Anatomy

Anatomy of plant cell

During examination of a plant cell under the electron microscope some structures in form of a stack of flattened membrane cisterns and vesicles were found. What organelles are these?
{=Golgi apparatus
~Endoplasmic reticulum
~Plastids
~Mitochondrions
~Microbodies}

Microscopic examination of a ficus leaf revealed in some cells of its epidermis a protrusion of the cell membrane with an accumulation of crystals that dissolve in the hydrochloric acid and release carbonic acid gas. This structure is called:
{=Cystolith
~Raphide
~Druse
~Single crystal
~Styloid}

The section of a sunflower seed has been treated with Sudan III solution that caused pink-and-orange staining. This is the evidence of presence of
{=Fatty oil
~Protein
~Starch
~Inulin
~Cellulose}

Microscopic study of soybean seeds stained with Sudan III revealed some droplets of various sizes. They are:
{=Lipids
~Proteins
~Starch
~Inulin
~Glycogen}

Histochemical test for fixed oils with Sudan III results in the following stain colour:
{=Pink and orange
~Black and purple
~Lemon-yellow
~Blue and violet
~Raspberry-red}

It is known that depending on *pH* of cellular fluid petal coloration can vary from blue-and-violet to pink and light pink. This is caused by presence of:
{=Anthocyanins
~Carotins
~Xanthophylls
~Phycobilins
~Chlorophylls}

Microscopic examination of a potato tuber showed some cell inclusions that become blue-violet as affected by Lugol's iodine solution. These inclusions are:
{=Starch granules
~Calcium oxalate crystals
~Drops of fatty oil
~Aleuronic grains
~Insulin crystals}

Styloids are big single elongate prismatic needle-like crystals. They are mostly typical for the following plants:
{=Monocotyledonous
~Dicotyledonous
~Gymnospermous
~Lycopodiophyta
~Equisetophyta}

A vegetational microspecimen was treated with Sudan III solution. As a result of it cell membranes turned pink that means they contain:
{=Suberin
~Cellulose
~Lignin
~Pectin
~Hemicellulose}

As a result of staining of a plant microslide with Sudan III solution the cell membranes turned pink. This indicates the presence of
{=Suberin
~Lignin
~Hemicellulose
~Pectin
~Cellulose}

After a plant microslide had been processed with phloroglucinol together with concentrated hydrochloric acid, the cell membranes turned crimson red. This indicates presence of:
{=Lignin
~Cellulose
~Suberin

~Hemicellulose
~Pectin}

In the course of plant cells treatment with phloroglucinol with concentrated sulfuric acid their cell walls became crimson-red, which means:
{=Lignification
~Mineralization
~Mucification
~Suberization
~Cutinization}

Connection between plant cell protoplasts and their metabolic function is provided by thin cytoplasmic threads that pass through pores in the cell walls. Name these threads:
{=Plasmodesma
~Fibrils
~Microtubules
~Microfilaments
~Cytoskeleton}

Name the process of cell membrane saturation with a fat-like substance - suberin:
{=Suberization
~Lignification
~Mineralisation
~Cutinization
~Sliming}

Morphologically the herbaceous plant being studied can be identified as *Convallaria majalis*. To confirm this conclusion additionally, a leaf of this plant was examined under the microscope and a search for the following crystalline inclusions was conducted:
{=Raphides
~Styloid crystals
~Druse crystals
~Crystal sand
~Single crystals}

It is known that in plants the synthesis of secondary reserve starch occurs in:
{= Amyloplasts
~Proteinoplasts
~ Elaioplasts
~Chloroplasts
~Chromoplasts}

After application of chlorine-zinc- iodine to the thick colourless cell membranes of collenchyma they became violet. That means the membranes are:

{=Cellulose
~Lignificated
~Cutinized
~Mineralized
~Suberinized}

Racemose clusters of calcium carbonate crystals are detected among the waste products of a protoplast. These crystals are:
{=Cystoliths
~Isolated crystals
~Raphides
~Styloids
~Druses}

Flax seeds are used in medicine as coating agents, due to the following ability of their secondary cell wall:
{=Sliming
~Suberization
~Gummosis
~Lignification
~Mineralization}

Anatomy of tissues

Microscopic examination of a root cortex in the absorbing zone revealed that it consists mainly of multilayer living loose parenchyma with starch granules. This is:
{=Mesoderm
~Endoderm
~Exoderm
~Collenchyme
~Phellogen}

Microscopic examination of primary cortex of a root in its absorption zone revealed that it consisted mainly of multilayer loose living parenchyma with amyloid granules. It is called:
{=Mesoderm
~Endoderm
~Exoderm
~Collenchyme
~Phellogene}

Microscopic examination of a stem of a perennial plant revealed integumentary tissue of secondary origin that was formed as a result of activity of:
{=Phellogen
~Procambium
~Cambium

~Pericycle
~Protoderm}

Microscopic examination of ground tissue of a small branch revealed cork and felloderm. These are the derivates of:
{=Phellogen
~Cambium
~Procambium
~Protoderm
~Pericycle}

While determining the type and characteristics of conducting bundles of axial organs one should take into account the positional relation between phloem and xylem and…
{=Cambium
~Procambium
~Collenchyme
~Pericycle
~Phellogen}

A sample section of an axial body shows a complex consisting of phellogen and its derivatives - cork and phelloderm. This tissue is called:
{=Periderm
~Colenchyma
~Sclerenchyma
~Epiblema
~Epidermis}

Microscopic examination of a perennial stem revealed the secondary integumentary tissue that was formed as a result of cell division of:
{=Phellogen
~Procambium
~Cambium
~Pericycle
~Protoderma}

Pulp of a needle leaf consists of living tissue with inner ansiform protuberances of membrane and chloroplasts along them. What is type of this leaf's parenchyma?
{=Plicate
~Aeriferous
~Spongioid
~Palisade
~Storage}

It is known that rhizome and roots of *Inula helenium* have cavities without distincts inner boundaries filled with essential oils. They are called:
{=Lysigenous receptacles

~Resin ducts
~Nonsegmented lacticifers
~Segmented lacticifers
~Schizogenous receptacles}

It is known that the leaves of *Eucalyptus globulus* have cavities with well-defined internal boundaries and filled with essential oils. They are called:
{=Schizogenous cavities
~Non-articulated lacticifers
~Schizolysigenous cavities
~Articulated lacticifers
~Lysigenous cavities}

Examination of a root revealed a tissue that has root fibrils and doesn't have stomata and cuticle. What tissue is it?
{=Epiblema
~Exoderm
~Epiderm
~Periderm
~Endoderm}

When root was being studied under microscope, root hairs were detected, which are cell growths of:
{=Epiblema
~Epidermis
~Endoderm
~Exoderm
~Mesoderm}

A sample section of an axial body shows a complex consisting of phellogen and its derivatives-cork and phelloderm. This tissue is called:
{=Periderm
~Colenchyma
~Sclerenchyma
~Epiblema
~Epidermis}

Racemose clusters of calcium carbonate crystals are detected among the waste products of a protoplast. These crystals are:
{=Cystoliths
~Isolated crystals
~Raphides
~Styloids
~Druses}

Microscopical examination of transverse section of a root revealed investing tissue consisting of thin-walled, closely joining cells with root fibrilla. This tissue is called:
{=Epiblem
~Root cap (pileorhiza)
~Periderm
~Endoderm
~Epiderm}

