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АНГЛІЙСЬКА МОВА ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ

Посібник для здобувачів першого (бакалаврського) освітнього рівня вищої освіти
спеціальності 187 “ Деревообробні та меблеві технології “

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Англійська мова за професійним спрямуванням: навчальний посібник для здобувачів першого (бакалаврського) рівня вищої освіти спеціальності 187 «Деревообробні та меблеві технології» . Державний біотехнологічний ун-т. – Харків : ДБТУ, 2022. – 113 **с.**

Наведено автентичні тексти за тематикою, пов’язаною з деревообробними та мебельними технологіями та вправи, спрямовані на формування лексичного запасу здобувачів, закріплення граматичних знань та розвиток фахової усної та письмової комунікації.

Призначено для здобувачів першого (бакалаврського) рівня вищої освіти спеціальності 187 «Деревообробні та меблеві технології» .

Державний біотехнологічний
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MODULE 1

TREE

UNIT 1

1.Read and translate the text. Learn the active vocabulary of the lesson.

tree (n)	— дерево
stem (n)	стовбур, стебло
trunk (n)	— стовбур
shrub (n)	— чагарник, кущ
stand (n)	— деревостан
species (n)	вид, порода
herb (n)	— трава
survey (n)	— дослідження
protect (v)	— захищати
topsoil (n)	— верхній шар ґрунту
branch (n)	— гілка
solidify (v)	— тверднути
drought (n)	— посуха
removal (n)	— усунення, переміщення
leaf (n)	— листок
determine (v)	— визначати

Word-combinations:

tropical region	тропічний регіон
mountain elevation	гірське підвищення
heavy rain	сильний дощ

TREE

Tree is a woody plant with a distinct main stem or trunk. At maturity, trees are usually the tallest plants, and their height and single main stem differentiate them from shrubs, which are shorter and have many stems. Trees are perennials, plants that live for at least three years. Some species of trees only grow to 4 m in height, but the tallest species may reach heights of more than 112 m. The largest trees, however, are not necessarily the oldest. Trees grow throughout the world, from the extreme cold regions near the Arctic and the Antarctic to the hot tropical regions around equator. They grow in both rich and poor soil, in deserts and swamps, along shores, and at mountain elevations of several thousand feet. Although trees may grow singly, under natural conditions they more often grow in stands, which consist either of one species or of a mixture of species.

A forest is a plant community made up of the trees, shrubs, and herbs that covers an area. Throughout much of North America, forests include only a few species of trees. In tropical forests, however, large numbers of different species can be found in very small areas. A survey of 1-hectare plot in the Brazilian rain forest determined that it contained 476 tree species.

Perhaps the most important ecological function of trees is protecting the land against erosion and wearing away the topsoil due to wind and water. The trunks and branches of trees provide protection from the wind, and tree roots help solidify soil in times of heavy rain. In addition, trees and forests store water reserves that act as buffers for the ecosystem during periods of drought. In many areas the removal of forests has resulted in costly floods and subsequent droughts.

Trees and forests also provide habitat, protection, and food for many plant and animal species. In addition, they play an important role in global climate and atmosphere regulation – the leaves of trees absorb carbon dioxide in the air and produce oxygen that is necessary for life.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

woody plant, main stem, trunk, to differentiate, shrub, extreme cold regions, rich and poor soils, deserts and swamps, mixture of species, plant community, against erosion, wearing away the topsoil, to contain, to protect land, wind and water, to branch, to solidify soil,

heavy rain, to provide habitat, protection and food, atmosphere regulation.

III. Complete the gaps with the suitable word from the box.

trees, leaves, plant, soil, main, nutrients, damage, branches,

A tree is a tall … with a trunk and branches made of wood. … can live for many years. The four main parts of a tree are the … roots, the trunk, the branches and the … . The roots are in the … . The trunk is the … body of the tree. The trunk is covered with bark which protects it from … . … grow from the trunk. The leaves take in sunlight and use … and food from the roots to make the tree grow to reproduce.

IV. Complete the following sentences with the correct form of the word:

1. Wood (n) / Woody (adj)

1. We went for a walk in the … .
2. The garden was overgrown with … plants such as hawthorn and bramble.

2. Plant (v) / Plant (n) / Plantation (n)

1. Bees pollinate the … by carrying the pollen from one flower to another.
2. They … a lot of fruit-trees in the orchard.
3. The … of pine trees covers a great territory in the region.

3. Determine (v) / Determination (n)

1. Eye colour … genetically … .
2. The team has great … to win.

4. Protect (v) / Protective (adj) / Protection (n)

1. Forests … soil from erosion.
2. I keep my computer printer under a … plastic cover.
3. He fights for the … of environment.

5. Adapt (v) /Adaptation (n)

1. When a species develops special traits to better survive in a particular environment, this is called … .
2. The rapid rate of climate change may overcome the natural ability of forest ecosystems to ….

6.Measure (v) / measurement (n) / measuring (ger)

1. This book describes the principles of modern forest … .
2. With increased interest in green infrastructure has come increased interest in ... the benefits of the urban *forest.*
3. There is special equipment to … the length of trees.

V. What parts of speech do the following words belong to?

Singly, necessary, necessarily, grow, growth, mix, mixture, tropical, determine, determination, importance, important, ecology, ecological, differ, different, climate, climatic, regulate, regulation, Antarctic, elevate, elevation, add, addition.

VI. Put the verbs in brackets in Present Perfect or Past Perfect Tenses.

1. We already (to define) the meaning of this term.
2. The forester (to measure) forest size before the committee arrived.
3. Students from agrarian university (to plant) a lot of deciduous trees so far.
4. After the children (to spend) hours playing and exploring in the forest around the camp they went swimming.
5. Within the last twenty years these two main branches (to grow) more and more apart.
6. Our local ecosystem is in danger because builders (to destroy) the forests, leaving the animals without shelter.
7. For the last 5 years people (to cut) down a lot of forests in our area.
8. By 2015 a lot of different living organisms (to live) in this habitat.
9. We (not to understand) the consequences of our harmful activities yet.
10. By the time the project started our scientists (to explore) the diversity of plant and tree species in the forests.

VII. Fill in the gaps below with a suitable preposition:

against	of	in	during	for

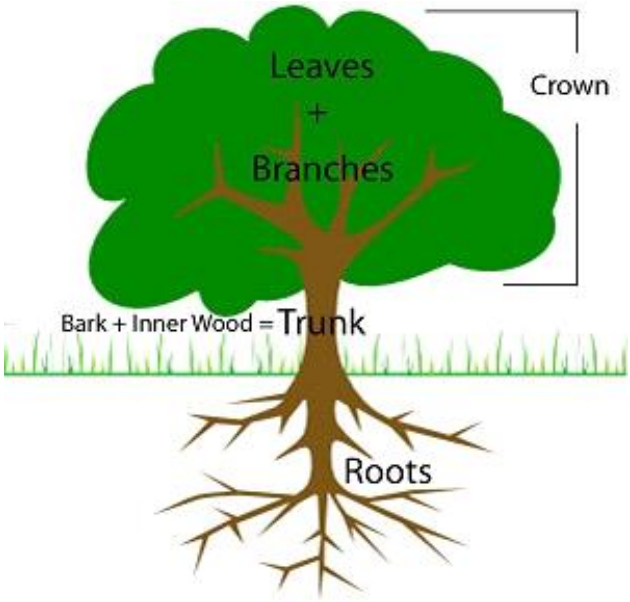
1. A forest is a plant community made up … the trees, shrubs and herbs.
2. Forests provide habitat, protection and food … many plants and animals.
3. The most important ecological function of trees is protecting the land … erosion.
4. … many areas the removal of forests has resulted … costly floods and subsequent droughts.
5. Trees and forests store water reserves that act as buffers for the ecosystem … periods of drought.

VIII. Translate into English using different tense forms in Active and Passive Voice.

1. Багато дерев було висаджено навколо школи цього року.
2. Наступного року кількість висаджених дерев у дендрологічному парку буде збільшена.
3. Студенти факультету лісового господарства зараз вирубують старі дерева.
4. Дерева – це багаторічні рослини, які живуть три і більше років.
5. Найвищі дерева досягають висоти сто і більше метрів
6. Верхній шар ґрунту був змитий через сильні дощі.
7. Ліси страждають від багатьох шкідників та хвороб.
8. Гілки сосни були пошкоджені сильним вітром.

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Speak about tree structure using the following picture.



X. Make up questions for the following answers concerning the tree.

1. A: ……..…
B: Trees are perennials, plants that live three or more years.
2. A: ……
B: The tree height may be different: depending on many factors.
3. A: …….
B: Trees may grow singly or in stands which consist of one or a mixture of species.
4. A: …….
B: A forest is a plant community make up of trees, shrubs and herbs.
5. A: …….
B: The most important ecological function of trees is protecting land against erosion.
6. A: ……..
B: Trees provide habitat, protection and food for many plant and animal species.

XI. Speak about forest as a plant community using the following words and word-combinations:

plant community; to be made up of …; trees and shrubs; herbs covering the area; to contain tree species; the ecological function of trees; to protect land against erosion; trunk and branches of a tree; to solidify soil; to store water reserves; to provide habitat, protection and

food; to play an important role in global climate and atmosphere regulation.

UNIT 2

I. Read and translate the text. Learn the active vocabulary of the lesson.

seed (n)	—насінина
flower (n)	—квітка
growth (n)	—ріст
anchor (v)	—закріплювати(*ся*)
nutrient (n)	—поживна речовина
internal (adj)	—внутрішній
external (adj)	—зовнішній
pine (n)	—сосна
maple (n)	—клен
taproot (n)	-- стрижневий корінь
meristem (n)	—меристема
cell (n)	—клітина
tissue (n)	—тканина
replace (v)	—заміняти
oak (n)	—дуб
willow (n)	—верба
female (adj)	—жіночий
pollen (n)	—пилок
male (adj)	—чоловічий
tassel (n)	—китиця, кисточка

Word-combinations:

reproductive structure	репродуктивна структура
male (female) flower	чоловіча (жіноча) квітка

MAJOR PARTS OF A TREE

The major parts of a tree are its roots, trunk, leaves, flowers, and seeds. These components play a vital role in a tree's growth, development, and reproduction. Trees are held in place by anchoring

organs called roots. In addition to anchoring the tree, roots also absorb water and minerals through tiny structures called root hairs. From the roots the water and mineral nutrients are carried upward through the wood cells to the leaves. Although the internal structure of most kinds of roots is similar, there are often external differences. Pines, for example, have a strongly developed taproot, or main root, in addition to branching side roots. In maples, on the other hand, there is little or no central taproot, and the other roots are produced in great numbers near the surface of the soil.

Roots grow constantly, and at the growing tip of each root is a region called the meristem, which is composed of special rapidly dividing cells. Just behind the meristem the cells become elongated, and farther from the tip the cells become differentiated into various kinds of plant tissue. In rapidly growing roots the root tip is covered by a root cap, a protective coat of loose cells that are constantly being rubbed off and replaced as the root grows.

All angiosperms bear flowers, the trees' reproductive structures. In some trees, such as dogwoods, cherries, and some magnolias, the flowers are large and colourful. Oaks, willows, and other temperate forest trees, on the other hand, often bear small, pale, and inconspicuous flowers.

In maples and many other trees the male and female reproductive parts are carried in separate flowers on the same tree. This arrangement is known as monoecism, and such trees are called monoecious. In oaks, for example, the male pollen-producing flowers are borne in long hanging tassels, and the short-stalked or stalkless female flowers are located on the twigs. In some trees, such as the hollies and willows, the male and female flowers are borne on separate trees.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

major parts, flower, seed, to call, to absorb water and minerals, internal structure, taproot, main root, the surface of the soil, the growing tip of the root, dividing cells, plant tissue, oak, pine, maple, cherry, dogwood, willow, reproductive parts, pollen-producing flowers, tassels, separate trees, meristem, to branch.

III. Match the words having the opposite meaning:

Internal	big
Tiny	external
Upward	inconspicuous
Conspicuous	downward
Male	long
Short	female
Rapidly	die
Grow	slowly
Similar	different

IV. Read and translate these words, underline the suffixes, define a part of speech the words belong to:

grow – growth – growing – grower
differ – different – differentiate
protect – protective – protection – protector
improve – improvable – improved – improvement
produce – producer – productive
develop – development – developing – developed
add – addition – additive – additional
compose – composition – composite
separate – separation – separated
consider – considerable – considerably – consideration

V. Use the following verbs to make your own sentences in Present Perfect, Present Perfect Continuous, Past Perfect, Past Perfect Continuous, Future Perfect and Future Perfect Continuous.

plant	Grow	study	survive
classify	Affect	define	adapt
destroy	Absorb	change	interact

VI. Match the parts of the sentences:

1. All trees components	a) by anchoring organs called roots.
2. Trees are held in place	b) in addition to branching side roots.
3. Pines have a strongly developed taproot	c) play a vital role in a trees growth, development and reproduction.
4. All angiosperms bear flowers	d) which are called reproductive organs.
5. Oaks and willows bear	e) large and colourful flowers.
6. Cherries and magnolias have	f) are borne on separate trees.
7. Maples have male and female flowers	g) small and pale flowers.
8. In willows the male and female flowers	h) on the same tree.
9. The internal structure of most roots	i) is similar.

VII. Arrange the words to make sentences:

1. are /the / trunk /major / parts / of / tree /roots / leaves / flowers /seeds.

2. all / play/ parts /a role /vital / in a tree's / growth / development / and / reproduction.

3. all / bear /angiosperms / flowers/ structures / the / trees'/ reproductive.

4. in / maples / the /male / are/ and / female /on / the /same / tree/ reproductive / parts /carried / in /separate / flowers.

5. in / hollies / separate / trees /and /willows/ the/ male /and/ female / flowers / are / borne / on /.

6. in / dogwoods /cherries / and / colourful / magnolias / the / are / flowers /large / and /.

VIII. Translate into English using Passive Voice.

1. Дерева утримуються у ґрунті за допомогою коріння.

2. Вода та мінеральні речовини всмоктуються кореневими волосками.

3. Меристему утворюють клітини, які швидко діляться.

4. У деяких дерев чоловічі і жіночі квіти розміщуються на одному дереві.

5. У верби жіночі і чоловічі квітки розміщуються на різних деревах.

6. Квітки вишні запилюються бджолами.

7. Багато сухих дерев були зрубані у нашому лісі

8. Хвойні ліси у цій частині країни будуть відновлені у найближчому майбутньому.

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Answer the following questions:

1. What are the main parts of a tree?
2. What is the main function of a root (leaves, flower)?
3. What types of roots do you know?
4. What is the difference in pine and maple roots?
5. How can you define the term “meristem”?
6. What is the reproductive tree organ?
7. What trees have male and female flowers on the same tree?
8. How are male and female flowers borne in willows (oaks)?

X. Dwell on the structure of a tree. Describe the functions of a trunk, root, leaf and a flower using the active vocabulary of the lesson.

UNIT 3

I. Read and translate the text. Learn the active vocabulary of the lesson.

bark (n) — кора (дерева)
protective (adj) — захисний
texture (n) — текстура
thickness (n) — товщина
identify (n) — визначати
outer (adj) — зовнішній
birch (n) — береза
transport (v) — переносити
solution (n) — розчин

phloem (n)	— флоема
xylem (n)	— ксилема
cambium (n)	— камбій
layer (n)	— шар
heartwood (n)	— серцевина
sapwood (n)	— заболонь
slough off (v)	— відшаровуватися
pith (n)	ядро, серцевина

Word- Combinations:

living cell	жива клітина
bark layer	шар кори

TREE TRUNK

Bark is the outer protective covering of a tree trunk. Because bark varies so widely in colour, texture and thickness, its characteristics provide one of the most important means of identifying species of trees. Most of the total thickness of bark consists of outer bark, which is made up of dead cells. Outer bark may be very thick, as in the cork oak, or quite thin, as in young birches and maples. Openings in the outer bark allow the movement of carbon dioxide and oxygen to and from the inner tissues.

The inner bark layer, called the phloem, consists of a thin layer of living cells. These cells act together to transport food in the form of sugars, which are made in the tree's leaves, through the trunk and stems to other parts of the tree. Phloem cells have thin walls, and their living contents are so interconnected that the sugar solutions can pass easily and rapidly from one end of the plant to the other. As old layers of outer bark are sloughed off, new ones are constantly being added from the inside, where new phloem is always being created.

Most of a tree trunk is occupied by the wood, or xylem layer, which consists almost entirely of dead cells. The living xylem cells, however, act as the tree's plumbing system by transporting water and dissolved food through the trunk and stems.

A layer of cells called the cambium separates the living xylem cells from the phloem. As the tree grows and develops, the cambium forms new phloem and xylem cells. The layers of xylem cells form rings; these rings can be counted to determine the age of a tree in areas with distinct growing seasons.

In young trees the center of the woody column, inside the xylem, consists of soft thin-walled cells called the pith. The pith serves as a storage tissue for sugars and later as a reservoir for wastes. In older trees the pith is crushed by the xylem's woody tissue, and wastes are simply deposited in the wood cells near the center of the trunk. As a result, in some trees the cells within the pith become dark in colour and form what is often called the heartwood. The lighter cells around them make up the sapwood.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

I. Give Ukrainian equivalents to the following words and word-combinations:

birch; maple; solution; to identify species of trees, carbon dioxide, cork oak, inner tissue, to be interconnected; to be occupied; to transport, to dissolve food; a layer of cells; to separate; to form new phloem; xylem cells; to determine the age; thin-walled cells; to serve; woody in tissue; to become dark; heartwood; sapwood; trunk; stem; growing season.

III. Complete the gaps with the suitable word from the box.

protects, layer, bark, cells, tree, roots, cambium, growth, produces

The trunk of a … is composed of several basic parts. The … of a tree is probably one of the most familiar parts of a tree. The bark is an outer covering of dead tissue which … the tree from weather, diseases, insects, etc. The next … inside the bark is called the phloem. It is a thin layer of living … which is responsible for transporting food around the

tree. Large amounts of sugar travel along the phloem to the … . The next portion of the trunk is called the vascular … . The cambium is a very thin layer of living tissue which … new phloem to its outside and new xylem to its inside. The cambium is the most active in spring and early summer when most tree … takes place.

