The Solanaceae family

3.86. Among the representatives of the Solanaceae (Potato) Family studied the fruit berry is present in
A. Atropa belladonna (belladonna)
B. Hyoscyamus niger (poison tobacco)
C. Datura stramonium (datura)
D. Nicotiana tabacum (species of tobacco)
E. Nicotiana rustica (rustic tobacco)

3.87. Bacca fruit is typical for the following representative of Solanaceae Family:
A. Atropa belladonna
B. Hyoscyamus niger
C. Nicotiana tabacum
D. Datura stramonium
E. Datura innoxia

3.88. While identification the Datura stramonium (datura) fruit we determine that it is …
A. septifragal capsule
B. bright black berry
C. ascidiform capsule with lid
D. flash globular cynarodium
E. berry in orange calyx

3.89. The Family Solanaceae includes a pubescent plant, its leaves are alternate, pinnate, intermittently, irregularly dissected into larger and smaller segments, inflorescence is double bostryx, corolla is rotate, and fruit is a globular green poisonous berry, tubers with stolons. This is …
A. Solanum tuberosum
B. Solanum dulcamara
C. Solanum lycopersicum
D. Capsicum annuum
E. Hyoscyamus niger

The Lamiaceae Family

3.90. Adenotrichous odorous plant has tetrahendral stem, spicate inflorescences consisting of the false whorl, bilabiate corolla and fruit – tetranutlet, so it belongs to the … family.
A. Lamiaceae (Mint)
B. Scrophulariaceae (Figwort)
C. Brassicaceae (Mustard)
D. Apiaceae (Carrot)
E. Solanaceae (Potato)

3.91. Select the family of the described officinal plant: “Perennial herbaceous plant with an ascending tetrahedral stem, opposite leaf aestivation and entire leaves. Flowers are zygomorphic, bisexual with bilabiate corolla and are united into semi-rings in leaf axils. The fruit is coenobium.”
A. Lamiaceae
B. Asteraceae
C. Poaceae
D. Brassicaceae
E. Rosaceae

Diagnostic features of the Lamiaceae (Mint) Family

- Stems are square in cross-section (tetraquetrous).
- Forms of the leaf arrangement – crosswise opposite
3.92. An essential oil plant under examination has a tetraquetrous stem, flowers with bilabiate corolla, coenobium fruit. These characteristics are typical for the following family:
A. Lamiaceae  
B. Papaveraceae  
C. Scrophulariaceae  
D. Polygonaceae  
E. Solanaceae

3.93. The determined essential oil plant has tetraquetrous stem, flowers with bilabiate corolla, fruit is coenobium; which is typical for …  
A. the Lamiaceae (Mint) Family  
B. the Papaveraceae (Poppy) Family  
C. the Polygonaceae (Knotweed) Family  
D. the Potato or Nightshade (Solanaceae) Family  
E. the Figwort (Scrophulariaceae) Family

3.94. In the plant cultivation farming there cultivated officinal ether oil plants, which do not grow naturally in Ukraine, namely: Mentha piperita (peppermint), Orthosiphon stamineus (St. John's wort) and …  
A. Salvia officinalis (garden sage)  
B. Origanum vulgare (common origanum)  
C. Leonurus cardiaca (motherwort)  
D. Thymus serpyllum (wild thyme)  
E. Melissa officinalis (lemon balm)

3.95. With the purpose of preservation sort quality we choose optimal way of the *Mentha piperita* (peppermint) reproduction: by means of …  
A. parts of rhizome  
B. parts of tuber  
C. cutting of the leaves  
D. seeds  
E. reproductive buds

3.96. Folk medicine uses flowers of white deadly nettle (*Lamium album*) to cure diseases of spleen, catarrh and others. What a family this plant belongs to?  
A. Lamiaceae (mint)  
B. Ranunculaceae (buttercup)  
C. Solanaceae (potato)  
D. Asteraceae (aster)  
E. Fabaceae (legume)
3.97. Species characters of the *Thymus serpyllum* are: the existence of apical cephalanthium, dark dotted glandules on the under side of a leaf, long fuzzes along the edge of a base and furthermore:
A. decumbent shoot
B. thorn shoot
C. shoot with spine
D. climbing shoot
E. shortened recumbent shoot

