in agricultural growth throughout the country. As a result, in the 1980s, the Planning Commission devised strategies to address agriculture's challenges in rain-fed areas. In 1988, it began agro-climate planning in order to achieve regional balance. National Mission for Sustainable Agriculture (NMSA) is to make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific integrated composite farming systems and to conserve natural resources through appropriate soil and moisture conservation measures.
- **Growth of Agricultural Output and Technology**
  - The technology utilised in agricultural production have improved since Independence. As a result, there has been an increase in agricultural production.
  - India has surpassed China as the world's leading producer of pulses and jute, as well as rice, wheat, peanuts, sugarcane and vegetables.
  - Since the mid-1960s, new technologies have emerged to boost the output of food grains, such as HYV seeds and chemical fertilisers.
- **Problem of Indian Agriculture**

  The problems of Indian Agriculture are:
  - Dependence on the erratic monsoon
  - Low productivity
  - Financial resources and indebtedness constraints
  - Lack of land reforms
  - Small farm size and landholding fragmentation
  - Lack of commercialisation
  - Large-scale underemployment
  - Cultivable land degradation

Practice Exercise

Multiple Choice Questions

Q 1. In India, which state produces the most jowar?
a. Punjab b. Maharashtra
c. Karnataka d. Rajasthan

Q 2. India is the world's leading producer of which crop?
a. Jute b. Rice c. Tea d. Coffee

Q 3. In Baba Budan Hills, which crop was introduced?
a. Tea b. Coffee c. Rice d. Cotton

Q 4. Which of the following does not belong in the land-use category?
a. Fallow land b. Marginal land
c. Net Area Sown d. Culturable Wasteland

Q 5. Which of the following is the primary reason for the growth in the forest share during the previous forty years?
a. Extensive and efficient efforts of afforestation
b. Increase in community forest land
c. Increase in the notified area allocated for forest growth
d. Better people's participation in managing forest area

Q 6. In irrigated areas, which of the following is the most common kind of degradation?
a. Gully erosion b. Wind erosion
c. Salinisation of soils d. Siltation of land

Q 7. Dryland farming does not allow for the cultivation of which of the following crops?
a. Ragi b. Jowar
c. Groundnut d. Sugarcane

Q 8. In which of the following group of countries of the world, HYV of Wheat and Rice were developed? *(CBSE SQP 2023-2024)*
a. Japan and Australia
b. The USA and Japan
c. Mexico and the Philippines
d. Mexico and Singapore

Q 9. In agriculture, how much groundwater is used?
a. 72% b. 82% c. 85% d. 92%

Q 10. Match the following:

Column I	Column II
A. Land use	(i) Prevents soil erosion
B. Humus	(ii) Narrow zone of contact between the lithosphere, hydrosphere and atmosphere
C. Rock dams	(iii) Productive use of land
D. Biosphere	(iv) Organic matter deposited on topsoil

Codes:

	A	B	C	D
a.	i	ii	iii	iv
b.	iv	iii	ii	i
c.	iii	iv	i	ii
d.	ii	i	iv	iii

Q 11. Consider the following statements and choose the correct answer with the help of given options:
Statement I: Resources are vital for human survival as well as for maintaining the quality of life.
Statement II: It was believed that resources are free gifts of nature.
a. Both the statements are true, statement II does not explain statement I correctly.
b. Both the statements are true and statement II correctly explains the statement I
c. Both statements I and II are false.
d. Statement I is true and statement II is false.

Assertion & Reason Type Questions

Directions (Q.Nos. 12-15): *In the questions given below, there are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the correct option:*
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.

Q 12. Assertion (A): India grows both short staple (Indian) cotton as well as long staple (American) cotton called 'narma' in north-western parts of the country.
Reason (R): Per hectare output of cotton is high under irrigated conditions in north-western region of the country.

Q 13. Assertion (A): There are three varieties of tea i.e. arabica, robusta and liberica.
Reason (R): India mostly grows superior quality coffee, arabica, which is in great demand in the International market.

Q 14. Assertion (A): Intensive Agricultural District Programme (IADP) and Intensive Agricultural Area Programme (IAAP) were launched in India.
Reason (R): The agricultural production became stagnated during the late 1950s.

