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The book includes botanic test items for use licensing integrated examination "KROK 1. Pharmacy" and further use in teaching.

The book has been developed for students of pharmaceutical faculties and academic staff of higher medical educational establishment.

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- # ANATOMY OF THE CELL, TISSUES AND VEGETATIVE ORGANS

PLANT CELL

1.1. Plant cell organelles that realize a protective function are ...
A. ribosomes; B. centrosomes; C. microtubules; D. mitochondria; E. lysosomes.

1.2. The cell sap containers in the plant cell are bordered by tonoplast from the cytoplasm, they accumulate water, reserve nutrients and ergastic substances; they also provide the osmolality and cell turgor. They are ...
A. nucleus; B. mitochondria; C. vacuoles; D. ribosomes; E. chloroplasts.

1.3. Cells with large central vacuole, which is confined with tonoplast and filled with the cell sap and can contain crystal inclusions. These cells are typical for…
A. animals; B. plants; C. cyanobacteriae; D. fungus; E. algae.

1.4. The above-membrane component of plant cells includes...
A. microfilaments; B. plazmalemma; C. microtubules; D. cell wall E. glycocalyx.

1.5. The membrane, which is adjacent to the vacuole, is called ...
A. plasmalemma; B. protoplast; C. mezoplasma; D. karyoplasma; E. tonoplast.

1.6.…participate in the formation of vacuoles.
A. bubbles EPR; dictyosomes; B. nucleus; C. lysosomes; D. ribosomes; E. mitochondria.

1.7. A cellulose monomer is ...
A. glucose; B. galactose; C. ribose; D. sucrose; E. fructose.

1.8. Organelles of cytoplasm complex do not include...
A. Golgi complex; B. endoplasmic reticulum; C. nucleus; D. mitochondria; E. ribosomes.

1.9. Fungus cells, unlike plant cells, accumulate ...
A. starch; B. aleurone; C. inulin; D. chitin; E. glycogen.

1.10. Cytoplasmic filaments, which go through pores of the cell wall, provide interrelation of protoplasts and metabolism between them. They are …

A. microtubules; B. plasmodesmas; C. fibrils; D. microfilaments; E. cytoskeleton.

1.11. It has been found that soluble polysaccharide is part of the cyanobacteria and fungi cells. When colored with Lugol's solution, it becomes brown and it is cleaved to glucose phosphate by the enzyme phosphorylase. It is ...

A. starch; B. cellulose; C. glycogen; D. inulin; E. fructose.

1.12. The cytoplasm of a plant cell is isolated from the cell wall by …
A. plasmolemma B. tonoplast (vacuolar membrane); C. hyaloplasma; D. nucleus envelope; E.endoplasmic reticulum.

1.13. While study of a plant cell under microscope it is indicated structures having the form of heap of depressed membrane cisterns and bubbles. This is a …

A. endoplasmic reticulum; B. plastids; C. mitochondrion; D. Golgi apparatus; E. calcium microbody.

1.14. To plant cell organelles that provide concentration, dehydration and induration of substances of endo-and exogenic nature belong the following ones:
A. Golgi complexes; B. lysosomes; C. ribosomes; D. plastids; E. endoplasmic reticulum.

1.15. Cell walls of these plants consist of chitin. It is typical for …
A. arboreal plants; B. gymnospermous plants; C. fungi; D. higher spore plants; E. algae.

1.16. It is known that bluish purple petal coloration of a plant under examination varies up to pink or light pink according to pH of cellular fluid of vacuole. It is caused by presence of:
A. carotins; B. Phycobilins; C. anthocyanins; D. Chlorophylls; E. xanthophylls.

1.17. 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:

A. xanthophylls; B. chorophylls; C. carotins; D. phycobilins; E. anthocyanins.

1.18. Green pigments of the plants are contained in …
A. amyloplasts; B. chromoplasts; C. chlorophylls; D. proteoplasts; E. mitochondria.

1.19 A plant cell differs from the animal one by presence of...
A. mitochondria; B. plastids; C. Golgi complex; D. lysosomes; E. nucleus.

1.20. While in photosynthesis it is forming a short-lived starch in chloroplasts. It is hydrolyzing quickly up to glucose. Such a starch is called …
A. secondary; B. primary; C. transient; D. reserve; E. storage.

1.21. Plastids contain pigments which act as antioxidants and are provitamins A. What are these pigments?
A. only chlorophylls; B. anthochlor; C. anthocyanins; D. carotinoids.

1.22. Carotin, phyllixanthin and licopin are pigments, which colour petals, fruits and leaves of plants and are accumulated in …
A. amyloplasts; B. chloroplasts; C. oleoplasts D. chromoplasts; E. proteoplasts.

1.23. Microscopic examination of a potato tuber showed some cell inclusions that become blue-violet as affected by Lugol's iodine solution. These inclusions are:

A. aleurone grains; B. inulin crystals; C. drops of fatty oil; D. calcium oxalate crystals; E. starch granules.

1.24. In the cytoplasm of the plant cells we find storage products. These are grainy structures with numerous centres of forming and alternating dark and light layers around them. Consequently, these are…
A. complex aleuronic grains; B. simple starch grains; C. complex starch grains; D. half-complex starch grains; E. simple aleuronic grains.

1.25. Thin cuts of Inula helenium roots are put into ethyl alcohol 96%. While microscopical analysis of the cuts we found out spherocrystals. This indicates the presence of…

A. Starch; B. inulin; C. protein; D. mucus; E. fat.

1.26. While microscopical studied of the seeds we find aleuronic grains, which are complex, because they consist of …
A. nucleus, vacuoles, globoid; B. globoid, vacuoles, crystalloid; C. vacuoles, amorphous protein, globoid; D. nucleus, amorphous protein, crystalloid; E. crystalloid, amorphous protein, globoid.

1.27. According to its chemical nature and significance, inulin is a ...
A. lipoid; B. storage protein; C. mineral substance; D.carbohydrate; E. excretory product.

1.28. Among the groups of biologically active substances listed below there is a compound of reserve nutrients of cell sap. It is ...
A. inulin; B. coumarins; C. saponins; D. flavonoids; E. terpenoids.

1.29. Starch is discovered by the action Lugol's solution (dark and blue coloration) on the root end. This starch is …
A. primary, anabolic; B. secondary, transitional; C. primary, preserve; D. secondary, reserve; E. secondary, reserve.

1.30. In the powder of the rhizomes prevail cells with small granular structures, which have concentric foliation and rima in the center. Lugol's solution colour them in dark blue colour, so these structures are …

A. simple starch grains; B. complex starch grains; C. half-complex starch grains; D. simple aleuronic grains; E. complex aleuronic grains.

