Forests are renewable resources and contribute substantially to economic development of a country. They play a major role in enhancing the quality of environment. Forests provide us bamboo and wood for fuel, grass, charcoal, packaging, fruits, flowers, animals, birds and many other things. Between 1700 to 1995, the period of industrialisation, 13.9 million sq km of forests or 9.3% of the world’s total area was cleared for industrial uses, cultivation, pastures and fuel wood. Under colonial rule, deforestation became more systematic and extensive.

Deforestation

The disappearance of forests is referred to as deforestation. Deforestation is not a recent problem. The process began many centuries ago; but under colonial rule it became more systematic and extensive.

Let us look at some of the causes of deforestation in India.

Land to be Improved

In 1600, approximately one-sixth of India’s landmass was under cultivation. As population increased over the centuries, the demand for food went up and the land under cultivation also increased rapidly. In the colonial period, cultivation increased for several reasons. First, the British encouraged the production of commercial crops like jute, sugar, wheat and cotton. The demand for these crops increased for the growing need of urban population and raw materials for industries. In the early 19th century, the colonial powers thought that forests were unproductive, so more lands had to be brought under cultivation, so that it could enhance the income of the state.
Sleepers on the Tracks: Decline in Forest Cover due to Railways

The spread of railways played an important role in the decline of forest cover in India. Wood was used as fuel to run locomotives and sleepers were required to hold the tracks together. Each mile of railway track required between 1760 to 2000 sleepers. By 1890, about 25,500 km of track had been laid and in 1946, the length of the tracks had increased to over 765,000 km. As the railway tracks spread through India, a large number of trees were required.

The Forest Department hired adivasis of Chhotanagpur to cut trees and make smooth planks which would serve as sleepers of the railways. The department at the same time banned them to cut trees to build their own houses. Between 1880 to 1920, cultivated area rose by 6.7 million hectare.

Plantations

Large areas of natural forests were also cleared to make way for tea, coffee and rubber plantations to meet Europe’s growing need for these commodities. The Colonial Government took over the forests and gave vast areas to European planters at cheap rates.

The Rise of Commercial Forestry

The British Government appointed a German expert, Dietrich Brandis as the first Inspector-General of Forests in India. He realised that a proper system had to be introduced to manage the forests and people had to be trained in the science of conservation. This system needed legal sanction. Rules about the use of forest resources had to be framed. Felling of trees and grazing had to be restricted, so that forests could be preserved for timber production. Anybody who cut trees without following the system had to be punished. So, he set up the Indian Forest Service in 1864 and helped to formulate the Indian Forest Act of 1865.

The Imperial Forest Research Institute was set up at Dehradun in 1906. The system they taught here was called Scientific Forestry. The Forest Act of 1865, was amended twice, once in 1878 and then in 1927. The headquarters of Forest Survey of India is at Dehradun and four regional offices are at Shimla, Kolkata, Nagpur and Bengaluru.

How were the Lives of People Affected?

The Indian Forest Act of 1878, divided forest into three categories, viz reserved, protected and village forests. The best forests were called Reserved Forests. Villagers could not take anything from these forests for their own use. For house building or fuel, they could take wood from protected or village forests.

The Forest Act meant extreme hardship for villagers and forest people across the country. Villagers wanted forests to satisfy different needs like fuel, fodder, leaves, etc. The Forest Department wanted trees for building ships and railways. For these purposes, they needed particular species like teak and sal. So these species were promoted and other species of trees had been cut down.

After the introduction of the Forest Act, everyday practices like cutting wood for personal use, grazing cattle, collecting fruits and roots, hunting and fishing became illegal. The villagers were forced to steal and if caught, they had to go at the mercy of the forest guards. Women who collected fuel wood were harassed by the guards who demanded free food from them.

How did Forest Rules Affect Cultivation?

Shifting cultivation is a traditional agricultural practice in many parts of Asia, Africa and South America. It was one of the major impacts of European colonialism. In shifting cultivation, cultivators used to cut certain parts of the forest in rotation, burn the trees and sow seeds in the ashes, after the first monsoon rains. European foresters regarded this practice as harmful for the forests. Shifting cultivation made it more difficult for the government to calculate taxes.

So the British Government decided to ban shifting cultivation. As a result, some communities were forcibly displaced from their homes. Some of them had to change their occupations, while some revolted against the law.

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* **Sleepers** Wooden planks laid across railway tracks; they hold the tracks in position.
* **Dietrich Brandis** A German expert, who was appointed as the first Inspector-General of Forests in India.
* **Scientific Forestry** A system of cutting trees controlled by Forest Department, in which old trees are cut down and new ones are planted.
* **Indian Forest Act, 1878** The British began extending their control over forests in India after passing the Forest Act of 1865 and 1878. This was driven by the increasing demand of timber for the railway track and hence the growing significance of forests as a source of revenue.
* **Reserved Forests** These were the forests which produced commercially valuable timber. No Pastoralist was allowed to access to these forests.
Who Could Hunt?

The new forest laws changed the lives of forest dwellers in yet another way. Before the forest laws, many people who lived in or near forests had survived by hunting deer, partridges and a variety of small animals. The forest law deprived the forest dwellers of their customary rights to hunt, but hunting became a big game for aristocrats. The Maharaja of Surguja alone shot 1157 tigers and 2000 leopards up to 1957. A British administrator George Yule, killed 400 tigers. Initially, certain areas of forests were conserved for hunting. Later, environmentalists and conservators begin to argue that all these species of animals needed to be protected and not killed.

New Trades, New Employments and New Services

In India, the trade in forest products was not new. Adivasi communities were trading elephants and other goods like hides, horns, silk, cocoons, ivory, bamboo, spices, fibres, grasses, gums, resins, etc. After the coming of the British in our country, the trade was completely regulated by the government.

The government gave many large European trading firms the sole right to trade in the forest products of particular areas. In this process, many Pastoralist and Nomadic communities like the Korava, Karacha and Yerukula lost their livelihoods.