IV. Complete the table to make word-families. In case there is no corresponding derivative put a No sign.

Noun	Verb	Adjective	Adverb
		protective	
form			
		important	
			constantly
	Occupy		
	Move		
			rapidly

V. Complete the following sentences with the correct form of the word:

1. *Protect (v) / Protective (adj) / Protection (n)*
2. Bark is the outer … covering of a tree trunk.
3. He studies at the plant … faculty of our University.
4. Trees stands … land against erosion.

2. Separate (v) / Separation (n)

1. A layer of cells called the cambium … the living xylem cells from the phloem.
2. This genetic … into 2 groups was clear when working with the complete set of 306 plants.

3. *Colour (v) / Colour (n) /Colourful (adj)*

1. Her garden is a vivid display of summer … and my mum is delighted in having the time to enjoy it.
2. The foliage will not … well if the soil is too rich.
3. The company produces hand-made chocolates in bright … wrapping.

4. Develop (v) / Development (n)

1. As the tree matures, it well … into a fine spreading type.
2. These green industries can not only create more jobs but also promote sustainable … of the land.

5. Connect (v) / Connection (n)

1. All the buildings … by underground passages.
2. She replaced the receiver before the … .

VI. Change the following sentences from Active into Passive Voice.

1. Dead cells of the bark make up the outer bark.
2. The wood occupies the most part of a tree trunk.
3. Cambium separates the living xylem cells from the phloem.
4. They have already planted a lot of trees in their orchard.
5. He solved a difficult problem yesterday.
6. They will analyze all the data in their diploma work.
7. They are writing their test now,
8. The students had passed their exams by the end of December.
9. A root absorbs water and minerals from the soil.

VII. In the text find the sentences in Passive Voice and translate them into Ukrainian. Define the tense used.

VIII. Translate into English using the active vocabulary of the lesson.

1. Стовбур – найголовніша частина дерева при виробництві лісоматеріалів.
2. Стовбур приєднується до коріння своєю нижньою частиною і одночасно підтримує гілки.
3. Поверхня стовбура вкрита корою.
4. Кора дерева – зовнішня частина стовбура, яка відділена від центральної частини камбієм.
5. Кора дерева бере участь у диханні дерева і захищає його внутрішні шари від зовнішніх впливів та шкідників.
6. Камбій – шар живих клітин, які постійно діляться, завдяки чому забезпечується зростання дерева у товщину.
7. Ядро є наймічнішою та найціннішою частиною деревини. Воно утворюється відмерлими клітинами.

8. Серцевина розміщена в центрі стовбура і формується протягом першого року життя.

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Speak about bark basing on the following verb schemes:

… is the outer protective covering …
… consist of outer bark …
… is made up of …
… may be very thick …
… allow the movement of …
… consist of a thin layer …
… act together to …
… have thin walls …
… are sloughed off …
… are constantly being added from …

X. Dwell upon the wood of the tree using the following words and word-combinations:

xylem layer, dead cells, tree's plumbing system, to transport water and dissolved food; though trunk and stems, cambium, level cells, phloem, xylem cells, to form rings; to determine the age; pith; to serve as; storage tissue; reservoir for wastes; woody tissue; to become dark in colour; heartwood; sapwood.

MODULE 2

WOOD

UNIT 1

1. Read and translate the text. Learn the active vocabulary of the lesson:

abundant (adj)	рясний, багатий
versatile (adj)	універсальний, різнобічний
serviceability (n)	застосування
lumber (n)	пиломатеріали
plywood (n)	фанера

pulp (n)	целюлоза
convey (v)	передавати
dissolve (v)	розчиняти(ся)
species (n)	вид, різновид
gymnosperms (n)	голонасінні
softwoods (n)	хвойні породи
angiosperms (n)	покритонасінні
hardwoods (n)	листяні породи
oak (n)	дуб
beech (n)	бук
spruce (n)	ялина, смерека
teak (n)	тик
balsa (n)	бальза
yew (n)	тис
sustainably (adv)	стабільно
exhaust (v)	вичерпувати, виснажити
consumption (n)	споживання
exceed (v)	перевищувати, перевищення
fuel (n)	паливо
paperboard (n)	картон
deforestation (n)	знелісснення
depletion (n)	виснаження (ресурсів)
anticipate (v)	передбачати
support (n) (v)	підтримка. підтримувати

Word- combinations:

utilization of wood	використання деревини
environmental toll	екологічний збиток
raw material	сировина
renewable resource	відновлюваний ресурс
basic subsistence	прожитковий мінімум
driving force	рушійна сила
reforestation program	програма лісовідновлення

WOOD PRODUCTION AND CONSUMPTION

Wood is one of the most abundant and versatile natural materials. As a material, wood has been in service since humans appeared on

Earth. Today, in spite of technological advancement and competition from metals, plastics, cement, and other materials, wood maintains a place in most of its traditional roles, and its serviceability is expanding through new uses. In addition to well-known products such as lumber, furniture, and plywood, wood is the raw material for wood-based panels, pulp and paper, and many chemical products. Finally, wood is still an important fuel in some parts of the world.

In botanical terms, wood is part of the system that conveys water and dissolved minerals from the roots to the rest of the plant, stores food created by photosynthesis, and furnishes mechanical support. It is produced by an estimated 25,000 to 30,000 species of plants, including herbaceous ones, though only 3,000 to 4,000 species produce wood that is suitable for use as a material. Wood-producing forest trees and other woody plants are of two categories: gymnosperms and angiosperms.

Gymnosperms, or cone-bearing trees, produce softwoods, such as pine and spruce, and angiosperms produce temperate and tropical hardwoods, such as oak, beech, teak, and balsa. It should be noted that the distinction implied by *hardwood* and *softwood* is not true in all cases. Some hardwoods, e.g. balsa are softer than some softwoods, e.g. yew.

Wood is a material of great economic importance. It is found throughout the world and can be sustainably managed as a renewable resource in contrast to coal, ores, and petroleum, which are gradually exhausted. By means of its harvesting in forests, its transportation, its processing in workshops and industries, and its trade and use, wood provides jobs and supports economic development and, in some countries, basic subsistence. Indicative of this importance is the continued high demand for wood and wood products.

On a weight basis, the consumption of wood exceeds by far that of other materials. More than half of roundwood (log) production is consumed as fuel, mainly in less-developed countries. Production of paper and paperboard has shown the most rapid increase among wood products; this trend is expected to continue as consumption per person in the less-developed countries approaches that in the developed nations.

Rising world population is the driving force of increasing consumption of wood and consequent deforestation. The depletion of many forests, especially in the tropics, makes uncertain the provision of an adequate wood supply to satisfy the anticipated need. Efforts to stop

the reduction of Earth's forest cover and increase the productivity of existing forests, establishment of extensive reforestation programs and plantations of fast-growing tree species, recycling of paper, and improved utilization of wood through research could ease the problem of wood supply and help to lessen the environmental toll of the lumber industry.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

versatile natural materials, less-developed countries, wood supply, extensive reforestation, increasing consumption, to satisfy the need, rapid increase, basic subsistence, establishment, gradually to exhaust, coal and different ores, wood processing industry, high demand, competition, temperate forests, serviceability, to provide jobs, harvesting wood, in addition.

III. Give English equivalents to the following words and word-combinations:

незважаючи на конкуренцію, найбільш стрімке зростання, швидкорослі породи дерев, лісистість Землі, продуктивність існуючих лісів, паливо, деревообробна промисловість, достатнє забезпечення деревиною, відновлюваний ресурс, попит на деревину та вироби з неї, по всьому світу, економічне значення, фанера, меблі, сировина, виснаження (ресурсів), пиломатеріали, дуб, бук, береза, хвойні дерева, листяні ліси.

IV. Complete the gaps with the suitable word from the box.

plant, leaves, difficult, soak up, roots, trunk, contains, wood

Wood and water

Why does … absorb water? Remember that the … of a tree is designed to carry water from the … to the leaves: it's pretty much a water superhighway. A freshly cut piece of "green" wood typically … a huge amount of hidden water, making it very … to burn as firewood

without a great deal of smoking and spitting. Some kinds of wood can … several times their own weight of water, which is absorbed inside the wood by the very same structures that transported water from the roots of the tree to the … when the tree was a living, growing … .

V. Match the words having the opposite meaning:

sustainable	to consume
gradually	dry
to increase	scarce
rapid	sharply
hardwoods	to emit
abundant	to reduce
to absorb	unstable
to create	slow
raw	softwoods

VI. Transform the following sentences from Present Continuous into Present Perfect Tense.

1. The workers are felling the old trees on the far site at the moment.
2. The consumption of wood is currently increasing greatly.
3. The students of Forestry faculty are actively planting the young pines in the dendrological park now.
4. Right now my groupmate is making his speech at the student conference on the problem of protecting rainforests.
5. The forester is marking the old trees to be removed from the forest.
6. Have a look! A special machine is debarking and chipping very big trees here.
7. The students of our group are just having their practical training at the sawmill.
8. The workers of the sawmill are just sorting out the logs according to their length.

DEVELOP YOUR COMMUNICATIVE SKILLS

VII. Make up questions for the following answers concerning wood:

1. A: …….
   B: Metals, plastics, cement, and other materials are the competition for wood.
2. A: …….
   B: Well-known wood products are furniture, plywood, paper, pulp, particleboard, etc.
3. A: …….
   B: Because wood is a renewable resource in contrast to coal, ores, and petroleum, which are gradually exhausted.
4. A: …….
   B: More than half of roundwood (log) production is consumed as fuel mainly in less-developed countries.
5. A: …….
   B: Rising world population is the driving force of increasing consumption of wood and consequent deforestation.

VIII. Speak about the ways to stop the reduction of the Earth's forest cover according to the plan;

a) increase of productivity of existing forests;
b) establishment of extensive reforestation programs;
c) creating the plantations of fast-growing tree species;
d) recycling wood products;
e) improving utilization of wood through research.

IX. Speak about wood as an important material. Describe the wood products and their consumption using the active vocabulary of the lesson.

UNIT 2

1.Read and translate the text. Learn the active vocabulary of the lesson:

detach (v)	відокремлювати(ся)
inseparably (adv)	нерозривно
pulpwood (n)	деревина для виробництва целюлози
poplar (n)	тополя

dimension (n)	розмір, вимір
determine (v)	визначити
ripening (ger)	дозрівання
vulnerable (adj)	вразливий
favourable (adj)	сприятливий
consideration (n)	розгляд, предмет розгляду
processing (ger)	переробка
stump (n)	пень
remove (v)	видалити, вилучити
delimbing (ger)	обрізання сучків
log (ger)	колода
debarking (ger)	окорювання
chipping (ger)	відколювання
sawmill (n)	лісопилка
handle (v)	обробляти
eventually (adv)	зрештою
application (n)	застосування
temperate (adj)	помірний
mainly (adv)	переважно
facility (n)	об'єкт, установа
otherwise (adv)	інакше
avoid (v)	уникати

Word- combinations:

harvesting wood	заготівля деревини
intended use	цільове використання
nesting bird	птах, що гніздиться
to fell trees	рубати (валити) дерева
selective cutting	вибіркова рубка
logging residues	порубкові рештки
storage yard	складська ділянка
felling site	лісосіка

HARVESTING WOOD (PART I)

Harvesting wood differs radically from harvesting other crops. The yearly growth of each individual tree cannot be detached from the living plant. Rather, new wood is added inseparably to preexisting growth until the entire tree is harvested, after a waiting period that

varies widely depending on intended use of the wood—for example, 2–3 years on energy plantations (where biomass is produced as fuel for power generation), 6–8 years for pulpwood (eucalypts), 12–15 years for fast-growing poplar hybrids, 30–50 years for fast-growing pines, and 100 years or more in temperate and tropical forests producing wood of large dimensions.

The season of harvest is not determined by the time of ripening, as it is for agricultural crops, but by such factors as the conditions of work for personnel, machines, and animals, such as nesting birds, and the danger of damage to the remaining forest and to the harvested wood.

Because felled trees are vulnerable to attack by fungi and insects, the harvest may be timed to avoid conditions favourable for these organisms. Time of harvesting becomes a consideration mainly when the felled trees will not be removed quickly from the forest for processing. Otherwise, for example, in the United States harvesting is a year-round activity.

Harvesting includes marking the trees to be removed (in selective cutting), felling and processing the trees, and transportation of the wood from the felling site, or stump area, to a roadside storage site or a central processing yard (landing) in the forest. Processing includes top removal (topping), delimbing, crosscutting into logs (bucking), debarking, and sometimes chipping undesirable trees or logging residues. Processing may be done totally or partially in the forest; in the latter case, the remaining work is completed in a sawmill or other woodworking facility.

Felled trees are handled by one of three harvesting systems: shortwood, longwood (or tree-length), or whole-tree. In harvesting, trees are completely processed (except perhaps for debarking) at the felling site; the logs are then transported to a storage yard or site and eventually to the factory where, if needed, they are debarked by machine. In longwood harvesting, the trees are only topped and delimbed at the felling site; the resulting long logs are then transported to the factory to be debarked and bucked. The whole-tree system omits processing at the felling site; topping and delimbing are done in a central processing yard, and debarking and bucking are performed either there or at the factory. In general, the shortwood system has the widest application.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

harvesting wood, marking the trees, sawmill, preexisting growth, fast-growing pines, felling and processing the trees, partially, application, longwood, to be debarked and bucked, storage yard, topping and delimbing, woodworking facility, stump area, the time of ripening, yearly growth, fast-growing, wide application, fuel for power generation.

III. Give English equivalents to the following words and word-combinations:

кардинально відрізнятися, системи рубок головного користування, переробка деревини, довгі колоди, ділянка з пнями (зруб), місце рубки , обрізати верхівку, обрубати сучки, складське приміщення, визначати сезон заготівлі, повністю або частково, транспортування деревини, паливо, цілорічна діяльність, робота, що залишилася.

IV. Complete the gaps with the suitable word from the box:

species, maturity, biomass, selectively, animal, damaging, bark, lumber

Planted trees may be grown according to a precise plan and clear-cut (the entire forest is felled) when they reach … . A drastic approach like that makes sense if the trees are a fast-growing … planted specifically for use as … fuel, for example. Individual trees can also be … felled from mixed forests and either dragged away by machine or … or even (if it makes economic and environmental sense) hauled upward by helicopter, which avoids … other nearby trees. Sometimes trees have their … and small branches removed in the forest before being hauled away to a … yard for further processing,

V. Match the parts of the sentences:

1. Harvesting includes…	a) by one of three harvesting systems.
2. Felled trees are handled…	b) by such factors as the

	conditions of work, machines, animals, nesting birds, etc.
3. Felled trees are vulnerable…	c) processing at the felling site.
4.The season of harvest is determined…	d) from harvesting other crops.
5. Processing includes …	e) marking the trees to be removed.
6. The whole-tree system omits …	f) is a year-round activity.
7. Harvesting wood differs radically …	g) site and eventually to the factory.
8. In the United States harvesting …	h) top removal, delimbing, crosscutting into logs, debarking, and sometimes chipping of undesirable trees.
9. The logs are then transported to a storage yard or …	i) depending on intended use of the wood.
10. A waiting period varies widely …	j) to be attacked by fungi and insects.

VI. Fill in the gaps below with a suitable preposition:

From	of	by	for	to	according to

1. The logs are then transported to a storage yard where, if needed, they are debarked … a special machine.
2. Felled trees are handled by one … three harvesting systems.
3. Long logs are then transported … the factory.
4. The harvest may be timed to avoid conditions favorable … some harmful organisms.
5. Planted trees may be grown … a precise plan.
6. Felled trees will be removed quickly … the forest to the special facilities for processing.

VII. Transform the sentences from Active into Passive Voice.

1. Special machines transport the logs to a storage yard or site and eventually to the factory.
2. Wood specialists mark the trees to be removed from the forest.
3. The workers omit processing the whole trees at the felling site.
4. Foresters grow some certain tree species for biomass as fuel for power generation.
5. Some fungi, insects and harmful microorganisms attack the vulnerable felled trees.
6. Such factors as the conditions of work for personnel, machines, animals, nesting birds and the danger of damage to the remaining forest determine the harvesting period.

VIII. Find the sentences in the text with Passive Voice and translate them into Ukrainian. Define the tense used.

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Answer the following questions to the text:

1. What does the waiting period for harvesting wood depend on?
2. What factors is the harvesting time determined by?
3. Why are fungi and other harmful organisms dangerous for felled trees?
4. What is “selective cutting”?
5. What does wood processing include?
6. Is processing always done totally in the forest?
7. Where are the long logs usually debarked?
8. Which of the three harvesting systems has the widest application?

X. Speak about harvesting wood according to the following plan:

a) different waiting periods for harvesting wood;
b) the factors to determine the harvesting season;
c) the stages of harvesting wood;
d) felled trees are handled by one of three harvesting systems;

e) the main kinds of processing trees.

UNIT 3

1.Read and translate the text. Learn the active vocabulary of the lesson:

hammer (n)	молоток
accomplish (v)	здійснювати, виконувати
handsaw (n)	ручна пила
angular (n)	кутовий, кутовий
strip (n)	смуга. стрічка
bucking (ger)	згинання, вигинання
ax (n)	сокира
spud (n)	інструмент для окорювання
skidding (ger)	занесення
available (adj)	доступний, наявний
shears (n)	ножиці
carry out (v)	здійснювати, проводити
feller (n)	лісоруб, дроворуб
landing (n)	ділянка, майданчик
bunch (n)	пучок, купа
feller-skidder (n)	трелювальник деревини
portable (adj)	портативний, переносний
prune (v)	обрізати, підрізати
bundle (n)	пучок, зв’язка
complete (adj) (v)	повний, завершати
perform (v)	виконувати, здійснювати
restrict (v)	обмежувати
clear-cutting (ger)	суцільна рубка
adverse (adj)	несприятливий
consequence (n)	наслідок
impact (n) (v)	вплив, впливати
biodiversity (n)	біологічне різноманіття
chisel (n)	долото, зубило

Word- combinations:

chain saw	бензопила
circular saw	циркулярна пила

to pile the logs	укладати колоди в штабелі
skidding operations	трелювальні роботи
crawler equipment	гусенична техніка
cable systems	кабельні системи
water jets	водяні струмені
carbon sequestration	поглинання вуглецю

HARVESTING WOOD (PART II)

Marking trees is done with a branding hammer or paint. Felling is commonly accomplished by chain saw; ax and handsaw are seldom used today. The standard technique for felling is to make an angular front cut, or undercut, on the side of the tree in the chosen direction of felling and then to saw a back cut so that the narrow strip of wood left between undercut and back cut breaks when the tree falls. The chain saw is also used for delimbing and bucking, and debarking is sometimes done in the forest by ax or spud (a combination of spade and chisel).

