
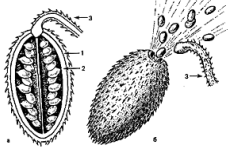
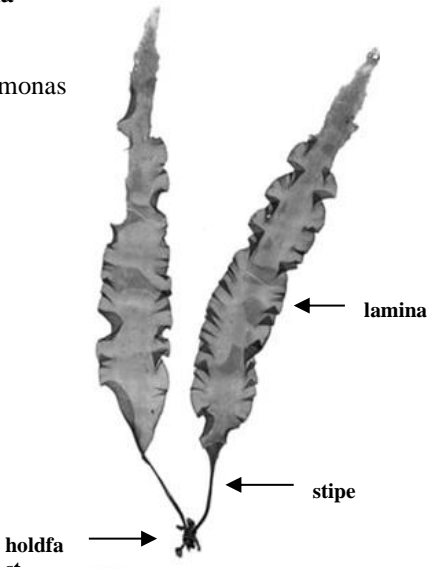



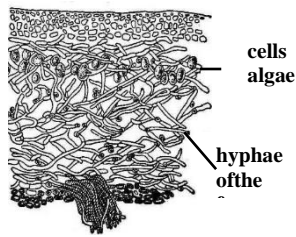
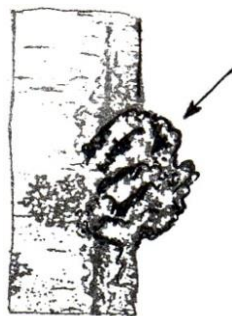
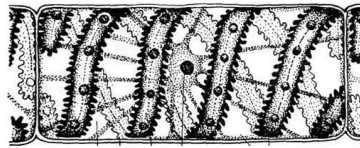
<p><b>2.93.</b> A one-seeded nuciform fruit cracks not by maturation. It has acorn cup, which is formed by overgrowth and lignification of the flower stem and bracts. This is ...</p> <p>A. <b>acorn</b>  B. nut  C. nutlet  D. disamara  E. corn seed</p>	<p><b>Acorn</b> is formed with tree carpels, from the inferior ovary. Pericarp is skinny. Acorn has cup-shaped cupule which is formed from the imbricated, accrete, skinny leaflets. Acorn is fruit typical for oak.</p> 
<p><b>2.94.</b> Morphological analysis of fruits shows that they are a combination of ripe fruits, formed from flowers of a single inflorescence. They are ...</p> <p>A. <b>multiple fruits</b>  B. polydrupes  C. regmas  D. hesperidium  E. capsules</p>	<p>Compound fruit is a set of mature fruits and of cauline constituent parts of a tight inflorescence that is clearly separated from the vegetative part of the shoot.</p>
<p><b>2.95.</b> Specify the type of seed distribution, when during their maturation fruits crack and the seeds are ejected with strength.</p> <p>A. <b>autochore</b>  B. hydrochore  C. geochore  D. zoochore  E. anemochore</p> 	<p><b>Autochore</b> is distribution of fruit, seeds, and spores without participation of external factors. They distinguish different forms of autochore: active scattering of seed from a cracked ripe fruit under the pressure (mechanochore) like <b>squirting cucumber (Ecballium)</b>, pumpkin family; burying fruit into the soil (geocarpy); spreading the fruits and seeds under action of gravity (barochore).</p>