Q 15. Assertion (A): Agriculture accounts for most of the surface and groundwater utilisation.
Reason (R): The share of the agricultural sector in total water utilisation is much higher than other sectors.

Answers

1. (b)	2. (c)	3. (b)	4. (b)	5. (c)
6. (c)	7. (d)	8. (c)	9. (d)	10. (c)
11. (a)	12. (b)	13. (d)	14. (a)	15. (b)

Passage Based Questions

Passage 1

Read the passage given below and answer the questions that follow by choosing the most appropriate option:

There are three distinct crop seasons in the northern and interior parts of the country, namely kharif, rabi and zaid. The kharif season largely coincides with Southwest Monsoon under which the cultivation of tropical crops such as rice, cotton, jute, jowar, bajra and tur is possible. The rabi season begins with the onset of winter in October-November and ends in March-April. The low temperature conditions during this season facilitate the cultivation of temperate and subtropical crops such as wheat, gram and mustard. Zaid is a short duration summer cropping season beginning after harvesting of rabi crops. The cultivation of watermelons, cucumbers, vegetables and fodder crops during this season is done on irrigated lands. However, this type of distinction in the cropping season does not exist in southern parts of the country. Here, the temperature is high enough to grow tropical crops during any period in the year provided the soil moisture is available. Therefore, in this region the same crops can be grown thrice in an agricultural year provided there is sufficient soil moisture.

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

a. Maha b. Kharif
c. Rabi d. Zaid

Q 2. The kharif season largely coincides with:

a. North east monsoon b. North west monsoon
c. South east monsoon d. South west monsoon

Q 3. ..... is a short duration summer cropping season beginning after harvesting of rabi crops.

a. Maha b. Yala
c. Zaid d. Kharif

Q 4. Choose the correct option:

Assertion (A): This type of distinction in the cropping season does not exist in southern parts of the country.

Reason (R): In southern parts the temperature is high enough to grow tropical crops.

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.

Answers

1. (a) **2.** (d) **3.** (c) **4.** (a)

Passage 2

Read the passage given below and answer the questions that follow:

Wheat is the second most important cereal crop in India after rice. India produces about 12% of the world's total wheat production. It is primarily a crop of temperate zones. Hence, its cultivation in India is done during winter *i.e.* rabi season. About 85% of total area under this crop is concentrated in north and central regions of the country *i.e.* Indo-Gangetic Plain, Malwa Plateau and Himalayas up to 2,700 m altitude. Being a rabi crop, it is mostly grown under irrigated conditions. But it is a rainfed crop in Himalayan highlands and parts of Malwa plateau in Madhya Pradesh. About 14% of the total cropped area in the country is under wheat cultivation. Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh are five leading wheat producing states. The yield level of wheat is very high (above 4,000 kg per ha) in Punjab and Haryana whereas Uttar Pradesh, Rajasthan and Bihar have moderate yields. The states like Madhya Pradesh, Himachal Pradesh and Jammu and Kashmir growing wheat under rainfed conditions have low yield.

Q 1. What is the contribution of India in the production of wheat?

Ans. India produces about 12% of the world's total wheat production.

Q 2. In India, which areas are appropriate for wheat production?

Ans. In India, wheat is generally produced in the Indo-Gangetic Plain, Malwa Plateau and Himalayas up to 2,700 m altitude.

Q 3. Which states are the leading producers of wheat?

Ans. Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh are five leading wheat producing states.

Very Short Answer Type Questions

Q 1. Give the names of India's two most important cereal crops. Give the names of any two states that are major producers of each of the crops they grow.

Ans. India's two most important grain crops are wheat and rice.

(i) Wheat: Uttar Pradesh and Punjab.
(ii) Rice: Uttar Pradesh and Punjab.

Q 2. Give three characteristics of dryland farming in India.

Ans. The characteristics of dryland farming in India are:

(i) Dryland farming is practised in locations where rainfall is less than 75 cms.
(ii) Hardy, resistant crops are grown in this form of farming.
(iii) This approach is beneficial for the soil moisture conservation.

Q 3. What is India's contribution to global rice production?