![Thymus serpyllum](image)

**Thymus serpyllum**
(Creeping thyme or wild thyme)

3.98. Low stem leaves of the *Leonurus cardiaca* are divided until the middle of lamina into 3 or 5 parts. This means that they are:
A. tripartite-or palmatifoliate
B. tripartite- or palmatifoliate
C. tripartite- or palmatifoliate
D. tripalinate-compound
E. imparti-pinnatifoliate

![Leonurus cardiaca](image)

**Leonurus cardiaca** (Motherwort)

Use in cardiostimulative therapy.

3.99. Choose the species of a plant whose apical shoots are used in medicine practice for obtaining of debilitants:
A. *Leonurus cardiaca*
B. *Glycyrrhiza glabra*
C. *Digitalis purpurea*
D. *Ledum palustre*
E. *Fagopyrum sagittatum*

3.100. Medical plants of Digitalis genus contain cardiac glycosides and are used as a raw material for cardiovascular insufficiency drugs. They belong to the Family ...
A. Scrophulariaceae
B. Lamiaceae
C. Apiaceae
D. Solanaceae
E. Polygonaceae

Plants of *Scrophulariaceae* family accumulate cardiac glycosides, which are used for therapy of cardiac decompensation.

3.101. The figwort family Scrophulariaceae includes a biennial plant up to 1.5 m high, with golden-yellow flowers gathered in spiked inflorescences. The flowers have five stamens. Specify this plant:
A. *Verbascum flumoides*
B. *Digitalis purpurea*
C. *Digitalis grandiflora*
D. *Digitalis lanata*
E. *Digitalis Ferruginea*

**The Scrophulariaceae Family**

![Verbascum flumoides](image)
The Ranunculaceae Family

3.102. A perennial herb plant of the Ranunculaceae Family has repeatedly pinnatisected leaves; apical, large, actinomorphic yellow flowers. This is …
A. *Adonis vernalis (Spring vernalis)*
B. Aconitum napellus (aconite)
C. Brassica nigra (black mustard)
D. Rosa canina (dog rose)
E. Daucus carota (species of carrot)

3.103. During identification of a perennial herb of Ranunculaceae family it was found to have: apical flowers of regular form up to 6 cm in diameter; 5 downy violet-and-green calyx lobes of irregular serrate form; up to 20 bright yellow glossy petals without nectarostigma. What plant is it?
A. *Adonis vernalis*
B. Helleborus purpurascens
C. Ranunculus acris
D. Delphinium elatum
E. Aconitum napellus

The Asteraceae Family

3.104. What is the family which can have flowers with different shapes of corolla (ligulate, false-ligulate, tubular) in one inflorescence?
A. *Asteraceae*
B. Lamiaceae
C. Solanaceae
D. Fabaceae
E. Magnoliaceae

3.105. In antodiums of sunflower (*Asteraceae*) representatives we determined all stated types the flowers except …
A. *bilabiate*
B. tubular
C. ligulate
D. false-ligulate
E. thimble (funnelform)
3.106. The plant has ether oil glandule, its fruit is achen and its inflorescence is anthodium. This is the diagnostic features of the family…
A. **Asteraceae**  
B. Scrophulariaceae  
C. Solanaceae  
D. Lamiaceae  
E. Rosaceae

3.107. A perennial plant of the *Asteraceae* family has large, single and apical anthodiums with purple false-ligulate flowers. It is used to strengthen the immunity. This is …
A. **Echinacea purpurea (purple cone-flower)**  
B. *Achillea millefolium* (common yarrow)  
C. *Chamomilla recutita* (common camomile)  
D. *Artemisia absinthium* (common wormwood)  
E. *Taraxacum officinale* (dandelion)

3.108. The herb plant investigated has articulate lacticifers with anastomoses, which contain a white latex, which is typical for …
A. **Taraxacum officinale (dandelion)**  
B. *Ranunculus acris* (species of buttercup)  
C. *Adonis vernalis* (spring vernalis)  
D. *Papaver somniferum* (opium poppy)  
E. *Aconitum napellus* (aconite)