In various forests of the world, animals such as horses, mules, oxen, and elephants are employed for skidding (dragging) the wood from the felling site to a concentration yard.

In contrast to the labour intensiveness of such traditional harvesting, a great variety of machines are available for all the above operations. Felling machines (fellers) are equipped with shears, chain saws, or circular saws; they are usually employed on small-diameter trees (e.g., for pulpwood), but larger machines are available for trees up to about 50 cm (20 inches) in diameter.

Some machines are specialized to perform separate operations such as delimbing or debarking, whereas others carry out combined operations. Harvesters combine felling, delimbing, and bucking; the logs are then loaded on forwarders for transport to a landing. Processors top, delimb, and bunch felled trees and pile the logs after the trees are bucked. Feller-skidders combine felling and skidding operations.

Chippers can chip whole trees and load the chips into trucks or trailers. Also available are portable debarkers and portable machines called tree monkeys that can delimb (actually prune) and debark standing trees.

Mechanical transportation is by wheeled or crawler equipment, by cable systems, and seldom by helicopter or giant balloon. In cable

systems (also called skyline systems) the logs are transported while lifted partially or wholly off the ground.

Pulpwood logs are sometimes bundled at the felling site and transported on trailers to storage yards or directly to pulp mills. Loading is generally mechanized. If an operation, such as bucking or debarking, is not completed in the forest, it is performed in the factory by stationary machines or, in the case of debarking, by water jets.

Mechanization of harvesting is the trend, but regions of small annual yield and unfavourable topography restrict the potential of expensive machines, and in many countries human and animal labour is still commonly used. High mechanization in combination with extensive clear-cutting has very adverse environmental consequences, both in terms of carbon sequestration and in terms of the impact on biodiversity.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

branding hammer, a paint, felling site, impact on biodiversity, unfavourable topography, to load the chips into trucks, portable debarkers, to bunch felled trees, to transport logs on trailers, water jets, to perform separate operations, by chain saw, narrow strip of wood, for delimbing and bucking, circular saw, equipment, annual yield, storage yard, carbon sequestration, extensive clear-cutting.

III. Give English equivalents to the following words and word-combinations:

екологічні наслідки, вплив на біорізноманіття, несприятливий рельєф, целюлозні заводи, обрізка сучків і раскряжевка, гусенична техніка, гігантська повітряна куля, складські приміщення, суцільна вирубка, обмежити потенціал, несприятливі наслідки, завантажити тріску у вантажівки, вертоліт, частково або повністю, скласти колоди в штабель.

IV. Match the following terms with their definitions:

1. chain saw	a) a mechanical vehicle that drags the logs from the felling site to the store yard

2.	log	b) a mechanical power-driven cutting tool with teeth set on a chain which moves around the edge of a blade.
3.	crawler	c) a power saw with a rapidly rotating toothed disk.
4.	shears	d) a piece of a tree used as lumber
5.	circular saw	e) to trim (a tree, shrub, or bush) by cutting away dead or overgrown branches or stems, especially to increase fruitfulness and growth.
6.	portable	f) a cutting instrument in which two blades move past each other, like scissors but typically larger.
7.	to prune	g) a large, heavy motor vehicle used for transporting goods, materials, or troops.
8.	truck	h) able to be easily carried or moved, especially because being of a lighter and smaller version than usual.
9.	biodiversity	i) logging residues, the remaining product of processing the wood
10.	chips	j) the variety of life in the world or in a particular habitat or ecosystem.

V. Arrange the words to make a sentence.

1. logs / bundled / sometimes / the felling / pulpwood / are/ at /site.
2. adverse / mechanization / high / extensive / and / has / very / environmental / clear-cutting / consequences.
3. dragging / horses/ such / animals / employed / as / mules / and / elephants / are / for / the wood / oxen.
4. used /delimbing / saw / the chain / bucking / is / also / for / and.
5. with / hammer / branding / trees / is /done/ a / paint/ marking/ or.

VI. Fill in the gaps below with a suitable preposition:

of	for	On	with	into

1. We depend … forests for our survival, from the air we breathe to the wood we use.
2. Forest products are a vital part … our daily lives in more ways than we can imagine.
3. Forests provide jobs ... more than 13 million people across the world.
4. Many our activities directly or indirectly involve forests. Some are easy to figure out while others are less obvious, such as by-products that go … everyday items like medicines, cosmetics and detergents.
5. Forests provide us … shelter, livelihoods, water, food and fuel security.

VII. Translate into English using modal verbs:

1. Ви можете допомогти мені скласти план подальших заходів? - Так, можу, бо це моя робота.
2. Чи слід мені звертатися до викладача за допомогою?
3. Ти повинен зробити це самостійно. Це – твій обов'язок.
4. Вона змушена зробити прибирання сьогодні, бо завтра вона чекає гостей.
5. Президент має відвідати Польщу наступної середи.
6. Тобі слід відвідати стоматолога, він зможе тобі допомогти.
8. Я не зміг прийти до тебе вчора, бо був дуже зайнятий на роботі.
9. Можна мені поставити вам запитання? - Ні, не можна.
10. Концерт мав початися о восьмій, але артисти запізнилися.
11. Ми мали зустрітися біля університету, але почався дощ і я змушений був змінити наші плани.
12. Я зможу закінчити цю статтю тільки завтра.
13. Їй слід пробачити йому, він змушений був це зробити.

DEVELOP YOUR COMMUNICATIVE SKILLS

VIII. Make up questions for the following answers.

1. A: …….
B: Marking trees is done with a branding hammer or paint.
2. A: ……
B: An ax and a handsaw are seldom used today.
3. A: …….
B: In various forests of the world, animals such as horses, mules, oxen, and elephants are employed for skidding (dragging) the wood.
4. A: …….
B: Portable debarkers and portable machines that can delimb (actually prune) and debark standing trees are called «tree monkeys».
5. A: …….
B: Harvesters combine felling, delimbing, and bucking.
6. A: ……..
B: In contrast to the labour intensiveness of such traditional harvesting, a great variety of machines are available for all the operations.

IX. Make up a summary to the text.

MODULE 3

USE OF WOOD

UNIT 1

1. Read and translate the text. Learn the active vocabulary of the lesson:

primary (adj)	первинний, головний
pole (n)	стовп, жердина
piling, pile (n)	свая
veneer (n)	шпон
plywood (n)	фанера
particleboard (n)	ДСП, деревостружкова плита
fibreboard (n)	ДВП, деревоволокниста плита
pulp (n)	целюлоза, пульпа
intermediate (adj)	проміжний, середній
secondary (adj)	вторинний, другорядний
furniture (n)	меблі
wharf (n)	пристань, причал
fence (n)	огорожа, паркан

treatment (n)	обробка
lumber (n)	пиломатеріали
quality (n)	якість
sawdust (n)	тирса
slab (n)	плита
residues (n)	залишки, рештки
grading (ger)	сортування. оцінювання
acceptable (adj)	прийнятний, припустимий
matches (n)	сірники
rotary-cut (n)	ротаційна різка
clipping (ger)	обрізка, вирізання
chips (n)	стружка

Word- combinations:

mine timber	шахтні лісоматеріали
highway guards	дорожні огородження
surface irregularities	нерівності поверхні
sheet of wood	лист деревини
uniform thickness	рівномірна товщина
tapered saw	конусна пила
wasteful operation	нераціональне використання
rotary-cut veneer	шпон струганий з ротаційним розпилом
the yield of lumber	вихід пиломатеріалів

ROUNDWOOD PRODUCTS, SAWN WOOD AND VENEER

The products of primary mechanical processing of wood are roundwood products (poles and pilings), sawn wood, veneer, plywood and laminated wood, particleboard, fibreboard, pulp and paper. Some products of primary manufacture, such as poles and posts, are used directly, but many constitute intermediate materials that by further processing are turned into secondary products such as furniture, building structures and components, containers, and musical instruments.

Roundwood products. Poles, posts, and certain mine timbers are products in round form. Poles are used in supporting telegraph and telephone lines and as pilings (foundations for wharves and buildings); posts are used in fences, highway guards, and various supports. As a rule, roundwood products are subjected to preservative treatment. The

bark is removed in the forest or factory, and poles and posts are further processed by shaving to remove surface irregularities.

Sawn wood. Lumber is the main sawn wood product. Lumber of large dimensions (more than about 10 cm in width and thickness) and suitable for heavy constructions is called timber. Another important product made by sawing, and sometimes by hewing, is railroad ties.

The yield of lumber in a sawmill varies widely, from about 30 to 70 percent, depending on the types of machines used, the diameter of logs (the larger the diameter, the higher the yield), and the quality of wood (the more defects, the lower the yield). The rest is changed to sawdust, slabs, trimmings, or chips. Residues that cannot be turned into products (usually including bark) are burned to produce energy.

After production the lumber may be treated with a preservative chemical to prevent attack by fungi and insects and is measured (classified according to dimensions), graded, and piled to dry. Grading lumber is usually visual and based on defects.

Veneer. Veneer is a thin sheet of wood of uniform thickness (commonly 0.5–1.0 mm) and sometimes as much as 10 mm.

According to the method of production, it is classified as rotary-cut, sliced, or sawn (produced with a special tapered saw). More than 90 percent of all veneer is rotary-cut, but figured woods producing veneer for furniture and other decorative purposes are sliced. Sawn veneer is seldom produced, because it is a wasteful operation.

After production, the veneer is passed through specialized dryers. Rotary-cut veneer is "clipped," by a guillotine-type knife to remove defects and produce individual sheets of acceptable size. In some modern factories all operations, from handling the logs to cutting, clipping, and drying, are automated by use of computers.

Veneers are used primarily for plywood and furniture, but they are also used in toys, various containers, matches, battery separations, and other products.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

primary mechanical processing, yield of lumber, specialized dryers, residues, particleboard, plywood and veneer, sawn wood, intermediate materials, secondary products, furniture, to prevent attack

by fungi, railroad ties, wharves and buildings, various supports, to remove defects, decorative purposes, matches, sawdust and slabs, visual grading.

III. Give English equivalents to the following words and word-combinations:

круглі лісоматеріали, різні опори, фанера, шпон, сірники, обробка заради збереження, декоративні цілі, сучасні меблі, складати в купу, спеціальна конусна пилка, вихід пиломатеріалів, пиляний шпон, прийнятний розмір, виробляти енергію, ніж гільйотинного типу, сушка, якість деревини, усунути дефекти.

IV. Match the parts of the sentences.

1. Some products of primary manufacture, such as …	a) are products in round form.
2. Lumber of large dimensions and suitable for heavy constructions …	b) poles and posts, are used directly.
3. Poles, posts, and certain mine timbers … are products in round form.…	c) is classified as rotary-cut, sliced, or sawn.
4. Some intermediate materials are turned into secondary products such as …	d) through specialized dryers.
5. According to the method of production, veneer …	e) is called timber.
6. After production the lumber may be treated with a preservative chemical …	f). are burned to produce energy.
7. After production, the veneer is passed …	g) plywood and furniture.
8. Residues that cannot be turned into products (usually including bark) …	h) furniture, building structures and components, containers, and musical instruments.
9. Veneers are used primarily for …	i) are automated by use of computers.
10. In some modern factories all	j) to prevent attack by fungi and

operations, from handling the logs to cutting, clipping, and drying …	insects

V. Complete the gaps with the suitable word from the box.

leaves, tree, rings, cambium, heartwood, sapwood, bark,

Structure of wood

Take a tree and peel off the outer "skin" or … and what you'll find is two kinds of wood. Closest to the edge there's a moist, light, living layer called … packed with tubes called xylem that help a tree pipe water and … up from its roots to its … ; inside the sapwood there's a much darker, harder, part of the tree called the … , which is dead, where the xylem tubes have blocked up with resins or gums and stopped working. Around the outer edge of the sapwood (and the trunk) is a thin active layer called the … where the … is actually growing outward by a little bit each year, forming those famous annual … that tell us how old a tree is.

VI. Complete the sentences with the correct form of Participle I or Participle II.

1. Everybody knows that it is dangerous to stand under a … (to fall) tree.
2. After production the veneer is passed through … (to specialize) dryers.
3. Forest clearing is a … (to grow) problem.
4. According to the method of production veneer is … (to classify) as rotary-cut, sliced or sawn.
5. The yield of lumber in a sawmill varies widely … (to depend) on the types of machines used.
6. Steve stopped … (to realize) that he had lost his way in the forest.
7. We saw a young forester … (to hurry) to the felling site.
8. Poles are used in … (to support) telegraph and telephone lines and as pilings.
9. In some modern factories all operations, from handling the logs to cutting, clipping, and drying are … (to automate) by use of computers.
10. Another important product … (to make) by sawing, and sometimes by hewing is railroad ties.

VII. What derivatives can you give to the following words:

a) thick;

b) process;

c) to preserve;

d) product;

e) special;

f) measure;

g) forest;

h) to create.

DEVELOP YOUR COMMUNICATIVE SKILLS

VIII. Answer the questions to the text "Roundwood products, sawn wood and veneer".

1. What are the products of primary mechanical processing wood?
2. What are the secondary products that are obtained after processing the primary ones?
3. Where are poles and posts used?
4. Why are roundwood products subjected to preservative treatment?
5. What is the main sawn wood product?
6. What kind of lumber is called timber?
7. How are the residues that cannot be turned into products usually used?
8. What kind of wood product is veneer?
9. What is a guillotine-type knife used for?
10. What things are made of veneer?

IX. Translate the following sentences into English using the active vocabulary of the lesson.

1. Деякі продукти первинного виробництва, такі як стовпи та опори, використовуються безпосередньо в різних галузях.

2. Ротаційний шпон "обрізається" ножем гільйотинного типу для видалення дефектів і отримання окремих листів прийнятного розміру.
3. Вихід пиломатеріалів на лісопилці залежить від типів використовуваних машин, діаметра колод і якості деревини.
4. Пиляний шпон виробляють рідко, оскільки це дуже витратне виробництво.
5. Після виробництва шпон пропускають через спеціалізовані сушарки.
6. Після виробництва пиломатеріали обробляють спеціальними хімікатами для запобігання ураження збудниками хвороб та пошкодження комахами.
7. Здебільшого шпон використовується для виготовлення фанери та меблів,
8. Сортування пиломатеріалів, як правило, є візуальним і базується на виявленні дефектів (вад).

UNIT 2

1. **Read and translate the text. Learn the active vocabulary of the lesson:**

plywood (n)	фанера
total (adj)	загальний
odd (adj)	непарний
assemble (v)	збирати(ся)
loading (ger)	завантаження
stack (v)	укладати в штабель
grade (v)	оцінити
advantage (n)	перевага
resistance (n)	стійкість, опір
splitting (ger)	розщеплення
value (n)	значення, вартість,
adaptable (adj)	адаптований, пристосований
curve (v)	викривляти(ся). вигинатися
variety (n)	різноманітність, сорт
beam (n)	балка
possess (v)	володіти

solid (adj)	міцний, твердий
thinness (n)	тонкість
knot (n)	вузол
angle (n)	кут

Word- combinations:

laminated wood	ламінована деревина, ламінат
glued together	склеєні між собою
dimensional stability	стабільність розмірів
exterior siding	зовнішнй сайдинг
sound-insulating	звукоізоляційний
load-carrying members	несучі елементи
to reduce waste	зменшити кількість відходів

PLYWOOD AND LAMINATED WOOD.

Plywood and laminated wood are both made of layers of wood glued together. The basic difference is that in plywood the grain of alternate layers is crossed, in general at right angles, whereas in laminated wood it is parallel.

Plywood. Plywood is a panel product manufactured by gluing one or more veneers to both sides of a central veneer layer. Most plywood is all-veneer. The total number of layers is usually odd (three, five, or more). After the glue is spread, the panels are assembled and brought for pressing, usually in large, multistoried hot presses, where loading is automatic. After pressing, the panels are stacked to cool and then are sanded, graded, and stored. Plywood ranges in thickness from 3 mm for all-veneer to 30 mm (1.2 inches) for lumber-core.

Plywood has many advantages over natural wood; among them are dimensional stability (the primary advantage), uniformity of strength, resistance to splitting, panel form, and decorative value. These characteristics make it adaptable to various uses.

Plywood (and the panel products particleboard and fibreboard) serve in building construction, including walls, floors, roofs, and doors; exterior siding and interior finishing (e.g. wall paneling); furniture; shelving; shipbuilding; automobile manufacture; refrigeration cars; toys; concrete formwork; and many other applications. Special types combine decorative value with thermal- and sound-insulating properties.

In addition to being made into flat panels, plywood is manufactured in curved form (molded plywood), which is used for boats, furniture, and other products.

Laminated wood. Laminated wood is usually built by the parallel gluing of lumber boards in a variety of sizes and shapes according to intended use. The main products are load-carrying members, such as beams and arches.

Laminated wood possesses several advantages over solid wood. It can be used to fabricate large members that are impossible to make from solid wood. The individual boards used in laminated wood, because of their relative thinness, can be properly dried without checking (cracking), and defects, such as knots, can be removed. In addition, because laminated wood is glued, wood of small dimensions can be used, thus reducing waste.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

total number of layers, refrigeration cars, right angle, both sides, in addition, relative thinness, dimensions, impossible, many advantages, multistoried hot press, to cool, uniformity of strength, curved form, concrete, variety of sizes and shapes, intended use, to be properly dried.