Ans. India was rated second in the world, producing 22% of all rice. India is the only country that produces more rice than China.

Q 4. What does the term "Common Property Resources" (CPR) mean?

Ans. There is no one group that owns Common Property Resources (CPR). They are open to everyone and can be utilised by anyone. These CPRs offer cattle with fodder and locals with fuel wood for their homes.

Q 5. In India, how is cropping intensity calculated?

Ans. The following formula is used to calculate cropping intensity in percentages:

Cropping Intensity (CI) = Gross Cropped Area/Net Area Sown × 100

Q 6. What are the different land use categories in India?

Ans. In India, land use is categorised into various categories based on its purpose and activities. The land use categories in India typically include: Agricultural land, Forest land, Urban land, Rural settlements, Industrial land, Commercial land, etc.

Q 7. What are oil seeds? Name some of them.

Ans. Oilseeds are plants that are cultivated for the purpose of extracting oil from their seeds. India is known for its diverse range of oilseeds. Some of the commonly grown oilseeds in India are mustard, groundnut, sesame, sunflower, soybean, coconut, cottonseed, rapeseed and safflower.

Short Answer Type Questions

Q 1. Define the term 'agriculture.' What conditions are favourable to agriculture?

Ans. Agriculture is derived from two Latin words: ager, which means 'land' and culture, which means 'cultivation.' It is the art and science of cultivating land and raising foods for human consumption. It entails land cultivation, crop production and animal rearing.

Several conditions are favourable to agriculture. Key factors that contribute to successful agricultural practices:

(i) **Climate:** A moderate and consistent climate with adequate rainfall is essential for agricultural activities. The temperature range should be suitable for the growth and development of crops and livestock.

(ii) **Soil Quality:** Fertile soil with proper nutrient content and good drainage is crucial for agriculture. The soil should have a suitable pH level, organic matter and appropriate texture to support plant growth.

(iii) **Water Availability:** Sufficient and reliable water supply, either through rainfall or irrigation, is necessary for crop cultivation. Adequate water resources ensure proper hydration for plants and livestock.

Q 2. Give three examples of how India's agricultural growth has progressed.

Ans. Examples of how India's agricultural growth has progressed are:

(i) Agriculture remains a major component of the Indian economy; in 2001, nearly 53% of the country's population was reliant on it.

(ii) The importance of India's agricultural industry can be gauged by the fact that around 57% of the country's land is dedicated to crop cultivation, compared to only about 12% globally.

(iii) Despite this, there is great pressure on agricultural land in India, as seen by the country's land-to-human ratio of 0.31 ha, which is nearly half that of the rest of the world (0.59 ha).

Q 3. "There is low yield per acre but high yield per person in the interior parts of semi-arid lands of the mid-latitudes in the world."

Support the statement with suitable examples from different parts of the world. *(CBSE SQP 2023-24)*

Ans. A few examples from different parts of the world where low yield per acre but high yield per person is observed in the interior parts of semi-arid lands in the mid-latitudes are:

(i) **Rajasthan, India:** Rajasthan is a state in north western India characterised by semi-arid conditions. Despite the arid climate and low agricultural productivity per acre, the local population has developed traditional farming techniques that allow for high yield per person.

(ii) **Great Plains, United States:** The Great Plains region, spanning across the Central United States, experiences semi-arid conditions in some areas. Dryland farming is practiced in these regions, where farmers grow crops like wheat, sorghum, and corn.

(iii) **Central Asia:** Several countries in Central Asia, including parts of Kazakhstan, Uzbekistan, and Turkmenistan, are characterised by semi-arid landscapes. In these regions, farmers have adopted to the arid conditions by practicing a combination of rainfed agriculture and irrigation. Wheat, barely and cotton are commonly grown crops.

Q 4. Why is India's agricultural productivity still so low? Make three main points.

Ans. Foodgrain and other crop yields per acre in India are low. The following are the key reasons:

(i) **Less use of HYV:** Only 16% of cultivated land is covered with HYV.

(ii) **Ineffective method:** The fertility of the earth's soils is dwindling. Fertilisers and insecticides are used sparingly.