3.109. While studying the samples of medicinal plants we determine that belongs to… *Asteraceae* Family.
A. **Taraxacum officinale (dandelion)**  
B. *Atropa belladonna* (belladonna)  
C. *Quercus robur* (english oak)  
D. *Urtica dioica* (great nettle)  
E. *Vinca minor* (common periwinkle)

3.110. While microscopical study of underground plant organs of the *Asteraceae* (Aster) Family we found out articulate lacticifers with anastomosis, which are filled with white latex. This is typical for
A. **Taraxacum officinale**  
B. *Helianthus annuus*  
C. *Artemisia absinthium*  
D. *Bidens tripartite*  
E. *Achillea millefolium*

3.111. What a medical plant of *Asteraceae* Family has all yellow ligulate and bisexual flowers which form anthodium?
A. **Taraxacum officinale**  
B. *Bidens tripartite*  
C. *Tussilago farfara*  
D. *Tanacetum vulgare*  
E. *Arnica Montana*
3.112. *Calendula officinalis* (pot marigold) has inflorescences, which is called …

A. **anthodium**  
B. head  
C. raceme  
D. spadix  
E. corymb

3.113. *Calendula officinalis* which a representative of the aster family is characterized by the following inflorescence type:

A. **flowerhead**  
B. umbel  
C. catkin  
D. glome  
E. cyme

3.114. *Calendula officinalis* (cypselas of marigold) are falciform and hamiform with narrow beak, the surface is …

A. **prickly**  
B. glabrate  
C. softly hairy  
D. felt hairy  
E. bristled

3.115. The annual inshore plant of *Asteraceae* (Sunflower) Family has tripartite leaves, terminal anthodiums with tubular flowers, flat seeds, tenent due to the presence of 2-3 hirsute teeth. This is …

A. **Bidens tripartita** (bur-marigold)  
B. Chamomilla recutita (chamomile)  
C. Centaurea cyanus (blue cornflower)  
D. Echinacea purpurea (purple cone-flower)  
E. Artemisia vulgaris (mugwort)
3.116. At the practice of procurement of *Compositae* plants the notion of “flower” may have both meaning: a single flower as well as an inflorescence. However in botanics the notion of “flower” is correct for…

A. *Centaurea cyanus*
B. *Gnaphalium uliginosum*
C. *Arnica montana*
D. *Echinops ritro*
E. *Bidens tripartita*

### Centaurea cyanus

3.117. In rosette of *Tussilago farfara*, the leaves are macropodous, broadly ovate-cordate. The upper side of the plate is green, and the lower one is …

A. whitish, densely pubescent
B. is bright green, slightly pubescent
C. dark green, no pubescence
D. dark green, glandular-pubescent
E. glossy, with thick cuticle

One of the diagnostic features of *Tussilago farfara* (coltsfoot vulgare) is the one of its leaf blade - its upper side is green, and the lower one is white dense (felled) pubescent

### Tussilago farfara

3.118. Apical shoots of *Tanacetum vulgare* have been collected as medicinal raw material, they are heterogeneous monopodial inflorescence: complex…

A. corymb of anthodiums
B. corymb of bostryx
C. dichasium ears
D. umbrella of heads
E. panicle of heads

Inflorescence *Tanacetum vulgare* (tansy) is complex, monopodial (botrioidnoe), heterogeneous, growing monopodially, corymbose branches and has small elementary inflorescences: anthodiums.

### Tanacetum vulgare

3.119. In Carpathian mountain meadows one can find herbs with orange anthodiums, upright stem and basal rosette of leaves. This is…

A. *Arnica montana*
B. *Cychorium intybus*
C. *Calendula officinalis*
D. *Echinacea purpurea*
E. *Centaurea cyanus*

The *Arnica* (*Arnica montana*) is an endemic, which grows in the Carpathian Mountains in a relatively limited area. The species is listed in the Red Book of Ukraine. It belongs to the Asteraceae family, which is indicated by presence of basal leaf rosette and inflorescence anthodiums.
The Alliaceae Family

3.120. The comparison representatives of different families shows that umbel-like inflorescence with spathe, simple perianth, fruit - fruitcase and underground organ - bulb are typical for the species of the … family.