### Content module 3. PLANT SYSTEMATIC

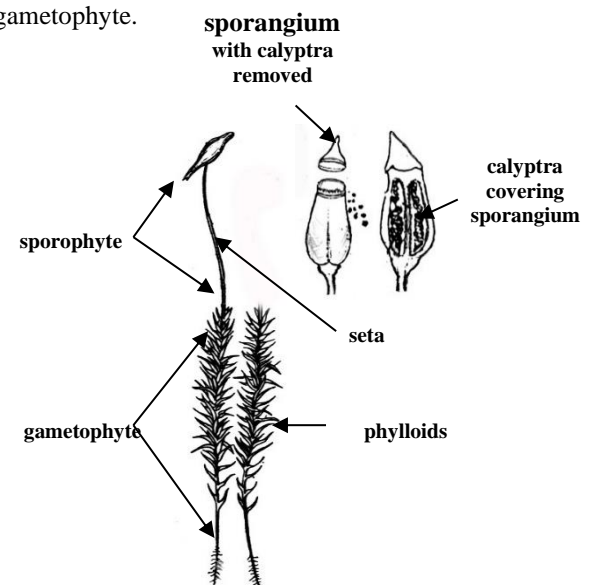
#### ALGAE, FUNGI, LICHEN

<p><b>3.1.</b> The brown alga with trunk, rhizoids, and foliaceous part is rich in alginates and iodine is ranked with genus of:</p> <p>A. <b>Laminaria</b>  B. Chlorella  C. Ulothrix  D. Chlamydomonas  E. Spirogira</p> <p style="text-align: center;"><i>Laminaria</i></p> 	<p><i>Laminaria</i> is a <a href="#">genus</a> of 31 <a href="#">species</a> of <a href="#">brown algae</a> (<a href="#">Phaeophyceae</a>), all sharing the common name "<a href="#">kelp</a>". They grow in White Sea and other. This economically important genus is characterized by long, leathery laminae and relatively large size. The greater proportion of commercial cultivation is for <a href="#">algin</a>, <a href="#">iodine</a> and <a href="#">mannitol</a>, which are used in a range of industrial applications. The largest producer of kelp products is <a href="#">China</a></p>
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<p>3.2. It is known that representatives of Chlorophyta division have cells with different shapes of chromatophores. Band-shaped chromatophores are species of the genus...</p> <p>A. <b>spirogyra</b>  B. volvox  C. clorella  D. chlamidomonas  E. spirulina</p>	<p>Plastids of algae are chromatophores in the form of a green band, spirally located; freshwater filamentous green alga <i>Spyrogyra</i> (<i>Spirogyra</i>) Division Chlorophyta has them.</p>
<p>3.3. The studied cells have nucleus and do not have chloroplasts; their cytoplasm reserves glycogen, the cell walls contain chitin. So, the cells belong to...</p> <p>A. <b>fungi</b>  B. lichen  C. alga  D. higher plant  E. cyanobacteriae</p>	<p><b>Fungi</b>, which is separate from <a href="#">plants</a>, <a href="#">animals</a>, and <a href="#">bacteria</a>. One major difference is that fungal cells have <a href="#">cell walls</a> that contain <a href="#">chitin</a>, unlike the cell walls of plants, which contain <a href="#">cellulose</a>. A fungi cell has hard shell, whose main structural substance is chitin; it also contains proteins, fats, polyglucanes.</p>
<p>3.4. The structure of gill-bearing hymenophore is considered by way of example of poisonous pileate fungus from the Basidiomycota class –</p> <p>A. <b>fly agaric</b>  B. champignon  C. shelf fungus  D. ergot  E. polypore</p>	<p><b>Basidiomycota</b> is one of two large <a href="#">phyla</a> that, together with the <a href="#">Ascomycota</a>, comprise the subkingdom <a href="#">Dikarya</a> (often referred to as the "<b>higher fungi</b>") within the Kingdom <a href="#">Fungi</a>. Fly-Agaric (<i>Agaricus muscarius</i>) is inedible poisonous mushroom having the red cap with white dots and stalk</p> 
<p>3.5. A sterile form of xylotroph <i>Inonotus obliquus</i> (i.e. shelf fungus) is detached from a trunk of <i>Betula pendula</i>. In other terms this is:</p> <p>A. <b>polypore</b>  B. fly agaric  C. ergot  D. champignon  E. tinder fungus</p>	<p><i>Inonotus obliquus</i>, commonly known as <b>Chaga mushroom</b> is a <a href="#">fungus</a> in <a href="#">Hymenochaetaceae</a> family. It is <a href="#">parasitic</a> on <a href="#">Birch</a> and other trees. The sterile conk is irregularly formed and has the appearance of burnt charcoal. It is not the <a href="#">fruit body</a> of the fungus, but a big mass of <a href="#">mycelium</a>, mostly black due to the presence of massive amounts of <a href="#">melanin</a>. The fertile fruit body can be found very rarely as a <a href="#">resupinate</a> (crustose) fungus on or near the clinker, usually appearing after the host tree is completely dead. Chaga mushroom being used in <a href="#">folk medicine</a> <a href="#">Eastern European</a> countries as a remedy for <a href="#">cancer</a>, <a href="#">gastritis</a>, <a href="#">ulcers</a>, and <a href="#">tuberculosis</a> of the bones.</p>
<p>3.6. The representatives of this Division reproduce vegetatively by means of special formations: Isidia, soredia, lobules. These organisms are from Division...</p> <p>A. <b>lichenes</b>  B. basidiomycota  C. equisetophyta  D. lycopodiophyta  E. polypodiophyta</p>	<p><b>Lichens (Lichenes)</b> is symbiotic organisms that consist of a fungus (marsupial, basidiomycete) and algae (green, blue-green). Reproduce vegetatively by body parts or special formations - Isidia, soredia, lobules.</p>