Some of them began to be called Criminal Tribes and were forced to work in factories, mines and plantations under government supervision. Their wages were low and conditions of work was very bad. Also, they could not return to their villages easily.

Rebellion in the Forest

In many parts of India and across the world, forest communities rebelled against the changes that were being imposed on them.

The People of Bastar

Bastar is located in the Southernmost part of Chhattisgarh and borders of Andhra Pradesh, Odisha and Maharashtra. A number of different communities like Maria and Marua Gonds, Dhurwas, Bhatras and Hallas, live in Bastar. The people of Bastar speak different languages, but share common customs and belief. The people believe that each village is given its land by Earth and they look after the natural resources of their village.

The Fears of the People

When the Colonial Government proposed to reserve two-thirds of the forest in 1905 and stop shifting cultivation, hunting and collection of forest produce, the people of Bastar were very worried.

Some villages were allowed to stay in the reserved forests on the condition that their people will work free for the Forest Department in cutting and transporting trees and protecting the forest from fires.

Subsequently, these came to be known as Forest Villages. The initiative was taken by the Dhurwas of the Kanger forest, where reservation first took place. Although, there was no single leader, many people speak of Gunda Dhur, from village Nethanar, as an important figure in the movement.

In 1910, mango boughs, a lump of Earth, chillies and arrows began circulating between villages. The people of Bastar organised themselves and revolted against the British. Bazaars were looted; the houses of officials and traders, schools and police stations were burnt and robbed and grain redistributed.

The British sent troops to suppress the rebellion and it took three months for the British to regain control. The story of the forests and people of Bastar does not end here. After independence, the same practice of keeping people out of the forests and reserving them for industrial use continued.

In the 1970s, the World Bank proposed that 4600 hectare of natural sal forest should be replaced by tropical pine to provide pulp for the paper industry. It was only after protests by local environmentalists that the project was stopped.

+ **Tribes** Groups of people who live away from cities and towns. They have their own culture, language and religion, etc.
+ **Forest Village** A village that is allowed to stay in the reserved forest on the condition that its people will work free for the Forest Department in cutting and transporting trees and protecting the forest from fire.
Forest Transformation in Java

Java is an island of Indonesia. It was mostly covered with forests. The colonial power in Indonesia was the Dutch and it wanted timber from Java to build ships.

The Woodcutters of Java

The Kalangs of Java were a community of skilled forest cutters and shifting cultivators. They were so valuable that in 1755, when the Mataram kingdom of Java split, the 6000 Kalang families were equally divided between the two kingdoms. Without their expertise, it would have been difficult to harvest teak and sal for the kings to build their palaces. When the Dutch began to gain control over the forests in the 18th century, they tried to make the Kalangs work under them. In 1770, the Kalangs resisted by attacking a Dutch fort at Joana, but the uprising was suppressed.

Dutch Scientific Forestry

In the 19th century, when it became important to control territory and not just people, the Dutch enacted forest laws in Java, restricting villagers’ access to forests. Now wood could only be cut for specified purposes like making river boats or constructing houses and only from specific forests under close supervision.

The Dutch first imposed rents on land being cultivated in the forest and then exempted some villages from these rents if they worked collectively to provide free labour and buffaloes for cutting and transporting timber. This was known as the Blandongdiensten System. Later, instead of rent exemption, forest villagers were given small wages, but their right to cultivate forest land was restricted.

Samin’s Challenge

Around 1890, Surontiko Samin of Randublatung village, a teak forest village, began questioning state ownership of the forest. He argued that the state had not created the wind, water, earth and wood, so it could not own it. Soon a widespread movement developed. Amongst those who helped organise it were Samin’s sons-in-law. By 1907, 3000 families were following his ideas. Some of the Saminists protested by lying down on their land when the Dutch came to survey it, while others refused to pay taxes, fines or perform labour.

Blandongdiensten System

This system was introduced by the Dutch in Java under which some villages were exempted from the taxes in terms of free labour and animals for cutting and transporting timber from forests.

Timeline

1600
Approximately one-sixth of India’s landmass was under cultivation. The population of Java was 3.4 million.

1700–1995
9.3% at the world’s total area was cleared for industrial uses, cultivation pastures and fuel wood.

1770
Kalanga uprising which was suppressed.

1850
The spread of Indian Railways.

1864
The Indian Forest Service was set up.

1865
The Indian Forest Act was formulated.

1878
The Indian Forest Act was amended and divided forests into reserved, protected and village forests.

1899–1908
Terrible Famines.

1910
Rebellion in the kingdom of Bastar.

1880–1920
India’s cultivated area rose by 6.7 million hectares. Terrible Famines.

1946
The length of railway tracks laid by now were over 765000 km.

1980
Introduction of scientific forestry and restriction imposed on the forest communities resulted in many conflicts.
War and Deforestation

The First World War and the Second World War had a major impact on forests. In India, working plans were abandoned at this time and the Forest Department was cutting trees freely to meet British war needs. In Java, just before the Japanese dominance, the Dutch followed a ‘Scorched Earth Policy’. By following this policy, they destroyed sawmills and burned huge piles of giant teak logs, so that they would not fall into Japanese hands. The Japanese then exploited the forests recklessly for their own interests.

New Developments in Forestry

Since the 1980s, governments across Asia and Africa have begun to see that scientific forestry and the policy of keeping forest communities away from forests has resulted in many conflicts. Conservation of forests rather than collecting timber has become a more important goal. In many cases across India, from Mizoram to Kerala, dense forests have survived only because villagers protected them in sacred grove known as Sarnas, devarakudu, kan, rai, etc. Some villages have been patrolling their own forests, with each household taking it in turns, instead of leaving it to the forest guards. Local forest communities and environmentalists today are thinking of different forms of forest management.
1. When was the Indian Forest Service set up?
   Ans. The Indian Forest Service was set up in 1864.

2. How much India's landmass was under cultivation in 1600?
   Ans. One-sixth of India's landmass was under cultivation in 1600.