A. Alliaceae (Onion)
B. Rosaceae (Rose)
C. Fabaceae (Legume)
D. Brassicaceae (Mustard)
E. Solanaceae (Potato)

3.121. The bulbous plant analyzed has a specific odour, radical cylindrical leaves, utricular flower stalk, bearing simple umbel with filmy spathe, and its fruit is fruitcase. These features indicate that it is …

A. Allium cepa (common onion)
B. Allium sativum (garlic)
C. Convallaria majalis (lily-of-the-valley)
D. Agropyrum repens (couch-grass)
E. Acorus calamus (sweet flag)

The Gramineae Family

3.122. In the flowers prepared a perianth is reduced to 2 films, 3 stamens are on the long stamen filaments, pistil is with 2-lociniates plumose stigma, which is typical for the … Family.

A. the Gramineae (Grass) Family
B. the Fabaceae (Legume) Family
C. the Convallariaceae (Lily-of-the-valley) Family
D. the Alliaceae (Onion) Family
E. the Asteraceae (Sunflower) Family

3.123. While studying under the magnifying glass the flowers of Zea mays (maize) gathered in inflorescence spadix it is determined that flowers are …

A. female
B. male
C. bisexual
D. asexual
E. achlamydeous

3.124. The perennial weed from Gramineae (Grass) Family occurs often, its rhizome is a medicinal agent that normalizes metabolism and diuresis. This is …

A. Agropyron repens (couch-grass)
B. Triticum aestivum (soft wheat)
C. Zea mays (maize or corn)
D. Avena sativa (oats)
E. Oryza sativa (rice)
### Medicinal plants of different families

| 3.125. The plant of the Rhamnaceae Family has an alternating leaf position and has no thorns. Its venation is pinnate with 6-8 pair straight lateral veins. This is … | **Rhamnaceae Family**
| --- | --- |
| A. Frangula alnus | **Frangula alnus**
| B. Rhamnus cathartica | |
| C. Padus racemosa | |
| D. Aronia melanocarpa | |
| E. Sambucus nigra | |

| 3.126. The leaves of Rhamnus cathartica (buckthorn) are ovate, venation is pinnate, 3-4 pairs of lateral veins, they are arcuate and come together at the top of the leaf, the margin of the leaf blade is … | **Rhamnaceae Family**
| --- | --- |
| **Rhamnus cathartica (buckthorn)** | **Rhamnus cathartica (buckthorn)**

| 3.127 Black, flesh fruits with 3 or 4 stones have the laxative effect, they are gathered from diecious, thorny bush with opposite branching. This plant is … | **Malvaceae (mallow) Family**
| --- | --- |
| A. Rhamnus cathartica (common buckthorn) | **Althaea officinalis (marsh mallow)**
| B. Aronia mellanocarpa (black chokeberry) | **Valeriana officinalis (common valerian)**
| C. Frangula alnus (black dogwood) | **Thymus serpyllum (wild thyme)**
| D. Sambucus nigra (european elder) | **Tussilago farfara (colt's foot)**
| E. Viburnum opulus (european dogwood) | |

| 3.128. The perennial plant of the Malvaceae (Mallow) Family is used as an expectorant. Leaves are simple, 3-5-palmatifoliate; flowers are large, pink, axillary and aggregated in racemose inflorescences. The fruit is cremocarp. This is … | **Malvaceae (mallow) Family**
| --- | --- |
| A. Althaea officinalis (marsh mallow) | **Valeriana officinalis (common valerian)**
| B. Fragaria vesca (wild strawberry) | **Valeriana officinalis (common valerian)**
| C. Potentilla erecta (tormentil) | **Valeriana officinalis (common valerian)**
| D. Tussilago farfara (colt's foot) | **Valeriana officinalis (common valerian)**
| E. Thymus serpyllum (wild thyme) | **Valeriana officinalis (common valerian)**

| 3.129. Valeriana officinalis (common valerian) has well developed main axes of the inflorescence, from which the axis of next orders with dichasiums situated at the same level grows. This is … | **Valeriana officinalis (common valerian)**
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Options</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>A. corymbose panicle of the dichasium</td>
<td>Valeriana officinalis (common valerian)</td>
</tr>
<tr>
<td>B. simple corymb of the dichasium</td>
<td></td>
</tr>
<tr>
<td>C. compound corymb of the dichasium</td>
<td></td>
</tr>
<tr>
<td>D. compound spike of the dichasium</td>
<td></td>
</tr>
<tr>
<td>E. compound umbel of the dichasium</td>
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</tr>
</tbody>
</table>