## SPORE-BERING PLANTS

<p><b>3.7.</b> The highest cryptogams have the ability to produce spores at the process of asexual reproduction. This is one of adaptations for living in upland. What is the chromosome set for spores?</p> <p>A <b>haploid</b>          B. diploid          C. triploid          D. tetraploid          E. polyploidy</p>	<p>At all sporous plants in their life cycle of development have alternation of generation – sexual and unisexual. The sexual generation is prothallium (or gametophyte). Gametophyte is formed from spores. Gametophyte has haploid a set of chromosomes. It carries out function of formation of gametes in special organs of sexual reproduction, which called amphigonium and antheridium. The asexual generation (or sporophyte) is formed of a zygote. Sporophyte has diploid a set of chromosomes. It carries out function of formation spores in special organs, which called sporangium.</p>
<p><b>3.8.</b> A higher nonvascular plant has precise heterogenesis, where gametophyte is dominant (sexual generation) and sporophyte (unisexual generation) is reduced. So, a plant belongs to...</p> <p>A. <b>bryophyta (mosses)</b>          B. lycopodiophyta (club mosses)          C. equisetophyta (horsetails)          D. polipodiophyta (ferny)          E gymnospermae (conifers)</p>	<p><b>Bryophyta (Mosses)</b> are small, soft <u>plants</u> that are typically 1–10 cm (0.4–4 in) tall, though some species are much larger. They commonly grow close together in clumps or mats in damp or shady locations. They do not have flowers or <u>seeds</u>, and their simple <u>leaves</u> cover the thin wiry stems. At certain times mosses produce <u>spore</u> capsules which may appear as beak-like capsules borne aloft on thin stalks.</p>
<p><b>3.9.</b> The plant with phylloids and rhizoids has no natural conductive tissues; its gametophyte is dominating in the development cycle. So, this plant belongs to...</p> <p>A. <b>bryophyta</b>          B. lycopodiophyta          C. equisetofyta          D. polypodiophyta          E. gymnosperme</p>	<p>Mosses are <u>bryophytes</u>, or <u>non-vascular plants</u> is differ from 'higher' plants by not having internal water-bearing vessels or veins, and no flowers and therefore no fruits, cones or seeds. They are small (a few centimeters tall) and herbaceous (nonwoody) and absorb water and nutrients through their leaves. Mosses have stems which may be simple or branched and upright simple leaves that often have midribs, roots (<u>rhizoids</u>) that anchor them to their substrate, and spore-bearing capsules on long stems.</p>
<p><b>3.10.</b> The subkingdom Embryophytes incorporates various groups of eucaryotes with the common feature of ability to photosynthesis. One can observe in their biocycle the heterogenesis alternation of sporophyte and gametophyte generations. What is the division of plants for which the gametophyte dominates the sporophyte in the life cycle?</p> <p>A. <b>bryophyta</b>          B. magnoliophyta          C. pynophyta          D. lycopodiophyta          E. polypodiophyta</p>	<p>In addition to lacking a <u>vascular system</u>, mosses have a <u>gametophyte</u> - dominant <u>life cycle</u>, i.e. the plant's cells are <u>haploid</u> for most of its life cycle. Sporophytes (i.e. the <u>diploid</u> body) are short-lived and dependent on the gametophyte.</p>  <p>The diagram illustrates the life cycle of a moss. It shows a <b>gametophyte</b> at the base, which is a green, branched structure with <b>phylloids</b> (small leaves) and <b>rhizoids</b> (root-like structures). From the gametophyte, a <b>sporophyte</b> grows. The sporophyte consists of a long <b>seta</b> (stalk) that supports a <b>sporangium</b>. The sporangium is initially covered by a protective <b>calyptra</b>. The diagram shows the calyptra being removed, revealing the sporangium. Labels include: sporangium with calyptra removed, calyptra covering sporangium, sporophyte, seta, gametophyte, and phylloids.</p>