Underneath the stem epidermis some layers of living perenchymal cells were found. The cells contained chloroplasts and had cellulose membranes with thickened angles. This tissue is called:
{=Angular collenchyme
~Lacunar collenchyme
~Lamellar collenchyme
~Storage parenchyma
~Chlorophyll-containing parenchyma}

While studying a stem covered with periderm, the researcher realized that gas exchange takes place through …
{=Lenticels
~Non-suberized (conducting) cells
~Hydatodes
~Stomata
~Pores}

Anatomico-histochemical analysis of a petiole revealed living parenchyma cells with cellulose, angular thickened membranes under the epiderm and above the fascicle. This is typical for:
{=Angular collenchyma
~Lamellar collenchyme
~Bast fibers
~Lacunar collenchyme
~Spongy parenchyma}

Destruction of intercellular substance and cell breakaway in overripe fleshy fruits is a result of:
{=Maceration
~Lignification
Mineralization
~Sliming
~Gummosis}

Microscopical examination of transverse section of a root revealed investing tissue consisting of thin-walled, closely joining cells with root fibrilla. This tissue is called:
{=Epiblem
~Endoderm

~Epiderm
~Root cap (pileorhiza)
~Periderm}

Microscopy of a leaf epidermis of *Convallaria majalis* showed that the stomata had four accessory cells. Two of them were lateral, and two other were polar. What type of stomatal mechanism is it?
{=Tetracytic
~Anisocytic
~Paracytic
~Anomocytic
~Diacytic}

Microscopy of leaf epidermis of *Lamiaceae (Labiatae)* family plants revealed that both accessory cells are perpendicular to a stoma. Such stomata are called:
{=Diacytic
~Paracytic
~Anisocytic
~Anomocytic
~Tetracytic}

Cross section of a root conducting zone shows pericycle that gives rise to:
{=Lateral roots
~Root cap
~Trichomes
~Adventitious roots
~Root fibrilla}

Characteristic peculiarity of mechanic plant tissues is that they consist mainly of dead cells, but there is one type of mechanic tissues consisting of living cells. Which of the listed mechanic tissues contains the living protoplast?
{=Collenchyme
~Scleroids
~Libriform
~Perivascular fibers
~Phloem fibers}

A substance performs mechanical function; its cells are covered with uniformly thick lignified membranes. This substance is:
{=Sclerenchyma
~Collenchyme
~Periderm
~Cambium
~Sieve tubes}

In the microscopical analysis of the root cross section of a dicot plant made in the absorption region we found a line of cells with lenticular suberizing thickenings – Casparian strips. There are cells of the…
{=Endoderm
~Exoderm
~Mesoderm
~Pericycle
~Central cylinder}

Pulp of a needle leaf consists of living tissue with inner ansiform protuberances of membrane and chloroplasts along them. What is type of this leaf's parenchyma?
{=Plicate
~Spongioid
~Palisade
~Storage
~Aeriferous}

Microscopic examination of a stem of a perennial plant revealed integumentary tissue of secondary origin that was formed as a result of activity of:
{=Phellogen.
~Procambium
~Cambium
~Pericycle
~Protoderm}

Microscopic examination of ground tissue of a small branch revealed cork and felloderm. These are the derivates of:
{=Phellogen
~Cambium
~Procambium
~Protoderm
~Pericycle}

Unlike the xylem of woody dicots, that of pines and many other Gymnosperms consist of...
{=Tracheids and contains no vessel elements or fibers
~Only vessel elements
~Resin canals
~Hypodermis
~Mesophyll}

In which the mechanical tissue may occur processes of photosynthesis?
{=Collenchyma
~Sclereids
~Sklerenchyma
~Apìkal meristem
~Intercalar meristem}

What are the features of opened collateral bundle?
{= Phloem occupies the outer part of the bundle, xylem – internal, between them is the cambium
~Phloem occupies the outer part of the bundle, xylem – outside of it, the cambium is missing
~ Phloem occupies the outer part of the bundle, xylem – internal, cambium is missing
~Phloem occupies the inside of the bundle, xylem, external, between them is the cambium
~Phloem occupies the inside of the bundle, xylem, external, cambium is missing}

In the microscopical study of the pine leaf we have found that layer thick-walled cells, which perform the protective and mechanical function, is situated under epidermis. This is …
{=Hypodermis
~Endodermis
~Subsidiary cells
~Secretory cells
~Supporting cells}

Stem thickening occurs due to functioning of the following structures:
{=Lateral meristem
~Apical meristem
~Wound meristem
~Intercalary meristem
~Endoderm}

Flax seeds are used in medicine as coating agents, due to the following ability of their secondary membranes:
{=Sliming
~Suberization
~Gummosis
~Lignification
~Mineralization}

During photosynthesis within plant cell chloroplasts there is short-term retained starch being produced, which rapidly hydrolyzes into glucose. This starch is called:
{=Primary
~Secondary
~Transitory
~Resistant
~Reserve}

A substance performs mechanical function; its cells are covered with uniformly thick lignified membranes. This substance is:
{=Sclerenchyma

~Collenchyme
~Periderm
~Cambium
~Sieve tubes}

Within folded parenchyma of a fir needle there are cavernous structures filled with galipot and lined with live thin-walled secretory cells. Name these structures:
{=Resin ducts
~Laticifers
~Hydatodes
~Glandules
~Nectar glands}

What type of conducting bundles is typical for all root zones of one-seeded plants?
{=Radial
~Central phloem
~Central xylem
~Bilateral
~Collateral}

What type of conducting bundles is characteristic of all root zones in one- seeded plants?
{=Radial
~Amphivasal (Leptocentric)
~Amphicribal (Hadrocentric)
~Bilateral
~Collateral}

Having been studied, conifer wood is determined to be composed of cells with pointed ends and lignified ring-porous cell wall. Therefore, this tissue of conifers is represented only by:
{=Tracheids
~Vessels
~Sieve tubes
~Companion cells
~Bast fibers}

Microscopic examination of leaf serration revealed secretory structures secreting some liquid. What are these structures called?
{=Hydatodes
~Nectaries
~Stomata
~Glandules
~Osmophores}

Microscopical examination of a leaf revealed water stomata on its serration. These stomata are for exudation of liquid-drop moisture. This process is called:
{=Guttation
~Internal secretion
~Photosynthesis
~Transpiration
~Gas exchange}

Anatomy of organs

When root is studied under microscope, one leading bundle is detected in its maturation zone, where xylem and phloem areas interchange radially. It can be concluded that this bundle type is:
{=Radial
~Amphivasal
~Collateral
~Bicollateral
~Amphicribal}

What type of conducting bundle is characteristic of primary anatomical structure of a root?
{= Radial
~Concentric
~Open collateral
~Bicollateral
~Closed collateral}

What type of conducting bundles is typical for all root zones of one-seeded plants?
{=Radial
~Central phloem
~Central xylem
~Bilateral
~Collateral}

Section of *Helianthus annuus* root has a secondary fascicular formation; it means that the section was made in the zone of:
{=Fortification and conduction
~Growth and elongation
~Absorption
~Fissionable cells
~Root cap}

A section of beet root has several layers of cambium that form additional conducting bundles. What is the structure of the given root?
{=Secondary, polycambial
~Secondary monocambial
~Primary, polycambial