3.130. The plant investigated is a tree with opposite palmately compound leaves, without stipules. Flowers are collected in upright pyramidal thyrsi - panicle of the bostryxes. Fruit is a spicular roundish fruitcase with one seed. These features are typical for …
A. Aesculus hippocastanum (horse chestnut)
B. Rhamnus cathartica (common buckthorn)
C. Quercus robur (english oak)
D. Hippophae rhamnoides (sea buckthorn)
E. Apium graveolens (celery)

3.131. The fruit, globular fruitcase with thorns, is examined. It opens with three valves, contains one large, dark-brown, bright seed with a light lusterless spot. This fruit belongs to …
A. Aesculus hippocastanum (horse-chestnut)
B. Papaver somniferum (opium poppy)
C. Datura stramonium (devil's-trumpet)
D. Plantago major (common plantain)
E. Hypericum perforatum (common St. John's wort)

3.132. Fruit of the Tilia cordata (small-leaved lime) is pseudomonocarpous with firm skinny pericarp and 1 or 2 seeds. This is …
A. nutlet
B. silicle
C. achene
D. silique
E. fruitcase

3.133. For diaphoretic herbal mix we have collected 3-5-flower, corymbose dichasia with light yellow, elongated wing-shaped, membranous bracts, which grows together with the axis until the middle of the inflorescence. The flowers are fragrant and are yellow in color. This inflorescence belongs to…
A. Tilia cordata

Tilia cordata is a small-leaved lime.
Medicinal raw material is dichasia inflorescence with yellow bracts.
<table>
<thead>
<tr>
<th>3.134. Diaphoretic herbal tea includes dichasial cymes with light-yellow, oblong, wing-like, squamelliferous perianth. The flowers are fragrant, yellowish. These inflorescences belong to:</th>
<th><img src="image1.jpg" alt="Image" /></th>
</tr>
</thead>
</table>
| A. *Tilia cordata*  
B. *Viburnum opulus*  
C. *Robinia pseudoacacia*  
D. *Mentha piperita*  
E. *Padus avium* | **filmy* pritsvetik**
**corymbose dichasium** |

<table>
<thead>
<tr>
<th>3.135. Among the plants of deciduous forest ambisexual tall trees prevail. They are covered with a thick dark-grey bark with deep cracks. The leaves are short petiolar, pinnatelylobate, pubescent from below. Fruits are acorn with spinelet on the top. So, this plant is …</th>
<th><img src="image2.jpg" alt="Image" /></th>
</tr>
</thead>
</table>
| A. *Quercus robur* (english oak)  
B. *Robinia pseudoacacia* (black locust)  
C. *Aesculus hippocastanum* (horse chestnut)  
D. *Tilia cordata* (small-leaved lime)  
E. *Betula verrucosa* (common birch) | **Quercus robur** (english oak) |

<table>
<thead>
<tr>
<th>3.136. During determination of fruit type <em>Hypericum perforatum</em> it was found that: the fruit is coebocarpous, dry, opens with valves and contains a big number of seeds. Therefore the fruit of <em>Hypericum perforatum</em> is:</th>
<th><img src="image3.jpg" alt="Image" /></th>
</tr>
</thead>
</table>
| A. *fruitcase*  
B. *multifollicle*  
C. *agrigate achene*  
D. *follicle*  
E. *coenobium* | **Hipericum perforatum** (common St. John's wort) |