1.31. Semi-autonomous organelles of plant cells, which are formed from proplastids, and able to divide, grow and move, like mitochondria, are called ...

A. Golgi vesicles; B. chloroplasts; C. endoplasmic reticulum; D. ribosome; E. plastids.

1.32. Plastids are covered by ...
A. double membranes; B. one membrane; C. without membrane; D. numerous membranes; E. three membranes.

1.33. While microscopical study of the plant cell it is established that a well-developed system of the tylakoides is typical for …
A. outer membrane of the chloroplast; B. inner membrane of the chloroplast; C. inner membrane of the mitochondria; D. inner membrane of the mitochondria; E. outer membrane of the proplastid.

1.34. Secondary reserve starch is formed in the …

A. amyloplasts; B. chloroplasts; C. chromoplasts; D. oleoplasts; E. proteoplasts.

1.35. Primary starch is formed in ...
A. leucoplasts; B. chromoplasts; C. leucoplasts and chloroplasts; D. chloroplasts; E. mitochondria.

1.36. Under the action of concentrated nitric acid and heating the proteins is dyed in …
A. bright yellow; B. red; C. orange; D. violet; E. blue.

1.37. Solid inclusions containing proteins were found in cells of castor seeds during their microscopic examination. They are ...
A. starch grains; B. cystolith; C. styloids; D. raphides; E. aleuronic grains.

1.38. Aleuronic grains accumulate…
A. carbohydrate; B. proteins C. mineral substances; D. lipids; E. excretory substances.

1.39. The influence on the slide of sunflower (Helianthus annuus) seed by the solution of Sudan III, pink-orange coloration appeared, it is the evidence of the presence of the … in the seed.
A. protein; B. starch; C. inulin; D. fatty oil; E. cellulose.

1.40. Inclusions of a plant cell that contain crystalloids, globoids or crystals of calcium oxalate, are …

A. complex aleuronic grains; B. half-complex starch grains; C. inulin; D. solid fats; E. complex starch grains.

1.41. … belongs to reserve liquid inclusions of a plant cell.
A. primary starch; B. fatty oil; C. secondary starch; D. transient starch; E. aleuronic grains.

1.42. Organic compounds of plant cell of non-carbohydrate nature include ...
A. waxes; B. pectin substances; C. inulin; D. fiber; E. mucus.

1.43. Druses are …
A. aggregate of single crystals; B. aggregate of crystal sand; C. growths of pyramidal crystals; D. aggregate of acicular crystals; E. aggregate of cystoliths.

1.44. While microscopical study of leaf we determined the presence of the crystalline facing which accompanies …
A. the columnar mesophyll; B. the spongy mesophyll; C. the edge of leaf blade; D. supporting idioblasts; E. the central vein.

1.45. With the help of microscopic and histochemical methods in the cells of solomon's seal (Polygonatum officinalis) rhizome one can determined raphids, which are …
A needle-shaped crystals of calcium oxalate; B star-shaped crystals of calcium oxalate; C. single crystals of calcium oxalate; D. grape-shaped crystals of calcium carbonate; E. needle-shaped crystals of calcium carbonate.

1.46. On superficial preparation of lily-of-the-valley (Convallaria majalis) leaf bunches of needle-shaped crystals are distinguishable in cells-idioblasts of the mesophyll. These are …
A. cells of cystoliths; B. raphides; C. druses; D. singles crystals; E. stilloids.

1.47. According to the morphological features the herbaceous plant is lily-of-the-valley (Convallaria majalis) to confirm this additionally it was made a microscopic analysis of a leaf and searching of crystalline inclusions of…
A. singl crystals; B. druse; C. styloid; D. crystal sand; E. raphids.

1.48. Monocot plants have needle-shaped crystals of oxalate calcium which are collected in packs. These are …
A. druse; B. styloids; C. twin crystals; D. raphids; E. crystal sand.

1.49.Single elongated prismatic crystals with pointed ends were found in leaf cells of a monocot plant. They are …
A. raphids; B. druse; C. styloids; D. crystal sand; E. cystolith.

1.50. Investigated plant is determined as Urtica dioica on the base of morphological diagnostic features. It is verified while the microscopical study by the present of the …

A. cystolith; B. druses; C. raphids; D. styloids; E. single crystals.

1.51. Among the products of life activity of the protoplast we find aciniform concretions of the calcium carbonate, i.e. …

A. single crystals; B. raphids; C. cystolith; D. styloids; E. druses.

1.52. By microscopic study of fig leaf (Ficus) in some epidermal cells the inner outgrowth of the cell wall was observed with accumulation of crystals that under the action of hydrochloric acid are soluble with evolving of carbonic gas. This structure is …

A. single crystal; B. druse; C. styloid; D. raphide; E. cystolith.

1.53. The cell walls of the inner epidermis of the pepper pericarp are penetrated with pits. In adjacent cells short cylindrical pit holes coincide as for their diameter and direction. These pits are …
A. oblique; B. straight; C. chinked; D. branched; E. bordered.

1.54. While microscopical analysis of the beech wood we discover crystals, which under the action of hydrochloric acid dissolve with gas isolation. So these are crystals of …
A. calcium carbonate; B. calcium oxalate; C. calcium potassium; D. suberin; E. inulin.

1.55. Under the action of chlorine-zinc-iodine the thickened, colourless cell walls of collenchymas turned violet. Thus, cell walls are …
A. lignified; B. cutinized; C. mineralized; D. cellulose; E. suberinized.

1.56. Processing of the plant microslide with phloroglucinol with concentrated hydrochloric acid resulted in crimson-red colouring of cell walls, which indicates the presence of …
A. pectin; B. cellulose; C. hemicelluloses; D. suberin; E. lignin.

1.57. Pericarp of nuts, stone of cherry, wood of stems are solid, because they accumulated ... in their cell wall.
A. silica; B. chitin; C. suberin; D. lignin; E. calcium carbonate.

1.58. Seeds of flax (Linum usitatissimum) are used as coating drug, due to the capability of cell walls to …

A. suberization; B. suberization; C. lignifications; D. sliming; E. mineralization.

1.59. Under the action of aniline sulphate reagent cell walls are coloured yellow, thus the walls are …
A. suberized; B. cutinized; C. lignified; D. sliming; E. mineralized.

1.60. Suberization of the cell walls involves accumulation of …
A. suberin; B. lignin; C. mucus; D. calcium oxalate; E. cutin.

1.61. The cell walls were coloured orange as a result of processing of the plant microslide with Sudan III solution, which indicates the presence of …
A. cellulose; B. pectin; C. lignin; D. hemicelluloses; E. suberin.