III. Give English equivalents to the following words and word-combinations:

стеля, підлога, фанера, розмір та форма, вигнута форма, клей, вилучати, плита, дошка, можливий, неможливий, перевага, недолік, вимір, відносна тонкість, тверда деревина, ламінат, арка, балка, декоративна цінність, загальна кількість, шар, властивості, теплоізоляційний матеріал, однорідність, належним чином, розмір.

IV. Match the words with the same meaning:

to possess	steadiness
dimensions	to compound
to reduce	complete
stability	to sort

to combine	to own
total	features
to grade	to decrease
properties	to produce
to manufacture	measurements

V. Match the following terms with their definitions:

1. odd	a) the ability not to be affected by something, especially adversely.
2. solid	b) a kind of wood material made by the parallel gluing of lumber boards.
3. resistance	c) or part of a building, usually to support the roof or floor above.
4. beam	d) having one left over as a remainder when divided by two.
5. uniformity	e) firm and stable in shape; not liquid or fluid.
6. splitting	f) the space (usually measured in degrees) between two intersecting lines or surfaces at or close to the point where they meet.
7. angle	g) the action of dividing or being divided into parts.
8.laminated wood	h) an appliance or compartment which is artificially kept cool and used to store food and drink.
9. concrete	i) b) the quality or state of being uniform.
10. refrigerator	j) a heavy, rough building material made from a mixture of broken stone or gravel, sand, cement, and water.

VI. Arrange the words to make a sentence.

1. together/ made / layers / plywood / is made/ of / wood / glued.

2. arches / load-carrying / products / the / main / are / members / beams / and.
3. dimensions / wood / of / producing / small / can / be / laminated / used / in / wood.
4. Characteristics / these / uses / various / laminated / make / wood / adaptable / to.
5. wood / laminated / solid / several / possesses / advantages / over / wood.
6. manufactured / curved / plywood / can / in / form / be.

VII. Translate the sentences into English using the Infinitive Constructions:

1. Я ніколи не бачив, як виробляють фанеру.
2. Директор лісопилки хоче, щоб ці колоди були складені в штабелі сьогодні.
3. Відомо, що ламінат має багато переваг над твердою деревиною.
4. Ми бачили як робітники пиляли дерева бензопилою.
5. Говорять, що якість цієї фанери набагато вища.
6. Ми хочемо, щоб балки для нашої стелі були доставлені завтра.
7. Здається, що цей шпон не дуже добре просушений.
8. Я бачила, що трактор тягнув колоди великих розмірів на будівельний майданчик.
9. Ти коли-небудь бачив, як використовують фанеру при виробництві меблів?
10. Студенти факультету деревообробних технологій спостерігали, як робітники лісопилки окорювали довгі колоди.

DEVELOP YOUR COMMUNICATIVE SKILLS

VIII. Say if these statements are “true” or “false”.

1. Loading the panels into large multistoried hot presses is usually automatic.
2. Laminated wood is usually built by the parallel gluing of lumber boards in a variety of sizes and shapes.

3. Plywood is manufactured only in the form of flat panels.
4. The main products of laminated wood are load-carrying members, such as beams and arches.
5. Because laminated wood is glued, wood of small dimensions can also be used but it is very wasteful operation.
6. Plywood has many disadvantages comparing to natural wood.
7. Special types of plywood combine decorative value with thermal- and sound-insulating properties.
8. Some special properties of plywood make it not adaptable to various uses.
9. Plywood ranges in thickness from 10 mm for all-veneer to 50 mm (1.2 inches) for lumber-core.

IX. Speak about plywood and laminated wood according to the following plan:

1. Plywood and laminated wood are both made of wood layers glued together.
2. The difference in manufacturing plywood and laminated wood.
3. The total number of layers in plywood.
4. What is done with the panels before and after pressing.
5. The advantages of plywood over natural wood.
6. The use of plywood.
7. The way to build laminated wood.
8. The advantages of laminated wood over solid wood.
9. The main products made of laminated wood.

X. Make a summary of the text.

UNIT 3

1. **Read and translate the text. Learn the active vocabulary of the lesson:**

particleboard (n)	деревостружкова плита (ДСП)
particle (n)	частка, часточка
glue (n) **(v)**	клей, клеїти
flakes (n)	лусочки, пластівці
friction (n)	тертя

sawdust (n)	тирса
source (n)	джерело
tolerate (v)	терпіти, припускати
homogeneous (adj)	однорідний
surface (n)	поверхня
purpose (n)	призначення, мета
mold (v)	формувати
fiber-board (n)	деревоволокниста плита (ДВП)
involve (v)	включати, залучати
reduction (n)	скорочення, зменшення
pulping (ger)	варіння целюлози
steam (v) (n)	пара, пропарювати
delivery (n)	доставка
blend (v)	змішувати
improve (v)	покращувати
preliminary (adj)	попередній
step (n)	крок, етап
grinding (ger)	шліфування, подріблення
subsequent (adj)	наступний, подальший
acid (n)	кислота
alkalies (n)	луги
bleach (v)	відбілювати
beating (ger)	биття
refining (ger)	переробка, рафінування
additive (v)	добавка

Word – combinations:

limited amount	обмежена кількість
resin adhesive	смоляний клей
sheet formation	формування листа
finishing treatment	фінішна обробка
water resistance	водостійкість
moisture content	вміст вологи
special mills	спеціальні фрези

PARTICLEBOARD, FIBREBOARD, PULP AND PAPER

Particleboard. Particleboard, another panel product, is manufactured of particles of wood glued together. Particles are flakes or

flakelike forms produced from wood by cutting, breaking, or friction. Sources of particles include residues from sawmills (including sawdust) and other wood-using industries, small-diameter roundwood, defective logs, and harvesting residues. Bark is tolerated in limited amounts, and debarking is not necessary if the bark is thin and the particles are placed in the interior of the panel. Particle production or delivery to the factory is followed by screening, drying, classification of particles, mixing with resin adhesive, board formation and pressing.

Particleboard is made in several forms: single-layer, in which particle size is practically homogeneous throughout; three-layer, in which particle size is different in core and surface layers; and graded, in which there is a gradual, symmetrical reduction of particle size from the centre of a board to its surface layers.

Particleboard is made for interior use (for example, for furniture, paneling, and doors) or for structural purposes (to support loads).
In addition to being produced in its flat-board form, particleboard is sometimes molded under high pressure and temperature to various shapes

Fiber-board. Production of fiber-board involves reduction of the wood to particles, pulping, sheet formation, pressing, and finishing treatment.

Pulping is mechanical; the main method is the thermomechanical process, in which wood particles are steamed and then reduced to fibres by the action of special mills. Before sheet formation, the pulp is blended with certain materials to improve water resistance, strength, and other properties. Either of two basic processes, dry or wet, is employed in the formation of the fibere sheet. Pressing is considered either wet or dry depending on the moisture content of the fiber sheet.

Pulp and paper. Wood is the main source of pulp and paper. Preliminary production steps are debarking and chipping. Pulping processes are of three principal types: mechanical, or grinding; chemical, or cooking with added chemicals; and semichemical, or a combination of heat or chemical pretreatment with subsequent mechanical reduction to fiber. The yield of pulp ranges from about 40 percent by chemical methods to 95 percent by mechanical ones. Chemical processes are based on either acids or alkalies. The pulp so produced is washed, screened, thickened by the removal of most of the water, and bleached. Paper manufacture involves beating or refining the

pulp, sizing and filling (introducing various additives), and running the pulp into the proper machine.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give Ukrainian equivalents to the following words and word-combinations:

glued together, refining the pulp, chemical pretreatment, subsequent reduction, removal of water, acids or alkalies, introducing various additives, debarking and chipping, preliminary steps, the main source, wet or dry, special mills, flat-board form, reduction of particle size, homogeneous, residues, water resistance, particleboard, fiber-board.

III. Give English equivalents to the following words and word-combinations:

спеціальні фрези; тирса; вміст вологи; вихід целюлози; кислоти або луги; промиті, просіяні та згущені; відбілювати; різні добавки; целюлоза та папір; деревостружкова плита; смоляний клей; формування плити; деревоволокниста плита; покращувати; тертя; шліфування; внутрішні роботи; доставка; варіння целюлози.

IV. Match the following terms with their definitions:

1. lumber	a) a part of the trunk or a large branch of a tree that has fallen or been cut off.
2. plywood	b) large movable equipment, such as tables and chairs, used to make a house, office, or other space suitable for living or working.
3. furniture	c) a type of strong thin wooden board consisting of two or more layers glued and pressed together
4. veneer	d) material made in rigid sheets or panels from compressed wood chips and resin
5. particleboard	e) wood materials of different shapes and contents made of logs or wood residues

6. wharf	f) a thin decorative covering of fine wood applied to a coarser wood or other material.
7. saw	g) powdery particles of wood produced by sawing.
8. sawdust	h) a long, rounded piece of wood, used with one end placed in the ground as a support for something.
9. log	i) a hand tool for cutting wood or other materials, typically with a long, thin serrated steel blade
10. pole	j) a level quayside area to which a ship may be moored to load and unload.

V. Match the words having the opposite meaning:

coarse	to unload
to cut	increase
to load	soft
moisture	to glue
to separate	alkaline
reduction	permanent
acidic	molded
movable	to unite
flat	dryness

VI. Arrange the words to make a sentence.

1. particles / wood / particleboard / is manufactured / of / glued together / manufactured.
2. industries / sawmills / include / sources / residues / of / particles / from / and / other / wood-using.
3. acids / based / processing / chemical / the pulp / is / on / either / or / alkalies.
4. formation / before / with / sheet / the pulp / materials / is / blended / certain.
5. special / reduced / particles / mills / to fibers / wood / and / are / steamed / and / by / the action / of /.

6. wood / reduction / firstly / involves / production / of / fiber-board / of / to particles.

VII. Translate the sentences into English using the Infinitive Constructions:

1. Я не люблю, коли робітники запізнюються на роботу.
2. Ми розраховуємо, що ці колоди будуть подріблені завтра.
3. Студенти не очікували, що іспит буде таким складним.
4. Я бачив, як вантажівка з лісоматеріалами виїхала зі складу.
5. Він хоче, щоб я допоміг йому розвантажити великі листи фанери.
6. Ви коли-небудь бачили як виробляють папір?
7. Очікується, що практика на лісопилці буде дуже цікавою та корисною.
8. Я терпіти не можу, коли деякі люди забруднюють ліс.
9. Чи хотіли ви, щоб вона посилалася на ваше дослідження у своїй статті?
10. Мати відчула, що дитина спокійно дихає.
11. Ніхто не бачив, як він увійшов до крамниці.
12. У дитинстві я любив, коли матуся співала мені українські пісні.

MODULE 4

WOOD PROPERTIES AND TREATMENTS

UNIT 1

1. Read and translate the text. Learn the active vocabulary of the lesson:

application (n) — застосування
weight (n) — вага
strength () — сила
moisture (n) — вологість
heartwood(n) — серцевина
sapwood (n) — заболонь
lustre (n) — блиск

nutrient (n)	— поживна речовина
growth (n)	— ріст
participate (v)	— брати участь
density (n)	— щільність
deciduous (adj)	— листяний
evergreen (adj)	— вічнозелений
layer (n)	— шар
inner (adj)	— внутрішній

Word- combinations:

hardness of wood	твердість деревини
inner layer	внутрішній шар

WOOD PROPERTIES

The total number of products made from wood is enormous—as high as 10,000, by some estimates. Such wide application is made possible by the versatility of wood and its many desirable qualities, such as high strength for its weight, workability, and aesthetic appeal.

But wood also has certain undesirable characteristics. It can burn and decay, for instance. It is hygroscopic (moisture-absorbing), and in gaining or losing moisture it changes dimensions.

In many tree species the central part of the transverse section of trunk is darker in colour than the peripheral wood. This inner part is called heartwood, and the surrounding zone sapwood. Sapwood comprises the newer growth rings and participates in the life processes of a tree. As the diameter of the tree increases with growth, the older, inner layers no longer take part in the transport and storage of water and nutrients and become heartwood. After a certain age, heartwood exists in all species, even though there may be no colour change.

Sensory characteristics of wood include colour, lustre, odour, taste, weight, and hardness of wood. Colour covers a wide range—yellow, green, red, brown, black, and nearly pure white woods exist, but most woods are shades of white and brown.

Natural lustre is characteristic of some species (for example, spruce, ash, basswood, and poplar) and more prominent on radial surfaces. Odour and taste are due to volatile substances contained in wood. Although difficult to describe, they are helpful distinguishing characteristics in some cases.

Weight and hardness are included in a diagnostic rather than technical sense—weight as judged by simple hand-lifting and hardness by pressing with the thumbnail. Common temperate-climate woods range in weight from about 300 to 900 kg per cubic metre in air-dry condition.

Density is the weight or mass of a unit volume of wood, Determination of the density of wood is more difficult than for other materials because wood is hygroscopic; both its weight and volume are greatly influenced by moisture content. The density of temperate woods varies from about 0.3 to 0.9 gram per cc, but the range worldwide is approximately from 0.2 to 1.2 grams per cc.

Wood is divided into two distinct kinds called hardwood and softwood, though confusingly the names don't always refer to its actual hardness or softness:

Hardwoods typically come from broad-leaved (deciduous) trees (those that drop their leaves each fall. Examples include ash, beech, birch, mahogany, maple, oak, teak, and walnut.

Softwoods typically come from evergeen (coniferous) trees (those that have needles and cones and retain them year-round. Examples include cedar, cypress, fir, pine, spruce, and redwood. Its leaves (inset) drop off in the fall and new ones grow in spring.

It's generally true that hardwoods are harder than softwoods, but not always. Balsa is the best-known example of a hardwood that is actually very soft. Hardwoods have lovely, attractive grains and are used for such things as making fine furniture and decorative woodwork, whereas softwoods often come from very tall, straight trees, and are better suited for construction work (in the form of planks, poles, and so on).

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give the Ukrainian equivalents to the following words and word-combinations:

wide application, high strength, to change dimensions, workability, heartwood, sapwood, density, moisture content, unit volume of wood, broad-leaved (deciduous) trees, evergreen trees, ash, beech, birch, mahogany, maple, oak, teak, walnut, spruce, cedar, cypress, fir, pine, hardness or softness of wood, construction work, making furniture, density of temperate woods, temperate-climate

woods, life processes of a tree, growth rings, colour, lustre, odour, taste, weight.

III. Match the words having the opposite meaning:

inner	softwood
hardwood	outer
distinct	easy
difficult	peripheral
simple	similar
central	artificial
natural	die
grow	undesirable
desirable	complex

IV. Read and translate these words, underline the suffixes, define a part of speech the words belong to:

apply – application - applicable
grow – growth – growing – grower
differ – different – differentiate
protect – protective – protection
improve – improvable – improvement
produce – producer – productive
compose – composition – composite
construct – construction - constructive
participate – participation – participatory - participant.
transport – transportation – transporter - transportable.

V. Complete the gaps with the suitable word from the box:

determine, climatic, species, latitude, affected, ecosystem, factors, precipitation, average, interact, altitude, geographic, weather, forest

Different types of forests exist because forests grow in different … conditions. Climate is the long-term …, or overall picture, of the everyday … experienced in a location. The climate can be … by a

number of different …, including … and …. In each different climate, there is a different temperature, amount of … (water falling from the sky, such as rain, hail or snow), sunlight and wind. All these factors the … plants and animals that live in the area and how they … with one another. Specific … areas are split into ‘biomes’, and each biome is a defined by the … living there. Therefore, the climate determines what kind of … exists in an area and the type of … biome that we see there.

VI. Turn sentences from direct into reported (indirect) speech:

1. My colleagues said to me: “This company is overexploiting these forests”.
2. The scientists said: “A lot of animal species disappeared from this territory last year”.
3. “This climate change is causing an increase in the number and strength of extreme weather events”, professor said.
4. “Many human activities convert forest land into agriculture land”, he said.
5. “These species can adapt to the new environment here”, they said.
6. “Disturbances have been shaping forests in different ways”, they noticed.
7. “Sensory characteristics of wood include colour, lustre, odour, taste, weight, and hardness of wood”, professor stressed.
8. “In many tree species the central part of the transverse section of trunk is darker in colour than the peripheral wood," the scientist said.
9. “Nowaydays the wooded areas in the country represent less than one third”, the researcher underlined.
10. "Determination of the wood density is more difficult than for other materials because wood is hygroscopic “, the forestry engineer said.

VII. Translate into English using the active vocabulary of the lesson. Mind Present Tenses in Active and Passive Voices:

1. Деревина використовується для виготовлення меблів та у будівництві.
2. Основні властивості деревини можна розділити на три групи: механіко-технологічні, фізичні та хімічні.

3. До механіко-технологічних властивостей належать: міцність, твердість, гнучкість, експлуатаційні характеристики та ін.

4. Фізичні властивості включають: блиск, колір, вологість, щільність, електропровідність тощо.

5. Хімічні властивості відображені у органічних речовинах, що містяться в дереві.

6. Центральна частина поперечного розрізу дерева темніша за кольором, ніж периферійна.

7. Внутрішня частина деревини називається серцевиною, а шар, який її оточує, заболонню. Кожна із цих частин виконує свою роль у житті дерева.

8. Існують різні класифікації деревини. Залежно від твердості виділяють два типи деревини: тверду і м'яку.

9. Тверду деревину мають дерева таких порід: дуб, клен, береза, горіх тощо. М'яку деревину мають кедр, смерека, сосна, ялина, осика та ін.

DEVELOP YOUR COMMUNICATIVE SKILLS

VIII. Ask questions to the sentences below and use them to make a dialogue:

1.Wood is divided into two distinct kinds called hardwood and softwood.

2. Hardwoods typically come from broad-leaved (deciduous) trees including ash, beech, birch, mahogany, maple, oak, teak, and walnut.