(iii) **Low investment**: Poor Farmers are unable to invest in agriculture. Farms are tiny in size.

Q 5. Describe any three characteristics of wetland farming in India.

Ans. The characteristics of wetland farming in India are:

(i) Rainfall in wetland farming exceeds 75 cm.

(ii) These are used to grow a variety of water intensive crops such as rice, jute and other similar crops.

(iii) Rainfall exceeds plant moisture requirements in the soil.

Q 6. What role do land resources play in society? Three facts should be stated.

Ans. Land resources are more important to those who rely on agriculture for their livelihood:

(i) Agriculture is a land-based activity, unlike secondary and tertiary occupations. In other words, the contribution of land to agricultural output is greater than its contribution to other sectors' outputs. As a result, lack of access to land is linked to the occurrence of poverty in rural areas.

(ii) Land quality has a direct impact on agricultural productivity, which is not the case for other sectors.

(iii) Land ownership has a social value in rural communities, in addition to its value as a productive element. It acts as a security for loans, natural disasters or life eventualities and it also adds to social status.

Q 7. "In India, the scope for bringing in more land under net area sown is restricted." Discuss. How do we increase the amount of land that is cultivated?

Ans. It's worth noting that the available total stock of cultivable land as a percentage of total reporting area has decreased slightly over time. Despite a similar drop in cultivable wasteland, there has been a bigger decline in cultivated land. It is obvious that India's ability to bring in new land under net area sown is restricted. As a result, there is a pressing need to develop and implement land-saving solutions. These technologies can be divided into two categories: those that increase the yield of a specific crop per unit amount of land and those that increase the total output per unit area of land from all crops cultivated in a given agricultural year by boosting land-use intensity. The advantage of the latter type of technology is that, in addition to enhancing productivity from limited land, it also greatly boosts labour demand. A high cropping intensity is important for a land-scarce but labour-rich country like India, not only to maximise the use of land resources but also to reduce rural unemployment.

Q 8. Explain the various farming seasons in India. In each season, name the crops that are grown.

Ans. In the northern and central portions of the country, there are three separate harvest seasons: kharif, rabi and zaid.

(i) The kharif season corresponds with the Southwest Monsoon, allowing tropical crops such as rice, cotton, jute, jowar, bajra and tur to be grown.

(ii) The rabi season begins in October-November with the arrival of winter and finishes in March-April. Low temperatures make temperate and subtropical crops like wheat, gramme and mustard easier to grow during this time of year.

(iii) Zaid is a short-term summer agricultural season that begins after rabi crops are harvested. During this season, irrigated lands are used to grow watermelons, cucumbers, vegetables and fodder crops.

Q 9. Differentiate between Dryland and Wetland farming.

Ans. Difference between Dryland and Wetland farming are:

S. No.	Dryland Farming	Wetland Farming
(i)	These areas face problems of drought.	Problems of flash floods and soil erosion are faced.
(ii)	Methods of water conservation are used also water harvesting is carried out	Aquaculture is practiced in these areas due to excess water
(iii)	Hardly and drought-resistant crops like Jowar, bajra, gram are grown	Water-intensive crops like rice, sugarcane, and jute are grown.
(iv)	Practised in areas like Northern Madhya Pradesh and Rajasthan.	Practised in rainier parts of Bihar and West Bengal.

Q 10. What are the most common oil seeds cultivated in India? Include the important production areas as well.

Ans. Oilseeds are grown for the purpose of obtaining edible oils. Oilseeds are grown in the drylands of India's Malwa plateau, Marathwada, Gujarat, Rajasthan, Telangana and Rayalseema districts of Andhra Pradesh, as well as the Karnataka plateau. These crops account for roughly 14% of the country's total planted land. The principal oilseed crops farmed in India are groundnut, rapeseed, mustard, soyabean and sunflower.

Q 11. What exactly does the term 'dry farming' imply?

Ans. 'Dry farming' is a type of agriculture used in locations when rainfall is scarce (less than 50 cm). Irrigation facilities are also unavailable in such areas. Deep

ploughing is used in this procedure after each storm to keep the majority of the rain water. A single crop is grown in these places each year. Drought-resistant crops such as wheat, cotton, gramme and legumes are commonly produced. 'Dry farming' is practised in the arid states of Rajasthan, Gujarat and Haryana in India.