~Primary, monocambial
~Transitional, monocambial}

While examining structure of a root the students paid attention to an area where the superficial cells formed root fibrils. What root zone is it?
{=Suction
~Cell division
~Extension
~Conduction
~Pileorhiza}

Cross section of a root conducting zone shows pericycle that gives rise to:
{=Lateral roots
~Trichomes
~Adventitious roots
~Root fibrilla
~Root cap}

On the root section of *Helianthus annuus* a secondary fascicular structure was found. This means that the section was made in the zone of:
{=Fixation and conduction
~Absorption
~Root cap (pileorhiza)
~Dividing cells
~Growth and distension}

When root was being studied under microscope, root hairs were detected, which are cell growths of:
{=Epiblema
~Epidermis
~Endoderm
~Exoderm
~Mesoderm}

In root transverse section laying and formation from pericycle of the following organs can be seen in maturation zone:
{=Lateral roots
~Trichome
~Additional roots
~Root hairs
~Root cap}

Researcher at the microscopic analysis of rhizomes found open collateral leading bundles, arranged in a circle that may indicate affiliation plants to the class…
{=Dicotyledons
~Mosses

~Monocots
~Lycopodiaceae
~Gymnosperms}

In a sample studied under a microscope the multilayer palisade (columnar) parenchyma can be clearly seen. Such structure is typical for:
{=Leaf
~Root
~Dicotyledon stem
~Rhizomes of ferns
~Adventitious roots}

Microscopy of leaf epidermis of *Lamiaceae* (*Labiatae*) family plants revealed that both accessory cells are perpendicular to a stoma. Such stomata are called:
{=Diacytic
~Paracytic
~Anisocytic
~Anomocytic
~Tetracytic}

Microscopy of monocotyledon leaf epidermis revealed that stomatal complex has four accessory cells. That means stomatal apparatus belongs to the following type:
{=Tetracytic
~Diacytic
~Anisocytic
~Anomocytic
~Paracytic}

On the transverse section of the leaves of *Camellia japonica* (dicot plant) under the upper epìdermis discovered that the perpendicular to the surface is three layers of elongated cells with numerous chloroplasts. Obviously, this parenchyma...
{=Palisade and assimilated
~Folded and assimilated
~Spongy and assimilated
~Spongy aerenchyma
~Folded aerenchyma}

In a leaf of lime under the upper epidermis have been found two layers of palisade parenchyma, and under lower - the spongy parenchyma. Therefore, the type of the leaf lamina is...
{=Dorsiventral
~Isolateral
~An Equilateral
~Radial
~Izolateral with aerenchima}

In a leaf of oleander under the upper epidermis and under lower one have been found two layers of palisade parenchyma, between them - the spongy parenchyma. Therefore, the type of the leaf lamina is...
{=Isolateral
~Dorsiventral
~An Equilateral
~Monoradial
~Multiradial}

On the photomicrograph of an herbaceous plant stem the bicollateral vascular bundles are clearly visible. The microspecimen represents the stem of the following plant:
{=Pumpkin (dicot)
~Rye (monocot)
~Flax-tail (monocot)
~Corn (monocot)
~Solomon’s seal (monocot)}

Microscopic examination of leaf serration revealed secretory structures secreting some liquid. What are these structures called?
{=Hydatodes
~Nectaries
~Stomata
~Glandules
~Osmophores}

Microscopical examination of a leaf revealed water stomata on its serration. These stomata are for exudation of liquid-drop moisture. This process is called:
{=Guttation
~Internal secretion
~Photosynthesis
~Transpiration
~Gas exchange}

Morphology of root

A student had to analyze an axial plant organ characterized by radial symmetry, unlimited growth, and positive geotropism. It provided nutrition, vegetative propagation, anchorage of plant in the soil. This organ was identified as …
{=Root
~Seed
~Stem
~Leaf
~Rhizome}

The study of the main root ontogenesis shows that it has developed from:
{=Radicle
~Apical meristem
~Pericycle
~Lateral meristem
~Intercalary meristem}

Comparison of the underground organs of herbaceous plants revealed that in the bipartite annuals the following organ prevails:
{=Main root system (tap root system)
~Adventitious root system
~Rhizome
~Bulb
~Corm}

Cross section of a root conducting zone shows pericycle that gives rise to:
{=Lateral roots
~Trichomes
~Adventitious roots
~Root fibrilla
~Root cap}

When studying white mistletoe, - perennial medicinal semiparasite plant, - it was revealed that its embryonic root buries into higher plant stem tissue and reaches vascular tissue system. This type of roots is called:
{=Haustorial roots
~Aerial roots
~Aerating roots
~Photosynthetic roots
~Contractile roots}

In Tormentil (perennial dicot plants) for the first year is formed main root, and eventually form underground shoot is a Rhizome with adventitious roots, which thicken, branch and form secondary tap roots. That is the type of root system?
{=Mixed or allorizal
~Tap root

~Additional roots
~Contractile
~Fibrous}

Among the given underground organs there was chosen the metamorphoses of the root…
{=Edible root of carrot
~Tubers of potato
~Rhizomes of lily-of-the-valley
~Bulbs of garlic
~Corms of saffron}

Microscopic analysis of a root revealed the following features: primary structure, endodermal cells with horseshoe-shaped areas, radial fascicle of the central cylinder, more than six xylem rays. Such root structure is typical for the following plants:
{=Angiosperms, monocotyledons
~Angiosperms, dicotyledons
~Gymnosperms, conifers
~Gymnosperms, gnetalians
~Pteridosperms}

In root transverse section laying and formation from pericycle of the following organs can be seen in maturation zone:
{=Lateral roots
~Trichome
~Additional roots
~Root hairs
~Root cap}

Morphology of stem and shoot (or sprout)
During morphological description of common periwinkle it was defined that it has shoot that trails on the ground and takes root. It allows characterizing such shoot as:
{=Creeping
~Tenent
~Twining
~Recumbent
~Scandent}

Examination of a medicinal plant revealed that its underground organ had nodes, internodes, cataphylls, gemmae and secondary roots. Therefore, this underground organ is:
{=Rhizome
~Stolon
~Tuber
~Storage root
~Root bulb}

In spring birch and poplar buds are gathered. They essentially are:
{=Embryonic shoots
~Reduced gametophytes
~Gametophyte embryos
~Sporophyte embryos
~Reduced sporophytes}

Apical bud of a sprout stops its development early and growth is realized due to two lateral buds placed opposite one another under the apex. Such ramification is called:
{=Pseudodichotomic
~Nonequidichotomic
~Bush
~Equidichotomic
~Monopodial}

Hop sprouts wind around a support and climb upwards. That means that they are:
{=Climbing
~Recumbent
~Arrect
~Tenent
~Trailing}

Valuable medicinal plant *Galega officinalis* in the underground part of the growth cone has a crown bud, internode, and modified bract leaves. Therefore, its underground part is presented by:
{=Rhizome
~Thorn
~Root
~Reproductive buds (bulbils)
~Phylloclades}

Name the above-ground sprout modifications that develop from lateral buds, are situated in leaf angles or inflorescences, and take part in vegetative reproduction:
{=Bulbils
~Above-ground tubers
~Cladodes
~Tendrils
~Thorns}