3. Which Act was passed in 1865?
   Ans. Indian Forest Act was passed in 1865.

4. What do you mean by deforestation?
   Ans. The disappearance of forests is referred to as deforestation.

5. Where was the Imperial Forest Research Institute set up in 1906?
   Ans. The Imperial Forest Research Institute was set up in 1906 in Dehradun.

6. How many tigers were killed between 1875–1925?
   Ans. Over 80000 tigers were killed between 1875–1925.

7. Which colonial power ruled Java?
   Ans. Java was ruled by the Dutch.

8. Where is Bastar located?
   Ans. Bastar is located at Chhattisgarh.

9. Which country occupied Indonesia during the Second World War?
   Ans. During the Second World War, Japan occupied Indonesia.

10. Between 1700 to 1995, how much area of forest cover in the World War cleared for industrial uses, cultivation, pastures and fuel wood?
    Ans. Between 1700 to 1995, 13.9 million sq km area of forest cover in the World War cleared for industrial uses, cultivation, pastures and fuel wood.

11. Which Forest Act divided forest into three categories, viz reserved, protected and village forests?
    Ans. The Forest Act of 1878, divided forests into three categories viz reserved, protected and village forests.

12. How many sleepers were required for each mile of railway track?
    Ans. Each mile at railway track required between 1760 to 2000 sleepers.

13. What is scientific forestry?
    Ans. Scientific forestry means natural forests which had lots of different types of trees were cut down and in their place, one type of tree was planted in straight rows.

14. Who was the community of skilled forests cutters and shifting cultivators in Java?
    Ans. The Kalangs of Java were a community of skilled forest cutters and shifting cultivators.

15. Who was the leader of rebel foresters in Andhra Pradesh?
    Ans. Alluri Sita Rama Raju was the leader at rebel foresters in Andhra Pradesh.
16. Which species of trees are suited for building ships and railways?
   Ans. Teak and Sal trees are suited for building ships and railways.

17. From which tree, latex can be collected?
   Ans. Latex can be collected from a rubber tree.

18. Where the Blandongdiensten System was introduced?
   Ans. The Blandongdiensten System was introduced in Java by the colonial power Dutch to control the forest land.

19. What is the local name of shifting cultivation of South-East Asia?
   Ans. Lading is the local name of shifting cultivation of South-East Asia.

20. Name some Indian communities who live in Bastar.
   Ans. A number of different communities live in Bastar such as Maria, Muria Gonds, Dhrurwas Bhatras and Halbas.

21. Who was the leader of the Forest Revolt in Bastar?
   Ans. Gunda Dhur was the leader of the Forest Revolt in Bastar.

22. For which product is Java famous?
   Ans. Java is famous as a rice-producing island in Indonesia.

23. Who was the first Inspector-General of forests in India?
   Ans. Dietrich Brandis was the first Inspector-General of Forests in India.

24. Which transport system was most essential for colonial trade and movement of goods?
   Ans. Railways were most essential for colonial trade and movement of goods.

25. How was Siadi creeper used for?
   Ans. Siadi creeper was used to make ropes.

Short Answer Type Questions [3 Marks each]

1. If you were in the Government of India in 1862, responsible for supplying the railways with sleepers and fuel on such a large scale, what were the steps you would have taken? [NCERT]
   Ans. The Government of India should have taken the following steps:
   (i) In areas where trees are cut for making sleepers, plant similar nature of trees to those that are cut, so that the forest cover is maintained.
   (ii) Try to increase coal mining and supply this to the railways as fuel instead of wood for running the steam engines.
   (iii) Limit the cutting of trees by the natives of the forest to only what they personally require and not allow them to trade in wood.
   (iv) Prevent poachers from entering the forests to cut wood illegally.

2. Why are the forests affected by wars? [NCERT]
   Ans. Forests are affected by wars because forest products are used for fulfilling various needs and requirement during war. In the case of India, during the First World War and the Second World War, the Forest Department was cutting trees freely to meet British war needs. During the Second World War in Java just before the Japanese occupied the region, the Dutch followed a Scorched Earth Policy, destroying sawmills and burning huge piles of giant teak logs, so that they did not fall into Japanese hands. The Japanese exploited the forests recklessly for their war industries, forcing villagers to cut down forests. Many villagers took this opportunity to expand cultivation in the forests. Thus, wars also led to destruction of forests.

3. What is forestry?
   Ans. Forestry is like science, art and craft of creating, managing, using, conserving and repairing forests and associated resources in a sustainable manner to meet desired goals, needs and values for human benefit. Forestry is practised in plantations and natural stands. The main goal of forestry is to create and implement systems that allows forests to continue a sustainable provision of environmental supplies and services. The challenge of forestry is to create systems that are socially accepted while sustaining the resource and any other resources that might be affected.
4. (i) Why were railways essential for the Colonial Government?
(ii) The ship industry of England was also responsible for deforestation in India. Give one reason.

Ans.
(i) Railways were very essential for the colonial trade and for the movement of imperial troops.
(ii) Due to the high demand, by the early 19th century, oak forests in England were disappearing. This created a problem of timber supply for the Royal Navy which required to build ships.

To get the supply of oak for the ship industry, Britishers started exploring Indian forests on a massive scale. With a decade, trees were being felled on a massive scale and vast qualities of timber were being exported from India.

5. Who were the Kalangs? Mention any four characteristics of this community.

Ans. The Kalangs were a tribal community of Java.
(i) They were skilled forest cutters and shifting cultivators.
(ii) They had a great skill in building palaces.
(iii) They were so valuable that in 1755, when the Mataram kingdom of Java split, the 6000 Kalang families were equally divided between the two kingdoms.
(iv) The Kalangs work was under the Dutch, when Dutch began to gain control over the forests in the 18th century.

