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FORESTRY

TOOL KIT SERIES

UPPSC

UTTAR PRADESH

STATE FOREST SERVICE

2025-26

Detailed Syllabus Based study material + **Linkage of Concepts with PYQs** + **Infused with Infographics & Maps**

Module - 5

- Forest Protection
- Forest Utilization
- Forest Legislation
- Forest Economics
- Wildlife Biology

MPPSC State Forest Service 2023


Rank – 1

Shashank Jain

Comprehensive Forestry Course + CIGP


Rank – 3

Jyoti Thakur

Comprehensive Forestry Course + CIGP


Rank – 4

Shivam Gautam

Comprehensive Interview Guidance Programme


Rank – 5

Nitin Patel

Comprehensive Forestry Course + CIGP


Rank – 6

Ravi Kumar

Comprehensive Interview Guidance Programme + Test Series


Rank – 7

Ankur Gupta

Comprehensive Forestry Course


Rank – 8

Deependra Lodhi

Comprehensive Interview Guidance Programme


Rank – 9

Kapil Chauhan

Comprehensive Forestry Course


Rank – 10

Alok Kumar Jhariya

Comprehensive Forestry Course + CIGP


Rank – 11

Tarun Chouhan

Comprehensive Interview Guidance Programme + Test Series


Rank - 12

Raghvendra Thakur

Comprehensive Forestry Course + Test S. + CIGP

11 Out of 12 Total Selections in

Assistant Conservator of Forest (ACF)

108 Out of 126 Total Selections in

Range Forest Officer (RFO) 2023


Rank – 1

Arvind Ahirwar

Comprehensive Interview Guidance Programme + Test Series


Rank – 2

Pushpendra Singh Ahirwar

Comprehensive Forestry Course + CIGP


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Narendra Gunare

Comprehensive Interview Guidance Programme + Test Series


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Jaishrish Barethiya

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Bhavna Sehariya

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Abhinay Chouhan

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Abhishek Barodiya

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Forestry

Module – 6

EDITION : 2026

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SYLLABUS

Indian Forest Service (IFoS) [Paper 2 | Section B] **UP PSC Forest (Main) 2025-26** [Paper 2 | Section B]	**Forest Protection & Wildlife Biology** : ◈ ***Injuries To Forest*** – abiotic and biotic, destructive agencies, insect-pests and disease, effects of air pollution on forests and forest die back. ◈ ***Susceptibility of Forests*** to damage, nature of damage, cause, prevention, protective measures and benefits due to chemical and biological control. ◈ ***General Forest Protection*** against fire, equipment and methods, controlled use of fire, economic and environmental costs; ◈ ***Timber Salvage Operations*** after natural disasters. ◈ ***Role of Afforestation*** and forest regeneration in absorption of CO_2. ◈ Rotational and controlled grazing, different methods of control against grazing and browsing animals; ◈ ***Effect of Wild Animals*** on forest regeneration, ◈ ***Human Impacts*** – encroachment, poaching, grazing, live fencing, theft, shifting cultivation and control. **Forest Resources & Utilization** : Environmentally sound forest harvesting practices; logging and extraction techniques and principles, transportation systems, storage and sale. Anatomical structure of wood, defects and abnormalities of wood, timber identification – general principles. ◈ Need and importance of ***Wood Seasoning and Preservation***; general principles of seasoning, air and kiln seasoning, solar dehumidification, steam heated and electrical kilns. ◈ ***Composite Wood*** – adhesives - manufacture, properties, uses, plywood manufacture-properties, uses, fibre boards-manufacture properties, uses; particle boards manufacture; properties, uses. Present status of composite wood industry in India and future expansion plans. ◈ ***Non-Timber Forest Products*** (NTFPs) – definition and scope; gums, resins, oleoresins, fibres, oil seeds nuts, rubber, canes, bamboos, medicinal plants, charcoal, lac and shellac, Katha and Bidi leaves, collection; processing and disposal. ◈ ***Pulp Paper*** and ***Rayon*** – present position of supply of raw material to industry, wood substitution, utilization of plantation wood; problems and possibilities. **Forest Policy** : ◈ ***History*** of forest development ◈ Indian ***Forest Policy*** of 1894, 1952 and 1988. National Forest Policy 1988 of People's involvement, Joint Forest Management, Involvement of women; Forestry policies and issues related to land use, timber and non-timber products, sustainable forest management; industrialisation policies; institutional and structural changes. ◈ ***Decentralization*** and Forestry Public Administration. ◈ **Forest Laws** : necessity, general principles, Indian Forest Act 1927; Forest Conservation Act, 1980; Wildlife Protection Act 1972 and their amendments ◈ Application of ***Indian Penal Code*** to Forestry. **Forest Economics** : ◈ ***Fundamental Principles***, Cost-benefit analyses; Estimation of demand and supply; ◈ Analysis of ***Trends*** *in the* ***National*** *and* ***International Market*** and changes in production and consumption patterns; assessment and projection of market structures ◈ Role of ***Private Sector*** and ***Co-Operatives***; role of corporate financing. Socio-economic analysis of forest productivity and attitudes ◈ ***Valuation*** of forest goods and service. **Wildlife Biology** : There is virtually no syllabus other than mentioning the subject title + Few things linked with wildlife are scattered over the entire syllabus.