3. Deciduous trees drop their leaves each fall.

4. Softwoods typically come from evergeen (coniferous) trees including cedar, cypress, fir, pine, spruce, and redwood.

5. Evergreen trees have needles and cones and retain them year-round.

6. Hardwoods are harder than softwoods but not always.

7. Hardwoods having attractive grains are used for making fine furniture and decorative woodwork.

8. Softwoods coming from very tall, straight trees are suited for construction work.

IX. Speak about wood characteristics using the following words and word-combinations:

heartwood and sapwood, growth rings, to participate in the life processes of a tree, the diameter of the tree, transport and storage of water and nutrients, sensory characteristics of wood, colour, lustre, odour, taste, weight, and hardness of wood, wide range of colours, to be prominent on radial surfaces, volatile substances, to be contained in wood, hand-lifting and hardness, to range in weight, unit volume of wood , determination of the density of wood.

UNIT 2

1. **Read and translate the text. Learn the active vocabulary of the lesson:**

drying(n)	— висихання, сушка
lumber (n)	— пиломатеріали
kiln (n)	— піч
pile (n)	— купа
bug (n)	— жук
bacterium (n)	— бактерія
rot (n)	— гниль
outer (adj)	— зовнішній
reduce (v)	— зменшити, скоротити
paint (n)	— фарба
liquid (n)	— рідина
treatment (n)	— обробка
burn (v)	— горіти
moisture (n)	вологість

Word-combinations:

closed kiln	закрита піч
closed chamber	закрита камера

DRYING AND PRESERVATION

Drying. Lumber and other wood products usually contain considerable moisture after their production, and drying is essential to prepare them for further use. Proper drying reduces the dimensional changes due to shrinkage and swelling, protects wood from microorganisms, reduces weight and transportation costs and increases

its strength. Drying is accomplished in yards in the open air or in closed kilns.

The object of open-air drying is to reduce the moisture content of wood to the lowest value permitted by weather conditions in the shortest time without producing defects.

The air-drying yard is located close to the lumber plant, on a dry site. The bottom row of lumber is kept about 40 cm (16 inches) above the ground. A suitable roof, usually made of low-grade lumber or panel material, is placed on top of each pile. The time required to air-dry from green condition to 20 percent moisture content varies from about 20 to 300 days depending on species, place, and time of year.

Kiln drying. It is conducted in a closed chamber, under artificially induced and controlled conditions of temperature, relative humidity, and air circulation. This method permits much faster reduction of moisture content to levels that are independent of weather conditions. In wood 2.5 cm (1 inch) thick, moisture is reduced from 20 to 6 percent in 2–15 days and from green condition to 6 percent in 2–50 days.

The source of heat is usually steam circulating in pipe coils. For satisfactory results, air movement is needed to carry the heat from its source to the lumber and to carry away the evaporated moisture. Air circulation is produced by fans located within the kiln and sometimes by blowers placed outside.

Preservation. In theory, wood might last forever if it weren't attacked by bugs and bacteria; preservatives can greatly extend its life by preventing rot. Different preservatives work in different ways. Paint, for example, works like an outer skin that stops fungi and insects penetrating the wood and eating it away, but sunlight and rain make paint crack and flake away, leaving the wood open to attack underneath. Creosote (another popular wood preservative) is a strong-smelling, oily brown liquid usually made from coal-tar. Unlike paint, it is a fungicide, insecticide, miticide, and sporicide: in other words, it works by stopping fungi, insects, mites, and spores from eating or growing in the wood.

Different kinds of treatment help to protect and preserve wood in other ways. It's a great irony that wood can be used to build a fine home that will last many decades or burn to the ground in minutes. Wood is so plentiful and burns so well that it has long been one of the world's favorite fuels. That's why fire-protection treatment of wooden building products is so important. Typically, wood is treated with fire retardant

chemicals that affect the way it burns if it catches fire, reducing the volatile gases that are given off so it burns more slowly and with greater difficulty.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give the English equivalents to the following words and word-combinations:

висушування деревини**,** збереження деревини, зменшувати розміри змін, захищати від мікроорганізмів, підвищувати міцність деревини, вологість деревини, пиломатеріали, купа, змінюватися, коливатися, температурні умови, відносна вологість, дозволяти, гниль, бактерії, шкідливі комахи, фунгіцид, пестицид, обробка деревини, паливо, проникати в деревину, горіти.

III. Complete the table to make word-families. In case there is no corresponding derivative put a No sign.

Noun	Verb	Adjective	Adverb
	protect		
	treat		
		different	
Movement			
		satisfactory	
Circulation			
			typically

IV. Match the words having the same meaning:

wood	various
different	processing
treatment	timber
help	assist
injury	land
ground	damage
acomplish	complete
permit	construct
build	allow
reduction	decrease

V. Match the words on the left with the words on the right. Use them in your own sentences:

open-air, weather, moisture, air, favourite, building, relative, dimensional	conditions, humidity, fuels, content, changes, products, drying, circulation

VI. Fill in the gaps below with a suitable preposition:

in	of	to	above	with

1. Drying is accomplished in yards ... the open air or in closed kilns.

2**.** The object ...open-air drying is to reduce the moisture content of wood to the lowest value permitted by weather conditions in the shortest time without producing defects.

3. The time required ... air-dry from green condition to 20 percent moisture content varies from about 20 to 300 days depending on species, place, and time of year.

4. Wood is treated ... fire retardant chemicals that affect the way it burns if it catches fire, reducing the volatile gases that are given off so it burns more slowly and with greater difficulty.

5.The bottom row of lumber is kept about 40 cm (16 inches) ... the ground.

VII. Match the parts of the sentences:

1. Proper drying reduces the dimensional changes due to	a) located within the kiln and sometimes by blowers placed outside.
2. The air-drying yard is located close to	b) to levels that are independent of weather conditions
3. The source of heat is usually steam	c) the lumber plant, on a dry site.
4. Different kinds of treatment help	d) circulating in pipe coils.
5. Fire-protection treatment of wooden building products	e) is so important.

6. Kiln drying is conducted in a closed chamber	f) under artificially induced and controlled conditions of temperature, relative humidity, and air circulation.
7. Method of kiln drying permits much faster reduction of moisture content to levels that are independent of weather conditions	g) after their production, and drying is essential to prepare them for further use.
8. Air circulation is produced by fans	h) to protect and preserve wood in other ways.

VIII. Find the sentences with Participle I and Participle II, define their functions and translate them into Ukrainian.

IX. Translate into English using the active vocabulary of the lesson and non-finite forms of the verb.

1. Сушіння деревини - це обробка деревини, спрямована на видалення з неї вологи**.**

2. Сушіння, яке здійснюється зразу після рубки, окрім того, що перетворює деревину у промисловий матеріал, захищає її від шкідників і хвороб.

3. Існує два основних способи сушіння деревини: природна, або сушка на відкритому повітрі, та штучна, або технічна сушка в сушильних камерах.

4. Сушіння в печі здійснюється при встановленій температурі, відповідній вологості та циркуляції повітря.

5. Для того щоб зберегти деревину використовують різні захисні засоби.

6. Опади та коливання температури негативно впливають на якість деревини, тому необхідно обробити її антисептиками.

7. Деревина добре горить. Щоб захистити її від загорання слід використати вогнезахисні засоби (спеціальні фарби, лаки, суміші).

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Make up questions for the following answers concerning drying and preserving wood:

1. A: .....

   B: Kiln drying is conducted in a closed chamber, under artificially induced and controlled conditions of temperature, relative humidity, and air circulation.
2. A: .....

   B: Kiln drying method permits faster reduction of moisture content to levels that are independent of weather conditions.
3. A: ……

   B: The source of heat during drying is usually steam circulating in pipe coils.
4. A: ……

   B: Methods of preservation are of two types: natural or in the open air and artificial or technical one in chambers.
5. A: .....

   B.: Different protection methods are applied to preserve wood.
6. A: .....

   B. Fire-protection treatment of wood with fire retardant chemicals is very important because they catch fire, reduce the volatile gases that are given off so it burns more slowly and with greater difficulty.
7. A.....

   B.: Various insecticides, miticides and sporicides are applied: in order to stop fungi, insects, mites, and spores from eating or growing in the wood.

X. Speak about wood drying basing on the following verb schemes:

… contain considerable moisture after their production ...
.... reduces the dimensional changes due to **...**
.... is accomplished in yards in ...
... is located close to the lumber plant ...
... is to reduce the moisture content of ...
... is kept about 40 cm (16 inches) above ...
... is placed on top of ....
... varies from about 20 to 300 days ...

UNIT 3

1. **Read and translate the text. Learn the active vocabulary of the lesson:**

fuel (n)	— паливо
log (n)	— колода
forestry (n)	— лісівництво
pollution (n)	— забруднення
papermaker (n)	— виробник паперу
value (n)	— цінність
sapling (n)	— відсадок, пагін
clearcutting (n)	— суцільна рубка
replacement (n)	— заміна
woodworking (n)	— обробка деревини
mature (adj)	— дорослий, зрілий
chips (n)	— тирса
offcuts (n)	— обрізки
sustainable (adj)	— стійкий, постійний
handful (n)	— невелика кількість

Word-combinations:

renewable energy	енергія, що відновлюється
power plant	електростанція
environmentally friendly	безпечний для довкілля

ENVIRONMENTALLY FRIENDLY

Wood fuel (a type of biomass) can be an environmentally friendly form of renewable energy. One power plant burns 76 tons of wood chips per hour (left) to make electric power. The wood is mostly grown within 100km of the plant, and a lot comes from wood industry offcuts and logging waste.

Wood was one of the first natural materials people learned to use, and it's never lost its popularity. These days, it's particularly prized for being a natural and environmentally friendly product.

Forestry is a rare example of something that has the potential to be completely sustainable: in theory, if you plant a new tree for every

old tree you cut down, you can go on using wood forever without damaging the planet. In practice, you need to replace like with like and forestry is not automatically sustainable, whatever papermakers like us to believe.

A brand new tree has much less ecological value than a mature tree that's hundreds years old, so planting a thousand saplings may be no replacement for felling just a handful of ancient trees.

Logging can be hugely environmentally damaging, whether it involves clearcutting a tropical rainforest or selectively felling mature trees in old-growth temperate woodland.

Some of the processes and chemicals used in forestry and woodworking are also environmentally damaging; chlorine, used to bleach wood fibers to make paper, can cause water pollution in rivers, for example.

But on the positive side, growing trees remove carbon dioxide from the atmosphere and planting more of them is one way to reduce the effects of climate change. Trees also provide important habitats for many other species and help to increase biodiversity (the wide range of living organisms on Earth). Practiced the right way, forestry is a good example of how people can live in perfect harmony with the planet.

INCREASE YOUR VOCABULARY AND CHECK YOUR GRAMMAR

II. Give the Ukrainian equivalents to the following words and word-combinations:

wood fuel, renewable energy, wood chips, industry offcuts, environmentally friendly product, forestry, biodiversity, climate change, growing trees, species, important habitats, planting, saplings, felling, logging, clear-cutting, temperate woodland, tropical rainforest, felling mature trees , water pollution, sustainable, papermaker.

III. Match the words having the opposite meaning:

internal	big
tiny	external
mature	unsustainable
sustainable	artificial
natural	ancient
modern	young

old	die
grow	young
similar	different

IV. Read and translate these words, underline the suffixes, define a part of speech the words belong to:

use – user – usage - useful
differ – different – differentiate
protect – protective – protection
improve – improvable – improvement
produce – producer – productive
develop – development - developer
nature – natural - naturalist
pollute – pollutant - pollution
value – valuable - valuation
sustain – sustainable - sustainability

V. Complete the gaps with the suitable word from the box.

wood, noncombustible material, heating, fuel, ground civilization, smoke hole, fireplace, stoves, industrial

Wood burning is the largest current use of biomass derived energy. Wood can be used as a solid ... for cooking or heating, or occasionally for steam engines.

The use of ... as a fuel source for home heat is as old as ... itself. Historically, it was limited in use only by the distribution of technology required to make a spark. Wood heat is still common throughout much of the world, although it has been mainly replaced by coal, oil or natural gas ... . Wood heating has been singled out as a serious health hazard in many regions of the world.

Early examples include the use of wood heat in tents. Fires were constructed on the ... and a smoke hole in the top of the tent allowed the smoke to escape by convection.

In permanent structures, hearths were constructed … surfaces of stone or another ... upon which a fire could be built. Smoke escaped through a ... in the roof.

The development of the chimney and the fireplace allowed for more effective exhaustion of the smoke. Masonry heaters or ... went a step further by capturing much of the heat of the fire and exhaust in a large thermal mass, becoming much more efficient than a ... alone.

The metal stove was a technological development concurrent with the ... revolution. Stoves were manufactured or constructed pieces of equipment that contained the fire on all sides and provided a means for controlling the draft - the amount of air allowed to reach the fire. Stoves have been made of a variety of materials.

VI. Arrange the words to make a sentence:

1**.** wood / form / fuel/ energy /can be / an / environmentally / friendly / renewable /of /.

2**.** wood /natural / is / one / the / of / first / materials / people / learned / to use.

3. chlorine / wood /used / to bleach / fibers / to make / paper / water / pollution / cause.

4. power / one / burns / chips / 76 tons / per hour / to make / electric / power / plant / of wood /.

5. wood / fuel / has /nowadays /never / lost / its / and / it / is / widely / used / popularity.

VII. Put the verbs in brackets into the correct form to make the first or the second type of Conditional sentences:

1. If we have severe natural occurrences, like drought, we … (not to have) a high yield.

2. If this plant … (to retain) more water it would survive.

3. Unless we regenerate this tree, we … (not to get) any fruit.

4. These fungi will spread throughout tree if you … (not to take) any measures.

5. If the neighbouring forest … (to be) in fire it can be dangerous for us.

6. We … (to have) a dense coniferous forest if we planted trees more regularly.

7. Unless you prune the trees and shrubs in the garden you … (never to have) beautiful and healthy trees.

8. If the adaptation of these trees was successful our forest … (not to have) any losses.

9. If they … (not to increase) the humidity the plants will definitely die.

10. If we don't stop the degradation of the soil in this area we … (not to have) any healthy trees.

VIII. Translate into English using Conditional sentences.

1. Дерева скинуть листя, якщо буде сильна посуха.

2. Якби площа землі, вкрита лісами, була більшою, ми б мали більше кисню.

3. Якби ця зима не була занадто морозною, ми б не боялися за саджанці.

4. Якщо рослинність цього лісу не буде відрізнятися, ми втратимо його унікальність.

5. Ми не матимемо лісів у майбутньому, якщо не припинимо надмірно використовувати лісові ресурси.

6. Якби людина більше думала про наслідки своєї діяльності, втрати лісу були б значно меншими.

7. Якщо це літо буде посушливим, ліс буде більш уразливим до пожежі.

8. Якби фермери використовували менше гербіцидів та пестицидів, то грунт був би набагато чистішим.

DEVELOP YOUR COMMUNICATIVE SKILLS

IX. Ask questions to the following sentences and use them to make a dialogue.

1**.** Wood fuel is environmentally friendly form of renewable energy.

2. Wood is one of the first natural materials people learned to use, and it's never lost its popularity.

3. A brand new tree has much less ecological value than a mature tree that's hundred years old.

4. Logging can be environmentally damaging, whether it involves clear-cutting a tropical rainforest or selectively felling mature trees in old-growth temperate woodland.

5. Some of the processes and chemicals used in forestry and woodworking are environmentally damaging.

6. Chlorine, used to bleach wood fibers to make paper, causes water pollution in rivers.

X. Speak about wood as a fuel using the following words and word combinations:

renewable energy, wood fuel, electric power, natural material, to be prized for, to be sustainable, brand-new tree, ecological value, logging, clear-cutting, tropical rainforest, temperate woodland, pollution.

TASKS FOR SELF-STUDY

TEXT 1

1. Read the text and complete the following sentences using the words from it:

1. *Forest plantations are forests that have been planted by ... .*
2. Plantations are usually a.... of a single tree species that are grown over a large area of the land.
3. *Fruit orchards are not usually classified as .....because they are usually cultivated on a smaller scale and the tress are typically smaller than those which fit into the standard tree and forest definitions.*
4. *Forest plantations and woodlots provide fuel wood and building materials for local ...*
5. *Planted forests are often established for environmental purposes such as soil .....*
6. *There are many different types of plantations around the....*
7. *The rubber tree (Hevea brasiliensis) is the most commonly used plant for producing .... .*
8. *Softwood is ... that comes from evergreen trees.*
9. *Coconut plantations can be found in 80 countries worldwide, mostly in humid, warm ....*
10. *Plantations of evergreen trees are very common in temperate and boreal ... because the trees grow quickly, providing a constant, cheap source of timber.*

2. Read the text one more time and make up its summary using the phrases on p.

HUMAN-MADE FOREST PLANTATIONS

Forest plantations are forests that have been planted by humans. They can occur anywhere in the world and can be made up of any tree species. Plantations are usually a monoculture of a single tree species that are grown over a large area of the land. Fruit orchards are not usually classified as plantations because they are usually cultivated on a smaller scale and the tress are typically smaller than those which fit into the standard tree and forest definitions. Plantations are an increasingly important source of industrial wood, and can potentially reduce timber harvesting from natural forests. Forest plantations and woodlots also provide fuel wood and building materials for local use. Planted forests are often established for environmental purposes such as soil conservation because tree roots help to keep soil in place and prevent it from washing away when it rains (erosion). The area of the world covered by forest plantations is increasing, and this trend is expected to continue.

There are many different types of plantations around the world.

The rubber tree

When you think of products made from rubber do you also think of nature? Most probably not, but in fact, there are quite a few natural rubbers that come from plants. The rubber tree (*Hevea brasiliensis*) is the most commonly used plant for producing rubber. It originally grew in the Amazon rainforest but it is now also commonly found in plantations all across the tropics.

Softwood plantations

Softwood is wood that comes from evergreen trees. Plantations of evergreen trees are very common in temperate and boreal biomes because the trees grow quickly, providing a constant, cheap source of timber.

Coconut

Coconut plantations can be found in 80 countries worldwide, mostly in humid, warm climates. Over 61 million tons of coconuts are produced each year! Coconuts grow high up, so in many countries farmers climb the trees to harvest them. In other countries, such as Thailand and Malaysia, people train pig-tailed macaque monkeys to climb up the coconut palms, pick a coconut and then drop it down to the people waiting below!