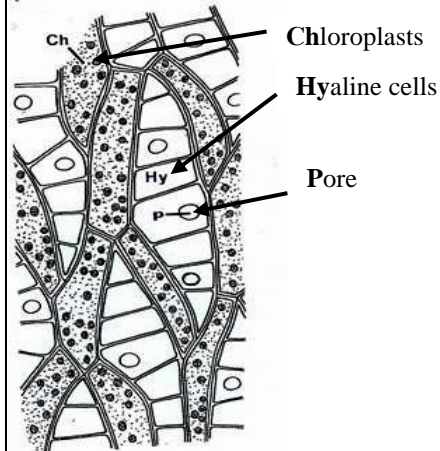
**3.11.** Sphagnum possesses quick absorbability and strong water retention because ...

- A. **there are special hyaline cells**
- B. alive near reservoirs
- C. presence of roots
- D. absence of transpiration
- E. a leaf surface has a dense layer of cutin



**sphagnum**

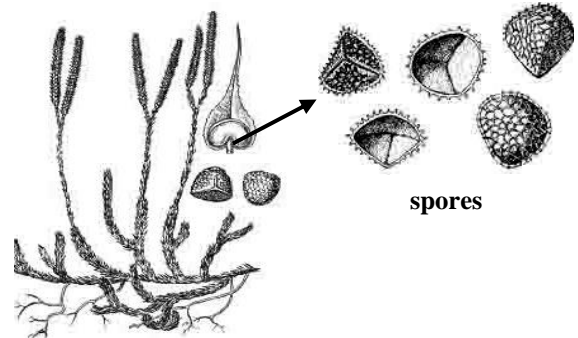
The unistratose leaves are made up of two cell types: larger, hyaline, dead cells (**Hy**) with spiral thickenings and circular pores (**P**) and smaller, relatively narrow, elongated cells that contain chloroplasts (**Ch**) and surround the hyaline cells; a midrib is lacking.



**3.12.** Spores of a higher plant are used as a powder for children. This plant is ...

- A. **lycopodium clavatum**
- B. equisetum arvense
- C. pinus sylvestris
- D. ledum palustre
- E. calendula officinale

Previously spores are used as powder in medicine (in children practice).



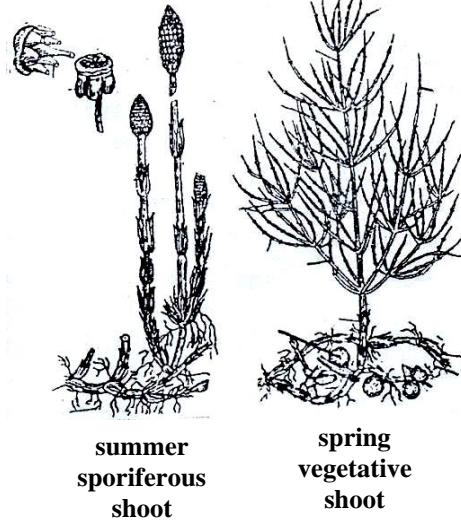
**3.13.** Spore and pollen analysis revealed in the pollen some tetrahedral spores with a semi-circular base and a reticular surface, which may belong to:

- A. **lycopodiophyta**
- B. equisetiphyta
- C. bryophyta
- D. polypodiophyta
- E. pinophyta

3.14. The plant which was investigated has a rhizome, spring nonchlorophyllic brown sporiferous shoots and summer green vegetative shoots. This is...