<table>
<thead>
<tr>
<th>3.137. While ascertainment the type of <em>Hipericum perforatum</em> (common St. John's wort) fruit it is indicated that the fruit is cenocarpous, dry, opens by the seams and contains large quantity of seeds. So, this fruit is a …</th>
<th><img src="image4.jpg" alt="Image" /></th>
</tr>
</thead>
</table>
| A. *fruitcase*  
B. *polyfollicle*  
C. *follicle*  
D. *coenobium*  
E. *polynutlet* | **filmy** pritsvetik
**corymbose dichasium** |
3.138. The plant belongs to Berbericeae Family. This is …
A. Podophyllum peltatum
B. Adonis vernalis
C. Chelidonium majus
D. Saponaria officinalis
E. Hypericum perforatum

Berbericeae Family
Podophyllum peltatum (mayapple) is a herbaceous perennial plant. Mayapple contains podophyllotoxin, which is used as a cytostatic and topically in the treatment of viral and genital warts.

3.139. Yellow-orange oblong pseudomonocarp drupes rich in vitamins and fatty oil are gathered from a female dioecious thorn bush –
A. Hippophaë rhamnoides
B. Rhamnus cathartica
C. Amygdalus communis
D. Sambucus nigra
E. Prunus spinosa

Elaeagnaceae Family
Hippophaë rhamnoides (common sea-buckthorn)

3.140. This marsh plant has ensiform leaves, inflorescence spadix with a veil, thick rhizome, light, fragrance, pink on the fracture, with well-defined and rapprochement scars and adventitious roots. This is …
A. Acorus calamus
B. Ledum palustre
C. Bidens tripartita
D. Sanguisorba officinalis
E. Valerina officinalis

Acorus calamus (calamus swamp) is a perennial hydrophyte of monocot class, Family Araceae. Rhizomes are rich with essential oils, tannins, flavonoids and other biologically active substances.

3.141. Petiolate, imparipinnately compound leaves have...
A. Sambucus nigra
B. Chelidonium majus
C. Vinca minor
D. Rumex confertus
E. Aesculus hippocastanum

unpaired-finger-
### 3.142. In gastric herbal mix there are oval brown lignified "cones" up to 1.5 cm long, which are ...

<table>
<thead>
<tr>
<th>A. <strong>seedheads alder</strong></th>
<th>B. larch cones</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. cypress cones</td>
<td>D. juniper cones</td>
</tr>
<tr>
<td>E. cones of hops</td>
<td></td>
</tr>
</tbody>
</table>

The alder’s female are small flowers collected in short oval aments with bracts that after fertilization of the flower and maturing of fruits nuts overgrow, lignifies and blossoms turn into brown pineal compound fruits.

### 3.143. … has leaves with long petioles, leathery, fan-like entire plate or the one with a few notches at the top and with dichotomic venation.

<table>
<thead>
<tr>
<th>A. <strong>Ginkgo biloba</strong></th>
<th>B. Cedrus libani</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Juniperus communis</td>
<td>D. Picea abies</td>
</tr>
<tr>
<td>E. Abies sibirica</td>
<td></td>
</tr>
</tbody>
</table>

**Ginkgo biloba** is relict species of Ginkgopsida class of gymnosperms. The main features include a flattened leaf with dichotomic venation.

### 3.144. It is known that leaves of most gymnosperm species are represented by needles. Which one of the species listed below has macropodous leathery leaves with solid flabellate lamina, dichotomous venation and one or several notches along the upper margin?

<table>
<thead>
<tr>
<th>A. <strong>Ginkgo biloba</strong></th>
<th>B. Cedrus libani</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Juniperus communis</td>
<td>D. Picea abies</td>
</tr>
<tr>
<td>E. Abies sibirica</td>
<td></td>
</tr>
</tbody>
</table>

### 3.145. A dioecious plant, *Urtica dioica*, has staminate and pistillate flowers with a greenish plain perianth. Therefore, the flowers are ...