1.62. While microscopical analysis of the leaves we discovered thick layer of the lipoid substance. This is …
A. suberin; B. cutin; C. lignin; D. mucus; E. calcium carbonate.

1.63. Essential oils of plant cell are …
A. a mixture of volatile aromatic substances; B. crystallized proteins; C. starch with inulin; D. a mixture of resins and balsams; E. mineral inclusions.

1.64. As a result of the action of methylene blue solution on the cut of marshmallow root, secretory cells are colored blue. It indicates to the presence of ...
A. glycogen; B. starch; C. mucus; D. inulin; E. lipids.

1.65. Destruction of intercellular substens and cell breakway in overripe fleshy fruits is a result of:
A. maceration; B. gummosis; C. mineralizathion; D. lignificathion; E. sliming.

1.66. …belong to excretory inclusions of plant cells.
A. primary starch; B. secondary starch; C. transitional starch; D. aleuronic grains; E. essential oils.

1.67. A yellow pigment is present in the cell sap of the citrus pericarp. It gives the color to the fruit and is involved in redox reactions. It is ...

A. anthocyanin; B. anthochlor; C. carotin; D. xanthophylls; E. fikobellin.

PLANT TISSUES

1.68. The tissue studied has a large nucleus, a thick cytoplasm without vacuoles; numerous mitochondias and ribosomes; a poor developed endoplasmic reticulum; no crystals. This is …
A. endosperm; B. periderm; C. epidermis; D. epiblema; E. meristem.

1.69. While microscopical analysis of the axis organ between secondary phloem and secondary xylem we find tissue in the form of the multi-layer ring. Cells are alive, thin-walled, densely closed, flattened and are situated in radial layers. So, this tissue is …

A. cambium; B. procambium; C. phellogen; D. pericycle; E. phelloderm.

1.70. When determining the type and characteristics of vascular bundles of axial organs, it is necessary to consider mutual arrangement of the phloem and xylem, the presence of facings and ...

A. epiderm; B. cambium; C. periderm; D. pericycle; E. phellogen.

1.71. Covering tissue has root hairs, have no stomas and cuticle. This is …
A. epiblema; B. epidermis; C. periderm; D. velamen; E. exoderm.

1.72. Stem thickens due to the function of the …
A. apical meristem; B. traumatic C. lateral meristem meristem; D. intercalary meristem; E. endodermis.

1.73. Cambium is a …
A. covering tissue; B. primary meristem; C. conductive tissue; D. secondary meristem; E. basic tissue.

1.74. Lateral roots are formed endogenously and they develop as a result of the activity of the …
A. pericycle; B. procambium; C. cambium; D. apical meristem; E. phellogen.

1.75 Microscopic examination of ground tissue of a small branch revealed cork and phelloderm. These are the derivates of:
A. procambium; B. cambium; C. protoderm; D. phellogen; E. pericycle.

1.76. While microscopical analysis of the perennial plant stem we find covering tissue of the secondary origin, which is formed by the activity of …

A. procambium; B. cambium; C. phellogen; D. cortex parenchyma; E. pericycle.

1.77. Lenticels are discovered in periderm of the perennial plant stem, they are formed by activity of … A. procambium; B. cambium; C. cortex parenchyma; D. pericycle; E. phellogen.

1.78. In the leaf epidermis one can see complexes containing pairwise approximate semilunar cells with chloroplasts. These are …

A. stomas; B. hydatodes; C. trichomes; D. glandules; E. lenticels.

1.79. Phellogen is formed either from pericycle or from the basic tissue which is obtaining the meristem activity. Name the type of tissue which is formed from fellogen. A. meristem; B. excretory tissue; C. strengthening (mechanical) tissue; D. conductive tissue; E. covering tissue;

1.80. Microscopical examination of transverse section of root revealed investing tissue consisting of a thin-walled, closely joining cells with root fibrilla. This tissue is called:
A. root cap (pileorhiza); B. epiderm; C. endoderm; D. epiblem; E. periderm.

1.81. While microscopical study of the stem we found out a covering tissue which consists of cork, phellogen and phelloderm. This tissue complex forms …
A. epidermis; B. xylem; C. periderm; D. phloem; E. collenchymas.

1.82. Under the microscope on the denticles of the leaf we discover secretory structures that excrete drops of liquid. These structures are …
A. nectarine; B. hydatodes; C. stomas; D. glandules; E. osmophores.

1.83. While microscopical study of the epidermis of the Lamiaceae (Mint) Family leaf it is ascertained that both subsidiary cells of the stomas are situated transversely to stoma slit. Stoma apparatus is

A. anomocytic; B. anisocytic; C. tetracytic; D. paracytic; E. diacytic.

1.84 Microscopy of epidermis of the dicot plant leaf has shown that cells around guard cells do not differ from the base cells. So, this type of stomata is …
A. diacytic; B. paracytic; C. anomocytic; D. tetracytic; E. anisocytic.

1.85 Plants of the Lamiaceae Family have rounded exogenous secretory structures with a short unicellular stalk and 8–12 radially situated secretory cells. These are …
A. nectarines; B. osmophores; C. hydatodes (or water stomas); D. glandular hairs; E. essential oil glandules.

1.86. 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?

A.tetracytic; B. diacytic; C. anomocytic; D. paracytic; E. anisocytic.

1.87. Microscopical examination of leaf revealed water stomata on its serration. These stomata are for exudation of liquid-drop moisture. This process is called:
A. guttation; B. photosynthesis; C. transpiration; D. internal secretion; E. gas exchange.

1.88. On the cross section of the Citrus exocarp we discovered large secretory structures without exact outline. This is …
A. schizogenous conceptacle; B. cells-idioblast; C. articulate lacticifer; D. non-articulate lacticifer; E. lysigenous conceptacle.

1.89. While microscopical analysis we find complex tissue, which consists of alive cells with thickened and cutinized external cell walls, stomas and hairs. This is …

A. periderm; B. epidermis; C. cortex; D. epiblema; E. velamen.

1.90. Microscopic examination of a stem of a perennial plant revealed integumentary tissue of secondary origin that was formed as a result of activity of …
A. pericycle; B. phellogen; C. procambium; D. cambium; E. protoderm.

1.91. The main role in the formation of lateral roots belongs to …
A. procambium; B. cambium; C. apical meristem; D. lateral meristerm; E. pericycle.

1.92. Leaves of the plants Mustard (Brassicaceae) Family are covered by epidermis, which has stoma apparatus with three subsidiary cells of different size. These types of stoma apparatus is called …
A. diacytic; B. anisocytic; C. paracytic; D. anomocytic; E. tetracytic.