- A. *Equisetum arvense*
- B. *Polytrichum commune*
- C. *Dryopteris filix mas*
- D. *Lycopodium clavatum*
- E. *Ephedra distachium*

*Equisetum arvense* L., field horsetail, common horsetail



*Equisetum arvense* (Field Horsetail or Common Horsetail), is aherbaceousperennial plant, native throughout the arctic and temperate regions of the northern hemisphere. It has separate sterile non-reproductive and fertile spore-bearing stems, growing from a perennial underground rhizomatous stem system. The fertile stems are produced in early spring and are non-photosynthetic, while the green sterile stems start to grow after the fertile stems have wilted, and persist through the summer until the first autumn frosts.

3.15. A plants under examination has a rhizome, big pinnatisected leaves with sori and sporangia on their undersurface . According to this data the plant should be related to one of the the following divisions :

- A. **Polypodiophyta**
- B. Lycopodiophyta
- C. Magnoliophyta
- D. Pinophyta
- E. Equisetophyta

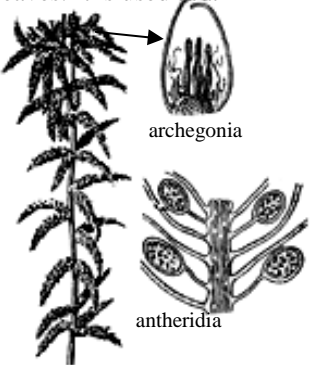

*Polypodiophyta* is division of the Plant kingdom consisting of the plants commonly called ferns. The ferns are vascular plants with stems, roots, and leaves. The small and inconspicuous gametophyte and the large spore-producing fern plant are quite independent of each other. The sporophyte plant, which is the plant form popularly recognized as a fern, may have an erect stem of more than 50 ft (16 m) in height, or a prostrate stem lying in or on the ground. Typically, the leaf, or frond, is large and much divided, although many ferns have simple leaves, i.e., leaves with the blade undivided. Fern leaves generally unroll as they develop from a coiled early bud stage is called the fiddlehead. Sporangia, the spore-producing structures, are generally found on the back of the leaf, but occasionally occur on special structures, which are probably evolutionarily modified leaves. In the great majority of ferns, the spore cases, or sporangia, are produced in groups, with each group called a sorus. These sori can often be seen on the back of the leaves. The sporangia in the sorus are usually protected in some manner, sometimes by an umbrellalike structure, the indusium, and sometimes by the inrolling of the leaf edge. The sporangium consists of a jacket of thin cells, partly surrounded at one side by a row of very thick-walled cells, the annulus. When the spores are mature, a springlike mechanism in the annulus serves to tear open the sporangium and eject the spores.

3.16. The sporophyte of the studied plant is a rhizome perennial. The plant frond leaves are pinnatisected; they have sori with spores on the underside. The plant belongs to division...


- A. **Polypodiophyta**
- B. Bryophyta
- C. Lycopodiophyta
- D. Equisetofyta
- E. Gymnosperme