Q 12. Differentiate between Crop Rotation, Crop Intensity and Mixed Cropping.

Ans. Difference between crop rotation, crop intensity and mixed cropping are:

S. No.	Crop Rotation	Crop Intensity	Mixed Cropping
(i)	Crop rotation refers to the practice of growing different crops in a specific sequence on the same peace of land over a defined period.	Crop intensity refers to the number of crops grown on a specific piece of land within a given period, usually a year.	Mixed cropping is a farming practice where two or more different crops are cultivated simultaneously in the same field.
(ii)	The purpose of crop rotation is to improve soil health, control pests and diseases, and manage nutrient balance.	The purpose of crop intensity is to put additional pressure on the soil and natural resources, requiring careful management, and sustainable practices.	The purpose of mixed cropping is to maximise the use of available resources to reduce risks associated with pest and diseases outbreaks.
(iii)	Compete for food, space and light.	No competition between the crops.	Competition between the crops growing.

Long Answer Type Questions

Q 1. Explain any five major problems of Indian agriculture? *(CBSE 2023)*

OR

Examine any five steps taken to address India's agricultural issues.

Ans. Agriculture is a vital part of the Indian economy. Despite tremendous development, notably since the 1960s, Indian agriculture still faces a number of major issues, including:

(i) Erratic Monsoon Dependence: Unfortunately, most sections of India only receive rainfall for 3-4 months during the rainy season and the rest of the year is basically dry, resulting in huge (parts) of the country receiving insufficient rainfall. If enough irrigation and water harvesting arrangements are constructed, such locations can produce excellent agricultural yield.

(ii) Low Productivity: In India, practically all crops have low yields. Low labour productivity is a result of high population pressure. To boost productivity, we must use HYV seeds and fertilisers.

(iii) Small Farm Size: Small land holdings are a fundamental impediment to agricultural modernisation. There are several states where holding consolidation has yet to be completed even once.

(iv) Lack of Commercialisation: Agriculture in India is still primarily subsistence. Foodgrains produced by small and marginal farmers are only enough to cover the needs of the producers' family members. Irrigation and sophisticated farm techniques have quickly expanded across the country.

(v) Lack of Development: Lack of development of rural infrastructure, the removal of subsidies and price support, crop rotation etc., reduce the regional imbalances if these are implemented properly.

Q 2. Examine the geographical circumstances that make wheat growing possible. Describe the production and farming areas of India.

Ans. Wheat is one of the world's master grains. It is the 'basic food' for 1/3 of the world's population. Because of its high gluten content, it is a valuable cereal. It's been cultivated since prehistoric times. It was first cultivated in the Mediterranean region. Wheat is a plant that grows best in temperate climates. It may be grown in a wide range of climates. Wheat is a widely grown crop all over the world. Wheat is seeded or harvested in various parts of the world every month.

(i) Temperature: During the growing season, wheat requires a minimum temperature of 10°C and a maximum temperature of 20°C. Wheat requires a frost-free time of 100 days.

(ii) Rainfall: Wheat fields require a moderate amount of rainfall each year, ranging from 50 to 100 cm. Wheat requires a cool, wet growth season as well as a warm, dry harvesting season.

(iii) Irrigation: In places with limited rainfall, such as the Indus and Punjab, irrigation is used. Dry farming techniques are also employed.

(iv) Soil: The ideal soil for wheat is light clay or thick loamy soil.

(v) Land: Wheat requires flat, well-drained land. It is well suited to the usage of mechanisation and irrigation systems.

(vi) Economic Factors: Wheat is a soil-depleting crop. To enhance production per hectare, better seeds, chemical fertilisers and novel kinds are utilised. It's a mechanised farming system. Tractors, combines and harvesters are frequently used. Wheat storage necessitates massive warehouses.

Production in India: In terms of production, India is the worlds second-largest wheat producer (12% production). Wheat is a winter crop that India produces in the amount of 67 million metric tonnes. Due to the Green Revolution, India has become self-sufficient in wheat production, with a yield per hectare of 2618 kg.