1.93. Stomas of leaf epidermis of Vinca minor have two subsidiary cells; their longitudinal axes are parallel to the somatic cleft. So, stoma apparatus is ...
A. diacytic; B. anomocytic; C. paracytic; D. tetracytic; E. anisocytic.

1.94. While microscopical study of the triennial stem on the cross section we detected covering tissue, which consists of densely close dead brown cells, with thick cell walls, which impregnate with suberin. This is …

A. cork cells (or phellema); B. epiblema; C. epidermis; D. collenchyme; E. chlorenchyma.

1.95. When studyied stem covered with periderm researcher came to conclusion that gaseous exchange takes place through:

A. hydatodes; B. lenticels; C. stomata; D. pores; E. throughput cells.

1.96. Nectaries usually contain …
A. solutions of sugars; B. essential oils; C. food enzymes; D. mucus; E. latex.

1.97. While microscopical analysis we find complex tissue, which consists of periderm aggregate. This is …

A. epidermis; B. epiblema; C. exoderm; D. bark; E. velamen.

1.98. While microscopical analysis of the leaves we discovered structures, which consist of long stalk and small secretory multicellular head. They are …
A. glandular hairs; B. covering hairs; C. stringing hairs; D. hydatodes; E. thorns.

1.99. By microscopical analysis of the plant (in epidermis) we discover glandules, where cells are situated by two cells in 3 – 6 layers, so the plant belongs to the Family...
A. Scrophulariaceae (Figwort); B. Solanaceae (Potato); C. Asteraceae (Sunflower); D. Apiaceae (Carrot); E. Lamiaceae (Mint).

1.100. 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:
A. Asteraceae (Sunflower); B. Lamiaceae (Mint); C. Solanaceae (Nightshade); D. Scrophulariaceae (Figwort); E. Apiaceae (Carrot).

1.101. Excretory structures, which excrete water with mineral substances in liquid state, are situated on the serrations of the leaf. Water excretes through the slits between two open guard cells. These are …

A. osmophores; B. emergence; C. glandular hair; D. hydathodes;E. glandule.

1.102. While microscopical study of the leaf on the denticles there are determined water stomas which are the appliance for excretion of liquid drops, i.e. realizing the process of …

A. gas exchange; B. endogenous secretory; C. transpiration; D. photosynthesis ; E. guttation.

1.103. In the flower we determine secretory structures, which excrete sugary solutions that attract pollinators. This is …
A. osmophores; B. nectarines; C. stinging hair; D. sticky hair; E. hydatodes.

1.104. External secretory structures include …
A. idioblast; B. lacticifer; C. resinous canals; D. nectarines; E. conceptacle.

1.105. While microscopical analysis of the Urtica dioica leaf we find large growths, which consist of multicellular stay, ampulla-shaped alive cell with small mineralized head. Cell sap contains substances, which cause irritation. This structure is …

A. covering hair; B. peltate scale; C. seta; D. glandular hair. E.stinging hair.

1.106. While microscopical study of the poppy pericarp it is determined, that there are tube structures with white latex. They are …
A. secretory glands; B. lysigenicous conceptacle; C. secretory cells; D. lacticifers; E. schizogenous conceptacle.

1.107. Under the epidermis of a leaf we find green tissue which consists of alive, oblong and tightly closed cells. These cells are orthogonally oriented to the leaf surface. This is a parenchyma of …
A. spongy; B. columnar (or palisade); C. folded; D. storage; E. auriferous.

1.108. Microscopy of the fruit pulp of quince has found sclereids of isodiametric form. They are …
A brachysclereids; B. astrosclereids; C. thread-like sclereids; D. osteosclereide; E. macrosclereids

1.109. Some plants accumulate latex in …
A. cells-idioblasts; B. glandules; C. lacticifers; D. hydatodes; E. conceptacles.

1.110. In epidermis of the madder dye leaf there have been identified multicellular spiny outgrowths; epidermal and subepidermal cells take part in their formation. These outgrowths are ...
A. simple trichomes (or hairs); B. glandular hair; C. emergences; D. glandules; E. stinging hairs.

1.111. In the wood of the Pinus sylvestris essential oils are accumulated in resin channels, which are covered inside with a layer of secretory cells. Those structures are called …
A. schizogenous conceptacles; B. lysigenous conceptacles; C. articulate lacticifers; D. non-articulate lacticifers; E. cells-idioblasts.

1.112. While microscopical study of the needle-shaped leaf we consider alive tissue with inner ansate growths of cell wall, along which there are situated chloroplasts, so this parenchyma is …
A. spongy; B. palisade; C. folded; D. folded and palisade; E. palisade and spongy.

1.113. Basic parenchyma of the hydrophytes and hygrophytes leaves with a developt system of intercellular spaces that promotes ventilation and flotage has been studied. This parenchyma is…

A. water-storage (or hydrophoric); B. assimilative spongy (or lacunose); C. aerenchyma (or air-containing); D. storage; E. assimilative folded

1.114. In folded parenchyma of the pine leaf we discover hollow structures that are lined with secretory cells and contain thick gum. These are …

A. nectarines; B. osmophores; C. schizogenous conceptacles; D. hydatodes (or water stomas); E. lacticifers.

1.115. The cells of leaf mesophyll are elongated, densely close with thin, straight walls and large quantity of chloroplasts, so, chlorenchyma is …
A. palisade; B. spongy; C. folded; D. storage; E. aerenchyma.

1.116. It is known that rhizome and roots of elegampane inula (Inula helenium) have cavities without distincts inner boundaries filled with essential oils. They are called:
A. lysigenous receptacles; B. segmented lacticifers; C. schizogenous receptacles; D. nonsegmented lecticifers; E. resin ducts.

1.117. On the longitudinal section of the dandelion root in cortex we find secretory structures with thick contents in the form of winding tubules, which are formed with series of cells. Such structures are called …
A. articulate lacticifer with anastomosis; B. articulate lacticifer without anastomosis; C. non-articulate non-branched lacticifer; D. non-articulate branched lacticifer; E. schizogenous cannals.

1.118. Cells of the stem pith are parenchymal and alive. They have large intercellular spaces and thin porous walls. This tissue is …
A. conductive; B. meristematic; C. mechanical; D. covering; E. basic.

1.119. While microscopical study of the leaf we discover that some layers of the chlorophyll-bearing cells are situated under epidermis. These cells have elongated form and are situated obliquely to the surface of a leaf with large amount of chloroplasts. So, this parenchyma is called …
A. folded; B. storage; C. water-bearing; D. palisade; E. spongy.