6. Explain any four ideas of Dietrich Brandis for the management of forests in India during the British period.

Ans. Four ideas of Dietrich Brandis for the management of forests in India are
(i) Dietrich Brandis, a German expert, was appointed the first Inspector-General of Forests in India.
(ii) He formulated new forest legislation and helped establish research and training institutions. The Imperial Forest Research Institute at Dehradun was founded by him in 1906.
(iii) He set up the Indian Forest Service (IFS) in 1864 and helped to formulate the Indian Forest Act of 1865.
(iv) He took an interest in the forest flora of North-West and Central India and Indian trees. He was among the earliest expert in India to formally link forest protection with local peoples.

7. The people of Bastar believe that each village was given its land by the Earth and in return, they look after the Earth by making some offerings at each agricultural festival. In addition to the Earth, they show respect to the spirits of the river, the forest and the mountain. Since each village knows where its boundaries lie, the local people look after all the natural resources within that boundary.

[Value Based Question]

Read the above passage and answer the following questions
(i) What are some of the beliefs regarding nature of the communities of Bastar?
(ii) What values do you imbibe from the above passage?

Ans.
(i) Some of the beliefs regarding nature of the communities of Bastar. These are
- The people believe that each village was given its level by the Earth and thus they look after the Earth by making some offerings at each agricultural festival.
- Respect is also shown to the spirits of the river, the forest and the mountain and natural resources were looked after by the local people.
- If people from a village want to take some wood from the forests of another village, they pay a small fine called Devsari, Dand or Man.

(ii) From the above passage we learnt that environment safety is very important for us. This passage also shows the mutual relation between villagers and the nature.

8. What new developments have occurred in forestry in Asia and Africa in recent times?

Ans. In recent times, Asian and African Governments introduced social forestry and the policy of keeping forest communities away from forests have only resulted in conflicts. Conservation of forests rather than collecting timber became the primary aim.

In order to meet this goal, the government realised that the involvement of people living near the forests is must. Infact, across India from Mizoram to Kerala dense forests have survived only because villagers protected them in sacred groves known as Sarnas, Devarakudu, Kan, Rai, etc. Some villages patrolled their own forest with each household taking instead of leaving it to forest guards.

9. Describe in brief the Saminist Movement of Indonesia.

Ans. Surontiko Samin of Randublatung village started a movement in Indonesia, questioning state ownership of the forest. The movement gained momentum and by 1907, 3000 families were following his ideas. Some of the Saminists protested by lying down on their land when the colonial power Dutch came to survey it, while others refused to pay taxes, fines or perform any labour.
10. In 1882, 280000 sleepers were exported from Java alone. However, all this required labour to cut the trees, transport the logs and prepare the sleepers. The Dutch first imposed rents on land being cultivated in the forest and then exempted some villages from these rents if they worked collectively to provide free labour and buffaloes for cutting and transporting timber. This was known as the Blandongdiensten System.

[Value Based Question]
Read the above passage and answer the following questions
(i) What are the three main features of Blandongdiensten System?

(ii) What lesson/values do you learn from this cruel system?

Ans.
(i) Blandongdiensten System was introduced by the Dutch in Indonesia.
Its features are
- Exemption of certain villagers.
- Imposing of rents on the lands which were cultivated in the forests.
- Collective work by the villagers to provide free labour.

(ii) From this cruel system, I learnt that the colonial rule drained wealth and destroyed the economy. This shows that the rule was based on exploitation.

Long Answer Type Questions [5 Marks each]

1. Have there been changes in forest areas where you live? Find out what these changes are and why they have happened. [NCERT]

Ans. There can be a variety of answers. A sample answer is given below
There have been a number of changes in forest areas in India since independence and some which have occurred in my district are as follows
(i) Entry to forest area is restricted and the Forest Department has posted guards to check any illegal entry.
(ii) Although, the number of trees in the forest has increased, reduction of rainfall in recent years has stunted the growth of trees.
(iii) The Adivasi villagers living inside the forest areas are gradually leaving their traditional occupations and migrating to the towns for education and jobs.
(iv) A number of wild animals like tigers and elephants are sometimes seen on the edges of the forest, but they do not venture out for fear of being killed by human beings. Earlier the tigers used to come into the nearby villages and take away animals and small children at night.
(v) The smuggling of ivory and skin of tiger has been almost controlled.

2. Discuss how the changes in forest management in the colonial period affected the following groups of people. [NCERT]

(a) Shifting Cultivators

(b) Nomadic and Pastoralist Communities

(c) Firms Trading in Timber/Forest Produce

(d) Plantation Owners

(e) Kings/British Officials Engaged in Shikar

Ans. Changes in forest management in colonial period are

(a) Shifting Cultivators

(i) European foresters regarded shifting cultivation as harmful for the forests. The government banned shifting cultivation.

(ii) Shifting cultivators were forcibly displaced many communities from their homes in the forests.

(iii) Some had to change occupations, while some resisted through large and small rebellions.

(b) Nomadic and Pastoralist Communities

(i) The forest laws deprived people of their customary rights and meant severe hardship for the Nomadic and Pastoralist communities.

(ii) They could not cut wood for their houses, could not graze their cattle or collect fruits and roots. Hunting and fishing became illegal.

(iii) They were forced to steal wood. If they were caught, they were at the mercy of the forest guards and they would have to offer bribes to the guards.

(iv) Many Pastoralist and Nomadic communities like the Korava, Karacha and Yerukula of the Madras presidency lost their livelihoods.

(v) Some of the Nomadic communities began to be called ‘Criminal Tribes’ and were forced to work instead in factories, mines and plantations under government supervision.

(vi) They were also recruited to work in plantations. Their wages were low and conditions of work were very bad.
(c) Firms Trading in Timber/Forest Produce

(i) By the early 19th century, oak forests in England were disappearing. This created a problem of timber supply for the Royal Navy.

(ii) By the 1820s, search parties were sent to explore the forest resources in India. Trees were felled on a massive scale and large quantities of timber were being exported from India.

(iii) The Colonial Government took over the forests and gave vast areas to European planters at cheap rates.