Area of Cultivation: Wheat is farmed in the Sutlej-Ganga plain for the most part (North West India). Spring wheat is grown up to a height of 2700 metres in mountainous districts of Lahaul-Spiti (Himachal Pradesh), Ladakh and Sikkim in the sub-Himalayan region. Wheat is planted on 14% of the net sown land. The primary wheat-producing states are Uttar Pradesh, Punjab, Haryana, Madhya Pradesh and Rajasthan. Fertile soils, winter rain and irrigation infrastructure are all available in these areas.

Q 3. Describe the growth, production and cultivation conditions of cotton in India.

Ans. Cotton is the world's most popular fibre crop. Cotton is the most widely produced of all the fibres. Cotton has been in use in India from 3000 BCE, according to Herodotus' writings. It's a fibre that may be used for variety of purposes. Many synthetic fibres are utilised now-a days, but cotton's low cost and lightness make it an ideal fabric for apparel.

Growth Conditions: Growth conditions of cotton in India are:

(i) **Temperature:** Cotton requires consistent high summer temperatures ranging from 22°C to 32°C. It necessitates a warm climate with plenty of sunshine. Cotton plants are vulnerable to frost. A 210-day frost-free growing season is required. It's a seasonal crop that's grown every year. The sheen and length of the cotton fibres are enhanced by sea breezes.

(ii) **Rainfall:** Cotton requires low to moderate rainfall, ranging from 50 to 100 cm. During the growing season, it requires mild rainfall and a dry, sunny harvesting period.

(iii) **Irrigation:** Irrigation is utilised in arid places. As in Punjab, it boosts the yield per acre.

(iv) **Soils:** Cotton thrives in loamy soils that are rich and well-drained. Lava soil has a good moisture retention capacity and is ideal for cotton cultivation. Fertilisers must be applied on a regular basis to keep the soil fertile.

(v) **Cheap Labour:** Cotton is picked by hand, which saves money on labour. The majority of the time, women's labour is used. It is vital to have a large, cheap and hardworking workforce.

(vi) **Land:** Cotton is best produced on flat or rolling terrain. These are regions that are well-drained. Such locations can benefit from the usage of machinery.

(vii) **Disease Control:** Controlling pests and illnesses is essential.

Production: Production conditions of cotton in India are:

(I) India is the world's fourth-largest cotton producer (8.3%). Cotton agriculture is the most widespread in India. India is the world's oldest cotton-producing country. Cotton from India is used in the textile industry. Cotton yields are low in India.

(II) Cotton is mostly manufactured using a short staple. Egyptian, Sudanese and Pakistani long-staple cotton are imported. Cotton is grown on over 65 lakh hectares (4.7% of the land). A total of 20 lakh tonnes are produced.

Areas of Cultivation

Cotton-growing regions are dispersed across India due to a wide range of climatic and soil conditions. Cotton is produced in greater quantities in Southern India than in Northern India.

(I) Black Cotton Soil Region: On the lava soils of the North-West Deccan, this is India's main cotton growing region. The largest cotton-producing states are Gujarat, Maharashtra and Madhya Pradesh.

(II) The Red Soil: The red soil area, which includes the states of Tamil Nadu, Karnataka and Andhra Pradesh, is where medium staple cotton is farmed.

(III) Alluvial Soil Region: Long staple cotton (Narma) is grown on the Northern Plains alluvial soils. Cotton is mostly produced in the states of Punjab, Haryana and Rajasthan. Due to its warm climate, fertile soil and irrigation infrastructure, Punjab has the highest output per acre.

Q 4. The key issues in Indian agriculture are 'erratic monsoon' and 'indebtedness.' Suggest and explain the measures to overcome these problems.

Ans. Suggestions for Erratic Monsoon are:

(I) In India, the monsoon has an extremely irregular nature. Although irrigation systems were established after independence, only 33% of the country's farmed land is irrigated. As a result, more emphasis should be placed on establishing diverse irrigation methods, particularly in India's unirrigated areas.