Module - 6

CONTENTS

UPPSC STATE FOREST SERVICE (ACF/RFO) PYQs | 2017 – 2021

Forest Protection

Year	Questions
2021	निम्नलिखित प्रत्येक का उत्तर लगभग 150 शब्दों में दीजिए / Answer the following in about 150 words each. — वनों में चराई को नियंत्रण करने के लिये क्या क्या तरीके अपनाये जाते हैं? What are the methods to control grazing in the forest area? [P2/5(b) | 8 M] — वनों में नियंत्रित फुकान के तरीकों एवं समय का वर्णन करो। Describe the methods and timings of the control burning in forests [P2/5(e) | 8 M] वनों को कीटों से क्या क्या क्षतियाँ होती है? साल बोरर कीट का विस्तार से वर्णन करो। What are the injuries caused by insects to the forest? Explain the Sal Borer in detail [P2/6(a) | 20 M]
2020	निम्नलिखित का कारण सहित वर्णन कीजिए / Describe the following with reasons — वनाग्नि वनों के लिए हानिकारक है। / Forest fire is harmful to the forests [P1/7(b) | 8 M] निम्नलिखित प्रत्येक का उत्तर लगभग 150 शब्दों में दीजिए / Answer the following in about 150 words each — अग्निरेखा क्या होती है तथा अग्निरेखाओं के निर्माण के समय क्या सावधानियाँ बरतने की आवश्यकता होती है? भारत में किस प्रकार की तथा किस माप की अग्निरेखाएँ प्रचलित हैं? / What is a fire line and what precautions should be taken when fire lines are made? What types and sizes of fire lines are prevalent in India? [P2/5(c) | 8 M]
2019	रोग और कीटों के विरुद्ध प्रतिरोधक क्षमता हेतु चयन एवं प्रजनन विधियों का वर्णन कीजिए / Describe the methods of selection and breeding for resistance against diseases and insects. [P1/6 | 40 M] निम्नलिखित प्रत्येक का उत्तर लगभग 150 शब्दों में दीजिए / Answer the following in about 150 words each — दावाग्नि का वर्गीकरण कीजिए। दावाग्नि से होने वाली क्षति का वर्णन कीजिए। वनों की आग के रोकथाम और नियंत्रण के लिए सुदूर संवेदन के उपयोग का आकलन कीजिए / Classify Forest fire. Describe damage caused by forest fire. Enumerate applications of remote sensing for the prevention and control of forest fires [P2/5(e) | 8 M]
2018	निम्नलिखित में से प्रत्येक का उत्तर लगभग 150 शब्दों में दें / Answer the following in about 150 words each. — वन क्षेत्र में महत्वपूर्ण अग्नि शमन यन्त्रों एवं उपायों का वर्णन करें। Describe about important firefighting instruments and tools in a forest area [P2/5(b) | 5 M]
2017	निम्न का संक्षिप्त में वर्णन कीजिए / Describe the following in brief — दावाग्नि का पर्यावरण पर प्रभाव / Impact of forest fire on environment [P1/7(c) | 5 M] वन अग्नि के क्या कारण हैं? इससे वनों को होने वाली क्षति तथा नियंत्रण के उपायों का वर्णन करें। What are the causes of forest fire? Discuss the damage caused by it to the forests along with its control [P2/7(b) | 20 M]