(iv) The British Government gave many large European trading firms the sale right to trade in the forest products of particular areas.

(v) The government gave contracts to contractors, who cut trees indiscriminately and made huge profits.

(d) Plantation Owners

(i) Large areas of natural forests were also cleared to make way for tea, coffee and rubber plantations to meet Europe's growing need for these commodities.

(ii) The Colonial Government took over the forests, and gave vast areas to European planters at cheap rates. These areas were enclosed and cleared of forests and planted with tea or coffee.

(iii) Communities like Santhals and Oraons from Jharkhand and Gonds from Chhattisgarh were recruited to work on tea plantation in Assam. Their wages were low and conditions of work were very bad.

(iv) The plantation owners, under the protection and rights given by the British Government, made huge profits.

(e) Kings/British Officials Engaged in Shikar or Hunting

(i) In India, Shikar or hunting of tigers and other animals had been part of the culture of the court and nobility for centuries.

(ii) Under colonial rule, the scale of hunting increased to such an extent that various species became almost extinct.

(iii) The British saw large animals as signs of a wild, primitive and savage society. They believed that by killing dangerous animals, the British would civilise India.

(iv) The British gave rewards for the killing of tigers, wolves and other large animals on the grounds that they posed a threat to cultivators.


(vi) Over 80000 tigers, 150000 leopards and 200000 wolves were killed for reward between 1875 and 1925.

(vii) Initially certain areas of the forests were reserved for hunting.

Note: In the examination, this question will not be asked completely, only its one or two sub-parts will be asked.

3. What were the similarities between colonial management of the forests in Bastar and Java? [NCERT]

Ans. Forest management of Bastar in India was in the hands of the British and in Java it was in the hands of the Dutch.

(i) The Dutch, like the British, wanted timber to build ships and to make sleepers for railway tracks.

(ii) Both the British and the Dutch enacted forest laws to control the forests and put restrictions on the customary rights of the local people. They were prevented from entering the forests, they could not graze cattle, or cut wood or take forest produce without permission.

(iii) Both the governments banned shifting cultivation.

(iv) Both the British and the Dutch introduced scientific forestry.

(v) The villages in Bastar were allowed to stay in the forests on the condition that their people would provide free labour for the Forest Department in cutting and transportation of trees and protecting the forests from fire.

Similarly in Java, the Dutch imposed rents on the cultivated land in the forests and then exempted some villages if they collectively provided free labour and buffaloes for cutting and transporting timber. This system was known as the 'Blandongdiensten System'.

(vi) When the exploitation by the British in Bastar and the Dutch in Java became too much, the forest communities in Bastar and Java revolted under Gunda Dhur and Surontiko Samin respectively. Both the revolts were crushed by the colonial powers.

4. Between 1880 and 1920, forest cover in the Indian sub-continent declined by 9.7 million hectare, from 108.6 million hectare to 98.9 million hectare. Discuss the role of the following factors in this decline. [NCERT]

(a) Railways

(b) Ship Building

(c) Agricultural Expansion

(d) Commercial Farming of Trees
(e) Tea/Coffee Plantations

(f) Adivasis and Other Peasant Users

Ans.

(a) Railways

(i) The spread of railways from the 1850s created a new demand. Railways were essential for colonial trade and for the movement of imperial troops. To run locomotives, wood was needed as fuel and to lay railway lines sleepers were essential to hold the tracks together. Each mile of railway track required between 1760 and 2000 sleepers.

(ii) From the 1860s, the railway network expanded rapidly. As the length of the railway tracks expanded, a very large number of trees were felled. As early as the 1850s, in the Madras presidency alone 35000 trees were cut annually for sleepers. Forests around the railway tracks started disappearing very fast.

(b) Ship Building

(i) By the early 19th century, oak forests in England were disappearing. This created a problem of timber supply from the Royal Navy. English ships could not be built without a regular supply of strong and durable timber. Imperial power could not be protected without ships. Therefore by the 1820s, search parties were sent to explore the forest resources of India.

(ii) Within a decade trees were being felled on a massive scale and vast quantities of timber were being exported, leading to disappearance of forests.

(c) Agricultural Expansion

(i) As population increased, the demand for food went up. Peasants extended the boundaries of cultivation by clearing forests.

(ii) In the early 19th century, the colonial state thought that the forests were unproductive. They were considered to be wilderness that had to be brought under cultivation so, that the land could yield agricultural products and revenue, and enhance the income of the state. So between 1880 and 1920, cultivated area rose by 6.7 million hectares by clearing the forests.

(iii) The demand for commercial crops like jute, sugar, wheat, cotton and raw material for industries increased. Therefore, the British encouraged expansion of cultivation by clearing forests, leading to decline in forest cover.

(d) Commercial Farming of Trees

(i) In commercial farming, natural forests which had lots of different types of trees were cut down. In their place one type of trees were planted in straight rows. This is called a plantation. To promote plantation farming or commercial farming, different varieties of trees were cut down leading to loss of many species and loss of forest cover when the trees were cut for commercial use.

(e) Tea/Coffee Plantation

(i) Large areas of natural forests were also cleared to make way for tea, coffee and rubber plantations to meet Europe’s growing need for these commodities.

(ii) The Colonial Government took over the forests and gave vast areas to European planters at cheap rates.

(iii) These areas were enclosed and cleared of forests and planted with tea or coffee.

(iv) Plantations were large in area leading to loss of large forest areas.

(f) Adivasis and other Peasant Users

(i) As in most parts of the world, shifting cultivation was done by the Adivasis and other peasant communities, in India also it is was practiced.

(ii) In shifting cultivation, parts of the forest area are cut and burnt in rotation. Seeds were sown in the ashes after the first monsoon rains and the crop was harvested by October-November. When fertility decreased, the process was repeated at another location. This led to a large loss of forests.

Note: In the examination, this question will not be asked completely, only its one or two sub-parts will be asked.