1.120. While microscopical study of the pine leaf we find that mesophyll consists of cells, which have many chloroplasts and sinuous cell walls. So, mesophyll is formed by … parenchyma.
A. palisade; B. storage; C. water-bearing; D. spongy. E. folded (plicate).

1.121. Basic tissue of green leaf consists of living thin-walled, parenchymatous cells and large intercellular spaces. This parenchyma is ...
A. spongy (or lacunose); B. palisade (or columnar); C. folded D. storage; E. venting.

1.122. Basic parenchyma is developed in seeds, pericarp, cortex, stem core and underground organs. It contains starch and aleuronic grains, drops of fatty oil. This parenchyma is …
A. water-storage (or hydrophoric); B. storage; C. aerenchyma (or air-containing); D. assimilative palisade (or columnar); E. assimilative spongy (or lacunose).

1.123. Underground location of rhizomes determines the fact that the most developed tissue is …
A. chlorenchyma; B. aerenchyma; C. xylem; D. storage parenchyma; E. collenchymas.

1.124. While microscopical studying of the leaf we find stellar sclereids. These are …
A. osteosclereids; B. trichosclereids; C. macrosclereids; D. astrosclereids; E. brachisclereids.

1.125. Air roots of orchids are covered with a multi-layer protecting, absorbing and photosynthesizing tissue of protodermal origin. It is …

A. epiblema; B. periderm; C. cortex; D. epiderm; E. velamen.

1.126. Anatomical and histochemical analyses of the petiole show that under the epidermis and above the conductive bundle there are alive parenchymal multangular cells with cellulose walls, thickened in cell angles. This is typical for …

A. angular collenchymas; B. spongy parenchyma; C. lamellar collenchymas; D. lacunar collenchymas; E. bust fiber.

1.127. A characteristic feature of strengthening tissues of plants is that such tissues consist essentially of dead cells. However there exists one type of strengthening tissues consisting of living cells. What cells of strengthening tissues from the list below contain a living protoplast?
A. collenchymas; B. sclereids; C. libriform; D. perivascular fibers; E. bast fibers.

1.128. While microscopical analysis of the stem we find complex tissues, which include such histological elements as: sieve tubes with companion cells, bast fibers, bast parenchyma. It's typical for …

A. xylem; B. epidermis; C. cortex; D. phloem; E. periderm.

1.129. Some layers of alive parenchymatous cells are discovered on the cross section. Cells contain chloroplasts; cell walls are thickened on the angles. This is …
A. lamellar collenchymas; B. lacunar collenchymas; C. angular collenchymas; D. storage parenchyma; E. aerenchyma.

1.130. While microscopical analysis of the longitudinal section of the flax (Linum) stem on the periphery we find groups tightly closed prosenchymatous cells with pointed ends and strongly thickened lamellar cellulose cell walls, which are penetrated with oblique pores. So, this is …

A. wood fibers; B. cortex fibers; C. tracheids; D. vessels; E. bast fibers.

1.131. The main conductive components of leaf vein tissues are ...
A. xylem and phloem; B. collenchyma and sclerenchyma; C. epidermis and periderm; D. aerenchyma and chlorenchyma; E. phloem and collenchymas.

1.132. While microscopic analysis of the rhizome we found centroxylem conductive bundles, so the rhizome belongs to …
A. Potentilla erecta; B. Convallaria majalis; C. Dryopteris filix-mas; D. Agropiron repens; E. Acorus calamus.

1.133.Anatomical and histochemical analyses of petiole shows that under epidermis there are alive parenchymal cells with cellulose and thickened tangential cell walls. This is …
A. angular collenchymas; B. lamellar collenchymas; C. lacunar collenchymas; D. spongy parenchyma; E. palisade parenchyma.

1.134. 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:
A. lamellar collenchyme; B. spongy parenchyma; C. lacunar collenchyme; D. bast fibers; E. angular collenchymas.

1.135. In the pulp of leaves (tea, begonia, ivy) there are sclereids that are dumbbell-shaped or have a form of tubular bones. They are ...
A. macrosclereids; B. thread-like sclereids; C. osteosclereides D. astrosclereids; E. brachysclereids.

1.136. In composition of the stem phloem there are groups of the densely close prosenchymatous cells with pointed ends, evenly thickened, lamellar, partly lignified cell walls. These are …
A. xylem fibers; B. phloem fibers; C. tracheids; D. sclereids; E. collenchymas.

1.137. Sclerenchyma consists of thickened cell walls, which are impregnated with lignin. These fibers are …

A. bast; B. cortex; C. perivascular; D. wood; E. sheath.

1.138. Ascending transport of water and soluted minerals is provided by …
A. vessels and tracheids; B. sieve tubes; C. wood fibers (libriform); D. bast fibers; E. sclerenchyma.

1.139. By means of microscopic analyses it has been observed prosenchymatous cells with bordered pits,which are typical for … tissue
A. mechanical; B. storage; C. conductive; D. covering; E. meristematic.

1.140. It is determined that transport of photosynthesis products is provided by the …
A. vessels; B. tracheids; C. parenchyma; D. bast fiber; E. sieve tubers.

1.141. Descending stream of organic substances from leaves to all plant organs is provided by …
A. vessels; B. sieve tubers; C. tracheids; D. bast fibers; E. wood fibers.

1.142. On the cross section of the pumpkin (Cucurbita) stem it can be well seen that open conductive bundles has two parts of phloem: inner and outer. These bundles are
A. collateral; B. radial; C. concentric with the phloem in the center; D. concentric with the xylem in the center; E. bicollateral.

1.143. Conductive bundles with the phloem in the centre and xylem around it are typical for rhizomes of the lily-of-the-valley (Convalaria majalis). This bundle is called …
A. concentric centerphloem; B. concentric centerxylem; C. radial; D. bicollateral; E. collateral.

1.144. What type of conductive bundle is typical for primary anatomic structure of the root?
A. radial; B. concentric; C. collateral closed; D. bicollateral; E. collateral open.

1.145. While microscopic analysis of the rhizome we found centroxylem conductive bundles, so the plant belongs to …
A. algae; B. dicot; C. monocot; D. gymnospermae; E. fern.

1.146. Conductive bundle is discovered on the cross section of the axis organ; its phloem and xylem are situated separately, which take turns radially. So, this type of the bundle is …

A. centroxylem; B. radial; C. centrophloem; D. collateral; E. bicollateral.

ANATOMY OF THE VEGETATIVE ORGANS

1.147. While microscopical study of the rhizome cross-section of the monocot plant we determine that cells of the inner layer of primary cortex have U-shaped thickenings of the cell walls. This tissue is …

A. phellogen; B. endoderm; C. exoderm; D. pericycle; E. epiblema.

1.148. In the root, completion of meristem cell differentiation and formation of primary anatomical structure occur in the zone of...
A. cell division; B. conduct; C. growth; D. root cap; E. absorption.