Arctostaphyllos uva ursi, Vaccinium vitis ideae and Vaccinium myrtillus life forms can be defined as:
{=Subshrub (suffrutex, semifrutex)
~Small shrub (fruticulus)
~Grass
~Vine
~Shrub (frutex)}

During excursion into a conifer forest the students noticed that bilberry (*Vaccinium myrtillus*) stems are lignified only partially in their lower part, the upper part of the stem retains the form of caulis. Therefore, this plant can be classified as:
{=Suffrutex (or subshrub)
~Annual grass
~Liana
~Perennial grass
~Tree}

Stem thickening occurs due to functioning of the following structures:
{=Lateral meristem
~Apical meristem
~Wound meristem
~Intercalary meristem
~Endoderm}

Morphology of leaves
In a sample studied under a microscope the multilayer palisade (columnar) parenchyma can be clearly seen. Such structure is typical for:
{=Leaf
~Root
~Dicotyledon stem
~Rhizomes of ferns
~Adventitious roots}

During the morphologic analysis of various plant leaves the students found the leaves, whose length of the leaf blade is 5 times more than its width. Specify the shape of the leaf blade:
{=Linear
~Elliptical
~Lanceolate
~Ovoid
~Reniform}

Leaves of a plant under examination have a distinct main vein (nerve) in the middle with regularly diverging side veins (nerves). What type of venation (nervation) is it?
{=Pinnate
~Dichotomic
~Digitate
~Arcwise (Arcuate)
~Parallel}

During morphological analysis of lily-of-the-valley *(Convallaria majalis)* leaf it was noted that lamina has wide elliptic shape and numerous veins are parallel to leaf margin and merge only at the leaf point. What is this venation type called?

{=Arcuate
~Parallel
~Palmate
~Pinnate-reticulate
~Dichotomous}

Examination of a medicinal herb revealed that its leaves were divided down to the base of the leaf blade with segments radiating from a common point in a fan manner. These leaves are:
{=Palmatisected
~Palmatilobate
~Pinnatisected
~Palmatipartite
~Pinnatipartite}

Leaves of *Aesculus hippocastanum* are composed of 5-7 assidenous folioles that are oblongobovate shaped with dentate-serrated margin, are attached to petiole (leaf rachis), and therefore are:
{=Palmately compound
~Pinnately compound
~Pinnatisected
~Palmatisected
~Palmatilobed}

During practical field session students have detected plant with diversity of leaves that differ by their placement on stem, parts development, size, shape, lamina division. This phenomenon is called:
{=Heterophylly
~Leaf mosaic
~Venation
~Phyllotaxy
~Metamorphosis}

In wheat, barley several veins with identical cross-sections are parallel to the top and there converge. The primary veins are connected by straight or slanting secondary. That is the type of venation?
{=Parallel
~Pinnate-marginal
~Arcuate
~Pinnate-ansate
~Dichotomous}

Shape of the margin of the leaf lamina is morphological diagnostic sign. If the serrations on the edge of the lamina are sharp and directed to the top sheet and the top edge of the tooth is shorter than from the bottom, then this margin called...
{=Serrate
~Dentate

~Entire
~Crenate
~Wavy}

Leaves that have blades with notches that reach ½ width half-plate called the...
{=Partite
~Petioled
~Dissected
~Complex
~Entire-kind}

A leaf consists of three leaflets situated on the top of common petiole (rachis). This leaf is…
{=Tricompound
~Trisected
~Palmatisected
~Paripinnately compound
~Imparipinnately compound}

In the morphological study of the plant it is observed that at the base of the compound leaf there are paired thorns, they are metamorphosis of the…
{=Stipules
~Leaflets
~Petiolules
~Rachises
~Petiole}

Leaves of bastard acacia (*Acacia*) have overgrown flat petioles, which perform the photosynthesis function. They are called…
{=Phyllode
~Thorns
~Tendrill
~Cladode
~Pitcher leaf}

Comparative analysis of the plant leaves of Knotweed (*Polygonaceae*) family revealed discover of their common feature – is the presence of…
{=Ocrea
~Vagina
~Tendril
~Spine
~Bract}

Morphological analysis of leaves revealed that each vein runs along the lamina separately and the veins join together only at the top of the lamina. This kind of venation is called:
{=Arcuate

~Pinnate
~Dichotomous
~Palmate
~Dichotomous}

Each stem node of white deadnettle (*Lamium album*) has two leaves which grow perpendicularly to the leaves of the previous node. Such leaf arrangement is called:
{=Cross-opposite
~Spiral
~Verticillate
~Rosette
~Leaf mosaic}

Morphology of flower

Colored or white component of double perianth, which consists of petals, is a:
{=Corolla
~Flower cup
~Androecium
~Gynoecium
~Perigonium}

Students should identify the following to determine the sex of a flower:
{=Stamens and pistils
~Flower cup and corolla
~Pedicle and receptacle
~Symmetry
~Color and type of indumentum}

Corolla of a zygomorphic bi-sexual flower consists of 5 petals: the largest one is called banner, two lateral - wings, and two fused together - keel. This corolla is characteristic of Fabaceae family and is called:
{=Papilionaceous
~Lingulate
~Rotate
~Funnelform
~Tubular}

A flower has the androecium consisting of two long and two short stamens. Therefore, the flower's androecium is:
{=Didynamous
~Tetradynamous
~Diadelphous
~Tetradelphous
~Polyadelphous}

Androecium of *Brassica oleracea* flower has six stamens, with four stamens of inner circle longer than two stamens of outer circle. What is this type of androecium called?
{=Tetradynamous
~Didynamous
~Diadelphous
~Monadelphous
~Polydelphous}

A sour cherry has shortened principal axis of inflorescence, pedicles have nearly equal length and emerge like from the same point. It is typical for the following type of inflorescence:
{=Umbel
~Corymb
~Truss
~Ear
~Anthodium}

Inflorescence of *Ledum palustre* has a significantly shortened rachis, connivent nodes, and pedicles of the quite similar length. This inflorescence is called:
{=Umbel
~Glomus
~Bostryx
~Spike
~Ament}

Examination of an inflorescence of sweet flag *Acorus calamus* L. revealed that it was encircled with a covering leaf (spathe) and small sessile flowers grew compactly on the thickened pulpy axis. Such inflorescence is called:
{= Spike or spadix
~Glomus
~ Ear
~Umbel
~Corymb}

Morphological analysis of an inflorescence revealed that its flowers were attached to the same axis at different levels but due to the various length of peduncle they grew in the same plane. Such inflorescence is called:
{=Corymb
~Anthodium
~Glomus
~Umbel
~Spike}

Inflorescence of greater plantain grows out at apex, the main axis is long, and flowers are sessile. This type of inflorescence is called:
{=Spike

~Panicle
~Spadix
~Capitulum
~Thyrsus}

Cherry (*Prunus cerasus*) inflorescence has short floral axis and approximately same length pedicles emerging from one point. It is characteristic of the following inflorescence organisation:
{=Umbel
~Corymb
~Raceme
~Spike
~Head}

Corolla of the origanum flower is zygomorphic, sympetalous and consists of a tube and two limbs. The upper limb is bilobate and the lower is trilobate. Such corolla is called:
{=Bilabiate
~Lingulate
~ Papilionaceous
~Thimble-like
~Unilabiate}