(II) To give fair water supplies to each cultivable region in India, water issues between states should be resolved. Rainwater harvesting should be emphasised in order to improve and recharge the groundwater level. As a result, farmers will be able to simply harvest their land using these resources. Drought-resistant crops should be used more frequently in locations where water is scarce.

Suggestions for Indebtedness are:

(i) In rural areas, cooperative finance should be encouraged and private lending should be prohibited.

(ii) Agriculture should be performed on a scientific basis so that farmers incomes improve and they are able to pay unproductive expenses without having to take out a loan. Encourage all farmers to participate in a minimum support price policy.

(iii) Rural banks and cooperative banks should offer low-interest storage facilities.

Q 5. "Indian agriculture's key difficulties are low productivity and fragmentation of land holdings." Suggest and explain measures to overcome these problems.

Ans. The following are some strategies for overcoming low productivity:

(i) To make all farmers aware of modern technology such as the use of improved implements, seeds, pesticides and manures, among other things.

(ii) Double cropping, greater crop rotation and combating plant diseases and pests, among other things, should be prioritised. All farmers should have access to a variety of irrigation options.

(iii) In rural locations, soil testing labs should be established to conduct timely soil testing.

(iv) Institutional credit or lending facilities, such as the Kisan Credit Card Scheme, should be made available to all farmers at affordable interest rates.

The following are some of the measures that can be taken to address the problem of land fragmentation:

(i) Large areas of land that have been abandoned can be reclaimed and made suitable for cultivation.

(ii) Cooperative farming can help to keep holdings from being sub-divided and fragmented. On so-called mega farms, this farming would result in the adoption of modern technology. Agriculture will become a profitable occupation as a result of large-scale farming economies.

(iii) To ameliorate the situation, a new agricultural policy should be developed.

(iv) Population pressure on land should be lessened.

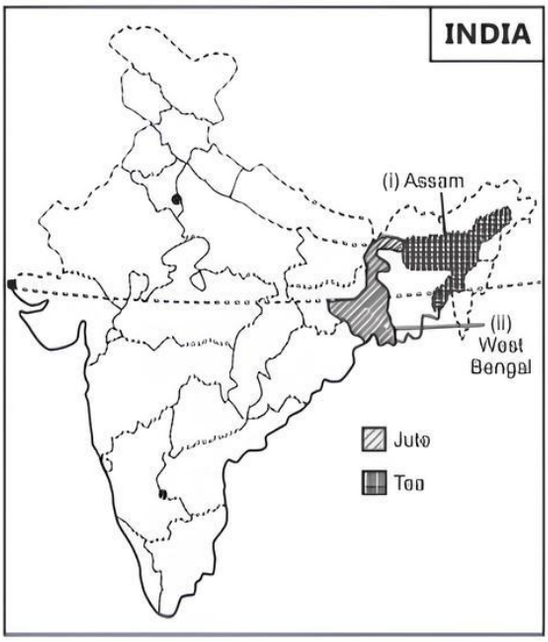
Map Based Questions

Q 1. Locate the name of the following with suitable symbols on the attached political outline map of India.

(i) The state that produces the most tea.

(ii) The state that produces the most jute.

Ans.



Q 2. Locate the following on a political map of India.

1. A sugarcane producing state

2. A tea producing state

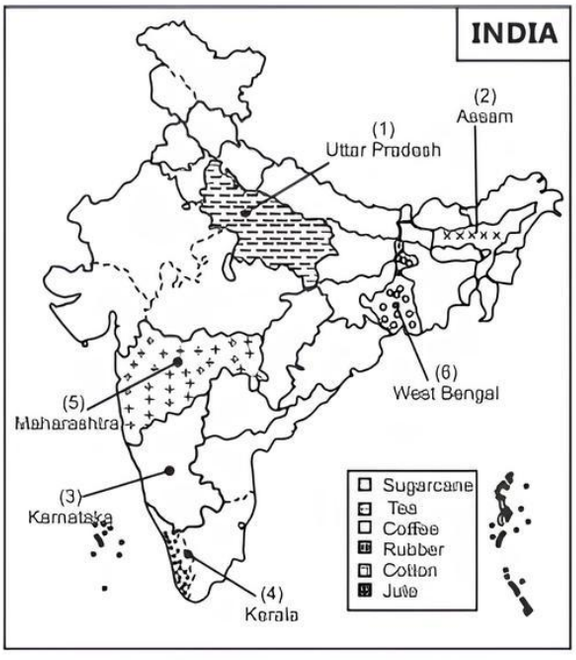
3. A coffee producing state

4. A rubber producing state

5. A cotton producing state

6. A jute producing state

Ans.