Forest Utilization

Year	Questions
2021	गैर-काष्ठ वन से आप क्या समझते हैं? बाँस एवं केन (बेंत) में अंतर स्पष्ट करो। / What do you mean by Non-timber forest products? Differentiate between Bamboos and Canes [P2/5(c) | 8 M] काष्ठ परिरक्षण को परिभाषित करें। अच्छे काष्ठ परिरक्षी के गुणों का वर्णन कीजिए। भारत में जो काष्ठ परिरक्षक उपयोग में लाये जाते हैं, उनका वर्णन करो / Define wood preservation. Explain properties of good wood preservatives. Describe the

CHAPTER 1

FOREST PROTECTION
INTRODUCTION

1.1 FOREST DISASTERS

HAZARD : A dangerous event, natural or man-induced, that could cause injuries, loss of life, damage of property, livelihood, or environment in a definite area. Events may be –

- **Natural**, e.g., Tsunami, Volcanic eruption, Earthquake, etc.
- **Man-induced**, e.g., Pollution, Flood, Drought, etc.

DISASTER : When a *natural* or *human-induced event* causes *widespread human loss*, accompanied by loss of livelihood, property, and the environment *in a definite area*.

- Means that an event becomes a disaster only when it happens at such a wide scale that the forest ecosystem is unable to cope with it, causing complete disruption of the normal functioning of the forest ecosystem.

[A **forest disaster** is a large-scale event that causes significant damage to a forest ecosystem]

Mt. Merapi volcano erupts, Indonesia, March 2023

Bhopal gas tragedy

The U.S. military used **Agent Orange**, a herbicide and defoliant, during the Vietnam War from 1962 to 1971.

TYPES OF FOREST DISASTERS

Based on speed

- Slow onset : Takes months/Years – Drought, Environmental / Forest degradation.
- Rapid onset : Triggered instantaneous – Cyclone, Landslide, Forest fire, etc.

Based on the agency

- Natural : Tsunami, Cyclones
- Man-induced : Forest fire

Based on the area of damage

- Climatic disasters : Drought, Flood in the Low lying area, Cyclone, Hail storm, Heatwave
- Geological disasters : Landslides, Volcanic eruptions, etc.
- Hydrological disasters : Tsunami, Limnic eruptions, etc.
- Man-induced : Forest fire, Heavy metal poisoning, etc.

CHAPTER 2

PROTECTION AGAINST INJURIES BY MAN

On the one hand, man is responsible for the establishment and cultivation of new forests, as well as the regeneration and sustainable management of natural forests in a scientific manner. However, on the other hand, man is also the primary cause of damage and destruction to these forests. Due to human activities, numerous forests around the world have already vanished, and some continue to be destroyed even today

KINDS OF DAMAGES BY MAN (ANTHROPOGENIC)

IFoS 2017 : Discuss briefly the *impacts of humans on forest health*. Explain different measures to check forest encroachment (15 m).

IFoS 2013 : Describe the anthropogenic causes of forest destruction. How can these be checked ? (10 m).

- Deforestation
- Shifting cultivation
- Illicit felling and illicit removal of forest produce
- Forest fire
- Encroachment
- Defective management
- Other damages, such as lopping, removal of leaf litter, removal of flowers and fruits, poaching, environmental pollution, etc.

2.1 DEFORESTATION

DEFINITION : Deforestation is defined as the *removal of tree crops* from a piece of land *without the intention of reforesting*. The damaging or removal of forest vegetation to such an extent that it failed to support its natural flora and fauna.

IFoS 2019 : Describe the *causes of deforestation*. What are the *measures to be taken for the control* of deforestation? (10 m).

IFoS 2019 : What do you mean by *deforestation* ? Explain the *major causes of deforestation* (Paper-1 | 8 m).

IFoS 2012 : What are the main reasons for decline of the forest cover in our country ? (5m).

IFoS 2011 : Write short notes on – *Forest decline* (2.5 m).