A plant under examination has papilionaceous flower. This plant belongs in the family:
{=Fabaceae
~Scrofulariaceae
~Ranunculaceae
~Lamiaceae
~ Asteraceae }

A student had analyzed an inflorescence and found out that the flowers on the developed main axis were set one by one, and due to the various length of pedicels they were located almost in the same plane, so they formed:
{=Corymb
~Glomus
~Anthodium
~Volute
~Umbel}

Corolla of the origanum flower (*Origanum vulgare*) is zygomorphic, sympetalous and consists of a tube and two limbs. The upper limb is bilobate and the lower is trilobate. Such corolla is called:
{=Bilabiate
~Lingulate
~Thimble-like
~Unilabiate

~Papilionaceous}

Morphological analysis of poplar inflorescence shows that it is a simple monopodial inflorescence: main axis is drooping; the flowers are sessile, unisexual. Specify the type of inflorescence:
{=Catkin
~Head
~Capitulum
~Cyme
~Panicle}

The birch has compound inflorescences with drooping main axis bearing dichasia composed of unisexual cells. Therefore, this inflorescence is called:
{=Ament (or Catkin)
~Raceme
~Spadix
~Spike
~Glomus}

Plantago major inflorescence grows at the apex, its rachis is long, with sessile flowers. Name this type of inflorescence:
{=Spike
~Panicle
~Spadix
~Capitulum
~Thyrse}

Actinomorphic apopetalous corolla include:
{=Cruciform
~Funnelform
~Campanulate
~Tubular
~Ligulate}

Monopodial inflorescences of plantain (spike) and maize (ear) have one trait in common: their flowers are placed on the well-developed principal axis. This is typical for the following inflorescences:
{=Simple botrioid
~Complex botrioid
~Cymose
~Aggregate
~Thyrsoid}

During the field practice a student found a plant with disk-shaped structure of its rachis, sessile flowers and husk. This inflorescence is called:
{=Anthodium
~Spike

~Spadix
~Glomus
~Raceme}

S.H.Navashyn, Ukrainian scientist, was the first one, who described double fertilization. In the process of fertilization first spermium conjugates with central nucleus of embryo sac and second spermium with:
{=Ovicell
~Synergides
~Antipodes
~Nucellus
~Chalaza}

Morphology of fruit and seed

A fruit under examination is pseudomonocarpic, with woody pericarp and one seed. The seed cuticle remains unfused with the pericarp. Such fruit is called:
{=Nut
~Cremocarp
~Achenocarp
~Caryopsis
~Pseudomonocarpic drupe}

A citrus fruit is characterized by the glandular exocarp, spongiose mesocarp and overground pericarp consisting of juice sacs. Such fruit is called:
{=Hesperidium
~Pepo
~Cinarodium
~Drupe
~Bacca}

One of the examined soft (fleshy) fruits is characterized by essential-oil exocarp, spongioid mesocarp and overgrown endocarp that consists of juice saccules. What fruit was under examination?
{=Hesperidium
~Pepo
~Multicoccus
~Drupe
~Bacca}

One of fleshy fruits under examination is characterized by essential oil exocarp, spongy mesocarp and overgrown endocarp consisting of juice sacs. What fruit was examined?
{=Hesperidium
~Pepo
~Cinarodium
~Drupe

~Bacca}

During field practice a student was tasked with making a morphological collection of coenocarpous fruits. What type of fruit belongs to this group?
{=Hesperidium
~Aggregate-accessory fruit
~Fragaria
~Cynarodium
~Drupe}

One of the common characteristics of subfamily *Prunoidea* representatives (family *Rosaceae*) is that their fruit is:
{=Drupe
~Aggregate-accessory fruit
~Bacca
~Pome
~Pepo}

You need to specify a monocarpous one-seeded fruit with hard scleroid endocarp and soft mesocarp. This fruit is:
{=*Monodrupe (or drupe)*
~*Legume*
~*Silique*
~*Capsule*
~*Bacca*}

The fruit of black locust is dry, formed of a single carpel, dehisces by the ventral and dorsal sutures on two sides, the seeds are attached along the ventral suture. Such fruit is called:
{=Legume
~Siliqua
~Follicle
~Capsule
~Silicula}

Many species of wild rose are a source of vitamins, fatty oils and herbal material. Specify the juicy pseudocarps that are procured as herbal raw material:
{=Rose hips
~Coenobia
~Hesperides
~Aggregate-accessory fruits
~Cenocarp stone-fruits}

Datura stramonium has dry many seeded fruits formed by syncarpous Gynoecium that dehisce when the valves are broken off. Specify the fruit type:
{=Capsule
~Follicle

~Siliqua
~Coenobium
~Hesperidium}

During identification of fruits of *Datura* family they were determined to be a:
{=Thorned quadrivalve capsule
~Glossy black berry
~Urceolate capsule with a lid
~Juicy globular cynarodium
~Berry in an orange cup}

During determination of fruit type *Hypericum perforatum* it was found that: the fruit is coebocarpous, dry, opens with valves and contains a big number of seeds. Therefore the fruit of *Hypericum perforatum* is:
{=Fruitcase
~Multifollicle
~Follicle
~Coenobium
~Aggregate achene}

Select the fruit that meets the description: monocarpic, dry, polyspermous, can be split apart only in the ventral suture. The seeds are located along the ventral suture:
{=Follicle
~Coccus
~Fleshy stone fruit
~Dry stone fruit
~Follicetum}

Dry many-seeded monocarp fruit opens along its ventral suture. It can be identified as:
{=Follicle
~Legume
~Nutlet
~Drupe
~Capsule}

What forms from an ovule after fertilization of flowering plants?
{=Seed
~Gametophyte
~Sporophyte
~Fruit
~Endosperm}

It is known that a seed without endosperm and perisperm has its nutrients accumulated in:
{=Embryo cotyledons
~Embryo root

~Embryo stalk
~Gemma
~Seed coat}

Seeds of rye, corn, and other crops have small corymb-shaped cotyledon and accumulate nutrients in the:
{=Endosperm
~Perisperm
~Shell
~Gemmule
~Embryo root}

Plant Systems

A macroscopic alga of brown color with trunk, rhizoids and foliaceous part rich in alginates and iodine is ranked with genus of:
{=*Laminaria*
~*Chlorella*
~*Chlamydomonas*
~*Spirogira*
~*Ulothrix*}

A big brown alga has a stipe, rhizoids and laminae rich in alginates and iodine. It belongs to the following genus:
{=*Laminaria*
~*Chlorella*
~*Chlamydomonas*
~*Spirogira*
~*Ulothrix*}

It is known that cells of *Chlorophyta* division representatives have chromatophores of various shapes. We can observe ribbon-like chromatophores in the species of the following genus:
{=*Spirogyra*
~*Volvox*
~*Clorella*
~*Chlamidomonas*
~*Spirulina*}

Mycothallus of the fungus under study consists of a stipe, pileus, lamellar hymenophore. This fungus belongs in the class:
{=Basidiomycetes
~Ascomycetes
~Zygomycetes
~Deuteromycetes
~Oomycetes}

Representatives of this division propagate vegetatively by special formations: isidia, soredia, lobules. Name this division.
{=*Lichenes*
~*Basidiomycota*
~*Equisetophyta*
~*Lycopodiophyta*
~*Polypodiophyta*}