<table>
<thead>
<tr>
<th>A. <strong>calyciform, unisexual</strong></th>
<th>B. calyciform, bisexual</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. corolliform, unisexual</td>
<td>D. corolliform, bisexual</td>
</tr>
<tr>
<td>E. doubleperianth, unisexual</td>
<td></td>
</tr>
</tbody>
</table>

Flowers that have only stamens or only pistils are **unisexual**. Plain filmy or green perianth is considered to be simple, **calyciform**.
### Content module 4. ECOLOGY

#### 4.1. Lichens are not present on the trees, growing in town, because of the …
A. chemical pollution in the environment  
B. lack of the water  
C. deficiency of nutrients in soil  
D. excess of the moisture  
E. deficiency of the light  

Lichens are composite organisms consisting of a symbiotic organism composed of a fungus (the mycobiont) with a photosynthetic partner (the photobiont or phycobiont). Lichens occur in some of the most extreme environments on Earth - arctic tundra, hot deserts, rocky coasts, and toxic slag heaps. Lichens are sensitive to cleanliness of air, therefore they do not grow in chemically polluted environment.

#### 4.2. Plants, settling on the trees, have aerial roots, feed individually (photosynthesize). So there are …
A. epiphytes  
B. parasites  
C. semiparasites  
D. ephemers  
E. succulents  

Epiphytes are 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 epiphyte (or air plant) is a plant that grows upon another plant (such as a tree) non-parasitically, derives its moisture and nutrients from the air and rain.

#### 4.3. Plant grows in dry place, so is …
A. xerophyte  
B. hygrophyte  
C. mesophyte  
D. hydrophyte  
E. epiphyte  

A xerophyte or xerophytic organism (xero meaning dry, phyte 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.
4.4. Plants, which grow in conditions of middle moisture, belong to such ecological group as …

A. mesophyte  
B. hydrophyte  
C. hygrophyte  
D. xerophytes  
E. succulent

**Mesophytes** 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 *Rosa multiflora*. Mesophytes make up the largest ecological group of terrestrial plants, and usually grow under moderate to hot and humid climatic regions.

4.5. Herb plant is dipped into water, so this plant is …

A. hydrophyte  
B. hygrophyte  
C. mesophyte  
D. xerophytes  
E. epiphyte

**Hydrophytes** 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.

4.7. Perennial plant with hight of 5 m has some lignified stems, which branch near the soil. This is …

A. bush  
B. tree  
C. liana  
D. subshrub  
E. herb

**Shrubs (or bushes)** 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).

4.8. One of these medicinal plants belongs to weeds. Which one:

A. Plantago major  
B. Papaver somniferum  
C. Mentha piperita  
D. Convallaria majalis  
E. Salvia officinalis

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.

4.9. Many people develop allergic reactions during flowering of a quarantine weed, such as…

A. *Ambrosia artemisiifolia*  
B. Equisetum arvense  
C. Stellaria media  
D. Erigeron Canadensis  
E. Convolvulus arvensis

(*Ambrosia artemisiifolia*) family Asteraceae is a dangerous cosmopolitan weed that causes allergic sinusitis, rhinitis and skin rashes during flowering.
4.10. Herbs that are submerged into water belong to ...
   A. **hydrophytes**
   B. hygrophyltes
   C. mesophyltes
   D. xerophyltes
   E. skiophyltes

| Hydrophytes | are plants that are wholly or partially immersed in water (lotus, water lily, arrowhead, duckweed). |

4.11. Vegetations of wetland and poor soils are investigated; they are dominated by herbaceous and grassy moss plants. This is a hallmark for vegetation of ...
   A. marsh
   B. forest
   C. meadow
   D. steppe
   E. ruderal

| A bog is a wetland piece of land with coastal plants, helophyltes. Their roots and stem bases are located in the ground under water, whereas stalks and flowers is over water. |

4.12. Lily-of-the-valley and ... belong to early-flowering of rhizomatous ephemerals
   A. **Adonis vernalis**
   B. Carum carvi
   C. *Allium cepa*
   D. Chamomilla recutita
   E. Thymus serpyllum

| Ephemeroids | 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. |

4.13. A plant which grows on the soil with abundant moisture and lack of oxygen has well developed aerenchyma and ...
   A. **pneumatophores roots**
   B. bulbs
   C. hapteron roots
   D. contractile roots
   E. buttres roots

| Breathing roots (pneumatophores) | 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. |