TEXT 2

1. Read the text and complete the sentences with the appropriate option of the word.

1. *Forests are naturally very dynamic, meaning that they are constantly ....*

a) changing b) growing c) cutting.

2. *There are some techniques used ... the forest appearance and character.*

a) to create b) to change c) to modify.

3. *All trees in a certain ... are removed in one operation of clear-cutting.*

a) place b) territory c) area.

4. *In many countries, clear-cutting is restricted by ...because it can have a drastic effect on the ecosystem.*

a) drafts b) laws c) plans.

5. *Shelter woodcutting ... to remove old trees over a period of several years to make way for younger trees.*

a) is used b) is defined c) is designed.

6. *Assisted regeneration ensures that temporarily bare ... is covered by vegetation again.*

a) ground b) land c) soil.

7. *The death of a tree is caused by ... age, illness or competition for nutrients, space sunlight, etc.*

a) young b) medium c) old.

2. Read the text one more time and be ready to speak about the main forest operations and their purposes.

FOREST OPERATIONS

Forests are naturally very dynamic, meaning that they are constantly changing. A wildfire or a storm can create large openings, allowing new plants to colonize these areas. The death of a tree (caused by old age, illness or competition for nutrients, space and sunlight) can create small openings. Sometimes, foresters attempt to mimic the result of these major and minor events through forest management operations. Here are some techniques used to modify the forest appearance and character:

Clear-cutting

All trees in a certain area are removed in one operation. It results in a large open area, similar to the effect of a forest fire. In many countries, clear-cutting is restricted by laws because it can have a drastic effect on the ecosystem.

Selection cutting

In this technique, individual or small groups of trees are strategically removed. Lesser quality trees are usually felled to give more space to the larger and more commercially valuable trees. When these latter trees grow large enough, they may be harvested.

Shelterwood cutting

This cut is designed to remove old trees over a period of several years to make way for younger trees. Tree reproduction is encouraged and some old trees are kept to provide initial protection and shade to the sensitive new seedlings until they are strong enough to grow independently.

Assisted regeneration

This technique ensures that temporarily bare land is covered by vegetation again. Human interventions promote and accelerate the establishment of vegetation (through seeds from mother trees or by planting new species).

TEXT 3

1. Read the text and complete the following sentences using the information from the text.

1. Forest degradation and deforestation can cause loss...

2. Damage to forests can have severe consequences ....

3. We rely on forest ecosystem services and forest products....

4. Some groups of people, including some indigenous peoples, are especially dependent on ....

5. The loss of trees and other vegetation can cause ....

6. The lack of trees also allows a greater amount of greenhouse gases ....

7. Deforestation leads to...

8. Forest regeneration can actually increase plant and animal ... .

2. Read the text one more time and speak about the causes and consequences of forest loss.

FOREST LOSS

Forest degradation and deforestation can cause loss of biodiversity and the destruction of natural ecosystems, which isn't just bad for nature: damage to forests can have severe consequences for the people who depend on them, too. We rely on forest ecosystem services and forest products for our well-being, and even our survival! Some groups of people, including some indigenous peoples, are especially dependent on forest resources for building their houses and finding fuel, wood or food. In summary, the loss or degradationof a forest can have significant negative effects on:

- people's well-being,
- people's income,
- the environment.

The loss of trees and other vegetation can cause climate change, desertification, soil erosion, fewer crops, floods, increased greenhouse gases in the atmosphere

One of the most dangerous and unsettling effects of deforestation is the loss of animal and plant species due to their loss of habitat.

In addition to the loss of habitat, the lack of trees also allows a greater amount of greenhouse gases to be released into the atmosphere.

The trees also help control the level of water in the atmosphere by helping to regulate the water cycle. With fewer trees left, due to deforestation, there is less water in the air to be returned to the soil. In turn, this causes dryer soil and the inability to grow crops.

Further effects of deforestation include soil erosion and coastal flooding. In addition to their previously mentioned roles, trees also function to retain water and topsoil, which provides the rich nutrients to sustain additional forest life.

However, healthy forests can be very resilient, recovering from stressful situations or damages over time. Forest regeneration can actually increase plant and animal diversity, and enable species best adapted to that particular environment to become established. Thus the temporary loss of trees is not always a bad thing from an ecological point of view. However, continued degradation by humans over a long time reduces the resilience of forests to natural threats and makes them more vulnerable to irreversible damage.

TEXT 4

1. Read the text and say if these statements are true or false.

a) *Events that change the forest and the trees that grow within it are called forest disturbances.*

b) Disturbances have been shaping forests in different ways.

c) *Permanent removal and the decrease in the area of a forest is called reforestation.*

d) When the forest is lost, many of the other life forms that lived and depended upon the forest appear.

e) Degradation of a forest is defined as a decrease in the quality of the condition of a forest, although the forest area remains the same size.

f) Damaging or removing organisms and wildlife in large numbers changes the balance of the ecosystem.

g) Many natural forest disturbances are becoming more intense due to human's actions.

h) A decrease in the quality of the forest could mean a less healthy forest, a forest with fewer species, or a forest with fewer useful goods and services for humans to use or sell.

2. Read the text one more time and make its summary using phrases on p.

WHAT CAUSES FOREST LOSS?

Events that change the forest and the trees that grow within it are called forest disturbances. For millions of years, disturbances have been shaping forests in different ways. These can be classified depending on their:

- *duration* – from seconds to months;
- *impactlevel* – from leaf damage through to tree death;
- *origin* – natural or humanю

Whether the origin of the forest disturbance is human or natural can have major consequences on the future of the affected forest. Many human activities permanently convert forest land into land that can be used for other purposes, such as agriculture. Permanent removal and the decrease in the area of a forest is called deforestation. When the forest

is lost, many of the other life forms that lived and depended upon the forest disappear too. Some species can adapt to the new environment, but many others cannot and need to find new habitats in which to live.

Another type of forest disturbance is degradation. Degradation is defined as a decrease in the quality of the condition of a forest, although the forest area remains the same size. A decrease in the quality of the forest could mean a less healthy forest, a forest with fewer species, or a forest with fewer useful goods and services for humans to use or sell. It can be caused by natural forces (e.g. wildfires and landslides) and when humans overuse or overexploit forest resources. For example, damaging or removing organisms and wildlife in large numbers changes the balance of the ecosystem.

Degradation is a complex issue, and much more difficult to observe and measure in comparison to deforestation. Natural and human forest disturbances, although different, are also linked. Many natural forest disturbances are becoming more intense due to human actions. For example, climate change is causing an increase in the number and strength of extreme weather events, such as droughts, that can put severe stress on forests, which can't adapt quickly enough, and cause the loss of species.

TEXT № 5

1. Read the text and say if these statements are true or false:

a) The tree rings can tell us how old the tree is, and what the weather was like during each year of the tree's life.

b) Trees are sensitive to local climate conditions, such as rain and temperature.

c*) The light-colored rings represent wood that grew in the late summer and fall and early summer, while the dark rings represent wood that grew in the spring.*

d.) One light ring plus one dark ring equals one year of the tree's life.

e) Tree rings usually grow wider in warm, wet years and they are thinner in years when it is cold and dry.

f) Scientists can compare modern trees with local measurements of temperature and precipitation from the nearest weather station.

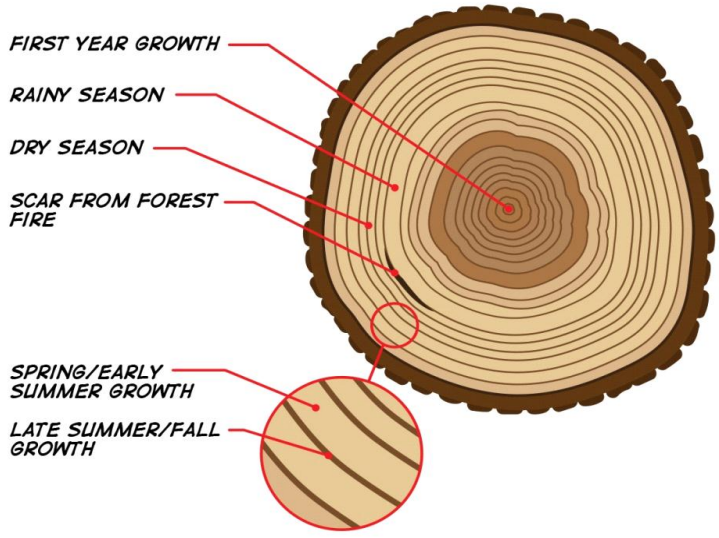
2. Read the text one more time and explain why it is so important to study tree rings.

TREE RINGS

The characteristics of the rings inside a tree can tell scientists how old a tree is and what the weather conditions were like during each year of that tree's life. Very old trees can offer clues about what the climate in an area was like long before measurements were recorded.

One way that scientists use trees to learn about past climate is by studying a tree's rings. If you've ever seen a tree stump, you probably noticed that the top of the stump had a series of rings. It looks a bit like a bull's-eye.

These rings can tell us how old the tree is, and what the weather was like during each year of the tree's life. The light-colored rings represent wood that grew in the spring and early summer, while the dark rings represent wood that grew in the late summer and fall. One light ring plus one dark ring equals one year of the tree's life.



Because trees are sensitive to local climate conditions, such as rain and temperature, they give scientists some information about that area's local climate in the past. For example, tree rings usually grow wider in warm, wet years and they are thinner in years when it is cold and dry. If the tree has experienced stressful conditions, such as a drought, the tree might hardly grow at all in those years.

Scientists can compare modern trees with local measurements of temperature and precipitation from the nearest weather station. However, very old trees can offer clues about what the climate was like long before measurements were recorded.

TEXT 6

1. Read the text and complete the sentences.

1. *Wood is a part of the system that ...*
2. *Wood-producing forest trees and other woody plants are of two types...*
3. *Gymnosperms, or cone-bearing trees, produce softwoods ...*
4. *Wood is a material of ...*
5. *Angiosperms produce temperate and tropical hardwoods...*
6. *Wood is found throughout the world and can be sustainably managed as ...*
7. *The consumption of wood exceeds by far...*
8. *More than half of roundwood (log) production is consumed as ...*
9. *Production of paper and paperboard has shown the most rapid increase ...*
10. *Efforts to stop the reduction of Earth's forest cover and increase the productivity of existing forests ...*

2. Read the text one more time and answer the following questions.

1. *What functions does wood perform?*
2. *What are two types of wood-producing forest trees?*
3. *What trees are producers of hardwoods?*
4. *What trees produce softwoods?*
5. *Is wood a material of great economic importance? Can you prove it?*
6. *How do people utilize wood?*
7. *What actions can ease the problem of wood supply and help to lessen the environmental toll of the lumber industry*?

GREAT ECONOMIC IMPORTANCE OF WOOD

In botanical terms, wood is part of the system that conveys water and dissolved minerals from the roots to the rest of the plant, stores food created by photosynthesis, and furnishes mechanical support. It is produced by an estimated 25,000 to 30,000 species of plants, including herbaceous ones, though only 3,000 to 4,000 species produce wood that is suitable for use as a material. Wood-producing forest trees and other woody plants are of two categories: gymnosperms and angiosperms. Gymnosperms, or cone-bearing trees, produce softwoods, such as pine and spruce, and angiosperms produce temperate and tropical hardwoods, such as oak, beech, teak, and balsa. It should be noted that the distinction implied by *hardwood* and *softwood* is not true in all cases. Some hardwoods—e.g., balsa—are softer than some softwoods—e.g., yew.

Wood is a material of great economic importance. It is found throughout the world and can be sustainably managed as a renewable resource—in contrast to coal, ores, and petroleum, which are gradually exhausted. By means of its harvesting in forests, its transportation, its processing in workshops and industries, and its trade and use, wood provides jobs and supports economic development and, in some countries, basic subsistence. Indicative of this importance is the continued high demand for wood and wood products.

On a weight basis, the consumption of wood exceeds by far that of other materials. More than half of roundwood (log) production is consumed as fuel, mainly in less-developed countries. Production of paper and paperboard has shown the most rapid increase among wood products; this trend is expected to continue as consumption per person in the less-developed countries approaches that in the developed nations. Rising world population is the driving force of increasing consumption of wood and consequent deforestation.

The depletion of many forests, especially in the tropics, makes uncertain the provision of an adequate wood supply to satisfy the anticipated need. Efforts to stop the reduction of Earth’s forest cover and increase the productivity of existing forests, establishment of extensive reforestation programs and plantations of fast-growing tree species, recycling of paper, and improved utilization of wood through research could ease the problem of wood supply and help to lessen the environmental toll of the lumber industry.

ESSENTIAL VOCABULARY

A

absorb (v) — усмоктувати; поглинати
adapt (v) — пристосовуватися, адаптуватися
additive (v) — добавка
agent (n) — чинник
altitude (n) — висота над рівнем моря
application (n) — застосування
anchor (v) — закріплювати(*ся*)
availability (n) наявність; доступність
abundant (adj) рясний, багатий
ax (n) сокира

B

bark (n) — кора (дерева)
beech (n) — бук
beam (n) — балка
birch (n) — береза
bleach (v) — відбілювати
boreal (adj) — північний, арктичний
branch (n) — гілка
broad-leaved(adj) — широколистий
bush (n) — кущ
bucking (ger) — згинання, вигинання

C

cambium (n) — камбій
canopy (n) — полог (намет)
cedar (n) — кедр
cell (n) — клітина
circumstance (n) — обставини, умови
clear-cutting (ger) — суцільна рубка лісу
competitor (n) суперник, конкурент

composition (n) склад, структура
coniferous(adj) хвойний
conversion (n) перетворення
crawler (n) гусенична техніка
curve (v) викривляти(ся). вигинатися
craggy(adj) — скелястий
chipping (ger) — відколювання
chisel (n) — долото, зубило
chips (n) — стружка

D

debarking (ger) окорювання
deciduous (adj) — листяний, листопадний
decomposer (n) — речовина, що розкладає (що-небудь) на складові частини
decrease (n) — зменшення
definition (n) — визначення
defoliation (n) — втрата листя
deforestation (n) вирубка лісу (знелісснення)
degradation (n) деградація, погіршення
density (n) щільність
desertification (n) перетворення в пустелю
destruction (n) знищення
determine (v) — визначати
deviation (n) — відхилення
disappear (v) зникати
distinct(adj) чіткий
disturbance (n) — порушення рівноваги
diverse (adj) — різноманітний
diversity (n) розмаїтість; різноманіття
downpour(n) злива
downstream (adv) — вниз за течією
drought (n) — посуха
duration (n) — тривалість
delimbing (ger) обрізання сучків

E

elm(n) в'яз
enable (v) давати можливість

enemy (n) ворог
environment (n) — середовище, оточення
epiphyte (n) — епіфіт
eradicate (v) — знищувати; викорінювати
evergreen (n) — вічнозелена рослина
exceed (v) перевершувати
exclude (from) (v) — вилучати; виключати
exposure (to) (n) — піддавання зовнішньому впливу
external (adj) — зовнішній

F

female (adj) — жіночий
fell (v) — рубати (валити) дерева
feller (n) — лісоруб, дроворуб
feller-skidder (n) — трелювальник деревини
furniture (n) — меблі
fern (n) — папороть
fir (n) ялиця
fibreboard (n) ДВП, деревоволокниста плита

flood (n) — повінь
flower (n) — квітка
force (n) — зусилля, сила
fuel (n) паливо, пальне
fungi (pl від fungus) (n) — грибок

G

glue (n) клей, клеїти
grinding (ger) шліфування, подріблення
growth (n) ріст

H

habitat (n) — природне середовище
handsaw (n) — ручна пила
hardy (adj) — морозостійка рослина
hazard (n) — небезпека
heartwood (n) — серцевина
height (n) — висота

hemisphere(n) — півкуля
herb (n) — трава
holly (n) — падуб; гостролист
homogeneous (adj) — однорідний
host (n) — хазяїн
humidity (n) — вологість

I

identify (n) — визначати
impact (n) — вплив; наслідки
indigenous (adj) місцевий, корінний
induced (adj) — викликаний, спричинений
infestation (n) — інвазія; зараження паразитами
interact (v) — взаємодіяти
internal (adj) — внутрішній
irreversible (adj) необоротний
issue (n) — питання, проблема

L

landscape(n) — ландшафт
landslide (n) — зсув, обвал
latitude (n) — широта
layer (n) — шар
leafless(adj) — безлистий
length(n) — довжина
lichen(n) — лишайник
litter (n) — лісова підстилка
loading (ger) — завантаження
log (n) —колода
lowland(n) — низовина, низька місцевість,
low-lying(adj) — який низько розташований
lumber (n) — пиломатеріали
lustre (n) — блиск

M

measure (v) — вимірювати

maple (n) — клен
mature (adj) —дорослий, зрілий

meristem (n) — меристема
moderate (adj) — помірний
moss (n) — мох

N

needle (n) —хвоя, голки (сосни)
neighboring (adj) —суміжний, прилеглий
nutrient (n) —поживна речовина

O

oak (n) — дуб
observe (v) — спостерігати, стежити
occur (v) — траплятися, відбуватися
occurrence (n) явище
orchard (n) — фруктовий сад
outer (adj) — зовнішній
overexploit (v) перевитрачати природні ресурси

P

permanent (adj) — постійний, довгостроковий
particleboard (n) — ДСП, деревостружкова плита
particle (n) — частка, часточка
preliminary (adj) — попередній
persistent (adj) — постійний
phloem (n) — флоема
pine (n) — сосна
pole (n) — стовп, жердина
piling, pile (n) — свая
pollen (n) — пилок
pollution (n) — забруднення довкілля
preventing (ger) — запобігання, попередження
protect (v) — захищати
protective (adj) — захисний
plywood (n) — фанера

pulp (n) — целюлоза
paperboard (n) — картон
pulpwood (n) — целюлозна деревина
processing (ger) — переробка

R

rainfall (n) — атмосферні опади;
rainwater (n) дощова вода
regenerate (v) — регенерувати; відновлювати
regeneration (n) регенерація, відновлення
remain (v) — залишатися
remnant (n) — залишок, рештка
removal (n) — видалення
replace (v) — заміняти
retain (v) — утримувати; зберігати
residues (n) — рештки

S

sapling (n) — пагін, молодик
sapwood (n) — заболонь
sawdust (n) — тирса
seed (n) — насінина
severe (adj) серйозний, сильний
Shed (v) — осипатися (про зерно, листя)
shrub (n) — чагарник, кущ
shrubbery (n) — чагарник, чагарникові насадження
significant (adj) важливий
single (adj) — єдиний
skidding (ger) — занесення
shears (n — ножиці
solidify (v) — тверднути
solution (n) — розчин
solid (adj) — міцний, твердий
sound-insulating (adj) — звукоізоляційний
spare (v) — берегти, зберігати
species (n) вид, порода
spruce (n) ялина
stand (n) — деревостан

stem (n) стовбур, стебло
stretch (n) — ділянка
stunted (adj) — низькорослий
survey (n) — дослідження
survival (n) виживання
susceptible (adj) — чутливий; уразливий
susceptive (adj) — уразливий, чутливий;
softwoods (n) — хвойні породи
stump (n) — пень
sawmill (n) — лісопилка

T

taproot (n) — стрижневий корінь
temperate(adj) помірний
texture (n) — текстура
thickness (n) — товщина
threat (n) небезпека
timber (n) — лісоматеріал, будівельний ліс
tissue (n) — тканина
topsoil (n) — верхній шар ґрунту
transpire (v) — випаровуватися
transport (v) — переносити
tree (n) — дерево
trunk (n) — стовбур

U

uniform (adj) — однорідний
urban (adj) — міський

V

valuable (adj) — дорогий
vegetation (n) — рослинність
veneer (n) — шпон
vulnerable (adj) уразливий

W

watershed (n)	водорозподіл
wooded (adj)	лісистий
weaken (v)	ослабляти; знижувати ефективність
willow (n)	верба
wood (n)	— деревина
woodworking (n)	обробка деревини

SPEAKING PHRASES:

To express your opinion

- As far as I know…
- To my mind
- In my opinion …
- As far as I am concerned,
- It seems to me that …
- I would say that ...
- I dare say that ...
- It goes without saying that ...
- I have no doubt that ...