A higher nonvascular plant has distinct alternation of dominant sexual (gametophyte) and reduced asexual (sporophyte) generations. This indicates that the plant belongs to the following division:
{=Bryophyta
~Lycopsida
~Equisetophyta
~Pteridophyta
~Gymnospermae}

A higher avascular plant shows clear alternation of generations with the dominant sexual (gametophyte) and reduced asexual (sporophyte) generation. This indicates that the plant relates to the:
{=*Bryophyta*
~*Lycopodiophyta*
~*Equisetophyta*
~*Pteroid*
~*Gymnosperms*}

Spore and pollen analysis revealed in the pollen some tetrahedral spores with a semi-circular base and a reticular surface, which may belong to:
{=Lycopodiophyta
~Equisetophyta
~Bryophyta
~Polypodiophyta
~Pinophyta}

Spore and pollen analysis revealed tetrahedral spores with a semi-circular base and reticular surface in the pollen. It is the pollen of:
{=*Lycopodiophyta*
~*Equisetophyta*

~*Bryophyta*
~*Polypodiophyta*
~*Pinophyta*}

A plant 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 following divisions:
{= Polypodiophyta
~Lycopodiophyta
~Magnoliophyta
~Pinophyta
~Eguisetophyta}

A common species of the Pinaceae family is a tall, evergreen, shade-enduring tree. The needles are solid, prickly, quadrangular in cross-section, spirally arranged. This tree is:
{=*Picea abies*
~*Larix sibirica*
~*Pinus sylvestris*
~*Juniperus communis*
~*Ephedra equisetina*}

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?
{=*Ginkgo biloba*
~*Cedrus libani*
~*Juniperus communis*
~*Picea abies*
~*Abies sibirica*}

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?
{=*Adonis vernalis*
~*Helleborus purpurascens*
~*Ranunculus acris*
~*Delphinium elatum*
~*Aconitum napellus*}

A medicinal plant under examination has a pistil formed by a big number of carpels, and a fruitcase that opens with small orifices. This is:
{=*Papaver somniferum*
~*Chelidonium majus*
~*Zea mays*

~*Mentha piperita*
~*Sanquisorba officinalis}*

A medicinal herb under examination has the capsule fruit with lacticifers and small openings. This herb is called:
{=*Papaver somniferum*
~*Chelidonium majus*
~*Zea mays*
~*Mentha piperita*
~*Sanquisorba officinalis*}

A plant under study has stipules fused together and thus forming a tight tube - ochrea, that is a diagnostic feature of the following family:
{=*Polygonaceae*
~*Gramineae*
~*Rosaceae*
~*Papaveraceae*
~*Clusiaceae*}

A leaf of a plant under examination has a membranous ocrea that envelops the bottom of internode. Presence of such modified stipules is a diagnostic sign of the following family:
{=Polygonaceae
~Gramineae
~Rosaceae
~Legumes
~Solanaceae}

A leaf has glumaceous ochrea. It clasps bottom of internode and is a modificated stipule. This is diagnostic sign of the following family:
{=*Polygonaceae*
~*Gramineae*
~*Rosaceae*
~*Legumes*
~*Solanaceae*

A plant under study has stipules fused together and thus forming a tight tube - ochrea, that is a diagnostic feature of the following family:
{=Polygonaceae
~Gramineae
~Rosaceae
~Papaveraceae
~Clusiaceae}

A food plant of *Polygonaceae* family stalk, cordate-sagittate leaves, and its fruit is a trihedral nutlet. Name this plant:
{=*Fagopyrum esculentum*

~*Polygonum aviculare*
~*Persicaria bistorta*
~*Rumex confertus*
~*Persicaria hydropiper*}

A leaf of a plant under examination has a membranous ochrea wrapped around the internode base. Presence of such modified stipules is the diagnostic feature of the following family:
{=*Polygonaceae*
~*Gramineae*
~*Rosaceae*
~*Legumes*
~*Solanaceae*}

Prevailing plants of a foliage forest are monoecious high trees coated with thick dark-grey rind with deep cracks. Their leaves are short-petiolar, pinnatilobate. Their fruit is acorn. Therefore, the dominating species is:
{=*Quercus robur*
~*Robinia pseudoacacia*
~*Aesculus hippocastanum*
~*Tilia cordata*
~*Betula verrucosa*}

If aromatic secretory-downy plant has square in cross section stem, spike inflorescence made up from whorled dichasia, bilabiate corolla and its fruit consists of four nutlets, it probably belongs to the following family:
{=*Lamiaceae*
~*Scrofulariaceae*
~*Brassicaceae*
~*Apiaceae*
~*Solanaceae*}

Crop production includes cultivation of medicinal essential oil plants that don't grow in Ukraine wildely, namely *Mentha piperita*, *Ortosiphon stamineus*, and also:
{=*Salvia officinalis*
~*Origanum vulgare*
~*Leonurus cardiaca*
~*Thymus serpyllum*
~*Leonurus quinquelobatus*}

Choose a plant whose apical sprouts are used in medical practice for sedative drug production:
{=*Leonurus cardiaca*
~*Glycyrrhiza glabra*
~*Digitalis purpurea*
~*Ledum palustre*
~*Fagopyrum sagittatum*}

When studying the diagnostic features of *Origanum vulgare*, the students noticed that the plant had a compound monopodial inflorescence. It is called:
{=Corymbose panicle
~Cluster of heads
~Cincinnus
~Bostyx
~Head}

One of the important diagnostic features of garden sage (*Salvia officinalis*) and motherwort (Leonurus cardiaca) is their shape of corolla. Their flowers have the following type of corolla:
{=Bilabiate
~Funnelform
~Thimble-shaped
~Pseudoliguateë
~Liguate}

Essential oil glandules that consist of 8 secretory cells placed in 2 lines and 4 tiers are typical for most plants of the following family:
{=Asteraceae
~Apiaceae
~Lamiaceae
~Rosaceae
~Scrophulariaceae}

An annual plant of the Asteraceae family has tripartite leaves, apical anthodia with tubular flowers, flat achenocarps that are tenent due to 2-3 bristly serratures. This plant is:
{=*Bidens tripartita*
~*Chamomilla recutita*
~*Centaurea cyanus*
~*Echinacea purpurea*
~*Artemisia vulgaris*}

In the practice of harvesting herbal raw material of Asteraceae family the term "flowers" means both individual flowers and inflorescences. However, the notion of "flowers" is botanically correct only for:
{=*Centaurea cyanus*
~*Gnaphalium uliginosum*
~*Arnica montana*
~*Echinops ritro*
~*Bidens tripartita*}

Calendula officinalis which a representative of the aster family (Asteraceae) is characterized by the following inflorescence type:
{=Flowerhead (a capitulum or anthodium)

~Umbel
~Catkin
~Glome
~Cyme}

Which medicinal plant of the *Asteraceae* family has only disk flowers in the flower head?
{=Three-part beggarticks (*Bidens tripartita*)
~Dandelion (*Taraxacum officinale*)
~*Echinacea purpurea*
~Cornflower (*Centaurea cyanus*)
~Common yarrow (*Achillea millefolium*)}

Examination of the leaf epidermis revealed cells containing cystoliths. Presence of cystoliths is typical for plants of the following family:
{=Urticaceae
~Brassicaceae
~Fabaceae
~Solanaceae
~Papaveraceae}