CAUSES OF DEFORESTATION

- *Diversion of forest land for non-forestry purposes* – like river valley projects, *Dams*, *Roads*, *Communication Lines*, *Railway Tracks*, *Mining*, etc. which have done a lot of damage to the forests. Since independence about. [Major causes = Expansion of Agriculture land]

  Example : Establishment of fruit belts in hills, *i.e.*, Chamba-Mussoorie fruit belt of UP govt during the 1960s clear large area of deodar-oak forest of Shivalik and lesser.

About 7.5 million hectares of forest land has been diverted for non-forestry uses since independence, of which approximately *4.5 million ha* was diverted between 1950-1980 and *2.8 million hectares* from 1980 to 2000. The central government admitted that *in 2019, 11500 hectares of forest land had been diverted in 22 states*.

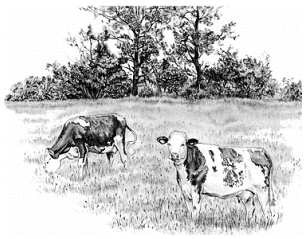
CHAPTER 3

PROTECTION AGAINST INJURIES BY ANIMALS

Animals cause damage to forests through grazing, browsing, debarking, trampling of plantations, and new growth.

Domestic animals often enter the forest to graze, which can have significant negative impacts on both the forest and its wild inhabitants. One major concern is the potential spread of diseases from domestic animals to wild animals. Additionally, domestic animals can inadvertently introduce new weed species by carrying the seeds on their bodies.

3.1 GRAZING



Grazing

Grazing refers to feeding leaves and twigs of plants such as grasses and herbs.

SIGNIFICANCE

- The backbone of the rural economy by providing milk, food, meat, and workforce.
- Contribute 6 % of GDP and 25 % of agricultural GDP.

Browsing

GRAZING PATTERN

(1) **Migratory grazing** : In this grazing, animals move from a higher to a lower altitude in winter seasons to avoid cool weather conditions and go back to hills in summer (*i.e.*, Bakarwals in HP, Van Gujjar in JK).

- *Kharak* system in Uttarakhand, *Gol* system in Rajasthan,

(2) **24 hour grazing** : In this, livestock remains inside the forest throughout the day. After the end of the designated period, animals are captured again for domestic use.

(3) **Day grazing** : Here, animals are allowed inside the forest in the daytime for grazing. In the nighttime, livestock is returned back to cattle sheds located near the human settlements.

(4) **Penning and stall feeding** : In this kind, fodder is collected from the forest and fed to the cattle in the cattle shed itself. Animals are not allowed to go out of the cattle shed.

► **GRAZING SYSTEM**

(1) **Continuous grazing** : In this grazing, the area subjected is *allowed for grazing throughout the year* without any control or regulation measures. This is not advisable because *continuous grazing decreases the palatable crops inside the forest* besides *increasing the weeds*. We can say that this type is a *low input – low output system* of grazing.

CHAPTER 6

REMAINING TOPICS

6.1 INJURIES TO FOREST BY ABIOTIC AND BIOTIC FACTORS : ~~We have already studied all these in chapters 3 to 6 and 10 of silviculture and chapters 2 and 3 of forest ecology~~.

Living (Biotic) and Non-living (abiotic) stresses are two categories of environmental factors that can forest vegetation.

Biotic tresses : living organisms such as pests, pathogens, and other organisms that directly affect tree health.

- Insects like beetles, borers, caterpillars, and aphids can attack trees, feeding on leaves, stems, or roots and causing damage.
- Fungal, bacterial, and viral pathogens can infect trees, leading to diseases such as pink disease in Eucalyptus, Teak defoliation.
- Competing vegetation, commonly referred to as weeds, can compete with trees for nutrients, water, and sunlight, potentially affecting tree growth and health.
- Larger organisms like deer, rabbits, or rodents can browse on tree foliage or bark, causing damage or hindering growth.

Abiotic stresses : non-living environmental factors that can impact trees. These stresses are often related to unfavorable physical or chemical conditions. Examples include –

- Extremely high or low temperatures - can affect tree physiology and metabolism, leading to stress or damage.
- Lack of water availability - can cause drought stress in trees, impacting their ability to carry out essential functions and leading to wilting or even death in severe cases.
- Flooding - Excessive water saturation in the soil can suffocate tree roots, causing oxygen deprivation and root damage.
- Salinity - High salt levels in soil or water can be detrimental to tree health by affecting water uptake and causing toxicity symptoms.
- Poor soil quality, such as compacted soil, nutrient deficiencies, or imbalanced pH levels, can limit tree growth and Vigor.
- Pollution: Air pollution, including high levels of ozone, sulfur dioxide, or heavy metals, can negatively impact tree health and vitality

> **IFoS 2022** : What are the biotic and abiotic stresses on trees? Explain the responses of trees to these stresses (8m) [*Linked* Q : Silviculture]

Trees have evolved various responses to cope with both biotic and abiotic stresses. These responses can be categorized into physiological, morphological, and biochemical adaptations.