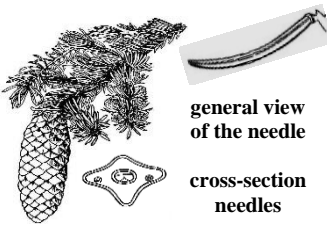








<p><b>3.17.</b> On the marshland we have collected <i>Sphagnum palustre</i>. Its stems are branched without rhizoids, leaves are arranged spirally imbricated, between the leaves of lateral branches there are antherids, and on the tips of shoots there are archegonias. This generation of sphagnum is...</p> <p>A. <b>monoecious gametophyte</b>  B. dioecious gametophyte  C. sporophyte  D. protonema  E. sporogonia</p>	<p><b><i>Sphagnum palustre</i></b> is white, or peat moss, with dominant monoecious gametophyte, able to absorb and retain large amounts of water in its leaves. It is used as a hygroscopic material.</p> 
<p><b>3.18.</b> <i>Spirulina</i> – is usual as a dietary supplement, a source of complete protein and vitamins. So it is a representative of the division ...</p> <p>A. <b>cyanobacterium</b>  B. green algae  C. diatoms  D. askomicotus  E. zigomicotus</p>	<p><b><i>Arthrospira platensis</i></b> is filamentous cyanobacteria (blue-green alga), living in alkaline lakes. Contains up to 70% of protein, normalizes metabolism and makes up for the deficiency of vitamins and minerals.</p> 



### GYMNOSPERMOUS


<p><b>3.19.</b> A conifer has soft, bright-green needles collected in a bunch on the short shoots. Every year in autumn these leaves fall down. It indicates that this tree belongs to the genus ...</p> <p>A. <b><i>Larix</i> (larch)</b>  B. <i>Abies</i> (abies)  C. <i>Pinus</i> (pine)  D. <i>Picea</i> (spruce)  E. Cedar (<i>cedrus</i>)</p> 	<p><b><i>Larix</i></b> – larch, family – <i>Pinaceae</i>, Division – <i>Pynophyta</i>  <i>Larix</i> (Larch) is coniferous tree at which fall down leaves - the soft needles collected in bunches on shortened shoots.</p> <p>Although a conifer, the larch is a <u>deciduous tree</u> and loses its leaves in the autumn. The shoots are dimorphic, with growth divided into long shoots typically 10–50 centimetres long and bearing several <u>buds</u>, and short shoots only 1–2 mm long with only a single bud. The <u>leaves</u> are needle-like, 2–5 centimetres long, slender (under 1 cm wide). They are borne singly, spirally arranged on the long shoots, and in dense clusters of 20–50 needles on the short shoots. The needles turn yellow and fall in the late autumn, leaving the trees leafless through the winter.</p>
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<p><b>3.20.</b> The subkingdom Embryophytes consists mainly of terraneous organisms which are presented by various life forms (herbs, shrubs, subshrub, trees and others). What is the division of Embryophytes which includes only shrubs and trees?</p> <p>A. <b>Pynophyta</b>  B. Magnoliophyta  C. Bryophyta  D. Lycopodiophyta  E. Polypodiophyta</p>	<p><b>Pines</b> are <u>trees</u> in the <u>genus</u><i>Pinus</i> in the <u>family</u><i>Pinaceae</i>.  The division of <i>Pynophyta</i> is presented only by bushes and trees.</p> 
<p><b>3.21.</b> The main diagnostical feature for distinguishing the species of pine-tree is quantity of needles on the shortened shoots. The pine-tree has ...</p> <p>A. <b>two needles</b>  B. five needles  C. three needles  D. eight needles  E. many needles</p>	<p>The main diagnostical feature for distinguishing the species of pine-tree is quantity of needles on the shortened shoots. The pine-tree has only <b>two needles</b> on the shortened shoots.</p> 
<p><b>3.22.</b> One of the important diagnostic characters for determining of pine species is the number of acerose leaf (needles). What is this number for common pine?</p> <p>A. <b>2</b>  B. 5  C. 3  D. 8  E. many</p>	
<p><b>3.23.</b> A common species of the Pinaceae family is an evergreen, shade tolerant, high tree. Its needles are tetrahedral, short, hard, barbed, spirally arranged. This is...</p> <p>A. <b>Picea abies</b>  B. <i>Larix sibirica</i>  C. <i>Pinus sylvestris</i>  D. <i>Juniperus communis</i>  E. <i>Ephedra equisetina</i></p>  <p>general view of the needle  cross-section needles</p>	<p>Diagnostic features of <b>Picea abies</b> (Norway spruce) include short, hard, prickly tetrahedral spirally arranged needles.</p>
<p><b>3.24.</b> Students, in their practical classes, have identified gymnosperms with dark blue cones, covered with a waxy bloom. This is...</p> <p>A. <b>Juniperus communis</b>  B. <i>Thuja occidentalis</i>  C. <i>Taxus baccata</i>  D. <i>Abies sibirica</i>  E. <i>Cedrus libani</i></p> 	<p><b>Juniperus communis</b> (common juniper), Cypress Family. Medicinal raw materials are cones, roundish three seminal dark blue cones coated grown together juicy scales.</p>