A species of *Ericaceae* family is characterized by the following type of leaves: alternate leaf arrangement, short footstalk, leathery, elliptic or obovate with retuse tip, downturned edges; upper surface is dark-green, lower surface is light-green with punctate glandules. Name this species:
{=*Vaccinium vitis-idaea*
~*Arctostaphilos uva-ursi*
~*Vaccinium oxycoccus*
~*Vaccinium myrtillus*
~Ledum palustre}

Arctostaphylos uva ursi, Vaccinium vitis ideae, Vaccinium myrtillus life forms can be defined as:
{= Subshrub (suffrutex, semifrutex)
~Vine
~Grass
~Shrub (frutex)
~Small shrub (fruticulus)}

Quercus robur leaves have the following type of lamina shape and division:
{=Pinnatilobate
~Trilobate
~Pinnatipartite
~Palmatilobate
~Palmatipartite}

Bacca fruit is typical for the following representative of *Solanaceae* family:

{=*Atropa belladonna*
~*Hyoscyamus niger*
~*Datura stramonium*
~*Nicotiana tabacum*
~*Datura innoxia*}

Analysis of a plant revealed essential oil glands with several layers of cells arranged in pairs. This allows for the possibility that the plant relates to the family:
{=*Asteraceae*
~*Scrofulariaceae*
~*Solanaceae*
~*Apiaceae*
~*Lamiaceae*}

Representatives of *Asteraceae* family have various types of flowers **EXCEPT FOR**:
{=Bilabiate
~Tubular
~Funnelform
~Ligulate
~Pseudoligulate}

You are studying a silvery downy plant of *Asteraceae* family, which is rich with essential oils and bitters. Harvested are apical sprouts with panicle of small round flower heads. This plant is:
{=*Artemisia absinthium*
~*Arctium lappa*
~*Bidens tripartita*
~*Calendula officinalis*
~*Chamomilla recutita*}

One of the herbarium specimens of medicinal plants relates to the *Asteraceae* family. This plant is:
{=*Arctium lappa*
~*Atropa belladonna*
~*Cassia acutifolia*
~*Urtica dioica*
~*Rubus idaeus*}

Common nettle (*Urtica dioica*), hop (*Humulus lupulus*), and black elderberry (*Sambucus nigra*) require soils rich in nitrogen compounds. Such plants are called:
{=Nitrophyles
~Nitrophobes
~Calciphiles
~Calciphobes
~Halophytes}

Weeds can be harmful for populace's wellbeing. Particularly, allergic reactions are often caused by the following plant in its period of blossoming:
{=*Ambrosia artemisiifolia*
~*Equisetum arvense*
~*Stellaria media*
~*Erigeron canadensis*
~*Taraxacum officinale*}

A plant producing essential oil has square stem, bilabiate corolla, coenobium fruit. These features are characteristic of:
{=*Lamiaceae*
~*Papaveraceae*
~*Polygonaceae*
~*Solanaceae*
~*Scrophulariaceae*}

An essential oil plant has a tetraquetrous stem, flowers with bilabiate corolla, its fruit is coenobium. These signs are typical for the following family:
{=*Lamiaceae*
~*Papaveraceae*
~*Polygonaceae*
~*Solanaceae*
~*Scrophulariaceae}*

An essential oil plant under examinati on has tetraquetrous stalk, flowers with bilabiate corolla, coenobium fruit. These characteristics are typical for the following family:
{=*Lamiaceae*
~*Papaveraceae*
~*Polygonaceae*
~*Solanaceae*
~*Scrophulariaceae}*

Rhizome of an *Asteraceae* family species is polycephalous, succulent, has lysigenous cavities, accumulates inulin. Such underground organ is characterisic of:
{=*Inula helenium*
~*Hyoscyamus niger*
~*Digitalis grandiflora*
~*Sorbus aucuparia*
~*Helianthus annuus*}

It is known that rhizome and roots of *Inula helenium* have cavities without distincts inner boundaries filled with essential oils. They are called:
{=Lysigenous receptacles
~Schizogenous receptacles
~Resin ducts
~Segmented lacticifers

~Nonsegmented lacticifers}

Species character of *Thymus serpyllum* includes: apical inflorescences (flower heads), dark punctate glands on the inferior surface of a leaf, long hairs along the edge of leaf base, and:
{=Creeping stems
~Thorns
~Stems with prickles
~Climbing stems
~Short decumbent stems}

What inflorescences are characteristic of *Cruciferae* (*Brassicaceae*) family?
{=Raceme or panicle
~Capitulum or corymb
~Capitulum or umbel
~Corymb or spike
~Spadix or panicle}

A plant has ribbed and hollow stems, sheathing pinnatisected leaves; compound umbel inflorescence; fruit with essential oil tubules. These features are typical for the representatives of the following family:
{=*Apiaceae*
~*Solanaceae*
~*Fabaceae*
~*Brassicaceae*
~*Scrophulariaceae*}

A plant under investigation has compound uniform monopodium inflorescence - compound umbel. What plant is it characteristic of?
{=*Anethum graveolens*
~*Allium cepa*
~*Sorbus aucuparia*
~*Rosa canina*
~*Centaurea cyanus*}

Bark of a thornless xylophyte of the *Rhamnaceae* family has laxative effect. Name this plant:
{=*Frangula alnus*
~*Aronia melanocarpa*
~*Hippophaë rhamnoides*
~*Rubus idaeus*
~*Crataegus sanguinea*}

A perennial plant has white flower heads grouped in compound corymbs and bipinnatisected or tripinnatisected leaves. Name this plant:
{=*Achillea millefolium*
~*Melilotus officinalis*

~*Potentilla erecta*
~*Phaseolus vulgaris*
~*Taraxacum officinale*}

A herbaceous plant under examination has segmented lacticifers with anastomoses filled with white latex. This is typical for:
{=*Taraxacum officinale*
~*Urtica dioica*
~*Chelidonium majus*
~*Anethum graveolens*
~*Thymus vulgaris*}

In the practice of harvesting herbal raw material of *Asteraceae* family the term «flowers» means both individual flowers and inflorescences. However, the notion of «flowers» is botanically correct only for:
{=*Centaurea cyanus*
~*Gnaphalium uliginosum*
~*Arnica montana*
~*Echinops ritro*
~*Bidens tripartita*}

The fruit is a thorned many-seeded capsule that opens into four flaps when ripe. It is characteristic of:
{=*Datura stramonium*
~*Papaver somniferum*
~*Hyoscyamus niger*
~*Digitalis purpurea*
~*Linum usitatissimum*}

A certain dioecious plant commonly grows at the forest edge. It is a shrub with thorned sprouts. Its fruit is a round black coenocarpous drupe (pyrenarium) with 3-4 seeds. Name this plant:
{= *Sambucus nigra*
~*Crataegus sanguinea*
~*Hippophae rhamnoides*
~*Rhamnus cathartica*
~*Rosa canina*}

Some medicinal plants are poisonous. Select a poisonous plant from the list below:
{=*Digitalis purpurea*
~*Thymus serpillum*
~*Salvia officinalis*
~*Thymus vulgaris*
~*Origanum vulgare*}