1.149 The root of a dicot plant acquires the secondary anatomic structure in the region …
A. root hairs; B. growth and elongation; C. cell division; D. anchoring and conducting; E. root cap.

1.150. On the root section of Helianthus annuus a secondary fascicular structure was found. This means that the section was made in the zone of:

A. growth and elongation; B. fixation and conduction; C. cell division; D. absorption; E. root cap (pileorhiza).

1.151. By microscopical study of the root cross-section we observe cover tissue, which consists of thin-walled, tightly closed cells with root hairs. This is …

A. epiblema; B. root cap; C. Periderm; D. endoderm; E. epiderm.

1.152. It microscopic structure of the root, in the absorption zone, we distinguish: …
A. secondary cortex, phloem; B. wood, core; C. primary cortex, central cylinder; D. primary cortex, periderm; E. secondary cortex, mesophyll.

1.153. On the slides of the bark stem of Tillia cordata (small-leaved lime) there were determined dense strands of fiber which are the part of …

A. soft bast; B. spring xylema; C. hard bast; D. lamellar collenchyme; E pith rays.

1.154. While considering the root structure we draw attention on the region which is covered by the tissue with root hairs. This is a region of …
A. cell division; B. absorption; C. growth and elongation; D. anchoring and conducting; E. root cap.

1.155. The senescent root of the garden radish is not so sappy; the storage xylem is becoming harder and porous. This is a result of considerable overgrowth and lignifications of …

A. vessels; B. parenchyma; C. bast fibers; D. sieve tubes; E. companion cell.

1.156. In the root structure a region is covered by the tissue with root hairs. This is a region of …
A. absorption; B. cell division; C. growth and elongation; D. anchoring and conducting; E. root cap.

1.157. While microscopical study of the primary cortex of the root we determine under epiblema 3-4 lines of big, multangular, and tightly closed cells with partly suberized cell walls. This tissue is …
A. endoderm; B. mesoderm; C. epiblema; D. phellogen; E. exoderm.

1.158. 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:

A. collenchyme; B. endoderm; C. mesoderm; D. exoderm; E. phellogen.

1.159. On cross-section of a root we identify: epiblema, exoderm, mesoderm, endoderm and central axial cylinder. So, section is made through the…
A. region of absorption; B. region of growth; C. region of anchoring and conducting; D. region of cell division; E. root cap.

1.160. In the root of the primary structure storage substances are reserved in …
A. pericycle; B. mesoderm; C. endoderm; D. central cylinder; E. exoderm.

1.161. In the microscopical analysis of the root the following fact has been found: its structure is primary, cells of the endodermis are with the U-shaped thickenings of the cell walls; conductive bundle is radial type with 7 rays of the xylem. Such structure of the root is typical for …

A. angiosperm dicot; B. gymnospermous; C. mossy; D. angiosperm monocot; E. ferny.

1.162. Rhizomes' underground location determines that the most developed tissue is ...
A. chlorenchyma; B. aerenchyma; C. xylem; D. storage parenchyma; E. collenchymas.

1.163. 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. These are cells of the…

A. endoderm; B. exoderm; C. mesoderm; D. pericycle; E. central cylinder.

1.164. While microscopical study of the primary cortex of the root, it is ascertained that its main mass is represented by multi-layer, alive, friable parenchyma with starch grains. This is …

A. mesoderm; B. endodermis; C. exoderm; D. collenchymas; E. phloem.

1.165. Rhizomes of dicot plants are covered with ...
A. epiblema; B. exoderm; C. endoderm; D. epidermis. E.periderm.

1.166. On the cross section of the beet edible root we see some rings of the cambium. They form additional conductive bundles and storage parenchyma. So, structure of this edible root is …
A. secondary, polycambial; B. secondary, monocambial; C. primary, polycambial; D. primary, monocambial; E. transitional, monocambial.

1.167. What type of conductive bundle is typical for primary anatomic structure of the root?
A. concentric; B. collateral closed; C. bicollateral; D. collateral open; E. radial.

1.168. The stem studied has gum ducts, in bast there are no companion cells and in woods there are no vessels. Spring tracheids perform the conductive function and autumn tracheids – the mechanical function. These anatomic features are typical for …
A. Pinus (pine-tree); B. Betula (birch); C. Tillia (small-leaved lime); D. Helianthus (sunflower); E. Cucurbita (pumpkin).

1.169. While microscopical analyses of the root cross section it is determined the following: the root has a periderm and annual rings formed by spring and autumn tracheids. Therefore this is a root of…

A. herbaceous dicot; B. woody gymnosperms; C. woody dicot; D. herbaceous monocot; E. woody monocot.

1.170. When studying the carrot edible structure it is observed that nutritious substances are stored in more developed, fleshy part of the organ - …
A. primary xylem; B. secondary xylem; C. bast; D. primary cork; E. cambium.

1.171. On the slice of the rhizome in the central cylinder we can distinguish closed collateral and centrophloem conductive bundles. Thus, plant belongs to the class of…
A. dicots; B. ferny; C. monocots; D. horse-tail; E. moss.

1.172. On the slice of the rhizome in central cylinder we can distinguish open collateral conductive bundles are location in a circle. It helps to suppose that plant belongs to the class of
A. monocots; B. ferny; C. horse-tail; D. moss; E. dicots.

MORPHOLOGY OF THE VEGETATIVE AND GENERATIVE ORGANS

MORPHOLOGY OF THE VEGETATIVE ORGANS

ROOT

2.1. The studying of the main root ontogenesis showed that the root is generated from…
A. embryo root of the seed; B. apical meristem; C. pericycle; D. lateral meristem; E. intercalary meristem.

2.2. From the given underground organs we choose metamorphoses of the root, namely …
A. tubers of potato; B. edible root of carrot; C. rhizomes of Convallaria majalis (lily-of-the-valley); D. bulbs of garlic; E. corms of saffron.

2.3. The studied mycorrhiza of Quercus robur (english oak) is the symbiosis roots of higher plant with …
A. fungus; B. alga; C. nitrogen-fixing bacteria; D. lichen; E. cianobacterium.