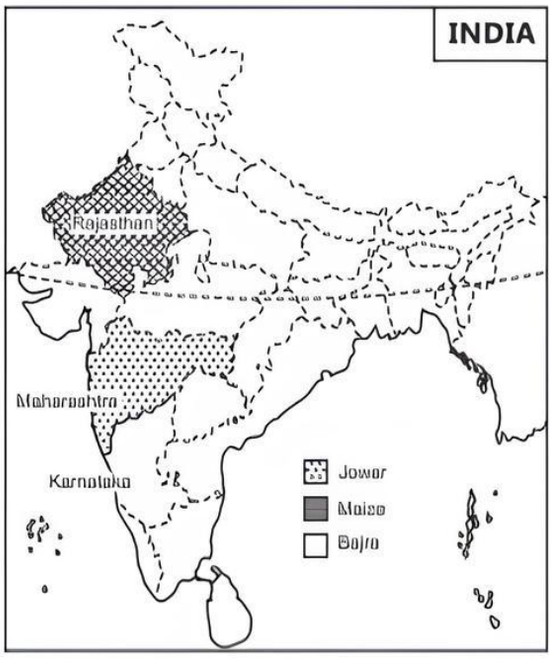
Q 3. Locate and label the following items on the given map with appropriate symbols.

1. Any one jowar producing state of India

2. Any one maize producing state of India

3. Any one bajra producing state of India

Ans.



Chapter Test

Multiple Choice Questions

Q 1. In which of the following group of countries of the world, HYV of Wheat and Rice were developed?

a. Japan and Australia
b. The USA and Japan
c. Mexico and the Philippines
d. Mexico and Singapore

Q 2. India is the world's leading producer of which crop?

a. Jute b. Rice c. Tea d. Coffee

Assertion and Reason Type Question

Q 3. *In the question given below, there are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the correct option:*

Assertion (A): Cotton and Jute are fibre crops.
Reason (B): West Bengal is the highest producing state of Jute.

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.

Passage Based Question

Q 4. *Read the passage given below and answer the questions that follow:*

Wheat is the second most important cereal crop in India after rice. India produces about 12% of the world's total wheat production. It is primarily a crop of temperate zones. Hence, its cultivation in India is done during winter *i.e.* rabi season. About 85% of total area under this crop is concentrated in north and central regions of the country *i.e.* Indo-Gangetic Plain, Malwa Plateau and Himalayas up to 2,700 m altitude. Being a rabi crop, it is mostly grown under irrigated conditions. But it is a rainfed crop in Himalayan highlands and parts of Malwa plateau in Madhya Pradesh. About 14% of the total cropped area in the country is under wheat cultivation. Uttar Pradesh, Punjab, Haryana, Rajasthan and Madhya Pradesh are five leading wheat producing states. The yield level of wheat is very high (above 4,000 kg per ha) in Punjab and Haryana whereas Uttar Pradesh, Rajasthan and Bihar have moderate yields. The states like Madhya Pradesh, Himachal Pradesh and Jammu and Kashmir growing wheat under rainfed conditions have low yield.

(i) What is the contribution of India in the production of wheat?
(ii) In India, which areas are appropriate for wheat production?
(iii) Which states are the leading producers of wheat?

Very Short Answer Type Questions

Q 5. What are the different land use categories in India?
Q 6. What are Oilseeds? Name some of them.

Short Answer Type Questions

Q 7. Give three examples of how India's agricultural growth has progressed.
Q 8. What role do land resources play in society? Three facts should be stated.

Long Answer Type Questions

Q 9. Examine the geographical circumstances that make wheat growing possible. Describe the production and farming areas of India.
Q 10. "Indian agriculture's key difficulties are low productivity and fragmentation of land holdings." Suggest and explain measures to overcome these problems.