To express your agreement

- I share your view.
- Fair enough!
- I have no objection.
- You are quite right

To express your disagreement

- I take a different view.
- I think otherwise.
- I am afraid that is not quite true.
- I don't share your view. I don't think so.

USEFUL PHRASES FOR ABSTRACT WRITING

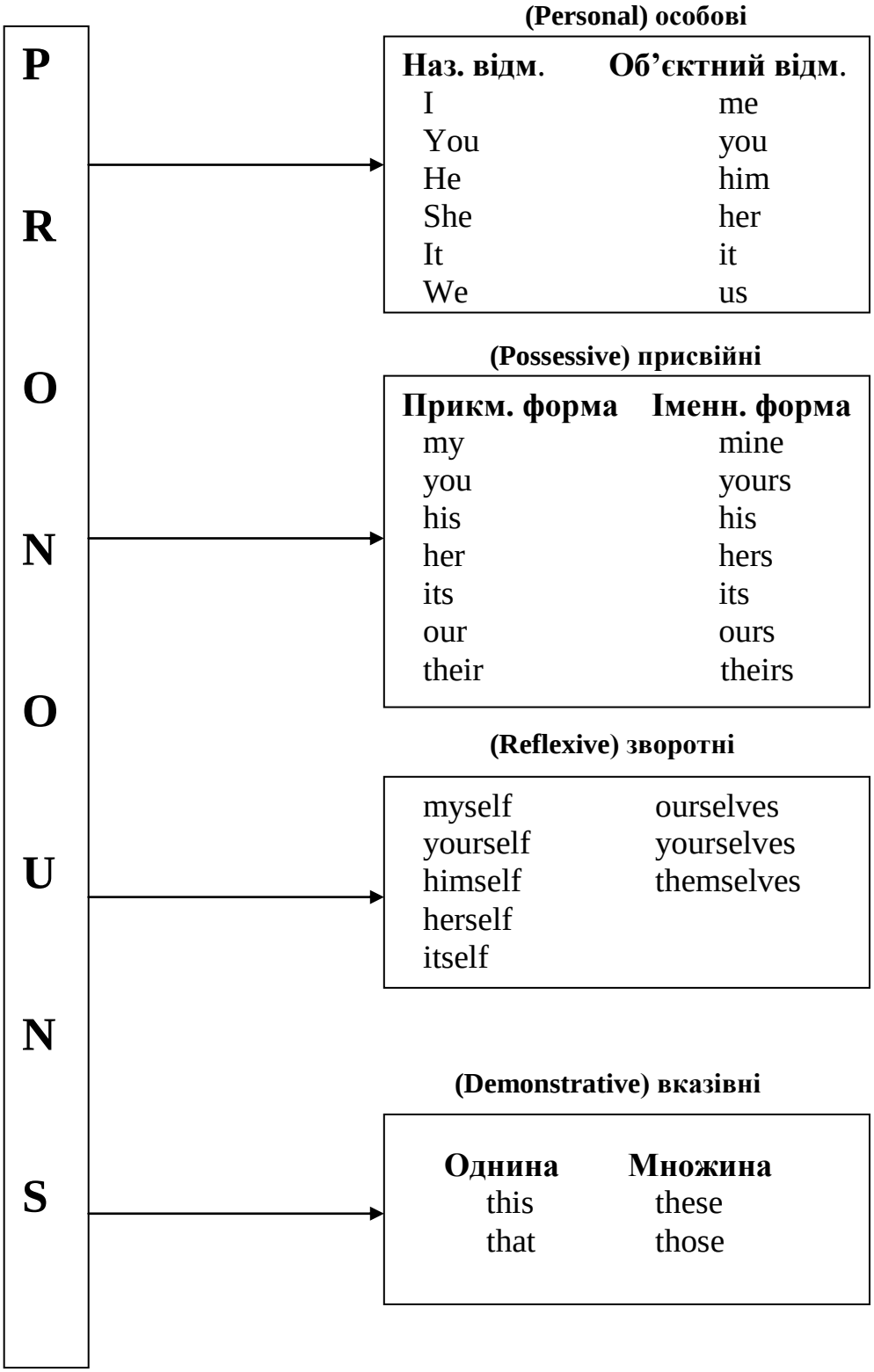
The text (story, article, …)	• is about… • deals with… • presents… • describes…
In the text (story, article, …)	• the reader gets to know… • the reader is confronted with… • the reader is told about…
The author (the narrator)	• says, states, points out that… • claims, believes, thinks that… • describes, explains, makes clear that… • uses examples to confirm/prove that… • agrees/disagrees with the view/thesis… • contradicts the view … • criticises/analyses/ comments on… • tries to express… • argues that… • suggests that… • compares X to Y… • emphasizes his thesis by saying that… • doubts that… • tries to convince the readers that… • concludes that…

About the structure of a text:

• The texts consists of…/may be divided into…
• The introduction goes as far as line…/ In the first paragraph/exposition the author introduces…
• In the second part of the text/ paragraph …
• Another example can be found in line…
• As a result…
• To sum up/ to conclude…
• In the conclusion, starting from line…, the author sums up the main ideas/ thesis…
• In his last statement the author concludes that…

ГРАМАТИЧНИЙ ДОДАТОК

ЗАЙМЕННИКИ



СТУПЕНІ ПОРІВНЯННЯ ПРИКМЕТНИКІВ

	Звичайний ступінь	**Вищий ступінь**	**Найвищий ступінь**
	І. Синтетичний спосіб		
	Односкладові прикметники		
-er **-est**	kind (добрий) big (великий)	kind**er** (добріший) bigg**er** (більший)	(**the**) kind**est** (найдобріший) (**the**) bigg**est** (найбільший)
	Двоскладові прикметники, які закінчуються на –er, -ow, -y, -ble		
-er **-est**	clever (здібний) easy (легкий)	clever**er** (здібніший) easi**er** (легший)	(**the**) clever**est** (найздібніший) (**the**) easi**est** (найлегший)
more/ **(the) most**	**ІІ. Аналітичний спосіб**		
	Інші двоскладові прикметники		
	active (активний)	**more** active (більш активний)	**(the) most** active (найактивніший)
	Прикметники з двох і більше складів		
	beautiful (прекрасний)	**more** beautiful (прекрасніший)	**(the) most** beautiful (найпрекрасніший)
	Особливі випадки утворення ступенів порівняння прикметників		
	good (гарний)	**better** (кращий)	**(the) best** (найкращий)
	bad (поганий)	**worse** (гірший)	**(the) worst** (найгірший)
	little (маленький)	**less** (менший)	**(the) least** (найменший)
	much, many	**more** (більше)	**(the) most** (більш за все**)**
	far (далекий)	**farther** (більш далекий)	**(the) farthest** (найдальший)
		further (більш далекий, подальший)	**(the) furthest** (найдальший)
	old (старий)	**older (**старший)	**(the) oldest**

		elder (старший із членів сім'ї)	(найстарший) **(the) eldest** (найстарший із членів сім'ї)

ЧИСЛІВНИК

Кількісні	**Порядкові**
1 – one	first
2 – two	second
3 – three	third
4 – four	forth
5 – five	fifth
6 – six	sixth
7 – sever	seventh
8 – eight	eighth
9 – nine	ninth
10 – ten	tenth
11 – eleven	eleventh
12 – twelve	twelfth
13 – thirteen	thirteenth
14 – fourteen	fourteenth
20 – twenty	twentieth
21 – twenty one	twenty first…

30 – thirty	thirtieth
40 – forty	fortieth
50 – fifty	fiftieth
100 – a hundred	hundredth
300 – three hundred	three hundredth
563 – five hundred and sixty three	five hundred and sixty third
1000 – a thousand	thousandth
5000 – five thousand	five thousandth
1000000 – a million	millionth

Present Simple Tense

Вживається для визначення дії: звичайної, постійної, притаманної підмету, тобто дії, що відбувається взагалі, а не в момент мовлення.

Відмінювання дієслова в **Present Simple Tense**

I, *We*, *You*, *They* } translate

He, *She*, *It* } translate**s**

Обставини часу:

usually – зазвичай
always – завжди
sometimes – інколи
seldom – рідко
often – часто
as a rule – як правило
every day – кожного дня
every week – кожного тижня
every month – кожного місяця

Допоміжне дієслово для ІІІ особи однини – **does,** для всіх інших осіб – **do**

Види речень в **Present Simple Tense** активного стану

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
You read books every day.	You do not (don't) read books every day.	Do you read books every day? -Yes, we do. (No, we don't.)	Do you read books or magazines every day?	What do you usually read every day?	You don't read books every day, do you?
The bird flies south every autumn.	The bird does not (doesn't) fly south every autumn.	Does the bird fly south every autumn?- Yes, it does. (No, it does not).	Does the bird fly south or east every autumn?	Where does the bird fly every autumn?	The bird flies south every autumn, doesn't it?
He is a painter.	He is not (isn't) a painter.	Is he a painter?-Yes, he is. (No, he isn't).	Is he a painter or a sculptor?	What is he?	He is a painter, isn't he?
They usually have	They usually have no	Do they usually have breakfast at 8	Do they usually have breakfast at 8	When do they usually have	They don`t usually

breakfast at 8 a. m.	breakfast at 8 a. m.	a. m.?	a.m. or at 9 a.m.?	breakfast?	have breakfast at 8 a. m., do they?

Past Simple Tense

Вживається для вираження фактів, дій, що відбулися в минулому

Відмінювання дієслова
в **Past Simple Tense**

I
We
You translat**ed** – стандартні дієслова
They
He went – нестандартні дієслова
She (II ст. таблиці нестанд. дієслів)
It

Допоміжне дієслово **did**

Обставини часу:

yesterday – вчора
the day before yesterday – позавчора
last week – минулого тижня
last month – минулого місяця
last year – минулого року
a week ago – тиждень потому
a month ago – місяць потому

Види речень в **Past Simple Tense** активного стану

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
You translated texts yesterday.	You did not (didn't) translate texts yesterday.	Did you translate texts yesterday? – Yes, we did. (No, we didn't).	Did you translate texts or articles yesterday?	What did you translate yesterday?	You didn't translate texts yesterday, did you?
Pete and Helen went to the theatre last Tuesday.	Pete and Helen did not (didn't) go to the theatre last Tuesday.	Did Pete and Helen go to the theatre last Tuesday? – Yes, they did. (No, they didn't).	Did Pete and Helen go to the theatre or to the museum last Tuesday?	Where did Pete and Helen go to last Tuesday?	Pete and Helen went to the theatre last Tuesday, didn't they?
She was a student three years ago	She was not (wasn't) a student three years	Was she a student three years ago? – Yes, she was. (No, she	Was she or was he a student three years ago?	What was she three years ago?	She was a student three years ago, wasn't

	ago	wasn’t)			she?
They had breakfast an hour ago	They didn`t have breakfast an hour ago	Did they have breakfast an hour ago? – Yes, they did. (No, they didn’t)	Did they have breakfast or dinner an hour ago?	When did they have breakfast?	They didn`t have breakfast an hour ago, did they?

Future Simple Tense

Вживається для вираження фактів чи дії, що відбудуться у майбутньому.

Відмінювання дієслова

в **Future Simple Tense**

I, *We* } will

You, *They*, *He*, *She*, *It* } will → translate

Обставини часу:

tomorrow – завтра
the day after tomorrow – післязавтра
next week – наступного тижня
next month – наступного місяця
next spring – наступної весни
in an hour – за годину
in a year – за рік

Види речень в **Future Simple Tense** активного стану

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
We will learn new words tomorrow.	We will not (won’t) learn new words tomorrow.	Will we learn new words tomorrow?- Yes we shall. (No, we shan’t).	Will we learn new words or rules tomorrow?	What will we learn tomorrow?	We won’t learn new words tomorrow, shall we?
The bird will fly back from the south	The bird will not (won’t) fly back from	Will the bird fly back from the south	Will the bird fly back from the south or from the east next spring?	Where will the bird fly back from next spring?	The bird will fly back from the south next

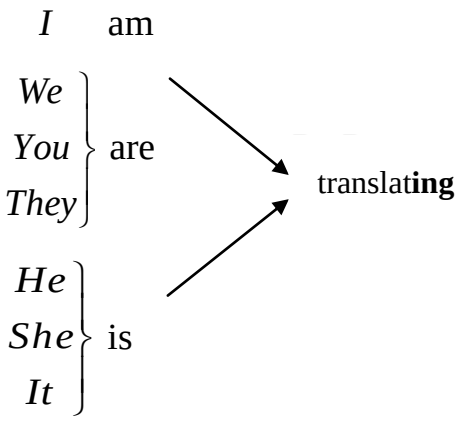
next spring	the south next spring	next spring?- Yes, it will. (No, it won’t)			spring, won’t it?

Present Continuous Tense

Вживається для визначення дій, що відбуваються в момент мовлення.

Відмінювання дієслова

в **Present Continuous Tense**



Обставини часу:

now – зараз

at the moment – в цей момент

currently -- *наразі*

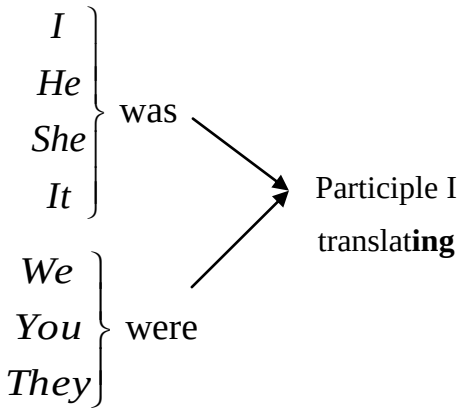
Види речень в **Present Continuous Tense**

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
They are speaking English now.	They are not (aren't) speaking English now.	Are they speaking English now? – Yes, they are. (No, they aren't).	Are they speaking English or German now?	What language are they speaking now?	They aren't speaking English now, are they?
Pete is working at the library at the moment	Pete is not (isn't) working at the library at the moment	Is Pete working at the library at the moment? – Yes, he is	Is Pete working at the library or at home at the moment?	Where is Pete working at the moment?	Pete is working in the library at the moment, isn't he?

Past Continuous Tense

Вживається для вираження дій, що відбувалися в конкретний момент часу в минулому.

Відмінювання дієслова в **Past Continuous Tense**



Обставини часу:

at 3 p.m. yesterday – вчора о 15-й годині

from 6 a.m. till 11 a.m. the day before yesterday – позавчора з 6-ї до 11-ї ранку, або інша дія в минулому *(<u>While Ann was cooking</u>, he was reading a newspaper)*

Види речень в **Past Continuous Tense** активного стану

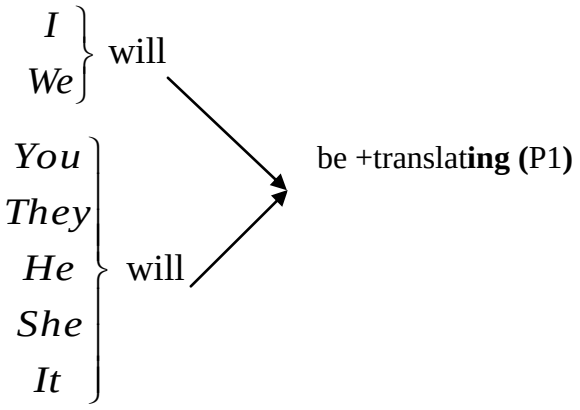
Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
They were translating texts at 2 p.m. yesterday.	They were not (weren't) translating texts at 2 p.m. yesterday.	Were they translating texts at 2 p.m. yesterday?	Were they translating texts at 2 or at 3 p.m. yesterday?	What were they translating at 2 p.m. yesterday?	They weren't translating texts at 2 p.m. yesterday, were they?
He was writing a letter from last Monday till last Saturday.	He was not (wasn't) writing a letter from last Monday till last Saturday.	Was he writing a letter from last Monday till last Saturday?	Was he or was she writing a letter from last Monday till last Saturday?	How long was he writing a letter?	He was writing a letter from last Monday till last Saturday, wasn't he?

Future Continuous Tense

Вживається для вираження дії, що відбудеться в конкретний момент часу в майбутньому.