5. The introduction of railway had an adverse impact on the forests. Justify by giving examples. [HOTS]

Ans. From the 1860s, the railway network expanded rapidly. Sleepers were the basic inputs required for constructing a railway line. Each mile of a railway track required between 1700 to 2000 sleepers. To meet this demand, large number of trees were felled. To run locomotive, wood was needed as fuel. As railway was being spread throughout India, more and more wood was required which could be used as fuel. The government gave out contracts of individuals to supply the required quantities. These contractors began cutting trees indiscriminately. Thus, forests around the railway tracks started disappearing fast. As early as the 1850s, in the Madras presidency alone, 35000 trees were being cut annually for sleepers.

6. (i) Forest are the National Wealth. Illustrate your answer with suitable examples.

(ii) What values/lesson do you learn from this given statement? [Value Based Question]
Ans. (i) It is quite proper to say that forests are the national wealth.

(a) Forests not only add to the beauty of a country but they are also an important source of many useful products.

(b) The wood that we get from the forests, it is important for building and construction purposes, for railway track, ship building, furniture and for fuel. In India, many industries are based on the forest products.

(c) We get the sandalwood, gums, resins, turpentine oil, honey, herbs, lac, etc from forests.

(d) Grass grown in forests is used for grazing the cattle, sheep, camel, etc. To great extent, the shortage for fodder is also made up by these forests.

(ii) From the given statement, I have learnt that forests play an important role in the like of a nation and make a great contribution in the creation of economic structure of a country.

7. **Why is it necessary to increase the areas under forests? Give five important reasons.** [HOTS]

**Ans.** A large part of our forests was cleared for industrial uses, cultivation, pastures and fuel wood. Thus, a necessity of increasing the area under forests becomes inevitable in India.

*The five important reasons are*

(i) **To maintain the ecological balance** It is necessary for maintaining ecological balance and absorption of carbon dioxide.

(ii) **To regulate the flow of rivers** Forests regulate the flow of rivers both in the rainy and dry seasons by absorbing or releasing water systematically. In this way, they reduce the chances of both floods and droughts.

(iii) **To provide natural habitat to wildlife** Forests provide natural habitat to wildlife and in this way they held in their preservation.

**8. How did commercial farming led to a decline in forests cover during colonial period?**

**Ans.** Before colonial period, India had nearly one-third of the total land area under forest cover which rapidly declined.

In the early 19th century, the colonial powers held the opinion that forests were unproductive and were in no way useful in increasing the income of the state.

So they encouraged to bring the wilderness under cultivation which would yield different agricultural products there by leading to the prosperity of the people and enhancing the revenue of the state.

The Britisher encouraged the production at commercial crops like jute, sugar, wheat, and cotton. They also encouraged plantation of tea, coffee and rubber. So the Indian farmers cleared forests for the commercial crops.

The Britishers exported timber like oak, sheesham and teak wood for Royal Navy to make strong ships. Expansion of the railway was another reason for clearing forest, as a large number of ‘sleepers’ were required for railway tracks. As the population increased and the demand of food went up. The forest were cleared for the expansion of agricultural land.

**Miscellaneous Questions**

1. **Name at least six items around you which come from forests.**

**Ans.** Some items around me which come from forests are – paper in books, wood for desks and tables, dyes that colour my cloth, honey, coffee, tea, oil, tannin, etc.

2. **The forest meant severe hardship for the villagers across the country, because**

(a) cutting wood, grazing cattle, collecting fruits, roots hunting and fishing became illegal.

(b) people were forced to steal and if caught, and they had to pay bribes to the forest guards.

(c) women who collected fire wood were harassed by guards.

(d) All of the above

**Ans.** (d) All of the above

(iv) **To help in precipitation or rainfall** Forests help precipitations of rainfall and thus minimise the possibility of droughts.

(v) **To conserve the soil** Forests play an important role in the conservation of soils as the roots of the trees do not allow the soil to flow away with the water.

3. **Who was Gunda Dhur?**

**Ans.** He was a nationalist who led Bastar Rebellion.

4. **In which parts is Swidden agriculture practised?**

**Ans.** This is traditional agricultural practice in many parts of Asia, Africa and South America.

5. **In India, dhya, penda, bewar, nevad, jhum, podu, khandad and kumri are some of the local terms for**

(a) Shifting Cultivation  (b) Plantations  (c) Deforestation  (d) Hunt

**Ans.** (a) Shifting Cultivation
6. Each mile of railway track required between 1760 and 2000 sleepers. If one average sized tree yields 3 to 5 sleepers for a 3 metre wide broad gauge track, calculate approximately how many trees would have to be cut to lay one mile of track.

**Ans.**

Average number of sleepers required per mile  

\[ \frac{1760 + 2000}{2} = 1880 \text{ sleepers} \]

Average number of sleepers obtained from one tree = 4

Therefore, approximate number of trees to be cut  

\[ \frac{1880}{4} = 470 \text{ trees} \]

7. Who are Baigas?

**Ans.** Baigas are a forest community of Central India.

8. What was Taungya Cultivation?

**Ans.** It was a system in which local farmers were allowed to cultivate temporarily within a plantation.

9. Which of the following is not a local name of shifting cultivation?

(a) Jhum  
(b) Kharif  
(c) Tavy  
(d) Milpa

**Ans.** (b) Kharif

10. At which of the following places, the villagers rose in revolt against the Colonial Government?

(a) Rajasthan  
(b) Midnapore  
(c) Bastar  
(d) Uttarakhand

**Ans.** (c) Bastar

11. Write a dialogue between a Colonial Forester and an Adivasi discussing the issue of hunting in the forest.  

**[NCERT]**

**Ans.** A sample dialogue is given below

**Colonial Forester** Who are you? What are you doing inside the forest at this time?

**Adivasi** I am a villager living in XYZ village on the South edge of this forest. I have come to hunt some animals for feeding my family.

**Colonial Forester** Don’t you know that we have banned the hunting of animals in the forest? Go away, you can not be allowed to hunt animals. It is illegal.