➲ PHYSIOLOGICAL RESPONSES

CHAPTER 1

WOOD SCIENCE & TECHNOLOGY [Introduction]

INTRODUCTION

Forest utilization is defined as the process of harvesting, conversion, transportation and disposal of forest produce. It includes the market and manufacturing of various usable commodities*** from it.

1.2 HISTORICAL BACKGROUND

Upto 1860s

Until this time, Forest clearing was common, and timber extraction was common for fuel and construction purposes. It was largely unorganized and merchants only had to pay a nominal fee for timber extraction. The extraction itself was limited to a few specific species such as Teak, Sal, Sandalwood, and Rosewood (*Dalbergia latifolia*). Axes served as the primary tools for cutting, resulting in significant wastage.

From 1860s to 2nd World War

During this time, forest departments were established in all states to ensure systematic working and conservation efforts. The period witnessed a *significant increase in the demand for timber, driven by both infrastructural needs such as railway sleepers and domestic requirements*. Additionally, advancements in forest engineering allowed for logging in previously inaccessible areas.

IFoS 2022 : Trace the History of logging in India. Explain how mechanization in harvesting and extraction helps in reducing the wastage and improving efficacy of logging (15 m)

The introduction of modern tools for timber extraction greatly improved efficiency in the process. Furthermore, the demand for timber escalated during the World Wars, leading to an increase in its price. This shift in the market

CHAPTER 3 TIMBER GRADING

AIM

- Quality regulation as per market demand
- Developing a clear definition of classes for timber
- Identifying the causes, influencing the quality, utilization, and price structure of timber.

Defects in timber can occur naturally or as a result of various environmental and processing factors. These defects can affect the strength, appearance, and overall quality of the wood.

IFoS 2017 : Briefly write about the *natural defects* observed in wood (8 m).

DEFECTS DUE TO INSECT ATTACKS

- **Borer Holes** : Caused by insects, Birds, marine borer, etc.

DEFECTS DUE TO FUNGAL ATTACKS

- **Rot or decay** : when fungi feed both soft and heartwood, *i.e.,* White rot, Brown rot, red rot, etc.

The fungi group that digests/Attacks on	Type of rot
Cellulose, but not lignin	Brown rot
Both Cellulose and lignin (All components of cell wall)	White rot
Cellulose in the secondary cell wall makes it brittle	Soft rot

Note **:** Dry rot – Decomposition of felled timber caused by the action of various fungi (Lack of proper ventilation).
Wet rot – Decay of timber caused by alternate wetting and drying [RPSC AE 2013; Nagaland PSC CTSE 2017].

- **Strain** : When fungi attack and feed sapwood portion only, where food material is stored, it causes strains (markings). This activity only affects the sapwood, leaving the heartwood unaffected. As a result, the strength of the wood remains unchanged; however, the colour will be changed.