2.4. Investigated axial organ without nodes has radial symmetry, positive geotropism, provides mineral nutrition and anchoring in the soil. This organ is …

A. stem; B. leaf; C. rhizome; D. root; E. seed.

2.5. Roots of the plants Fabaceae (Legume) Family are determined by the presence of …
A. fungus-roots; B. reproductive buds; C. corm; D. bulbs; E. root nodules on the roots;

SHOOT

2.6. The apical bud of the generative shoot early stops its development, and growth and branching of the inflorescence are provided by two lateral buds, which are situated oppositely under the apex. So,

shoot grows …
A. pseudodichotomic; B. equaldichotomic; C. monopodialy; D. unequal-dichotomic; E. tillering.

2.7. Hop sprouts wind around a support and climb upwards. That means that they are:
A. arrect; B. creeping; C. recumbent; D. tenent; E. trailing.

2.8. 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:
A. nonequidichotomic; B. sympodial; C. pseudodichotomic; D. monopodial; E. equidichotomic.

2.9. Macroscopical analysis of the branch of the Crataegus (hawthorn) with a thorn testifies, that the thorn is a metamorphosis of the …
A. shoot; B. stipules; C. leaf blade; D. petiole; E. cells of the epidermis.

2.10. Shoots of the Cucumis sativus (cucumber) twine around the support and climb up, so they are …

A. decumbent; B. upright; C. ascending; D. creeping; E. climbing.

2.11. Examination of a medicinal plant revealed that its underground organ had nodes, internodes, scale-shaped, gemmae and secondary roots. Therefore, this underground organ is:

A. tuber; B. stolon; C. storage root; D. rhizome; E. root bulb.

2.12. Among the given specimens of aboveground shoot metamorphoses there are such, that develop from lateral buds in leaf angle and provide vegetative reproduction. These are:
A. stolons; B. bulbs; C. tubers; D. runners; E. air bulbils.

2.13. While investigation of the medicinal plant we find, that its underground organ has nodes, internodes, filmy leaves, buds and adventitious roots, so this is …
A. rhizome; B. edible root; C. tuber; D. bulb; E. corm.

LEAF

2.14. The Lamiaceae (Mint) Family plants have the property that couples of leafs in two neighbor node are situated in mutually antithetic planes, i.e.

A. distichous crosswise opposite; B. whorled; C. turbinal; D. contortuplicate; E. crosswise opposite.

2.15. If the prongs on the edge of the leaf blade are inclined to the top and have sides of different length, the edge of the leaf blade is...

A. serrated; B. toothed; C. notched; D. crenate; E. wavy.

2.16. If each node of the stem has more than two leaves, this leaf arrangement is...
A. spiral; B. arranged opposite; C. whorled; D. cross-arranged opposite; E. rosette.

2.17. 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:
A. dichotomous; B. arcuate; C. palmate; D. parallel; E. pinnate.

2.18. A phenomenon, when plants have leaves that differ as for their shape, size and degree of irregularity of the leaf blade on its stem, is called ...
A. venation; B. heterophyllous; C. metamorphosis; D. leaf mosaic; E. modification.

2.19. While students carry out morphologic analysis of leaves of different plants, they paid attention to the leaf, in which length of the blade was 5 times longer than its width. This form of the leaf blade is called ...
A. linear; B. lanceolate; C. ovoid; D. kidney shaped; E. elliptical.

2.20. The leaves are peltate; 5-7 similar veins spread from the plate base and branch repeatedly. So, such venation is...
A. palmati-reticular; B. palmate-edge; C. parallel; D arcuate; E. pinnati-reticular.

2.21. Each stem node of white deadnettle (Lamium album) has two leaves which grow perpendicularli to the le3aves of the previous node. Such leaf arrangement is called:

A. crosswise opposite; B. verticillate; C. rosette; D. leaf mosaic; E. spiral.

2.22. Leaf has one main vein from which lateral veins go away evenly. This type of venation is called …

A. palmate; B. arcuate; C. parallel; D. dichotomous; E. pinnate.

2.23. In the plant leaves we distinguish the central (or main) vein, from which diverge lateral veins, which branch repeatedly and make the net of small veins. So, the venation type of the leaf is …
A. arcuate; B. parallel; C. palmate-reticulate; D. dichotomous; E. pinnate-reticulate.

2.24. Leaf venation in monocotyledonous plants typically is...
A. pinnati-edge; B. pinnati-reticular; C. palmati-loop; D. parallel; E. palmati-reticular.

2.25. The leaf has oblong leaf blade, which is cut into the lobes up to 1/3 of the leaf size, so the leaf is …
A. pinnatipartite; B. pinnatisected; C. pinnatilobate; D. palmatisected; E. palmatisected.

2.26. When analysing the officinal raw material it has been determined that leaves are cut up to the base of the blade, its segments are situated fan-like. So, these leaves are …

A. palmatisected; B. pinatisected; C. palmatipartite; D. pinatipartite; E. palmatilobate.

2.27. Low stem leafs of the Leonurus cardiaca are divided until the middle of lamina into 3 or 5 parts. This means that they are:
A. tripartite- or palmatidissected; B. tripartite- or palmaticompound; C. impari-pinnaticompound; D. impari-pinnatipartite; E. tripartite- or palmatipartite.

2.28. A leaf consists of three leaflets situated on the top of common petiole (rachis). This leaf is …
A. trisected; B. palmatisected; C. paripinnately compound; D. imparipinnately compound; E.tricompound.

2.29. A representative of the Legume family has a leaf with common petiole (rachis) with five pairs of opposite leaflets and one apical. So, the leaf is ...

A. imparipinnately compound; B. paripinnately compound; C. palmately compound; D. pinnatisect; E. palmatisected.

2.30. In the process of morphological description of Salvia, students paid attention to bright bracts, which serve to attract pollinating insects and are modification of:
A leaves; B androecium; C shoots; D pedicles; E receptacle.

2.31. 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:
A. pinnatipartite; B. pinnatisected; C. palmatisected; D. palmatipartite; E. palmatilobate.

2.32. Leaves of the Aesculus hippocastanum consist of 5-7 leaflets, which are situated on short rachis of the common petiole. So they are ...
A. pinnately compound; B. pinnatisected; C. palmately compound; D. palmatisected; E. palmatilobate.

2.33. Leaves of the pea (Pisum sativum) are attached to prop with the help of tendrils. These tendrils are metamorphoses of …
A. petiole of the compound leaf; B. leaflets of the compound leaf; C. simple leaves; D. petioles; E. stipules.

2.34. Leaves of bastard acacia (Acacia) have overgrown flat petioles, which perform the photosynthesis function. They are called …

A. thorns; B. tendril; C. cladode; D. pitcher leaf; E. phyllode.

2.35. 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 …
A. stipules; B. leaflets; C. rachises; D. petiolules; E. petiole.