**Adivasi** I need the flesh of the animal, so that my wife can cook the food. I regularly hunt for animals and nobody has stopped me before.

**Colonial Forester** No, you will not be allowed to do this. Only Britishers are allowed to hunt animals. Go back to your village. Otherwise, I will have you arrested.

**Adivasi** Okay, if you say so, I will go. But I will return.

12. What is the local name of 'Madhuca Indica'?

**Ans.** The local name of ‘Madhuca Indica’ is mahua. Villagers wake up before dawn and go to the forest to collect the mahua flowers which have fallen on the forest floor. It can be eaten or used to make alcohol and its seeds can be used to make oil.
Check your Compatibility

A. Very Short Answer Type Questions

1. Match the following

<table>
<thead>
<tr>
<th>List I</th>
<th>List II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Dietrich Brandis</td>
<td>1. A British administrator who killed 400 tigers.</td>
</tr>
<tr>
<td>B. Gunda Dhur</td>
<td>2. The first Inspector-General of Forest in India.</td>
</tr>
<tr>
<td>C. George Yule</td>
<td>3. An inhabitant of Randublatung village, who started a movement against state ownership of forest.</td>
</tr>
<tr>
<td>D. Surontiko Samin</td>
<td>4. The prominent leader of Bastar rebellion.</td>
</tr>
</tbody>
</table>

Codes

- (a) 2 4 1 3
- (b) 2 3 4 1
- (c) 3 4 2 1
- (d) 4 3 1 2

2. Which one of the following things is not a forest product?
   - (a) Gum
   - (b) Resin
   - (c) Rubber
   - (d) Fish

3. Which one of the following is the local name of shifting cultivation in Central America?
   - (a) Lading
   - (b) Milpa
   - (c) Chena
   - (d) Podu

B. Short Answer Type Questions

1. What do you mean by Devasari?
2. Explain ‘Searched Earth Policy’.
3. Name the state that has the largest forest cover in our country.
4. What do you mean by ‘scientific forestry’?

C. Long Answer Type Questions

1. Why were the forests important to the villagers?
2. What was the impact of regulation of trade in forest products by British Government in India?
3. How did commercial farming lead to a decline in forests cover during colonial period?
ACTIVITY

The teacher will instruct the students to collect any 6 forest products (e.g., bamboo, honey, tendu, leaves, mahua, eucalyptus oil, berries, neem, etc). A limited time of 2 days may be given.

Procedure

The students submit their collections and a mini exhibition may be organised in a convenient place in the school. The student would be required to explain the forest products and their utility.

Learning Outcomes

After collecting the forest products, the students would be able to do the following
- Understand the importance of forest products in our life.
- Identify the forest products out of various other products.
- Recognise the properties of each product.

Follow Up

If some students fall short of required ability, the teacher may find out some time to explain how to overcome these shortcomings.

FORMATIVE ASSESSMENT

Activities

✓ Activity 1

Topic

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✓ Activity 2

Topic

Tiger Hunting
Learning Objectives
Enable the students to understand the necessity of preservation of wild animals.

Skills Developed
General awareness, power of observation and analytical skill.

Method
Answer the question–Do you think anybody involved in killing tiger in 2013 would pose for a photograph like the given picture? Explain with an evidence.

Hint
Consult textbook and the internet.

The centrally sponsored scheme ‘Project Tiger’ was launched in April 1973. The project aims at ensuring a viable population of Bengal tiger in their natural habitats and preserving areas of biological importance as a natural heritage for the people.

The government has set up a Tiger Protection Force to combat poachers and funded the relocation of upto 200000 villagers to minimise human-tiger conflicts.

Activity 3

Topic
Interpret the picture and answer the questions

(i) What are the villagers doing?
(ii) Name the system of cultivation.

Hint
Taungya cultivation was a system in which local farmers were allowed to cultivate temporarily within a plantation. In this photo, taken in Tharrawaddy division in Burma in 1921, the cultivators are sowing paddy. The men make holes in the soil using long bamboo poles with iron tips. The women sow paddy in each hole.

Activity 4

Topic
To make a list of forest products

Procedure
(i) The teacher gives this activity in his own period. He gives a list of products. The students have to identify these products and classify them under forest products and non-forest products.

List of Products
- Mobile phone, latex, I-pod, honey, compact disc, bangle, bamboo, chocolate, haldi, amla, matchstick, eucalyptus oil, sweet potato, berries, gum, rubber, resins, tulsi, paper, mint, neem, poppy seed, shikakai, tamarind, cactus, herbs, etc.

(ii) After making the list of forest products, students have to categories them under the heading of medicinal/domestic/industrial.

Learning Outcomes
After completing this activity, the student would be able to do the following
- Understand the importance of forest product in our life.
- Identify forest products out of various other products.
- Recognise the properties of each product.
- Develop the organising skill.

Activity 5

Topic
Chipko Movement

Procedure
Each student would be asked to write about Chipko Movement.

Learning Outcomes
After completing this activity, the student would be able to do the following
- Develop ability to use imagination and creative writing. Develop power of observation and reasoning.
- Develop creative expression.
Assessment Criteria

- Each student must be assessed on the basis of the flow of writing ability and creative expression. Narrative should be based on factual details.

Hint

- The Chipko Movement or Chipko Andolan is a movement that practised the Gandhian methods of satyagraha and non-violent resistance, through the act of hugging trees to protect them from being felled. The modern Chipko Movement started in the early 1970s in the Garhwal Himalayas of Uttarakhand. The then in Uttar Pradesh with growing awareness towards rapid deforestation.

- The landmark event in this struggle took place on 26th March, 1974, when a group of peasant women in Reni village, Hemwalghati, in Chamoli district, Uttarakhand, acted to prevent the cutting of trees and reclaim their traditional forest rights that were threatened by the contractor system of the State Forest Department.