Soft – rot

Wood Strain

CHAPTER 4 WOOD PROPERTIES

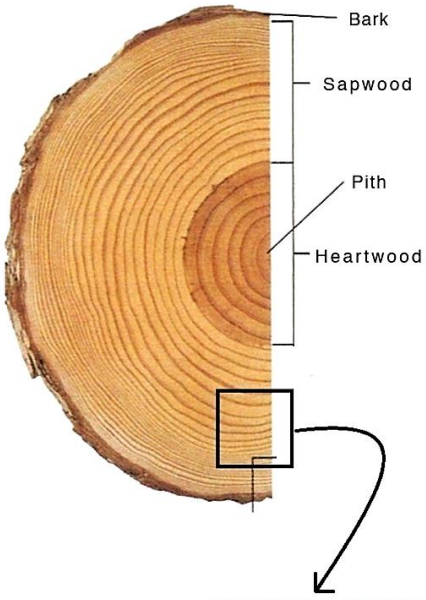
WOOD PROPERTIES

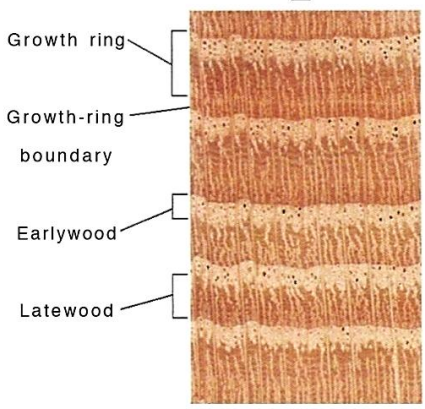
Gross structural	Minute structural	Gross physical	Mechanical	Chemical properties

GROSS STRUCTURAL

Gross structural means what we can easily identify when we see a timber (log) through the naked eyes

- Bark
- Pith
- Sapwood & heartwood
- Growth rings or Annual rings
- Spring and Autumn wood
- Grains & Textures





- **Bark** : the outermost part of the timber. The outer part is usually dead and has diagnostic value (Species identification).
- **Pith** : Small soft mass of tissue in the central portion** of tissue, usually lighter in colour. It neither has any specific function nor any diagnostic value.
- **Sapwood & Heartwood** : Sapwood (Alburnum) is the *Lighter, younger outer portion* of a tree trunk. Composed mostly of living cells and, as its name implies, is for the conduction of sap (liquids), and storing food.

  Heartwood (Duramen) is the central dark part of the wood that has become heavier and darker due to the deposition of gum, resin, oil, and chemicals.

Sapwood (Alburnum)	Heartwood (Duramen)
It forms the outer wood part	It forms the central wood part
It is light–coloured	It is dark–coloured
Lighter in weight	Heavier /Denser
It contains living cells	Dead cells

CHAPTER 6 WOOD PRESERVATION

Wood preservation is the process of improving the natural durability of wood through treatment with chemicals that are toxic to insects, fungi, and other decaying agents.

NECESSITY

- To increase the lifespan of wood : Woods uses extend to various sectors of the economy (e.g., telephone poles). However, due to cellulose and moisture, its durability or working lifespan diminishes significantly. Therefore, some forms of treatment are necessary to prevent this.
- To enhance the working ability of wood under specific conditions, we also require a specific type of wood that can function effectively under particular conditions, such as heat or salt stress conditions (marine environment), where normal wood may not work efficiently.
- To avoid frequent replacement of wood.

Durability : The property or ability of wood to remain sound. Usually, it's lost due to fungal attacks, insect attacks, animals, fire hazards, or mechanical wear and tear.

Factors Affecting Durability : Moisture contents in the wood (Provide a base for fungal attack), its hardness (↑↑), deposition of resin and gums (↑↑), and use of wood.

Hardwood + more gum/resin deposition = more durable

Ralph Pearson*** : Father of wood preservation. Started scientific studies on wood preservation at FRI in 1908

Sonti Kamesam developed a wood preservative "ASCU" in the 1930s at FRI.

6.1 WOOD PRESERVATIVES

Preservatives are chemical that is used in preservation, usually poisonous to insect pests. Property of an ideal preservative

- It should be Highly toxic to fungi, insects and marine organisms whereas least toxic to human beings
- High permanency (resist to leaching by water or by any other solvent)
- It should impregnate the wood easily (High Penetrability) and retain it permanently
- It should be neither volatile nor liable to become inactive after some years (High chemical stability).
- It should be cheap and available in plenty
- It should not increase the inflammability of wood
- It should not corrode metals
- It should be a colourless, odourless, and paintable one.
- It should not affect the strength of the wood.

CHAPTER 9 USES OF WOOD

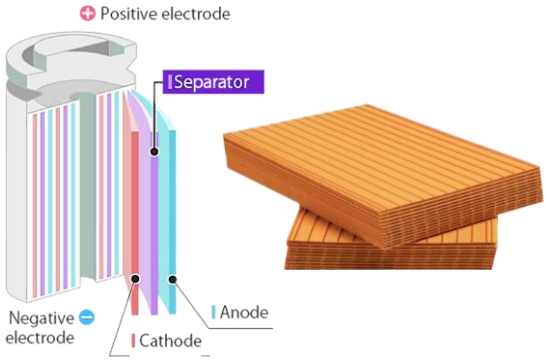
- **Aircraft Industry** : requires light wood with straight fibres and great strength, *i.e.*, *Picea sitchensis*, *Picea smithiana****, *Ochroma pyramedelis**** (Balsa = Lightest wood)***, etc.