Відмінювання дієслова

в **Future Continuous Tense**



Обставини часу:

at 3 p.m. tomorrow – завтра о 15-й год.

from 5 till 7 p.m. the day after tomorrow – з 17-ї до 19-ї години післязавтра.

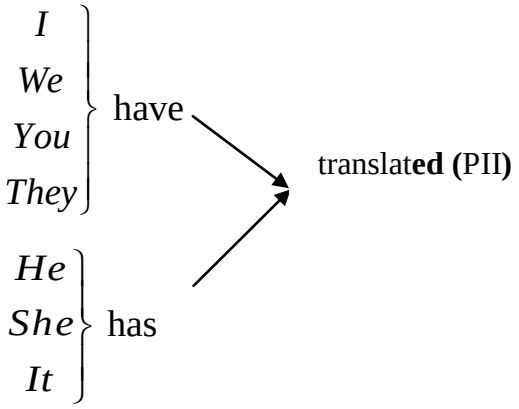
Види речень в **Future Continuous Tense** активного стану

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
We shall be translating the articles at 9 a. m. tomorrow.	We shall not (shan't) be translating articles at 9 a. m. tomorrow.	Shall we be translating the articles at 9 a. m. tomorrow? – Yes, we shall. (No, we shan't).	Shall we be translating or looking through the articles at 9 a. m. tomorrow?	What shall we be translating at 9 a. m. tomorrow?	We shan't be translating the articles at 9 a. m. tomorrow, shall we?
The farmers will be picking up apples in the garden from 8 a. m. till 7 p. m. next Saturday	The farmers will not (won't) be picking up apples in the garden from 8 a. m. till 7 p. m. next Saturday	Will the farmers be picking up apples in the garden from 8 a. m. till 7 p. m. next Saturday? – Yes, they will. (No, they won't)	Will the farmers be picking up apples or pears in the garden from 8 a. m. till 7 p. m. next Saturday?	How long will the farmers be picking up apples in the garden next Saturday?	The farmers will be picking up apples in the garden from 8 a. m. till 7 p. m. next Saturday, won't they?

Present Perfect Tense

Вживається для вираження закінченої дії, що завершилася в попередній період до моменту мовлення, але має безпосередній зв`язок з теперішнім моментом.

Відмінювання дієслова в **Present Perfect Tense**



Обставини часу:

just – тільки що

yet – ще, вже

already – вже

recently, lately – недавно

ever – коли-небудь

never – ніколи

this week – цього тижня

this month – цього місяця

(інколи момент дії може бути невираженим)

Види речень в **Present Perfect Tense**

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
You have already translated the text.	You have not (haven't) translated the text yet.	Have you already translated the text? – Yes, we have. – (No, we haven't).	Have you already translated the text or the article?	What have you already translated?	You haven't translated the text yet, have you?
He has passed the exams this week	He has not (hasn't) passed the exams this week	Has he passed the exams this week? – Yes, he has. (No, he hasn't)	Has he or has she passed the exams this week?	Who has passed the exams this week?	He has passed the exams this week, hasn't he?

Past Perfect Tense

Вживається для вираження закінченої дії, що відбулася до певного моменту в минулому та співвідносилася з цим моментом в минулому, а не з моментом мовлення, тобто не з теперішнім моментом.

Відмінювання дієслова

в **Past Perfect Tense**

I
We
You
They } had +translat**ed (**PII**)**
He
She
It

Обставини часу:

by 3 p.m. yesterday – вчора до 15-ї години

by last Wednesday – до минулої середи;

інша дія в минулому *(<u>When I came to Kyiv</u> my friends had already been there)*

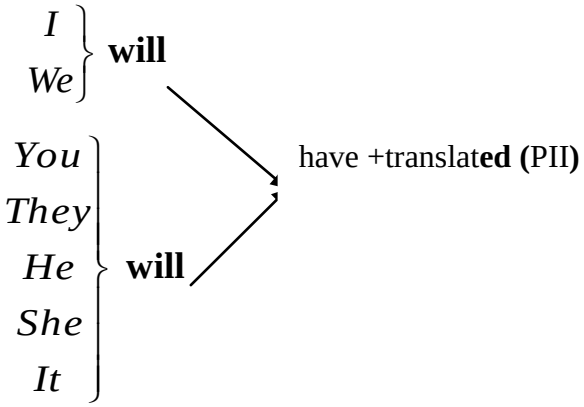
Види речень в **Past Perfect Tense**

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
She had translated the poem by last Thursday.	She had not (hadn’t) translated the poem by last Thursday.	Had she translated the poem by last Thursday? – Yes, she had. (No, she hadn’t).	Had she translated the poem by last Thursday or Friday?	What had she translated by last Thursday?	She had translated the poem by last Thursday, hadn’t she?
John had written the letter to his friends by 4 p.m. yesterday.	John had not (hadn’t) written the letter to his friends by 4 p.m. yesterday.	Had John written the letter to his friends by 4 p.m. yesterday? – Yes, he had. (No, he hadn’t).	Had John written the letter to his friends by 4 or by 5 p.m. yesterday?	What had John written by 4 p.m. yesterday?	John hadn’t written the letter to his friends by 4 p.m. yesterday, had he?

Future Perfect Tense

Вживається для вираження дії, що відбудеться та закінчиться раніше певного моменту в майбутньому.

Відмінювання дієслова в **Future Perfect Tense**



Обставини часу:

by next Thursday – до наступного четверга

by 5 p.m. tomorrow – завтра до 17-ї години.

(They will have studied the problem before they begin their practical work).

Види речень в **Future Perfect Tense** активного стану

Речення		Питання			
розповідні	заперечні	загальні	альтернативні	спеціальні	розділові
Mary will have translated the text by next Thursday.	Mary will not (won't) have translated the text by next Thursday.	Will Mary have translated the text by next Thursday? – Yes, she will. (No, she won't).	Will Mary or will Jane have translated the text by next Thursday?	What will Mary have translated by next Thursday?	Mary will not have translated the text by next Thursday, will she?
The bird will have flown back from the south before trees are in blossom.	The bird will not (won't) have flown back from the south before trees are in blossom.	Will the bird have flown back from the south before trees are in blossom? – Yes, it will (No, it won't).	Will the bird have flown back from the south or from the north before trees are in blossom?	Where will the bird have flown back from before trees are in blossom?	The bird will have flown back from the south before trees are in blossom, won't it?

PASSIVE VOICE

(Пасивний стан)

to be + Participle II (asked, written**)**

Time	Tense		
	SIMPLE	**CONTINUOUS**	**PERFECT**
PRESENT	*I am* / *She* / *He* — *is* *You* / *We* / *They* — *are* → asked *Мене* / *Її* / *Його* / *Вас, тебе* / *Нас* / *Їх* → запитують	*I am* / *She* / *He* — *is* *You* / *We* / *They* — *are* → being asked *Мене* / *Її* / *Його* / *Вас, тебе* / *Нас* / *Їх* → запитують	*She* / *He* — *has* *I* / *You* / *We* / *They* — *have* → been asked *Її* / *Його* / *Мене* / *Вас, тебе* / *Нас* / *Їх* → запитали
PAST	*I* / *She* / *He* — *was* *You* / *We* / *They* — *were* → asked *Мене* / *Її* / *Його* / *Вас, тебе* / *Нас* / *Їх* → запитали	*I* / *She* / *He* — *was* *You* / *We* / *They* — *were* → being asked *Мене* / *Її* / *Його* / *Вас, тебе* / *Нас* / *Їх* → запитували	*I* / *She* / *He* / *You* / *We* / *They* → had been asked *Мене* / *Її* / *Його* / *Вас, тебе* / *Нас* / *Їх* → запитали

FUTURE	*I*, *We* — *will*; *She*, *He*, *You*, *They* — *will* — be asked *Мене*, *Нас*, *Її*, *Його*, *Вас, тебе*, *Їх* — запитають	———	*I*, *We* — *will*; *She*, *He*, *You*, *They* — *will* — have been asked *Мене*, *Нас*, *Її*, *Його*, *Вас, тебе*, *Їх* — запитають

MODAL VERBS
(модальні дієслова)

Present Simple	Past Simple	Future Simple
CAN 1) «можливість» They can come to us soon. Вони можуть прийти до нас скоро. 2) «вміння» I can speak English well. Я вмію добре розмовляти англійською. I cannot read Spanish. Я не вмію читати по-іспанськи. Еквівалент: to be able to I am able to come. Я можу прийти	**COULD** «міг, міг би» We couldn't do it last week. Ми не могли зробити це минулого тижня. Could you help me do this task? Ви не могли б допомогти мені зробити це завдання? was / were able to I was able to do it yesterday. Я зміг це зробити вчора	shall/will be able to I shall be able to come tomorrow. Я зможу прийти завтра
MAY 1) «ймовірність події або дії» It may rain. Можливо буде дощ. 2) «прохання» May I come in? Можна мені увійти?	**MIGHT** «ймовірність події або дії» It might be John. Це, можливо, Джон	shall/will be allowed to I shall be allowed to use the dictionary while translating the text tomorrow. Завтра мені дозволять користуватися словником при перекладі тексту
MUST 1) «необхідність дії» He must do it in time. Він повинен зробити це вчасно. Еквіваленти:1. to have to «змушений» He has to get up earty. Він змушений рано вставати. 2) to be to – «змушений зробити згідно з планом або домовленістю»	He had to do it yesterday. Він змушений був зробити це вчора. He was to speak at the meeting. Він повинен був	He will have to do it next week. Він мусить зробити це наступного тижня

I am to be at home at 5. Я повинна бути вдома о 5-й годині **SHOULD** Слід було б You should do it. Вам слід було б зробити це. (тепер)	виступити на зборах You should have done it. Вам слід було б зробити це. (раніше)	

БЕЗОСОБОВІ ФОРМИ ДІЄСЛОВА

	Infinitive (з часткою *to*)		**Gerund (*-ing*)**		**Participle I (*-ing*)**		**Participle II (ст. д. – ed, нест. д. – 3 форма дієслова)**
Voice / Tenses	Active	Passive	Active	Passive	Active	Passive	
Simple	to ask to write	to be asked to be written	asking writing	being asked being written	asking writing	being asked being written	asked written
Continuous	to be asking to be writing	-	-	-	-	-	-----
Perfect	to have asked to have written	to have been asked to have been written	having asked having written	having been asked having been written	having asked having written	having been asked having been written	-----

The use of non-finite forms of the verb

Члени речення	**Infinitive (to)**	**Gerund (-ing)**	**Participle I (-ing)**	**Participle II (ст. д. – ed, нест. д. – 3 форма дієслова)**

1. Підмет	To walk is useful Гуляти – корисно	Walking is useful	----	----
2. Частина присудка	Our aim is to master English. Наша мета – оволодіти англійською мовою	Our aim is mastering English. Наша мета – оволодіння англійською мовою	He is writing a letter. Він пише лист	He has written a letter. Він написав лист
3. Додаток	She likes to sing Вона любить співати	She likes singing	----	----
4.Означення	The method to be used is not new. Метод, який треба використати, не новий	____	Look at the trees growing in our garden. Подивись на дерева, які ростуть у нашому садку	The method used is not new. Метод, який був використаний – метод не новий
5.Обставина	He went there to study. Він пішов туди навчатися	He went there for studying. Він пішов туди навчатися	(While) reading he made notes. Читаючи, він робив записи	When done, this work will give good results. Коли робота буде зроблена, вона дасть гарні результати

ІНФІНІТИВНІ КОНСТРУКЦІЇ

Complex Subject

«Складний підмет»

Підмет	Присудок	Інфінітив	Другорядні члени речення	Переклад
He	is said	to come	to us	Говорять, що він прийде до нас
This farm	is known	to have	rich soil	Відомо, що це господарство має багаті ґрунти
They	are expected	to work	on the farm	Сподіваються, що вони будуть працювати в господарстві
This crop	is likely	to give	high yields	Ймовірно, що ця культура дасть високі врожаї

Дієслова, що вживаються як присудок:
в Passive Voice:
to report, to say, to know, to suppose, to state, to expect, to believe та ін. в Active Voice:

to seem, to appear, to be likely, to be unlikely, to be sure.

Complex Object

"Складний додаток"

Підмет	Присудок	Додаток, виражений іменником або займенником в об'єктному відмінку	Інфінітив	Другорядні члени речення	Переклад

We	expect	them	to do	it in time.	Ми сподіваємось, що вони зроблять це вчасно.
I	want	you	to work	better.	Я хочу, щоб ви працювали краще.
They	consider	us	to translate	this text.	Вони сподіваються, що ми перекладемо цей текст.
We	saw	him	enter	the house.	Я бачив, як він входив у будинок.
I	heard	her	sing		Я чув, як вона співала.

Конструкція вживається після дієслів (в активному стані):

to know, to want, to expect, to consider, to think, to suppose, to find, to believe та ін.

ЛОВОТВОРЕННЯ

I. Афіксація		
Частини мови	**Префіксація**	**Суфіксація**
1) іменник	**counter:** counteraction **anti:** antifascist **over:** overproduction **non:** nonconductor **in:** inability та ін.	**-er / -or** (додається до дієслів): doer **-ee** (від дієслів) – payee **-age** (від дієслів) – marriage **-ance / -ence** (від прикметників) – resistance **-dom** (від іменників та прикметників) – freedom **-hood** (від іменників) – brotherhood **-ion (-ation, -tion, -sion, -ssion)** (від дієслів) – collection **-ment** (від дієслів) – development **-ness** (від прикметників) – coldness **-ship** (від прикметників) – friendship **-** **ure** (від дієслів) – departure та ін.
2) прикметник	**un:** unequal **in (il):** incomplete, illegal **dis:** dishonest **non:** nonessential **post:** post-revolutionary **inter:** interdependent **sub:** subconscious **ultra:** ultra-short та ін.	**-able /-ble** (від дієслів) eatable **-al** (від іменників) central **-ant / -ent** (від дієслів) different **-ful** (від іменників) beautiful **-ish:** (від іменників та прикметників) Danish, reddish **-ive:** (від дієслів та прикметників) active **-less:** (від іменників) hopeless **-ous:** (від іменників) glorious`` **-** **y** (від іменників) windy та ін.

Частини мови	Префіксація	Суфіксація
дієслово	**un:** to undress **dis:** to disapprove **re:** to re-elect **mis:** to mislead **to over:** to over-estimate **under:** underpay **counter:** to counteract **en:** to enslave	**-en** (від прикметників / іменників) to sharpen **-fy** (від прикметників) to simplify **-ize** (від іменників) to characterize
II. Конверсія		
а) іменник answer work **б) прикметник** clean empty		**дієслово** to answer to work **дієслово** to clean to empty
III. Чергування звуків (букв)		
іменник use [ju:s] life [laif]		**дієслово** to use [ju:z] to live [li:v]
IV. Зміна наголосу		

éxport	to expórt
ímport	to impórt

V. Словоскладення:

а) утворення іменника bed + room = bedroom school + boy = schoolboy father + in + law = father-in-law

б) утворення прикметника dark + blue =dark-blue first + class = first-class

в) утворення дієслова white + wash = to whitewash broad + cast = to broadcast

IRREGULAR VERBS

(Список неправильних дієслів)

be	was, were	been	бути
become	became	become	стати, зробитися
begin	began	begun	починати(*ся*)
blow	blew	blown	дути
break	broke	broken	ламати(ся)
bring	brought	brought	приносити
build	built	built	будувати
burn	burnt	burnt	горіти, палити
buy	bought	bought	купувати
catch	caught	caught	ловити, схоплювати
choose	chose	chosen	вибирати, добирати
come	came	come	приходити
cost	cost	cost	коштувати
cut	cut	cut	різати
do	did	done	робити
draw	drew	drawn	тягти; малювати
drink	drank	drunk	пити
eat	ate	eaten	їсти
fall	fell	fallen	падати
feed	fed	fed	годувати
feel	felt	felt	почувати (*себе*)
fight	fought	fought	боротися, битися
find	found	found	знаходити
fly	flew	flown	літати
forget	forgot	forgotten	забувати
freeze	froze	frozen	заморожувати
get	got	got	одержувати; ставити
give	gave	given	давати
go	went	gone	іти, ходити
grow	grew	grown	рости, ставати
have	had	had	мати
hear	heard	heard	чути
hold	held	held	тримати
keep	kept	kept	тримати, зберігати
know	knew	known	знати
lead	led	led	вести
learn	learnt	learnt	вчити(ся)
leave	left	left	залишати

Продовження списку

let	let	let	дозволяти
loose	lost	lost	губити, втрачати
make	made	made	робити
meet	met	met	зустрічатися
pay	paid	paid	платити
put	put	put	класти
read	read	read	читати
ride	rode	ridden	їздити верхи
rise	rose	risen	вставати, сходити
run	ran	run	бігти
say	said	said	сказати
see	saw	seen	бачити
sell	sold	sold	продавати
send	sent	sent	посилати
shake	shook	shaken	трясти
shine	shone	shone	сяяти, блищати
show	showed	shown	показувати
sing	sang	sung	співати
sleep	slept	slept	спати
smell	smelt	smelt	нюхати, пахнути
speak	spoke	spoken	говорити, розмовляти
spend	spent	spent	витрачати
stand	stood	stood	стояти
swim	swam	swum	плавати
take	took	taken	брати
teach	taught	taught	вчити
tell	told	told	розповідати, говорити
think	thought	thought	думати
throw	threw	thrown	кидати
understand	understood	understood	розуміти
wake (up)	woke (up)	woken (up)	прокидатися
wear	wore	worn	носити
win	won	won	перемагати
write	wrote	written	писати

LITERATURE

1. Герман Л.В., Коврига Ю.В. Англійська мова: посібник для здобувачів першого (бакалаврського) освітього рівня вищої освіти -Х. :ХНАУ, 2020. - 118 с.
2. Braatz S., Stahl J. The youth guide to forests. - 1st ed. 2014. - 240 p.
3. Hammond H. Seeing the forest among the trees. - 1992. - 311p.
4. Evans J The Forests Handbook: An Overview of Forest Science.- 2001.- Vol. 1 .- 402 p.
5.National Forestry Handbook.-USA: United States Department of Agriculture, 2004.- 216 p.

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