- Their actions inspired hundreds of such actions at the grassroots level throughout the region. By the 1980s, the movement had spread throughout India and led to formulation of people-sensitive forest policies, which put a stop to the open felling of trees in regions as far reaching as Vindhyas and the Western Ghats. Today, it is seen as an inspiration and a precursor for Chipko Movement of Garhwal.

Activity 6

Topic
- Is deforestation necessary for the development?

Method
- The following points should be covered in the process of debating
  - The actual meaning of the term ‘deforestation’
  - Examples as evidence to support the argument
  - Matters related to regulation
  - Rehabilitation
  - Effect on livelihoods and the protests

Procedure
- The class will be divided into two groups to speak for the motion and against the motion about the topic. Each child belonging to both the groups will give their inputs to prepare the debate. The group leader will lead the discussion in the class and hold a debate.

Assessment Criteria

- Reasons to support the student points.
- Effectiveness of presenting the debate.
- Ability to convince the class.

Follow Up
- At the end, the teacher should summarise the significant points given by both the groups.

Activity 7

Topic
- The students will be asked to conduct research on people who are well-known for contributing towards protection of environment.

They are
- Sunderlal Bahuguna
- Medha Patkar
- Rajendra Singh
- Chandi Prasad Bhatt

Procedure
- The students can consult reference books and the internet. After the research is complete the teacher would divide the class into three groups.

Group one to enact a scene based on environment movement and its significance. They have to make posters about the movement.

Group two have to make charts on the activities of the mentioned personalities. Group three have to write paragraphs, poems for preservations of forests and ecological balance of the environment.
(i) **Sunderlal Bahuguna** *(born 9th January, 1927)* is a noted Garhwali environmentalist, *Chipko Movement leader* and a follower of Mahatma Gandhi’s philosophy of non-violence and Satyagraha. For years, he has been fighting for the preservation of forests in the Himalayas, first as a member of the Chipko Movement in 1970s and later spearheaded the Anti-Tehri Dam Movement starting 1980s to early 2004. He was one of the early environmentalists of India and later he and people associated with the Chipko Movement started taking up environmental issues, like against large dams, mining and deforestation, across the country. He was awarded the Padma Vibhushan, India’s second highest civilian honour, on 26th January, 2009 and Padma Award on 14th April, 2009.

(ii) **Medha Patkar** *(born 1st December, 1954)* is an Indian social activist. She is known for her role in Narmada Bachao Andolan. She has also filed a public interest petition in the Bombay High Court against Lavasa along with other members of National Alliance of People’s Movements (NAPM), including Anna Hazare.

She was raised by politically and socially active parents. She was often known for her extreme views on growth of country and liberalisation. She played a pivotal role in driving out the Tata Nano Pant from Singur, West Bengal.

(iii) **Rajendra Singh** *(born 6th August, 1959)* is a well-known water conservationist from Alwar district, Rajasthan. Also known as *Waterman of India*, he won the Ramon Magsaysay Award for community leadership in 2001 for his pioneering work in community-based efforts in water harvesting and water management.

He runs an NGO called ‘Tarun Bharat Sangh’ (TBS), which was founded in 1975. Starting from a single village in 1985, over the years TBS helped build over 8600 *johads* and other water conservation structures to collect rainwater for the dry seasons, has brought water back to over 1000 villages and revived five rivers in Rajasthan namely Arvari, Ruparel, Sarsa, Bhagani and Jahajwali.

(iv) **Chandi Prasad Bhatt** *(born 1934)* is a Gandhian environmentalist and social activist, who founded Dasholi Gram Swarajya Sangh (DGSS) in Gopeshwar in 1964, which later became a mother-organisation to the Chipko Movement, in which he was one of the pioneers. For this he has been awarded the *Ramon Magsaysay Award* for Community Leadership in 1982, followed by the Padma Bhushan in 2005.

Today he is known for his work on subaltern social ecology and considered one of India’s first modern environmentalist. Inspired by the speech of Jayaprakash Narayan, Bhatt joined into Sarvodaya Movement and Gandhian campaigns of Bhoodan and Gramdan Movement.

He become the spokesperson of Chipko Movement and was appointed a member of the *National Forest Commission*, which reviewed all existing policies and legal frameworks relating to forest management and submitted its report to the government.
Activity 8

**Topic**
Deforestation and its impact

**Procedure**
Teacher will give the topic to the students a week in advance. Students have to collect additional information related to the topic from reference books and the internet.

**Assessment Criteria**
Assessment may be done based on authenticity of the research work done, clarity of thoughts, relevance of content presentation.

**Hint**
Depletion in the area of forest vegetation is referred to as deforestation. The policy of imperialist countries was the main cause of deforestation in their colonies. They exploited the different resources of their colonies but agriculture and the natural vegetation (or forest) were hit the most.

Activity 9

**Topic**
The effects of forest act on villagers.

**Objective**
Develop awareness and knowledge about the effects of forest act.

**Skill Developed**
Develop social awareness and empathy.

**Reasoning Skill**
Develop creative writing skill and self-confidence.

**Method**
The teacher should give topic to the students one week in advance to collect additional information. Student can consult text book and the internet.

**Assessment Criteria**
The teacher may assess this task for
- Creative writing
- Logical expression of fact
- Expression

Activity 10

**Topic**
Chipko Movement – A Livelihood Movement

**Procedure**
Imagine yourself to be a member of Chipko Movement and draw poster.

**Learning Outcomes**
- Develop creative talent among students
- Develop analytical skill

**Assessment Criteria**
- Creativity
- Expression
- Presentation

**Hint**
The Chipko Movement, though primarily a livelihood movement rather than a forest conservation movement, went on to become a rallying point for many future environmentalists, environmental protests and movements the world over and created a precedent for non-violent protest.

It occurred at a time when there was hardly any environmental movement in the developing world and its success meant that the world immediately took notice of this non-violent movement, which was to inspire in time many such eco-groups by helping to slow down the rapid deforestation, expose vested interests, increase ecological awareness and demonstrate the viability of people power.