- **Agriculture Implements** : only the strongest, hardest wood can be suitable to hold pressure developed during uses in bullock carts, Plough, handles, etc. With this, species also must be locally available.

  Example : Babool (*Acacia nilotica*), *Xylia xylocarpa*, *Anogeissus latifolia*, etc.

- **Battery Separators** : wood should be light, sufficiently strong, straight grain, and especially free from volatile acids, tannins and resinous material so it couldn't affect electrolytes.

  Examples : *Conifers**** – *Abies pindrow*, deodar, pines, spruce, etc.



- **Boat and Shipbuilding** : should be strong, elastic, durable and free from defects to stand the enormous strains and marine environment. With this, it should be light in weight and corrosion-resistant

  Examples : Teak*** (Best ship building timber***)
  Ochroma pyramidalis (Balsa) and *Bombax ceiba* for life-saving apparatus.

The Beypore Uru is a traditional dhow that was built in Beypore, India, with a legacy that dates back to the 11th century. Made from pure Malabar teak and coir, these vessels have been used for generations to facilitate trade, and are renowned for their unique design and skilled craftsmanship.

- **Furniture Industry** : The essential qualities required are good colour, handsome grain or figure, non-liability to crack, split, warp or ease of working and finishing.

  Examples : Teak (*Tectona grandis*), Rosewood (*Dalbergia latifolia*), Siris (*Albizia spp.*).

- **Matchwood Industry** : required wood should have straightness of grain, good fissility, strength, good white color, freedom from knots, easily peelable, and capacity to absorb paraffin

  Examples : *Boswellia serrata**** (Salai), *Populus tremula*, Ailenthus excelsa***, Bombax ceiba*** (Semul, mainly planted in North India for the matchwood industry)* etc.

- **Packaging Industry** : would be light, free from knots and should have straight fibres to provide excellent packaging with not increasing packaging weights. Examples : Conifers.

CHAPTER 10

SALE OF FOREST PRODUCES

There are many different systems under which timber and other forest produce may be disposed to purchasers –

SYSTEM OF SALE

(a) Lump-sum sale
(b) Payment on outturn (Royalty)

LUMP SUM SALE : These cover all systems of sales under which a fixed sum is paid for the product, whether the exact quantity of such product is known or not. A lot of logs, an area of grass, a fuel coupe, a lot of trees marked for felling may be sold under this system. The sales may be by auction, tender or direct.

In the same way, the sale may be of some unknown quantity of produce; in this case, the purchaser usually buys the permission to collect and extract such products from a specified area of forest by the purchase price paid is by lump sum payment. The exact amount of produce extracted being unknown at the time of purchase.

PAYMENT ON OUT TARN : This includes the sales when the amount fixed corresponds with the actual amount of products sold or extracted. There are many varieties of this system. Royalty may be on volume, weight, or on quantity.

► HOW THESE 2 systems OF SALE WORKS ?

- **Sale of a whole coupe or area** : Consists in selling the right over a given area to a person or a firm known as a lessee, to extract timber or other produce for a fixed period. Lease value may be realized lump-sum, in one or more installments, or on a royalty basis.
- **Sale of standing trees** : Trees are selected and marked and the whole coupe sold standing, by auction, tender or private bargain. The sale may be a lump sum or by royalty.
- **Sale of a few selected trees** : This consists of selling, usually by a private bargain or by fixed tariff a few selected trees, in special cases of sale.
- **Sale by means of license or permit** : The intending purchaser to apply for a license to extract timber or other forest produce of certain descriptions in a specified area and within a fixed period.

► **METHODS OF SALE**

1. Sale by the private bargain.
2. Sale to the highest bidder : Open tender/Sealed tender
3. Sale by royalty or fixed tariff

CHAPTER 2 FOREST ACTS

SYLLABUS : Forest Laws - necessity, general principles, Indian Forest Act 1927; Forest Conservation Act, 1980; Wildlife Protection Act 1972, and their amendments.