In spring a perennial plant of *Asteraceae* family produces floral shoots with golden-yellow flowers. After blossom-fall, shoots with large leaves appear. Name this plant*:*
{~*Potentilla erecta*
= Tussilago farfara
~*Petroselinum crispum*
~*Datura stramonium*
~*Hipericum perforatum*}

A fruit is a capsule with oblate light brown smooth glossy seeds that mucify when moistened. This fruit belongs to:
{=*Linum usitatissimum*
~*Hypericum perforatum*
~ *Ledum pulustre*
~*Linaria vulgaris*
~*Digitalis purpurea*}

Microscopy of subterranean organs of an Asteraceae family plant shows articulated laticifers with anastomoses filled with white latex. It is characterisic of the following plant:
{=*Taraxacum officinale*
~*Achillea millefolium*
~*Bidens tripartita*
~*Helianthus annuus*
~*Artemisia absinthium*}

Calendula officinalis as a representative of *Asteraceae* family can be characterized by the following type of inflorescence:
{=Anthodium
~Catkin
~Corymb
~Umbel
~Capitulum}

A certain herbaceous plant grows on the meadows of the Carpathian Mountains. It has orange anthodium inflorescences, upright stem, and a rosette of basal leaves. Name this plant:
{=*Arnica montana*
~*Echinacea purpurea*
~*Centaurea cyanus*
~*Calendula officinalis*
~*Cychorium intybus*}

Which representative of the *Rosaseae* family has spring bloom in form of white, fragrant flowers gathered in pendulous racemes at the ends of short shoots?
{=*Padus rasemosa (P.avium)*
~*Potentilla erecta*
~*Sorbus aucuparia*

~*Cerasus vulgaris*
~*Crataegus sanquinea*}

Many species of wild rose are a source of vitamins, fatty oils and herbal material. Specify the juicy pseudocarps that are procured as herbal raw material:
{=Rose hips
~Coenobia
~Hesperides
~Aggregate-accessory fruits
~Cenocarp stone-fruits}

A fruit tree of *Rosaceae* family has short thorny shoots; the fruit is a distinctively-shaped pome with stone cells in its pulp. Name this plant:
{=*Prunus spinosa*
~*Prunus armeniaca*
~*Malus sylvestris*
~*Pyrus communis*
~*Cerasus vulgaris*}

Herbarium specimens of medicinal plants are being studied. Which one of them belongs to Rosaceae family?
{= *Crataegus sanguinea*
~*Conium maculatum*
~*Capsella bursa-pastoris*
~*Melilotus officinalis*
~*Polygonum persicaria*}

A plant under examination has papilionaceous flower. This plant belongs in the family:
{=*Fabaceae*
~*Scrofulariaceae*
~*Ranunculaceae*
~*Lamiaceae*
~*Asteraceae*}

Examination of five herbarium specimens of medicinal plants showed that one of them belonged to the *Legume* (Fabaceae) family, namely:
{=*Glycyrhiza glabra*
~*Atropa belladonna*
~*Hyoscyamus niger*
~*Datura stramonium*
~*Solanum dulcamara*}

Both scientific and folk medicine uses medicinal plant *Glycyrrhiza glabra* L. What part of the plant is harvested?
{=Roots and rhizomes
~Foliage

~Inflorescence
~Grass
~Seeds}

One of the plants under examination has a zygomorphic flower and papilionaceous corolla. This plant is called:
{=*Melilotus officinalis*
~*Mentha piperita*
~*Valeriana officinalis*
~*Urtica dioica*
~*Rosa canina*}

When studying five herbarium specimen of medicinal plants, it was determined that one of them belongs to *Fabaceae* family. Which one is it?
{=*Ononis arvensis*
~*Atropa belladonna*
~*Hyoscyamus niger*
~*Datura stramonium*
~*Solanum dulcamara*}

Astragalus dasyanthus has sessile flowers gathered into inflorescences with a short thick axis. This inflorescence is called:
{=Capitulum
~Cyme
~Truss
~Spike
~Head}

A plant under examination has a storage root; its stems are ribbed and channelled, hollow; leaves are many times pinnatisected, leafstalk has a boot; inflorescence is the compound umbel; fruit is the cremocarp with essential oil canaliculi in the pericarp. Such characteristics are typical for the plants of the following family:
{=*Apiaceae*
~*Solanaceae*
~*Fabaceae*
~*Brassicaceae*
~*Scrophulariaceae}*

The analyzed plant has hollow ribbed stems, compound umbel inflorescence, schizocarpic fruit (cremocarp) and is rich in essential oils, which is a characteristic of:
{=*Apiaceae*
~*Fabaceae*
~*Ericaceae*
~*Brassisaceae*
~*Asteraceae*}

Fruits of the *Apiaceae* family can be identified on the basis of a set of morphological features and presence of the following formation in the pericarp:
{=Essential oil tubules
~Resin ducts
~Articulated lacticifers
~Non-articulated lacticifers
~Wax strips with stomata}

Which of the following plants has pome fruit?
{=*Sorbus aucuparia*
~*Prunus domestica* L.
~*Amygdalus communis*
~*Rosa majalis*
~*Prunus padus*}

An herb under analysis relates to the *Malvaceae* family and is used as an expectorant and coating agent. The stem is erect, with simple palmate three to five lobed leaves, large pink flowers growing in short panicles. The herb has schizocarpic fruit - a capsule. Identify the plant:
{=*Althaea officinalis*
~*Fragaria vesca*
~*Potentilla erecta*
~*Tussilago farfara*
~*Thymus serpyllum*}

Diaphoretic herbal tea includes dichasial cymes with light-yellow, oblong, wing-like, squamelliferous perianth. The flowers are fragrant, yellowish. These inflorescences belong to:
{=*Tilia cordata*
~*Viburnum opulus*
~*Robinia pseudoacacia*
~*Mentha piperita*
~*Padus avium*}

To make diaphoretic herbal tea the following inflorescences are used: 3-15 corymbose dichasia with light-yellow oblong wing-shaped membranous recaulescent squamella that fuses halfway with floral axis. Flowers are fragrant, yellowish. These, inflorescences belong to:
{=*Tilia cordata*
~*Viburnum opulus*
~*Robinia pseudoacacia*
~*Mentha piperita*
~*Padus avium*}

On the photomicrograph of a herbaceous plant stem the bicollateral vascular bundles are clearly visible. The microspecimen represents the stem of the following plant:
{=Pumpkin (*Cucurbita pepo*)
~Rye (*Secale cereale*)
~Flax (*Linum usitatissimum*)
~Corn (*Zea mays*)
~Solomon's seal (*Polygonatum odoratum*)}

A cultivated plant has green berry like fruit and underground sprout modifications - tubers. The described plant is:
{=*Solanum tuberosum*
~*Convalaria majalis*
~*Polygonatum odoratum*
~*Atropa belladonna*
~*Solanum lycopersicum*}

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:
{=*Verbascum phlomoides*
~*Digitalis purpurea*
~*Digitalis grandiflora*
~*Digitalis lanata*
~*Digitalis Ferruginea}*

Stinging nettle *(Urtica dioica)*, hop *(Humulus lupulus)* and common elder *(Sambucus nigra)* are plants that require high nitrogen content in soil, which means that they are:
{=Nitrophilous
~Nitrophobous
~Calciphilous
~Calciphobous
~Halophytic}