<p><b>3.145.</b> A dioecious plant, <i>Urtica dioica</i>, has staminate and pistillate flowers with a greenish plain perianth. Therefore, the flowers are ...</p> <p>A. <b>calyciform, unisexual</b>          B. calyciform, bisexual          C. corolliform, unisexual          D. corolliform, bisexual          E. doubleperianth, unisexual</p>	<p>Flowers that have only stamens or only pistils are <b>unisexual</b>. Plain filmy or green perianth is considered to be simple, <b>calyciform</b>.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">               pistillate, male           </div> <div style="text-align: center;">               staminate, female           </div> <div style="text-align: center;">               female           </div> </div>
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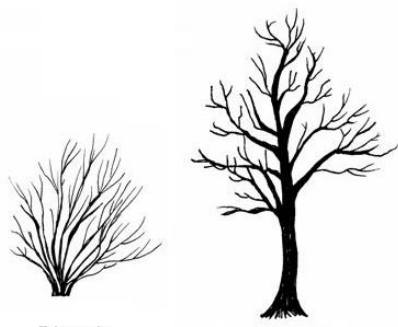
## Content module 4. ECOLOGY



<p><b>4.1.</b> Lichens are not present on the trees, growing in town, because of the ...</p> <p>A. <b>chemical pollution in the environment</b>          B. lack of the water          C. deficiency of nutrients in soil          D. excess of the moisture          E. deficiency of the light</p> 	<p><b>Lichens</b> are composite organisms consisting of a symbiotic organism composed of a fungus (the <b>mycobiont</b>) with a photosynthetic partner (the <b>photobiont</b> or <b>phycobiont</b>). Lichens occur in some of the most extreme environments on Earth - arctic tundra, hot deserts, rocky coasts, and toxic slag heaps. <b>Lichens</b> are sensitive to cleanliness of air, therefore they do not grow in chemically polluted environment.</p> 
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<p><b>4.2.</b> Plants, settling on the trees, have aerial roots, feed individually (photosynthesize). So there are ...</p> <p>A. <b>epiphytes</b>          B. parasites          C. semiparasites          D. ephemers          E. succulents</p> 	<p><b>Epiphytes</b> live on other plants, eat by absorption water and substances from environment all body (mosses, lichens) or by means of air roots (the higher plants). An <b>epiphyte</b> (or <i>air plant</i>) is a plant that grows upon another plant (such as a tree) non-parasitically, derives its moisture and nutrients from the air and rain</p>
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<p><b>4.3.</b> Plant grows in dry place, so is ...</p> <p>A. <b>xerophyte</b>          B. hygrophyte          C. mesophyte          D. hydrophyte          E. epiphyte</p>	<p>A <b>xerophyte</b> or <b>xerophytic organism</b> (<i>xero</i> meaning dry, <i>phyte</i> meaning plant) is a plant which is able to survive in an environment with little available water or moisture, such as a desert. Xerophytic plants may have adaptations of their shape and form (morphology) or physiology that reduce their water loss or store water during periods of dryness.</p>
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<p>4.4. Plants, which grow in conditions of middle moisture, belong to such ecological group as ...</p> <p>A. <b>mesophyte</b>  B. hydrophyte  C. hygrophyte  D. xerophytes  E. succulent</p> 	<p><b>Mesophytes</b> are terrestrial plants which are adapted to neither a particularly dry nor particularly wet environment. An example of a mesophytic habitat would be a rural temperate meadow, which might contain Goldenrod, Clover, Oxeye Daisy, and <i>Rosa multiflora</i>. Mesophytes make up the largest ecological group of terrestrial plants, and usually grow under moderate to hot and humid climatic regions.</p>
<p>4.5. Herb plant is dipped into water, so this plant is ...</p> <p>A. <b>hydrophyte</b>  B. hygrophyte  C. mesophyte  D. xerophytes  E. epiphyte</p> 	<p><b>Hydrophytes</b> are the plants, which grow in impoundments (e.g., lotus, cow lily, duckweed and sagittaria). The underwater parts of the plants differ from above-water ones anatomically and morphologically. The root carries out the anchoring function in the substrate.</p>
<p>4.7. Perennial plant with hight of 5 m has some lignified stems, which branch near the soil. This is ...</p> <p>A. <b>bush</b>  B. tree  C. liana  D. subshrub  E. herb</p> 	<p><b>Shrubs (or bushes)</b> are perennial plants up to 5 m height, all above-ground shoots are lignified, almost of identical size, locate and branch very low from the ground (e.g., raspberry, dog rose).</p>  <p style="text-align: center;">Shrub                      Tree</p>
<p>4.8. One of these medicinal plants belongs to weeds. Which one:</p> <p>A. <b>Plantago major</b>  B. Papaver somniferum  C. Mentha piperita  D. Convallaria majalis  E. Salvia officinalis</p>	<p>A weed is herbaceous plant not valued for use or beauty, growing wild and rank, and regarded as cumbering the ground or hindering the growth of superior vegetation... Applied to a shrub or tree, especially to a large tree, on account of its abundance in a district... An unprofitable, troublesome, or noxious growth.</p>