Laws are a body of principles recognized and applied by the state in the administration of justice.

Forest Law : All principles, regulations, or acts that govern the forest and its related activities either inside or outside of the forest.

- Law is a generic term, whereas 'Acts' pertains to a specific situation.
- Forest law is a **Special law**

IFoS 2018 : What are the main differences between forest policy and forest laws ? Give *salient* points of the National Forest *Policy of 1952* and *1988* (15 m).

Forest Policy : policy is a purposeful course of action, undertaken by an organisation that deals with the uses and management of forest resources.

Forest Law	Forest Policy
Laws or 'Acts' are related to regulating and governing a particular situation or act. If you violate it you will be punished.	The policy is a guiding principle and is related to our future Goal where we want to go. If someone violates it, there is a provision for punishment.
Passed by Parliament	By Executive decision, no need to go through parliament

2.1 INDIAN FOREST ACT (1927)

- 21st September 1927
- Act to consolidate the law relating to forests, the transit of forest produces and the duty leviable on timber and other forest produce.

Chapter : 1 **Preliminary**	Section 1 : This act may be called the Indian Forest Act of 1927 Extent – Whole India. Section 2 : Definitions –
	[2.1] Cattle includes elephants, camels, buffaloes, horses, mares, geldings, ponies, colts, fillies, mules, asses, pigs, rams, ewes, sheep, lambs, goats and kids. **[2.2] Forest officer** **[2.3] Forest offences** - offence punishable under this Act or under any rule made thereunder

CHAPTER

1

WILDLIFE BIOLOGY

[INTRODUCTION]

The term 'Wildlife' is commonly referred to all forms of undomesticated animals, including mammals, birds, reptiles, amphibians, fish, and invertebrates, that exist and thrive in their natural habitats.

IMPORTANCE OF WILDLIFE / POSITIVE VALUES

- Ecological Value : play an important role in the food chain, biogeochemical cycles, and through positive and negative population regulation, maintains the delicate balance of an ecosystem. For example, illegal killing of snakes (for illegal skin trade or from fear or taboo) leads to the increase of the rodent population, which ultimately results in huge economic loss in terms of loss of a certain quantity of crop, as well as, increased cost towards pest management by using rodenticides.
- Economic value : Various products obtained from wildlife include timber, firewood, natural rubber, gums, resins, tannins, essential oils, honey, etc. Wild medicinal plants are the source of several medicines. Animal products like hides, horns, ivory, fur, etc., are good sources of income for many countries.
- Sports and Enjoyment : Wild animals are also a good source of game, fun, and recreation for people from all walks of life. In some countries, people spend a large amount of money on hunting, fishing, bullfighting, cockfighting, etc. 'Bird watching' and 'Wildlife photography' are two very popular and growing hobbies for many people.
- Scientific Value : Several life-saving drugs have been discovered from different species of flora and fauna. The efficacy of new medicine or any new surgical method is often tested first on animals. Sea urchins helped to understand human embryology, rhesus macaques to understand the human blood group, antlers of deer are used to study radioactive contamination, and birds' feathers help assess the heavy metal pollution in the environment.
- Genetic Resource : Genes from wild flora and fauna are used to devise better and more productive crop varieties and breeds through genetic engineering. Thus, wildlife serves as a resource for traits like higher productivity, better disease and pest resistance, greater climatic adaptability, etc.
- Cultural and Religious Value : Wildlife is protected by different cultures like the Bishnois of Rajasthan protecting and worshipping blackbuck. Epics such as Ramayana and Mahabharata depicted that deer, birds, and several animals and plants were protected and roamed freely in the vicinity of the ashramas of the saints.

IFoS 2020 : What is the significance of wildlife in today's perspective? Discuss in brief about the components of wildlife ecology (8m).

IFoS 2018 : What is the ecological and economical importance of biodiversity ? Mention the salient measures for conservation of biodiversity (8 m).

- Why wild life conservation? Comment [OPSC Civil (Main) 2018].
- Differentiate between - Positive and negative values of wildlife [HPSC Civil (Main) 2017]

NEGATIVE VALUES OF WILDLIFE

- Destruction of properties (*i.e.,* by elephant), food crops, vehicles, etc.

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