<p><b>4.9.</b> Many people develop allergic reactions during flowering of a quarantine weed, such as...</p> <p>A. <b>Ambrosia artemisiifolia</b>  B. Equisetum arvense  C. Stellaria media  D. Erigeron Canadensis  E. Convolvulus arvensis</p>	<p>(<b>Ambrósia artemisiifólia</b>) family Asteraceae is a dangerous cosmopolitan weed that causes allergic sinusitis, rhinitis and skin rashes during flowering.</p> 
<p><b>4.10.</b> Herbs that are submerged into water belong to ...</p> <p>A. <b>hydrophytes</b>  B. hygrophytes  C. mesophytes  D. xerophytes  E. skiophites</p>	<p><b>Hydrophytes</b> are plants that are wholly or partially immersed in water (lotus, water lily, arrowhead, duckweed).</p>
<p><b>4.11.</b> Vegetations of wetland and poor soils are investigated; they are dominated by herbaceous and grassy moss plants. This is a hallmark for vegetation of ...</p> <p>A. <b>marsh</b>  B. forest  C. meadow  D. steppe  E. ruderal</p>	<p>A bog is a wetland piece of land with coastal plants, helophytes.  Their roots and stem bases are located in the ground under water, whereas stalks and flowers is over water.</p>
<p><b>4.12.</b> Lily-of-the-valley and ... belong to early-flowering of rhizomatous ephemeroïds</p> <p>A. <b>Adonis vernalis</b>  B. Carum carvi  C. Állium cepa  D. Chamomilla recutita  E. Thymus serpyllum</p>	<p><b>Ephemeroïds</b> are plants with a short 20-30-day cycle of vegetation. They bare dry period in the form of bulbs and rhizomes, and their above-ground part dies.  Adonis vernalis - adonis spring belongs to these plants.</p>
<p><b>4.13.</b> A plant which grows on the soil with abundant moisture and lack of oxygen has well developed aerenchyma and ...</p> <p>A. <b>pneumatophores roots</b>  B. bulbs  C. hapteron roots  D. contractile roots  E. buttres roots</p> 	<p><b>Breathing roots (pneumatophores)</b> of tropical trees growing in marshy, silty places are going up in the air (negative geotropism) outgrowths with aerenchyma, allowing air to reach the underground roots.</p>