MORPHOLOGY OF THE GENERATIVE ORGANS

FLOWER

2.36. Flowers of the lily of the valley have 6 white leaflets which are grown together into the ladybell-shaped corolla. This perianth is …

A. simple corolliform; B. simple calyciform; C. double; D. double with corolliform calyx; E. double with calyciform calyx.

2.37. The male gametophyte of flowering plants is …
A. carpel; B. embryo sac; C. ovule; D. nucellus; E. pollen grain.

2.38. Interior bright or white part of the double perianth, which consists of petals, is called aureole or ...

A. calyx; B. corolla; C. androeceum; D. gynoeceum; E. perigonium.

2.39. Corolla is zygomorphous, gamopetalous and consists of tuber and two free parts – upper is formed by two and lower by three accrete petals. Corolla of such type is …

A. unilabiate; B. larva-form; C. bilabiate; D. thimble-form; E. ligulate.

2.40. Sporiferous structures of the flower, which have two pollen sacs joined by a connective, form flower's ...
A. pestle; B. anther; C. stigma; D. ovary; E. style.

2.41. Flowers of Brassica oleracea (cultivated cabbage) have four long stamens and two – short. So, the type of the androecium is …
A. tetradymous; B. didymous; C. monoadelphous; D. diadelphous; E. polyadelphous.

2.42. A shortened axis of the flower with strongly connivent nodes, where other parts of the flower are located in rings or spirals, forms flower's ...
A. receptacle; B. pedicel; C. perianth; D. calyx; E. corolla.

2.43. Androecium was considered in the flower. It consists of two long and two short stamens. So, androecium of the flower is …
A. tetradymous; B. diadelphous; C. tetradelphous; D. didymous; E. polyadelphous.

2.44. The flower has many stamens that accrete by stamen filaments in several bunches, so androecium is …

A. tetradymous; B. polyadelphous; C. didymous; D. monoadelphous; E. diadelphous.

2.45. In adonis (Adonis vernalis) flower gynoecium consists of numerous free carpels, i.e. it is …
A. monocarpous; B. apocarpous; C. syncarpous; D. paracarpous; E. lysicarpous.

2.46. Dissected flower has an inferior ovary, since the pistil is …
A. cenocarpous, receptacle is concave, not accrete with ovary; B. cenocarpous, receptacle is concave, accrete with ovary; C. monocarpous, receptacle is concave, not accrete with ovary; D. monocarpous, receptacle is flat, not accrete with ovary; E. monocarpous, receptacle is convex, not accrete with ovary.

INFLORESCENCES

2.47. Acorus calamus has inflorescence, which consists of numerous small sessile flowers, situated on the thick fleshy axis. So, this is …
A. spike; B. umbel; C. corymb; D. spadix; E. head.

2.48. The common feature of the inflorescences of plantain (Plantago major) (spike) and maize (Zea mays) (spadix) is the presence of sessile flowers on the well developed main axis, which grows monopodialy, it is typical for inflorescences - …
A. botryoid compound; B. cymose; C. aggregate; D. thyrsus; E. botryoid simple.

2.49. 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:

A. thyrsus; B. simple botrioid; C. complex botrioid; D. cymose; E. aggregate.

2.50. The cherry-tree (Cerasus vulgaris) has shorted main axes of inflorescence, its pedicles are approximately of the equal length, and they grow from one point. This is typical for inflorescence - …

A. umbel; B. corymb; C. raceme; D. spike; E. anthodium.

2.51. The flowers of milk vetch (Astragalus dasyanthus) sit on the shorted and thickened main axis, forming simple inflorescence, which is called ...
A. corymb; B. catkin; C. panicle; D. spike; E. glome.

2.52. Leafed inflorescence of the marsh mallow (Althaea officinalis) has the well developed main axis where flowers are situated on the short flower stalk in turn. This is …

A. raceme; B. umbel; C. corymb; D. panicle; E. dichasium.

2.53. The plant examined has simple inflorescence with the short-cut and thickened axis, where flowers are situated on the short flower stalks. This inflorescence is …

A. bostryx; B. catkin; C. corymb; D. head; E. anthodium.

2.54. During the field practice the student determined the plant, which had inflorescence with the horizontal overgrown axis, sessile flowers and leaf involucre, so this inflorescence is …
A. anthodium; B. spike; C. corn; D. glome; E. panicle.

2.55. In the inflorescence of wild rosemary (Ledum palustre) the main axis is shorted, the nodes are brought together; flowers are situated approximately on the same level. So, this inflorescence is …
A. corymb; B. clove; C. bostryx; D. spike; E. catkin.

2.56. Leafed inflorescence of the marsh mallow (Althaea officinalis) has the well developed main axis where flowers are situated on the short flower stalk in turn. This is …

A. umbel; B. corymb; C. panicle; D. raceme; E. dichasium.

2.57. The flowers which form inflorescence are attached to a single axis at different levels. However, because of different pedicle lengths the flowers lie at the same plane and form …
A. calathidium; B. head; C. umbel; D. corymb; E. bostryx.

2.58. Flowers, which form inflorescences, have pedicles different length, and so flowers lie in the same plane and form …

A. calathidium; B. head; C. umbel; D. bostryx; E. corymb.

2.59. Inflorescence of the Chelidonium majus (rock poppy) has abbreviated main axis, which ends by apical flower and has some development lateral axes, equal in length, and situated in circles. So, that inflorescence is called …
A. simple umbel; B. false umbel (or pleiochasium); C. head; D. bostryx; E. compound umbel.

2.60. Combined inflorescence of horse chestnut has main axis growing monopodially and the lateral ones, growing sympodially. Such features are typical for ...
A. thyrsus; B. panicle; C. complex corymb; D. compound umbel; E. compound spice.

2.61. The apical bud of the generative shoot early stops its development, and growth and branching of the inflorescence are provided by two lateral buds, which are situated oppositely under the apex. So, shoot grows …
A. sympodialy, according to the type of the dichasium; B. dichotomic; C. monopodialy; D. sympodialy, according to the type of the monochasium; E. sympodialy, according to the type of the pleiochasium.

2.62. The birch has compound male and female inflorescences, the main axis is drooping. It consists of dichasiums of unisexual flowers. So, inflorescence of the birch is …

A. raceme; B. catkin; C. spike; D. glome; E. compound catkin.

FRUIT

2.63. Seed embryo develops in the ovary of ...
A. stamens; B. sepals; C. petal; D. receptacle; E. pistil.

2.64. Navashin S.G., a Ukrainian biologist, found that during double fertilization of the flower one spermatozoon fused with the central nucleus of the embryo sac, and the other with ...
A. egg; B. synergids; C. antipodes; D. nucellus; E. chalaza.

2.65. While analyzing the fruits we determine that one of them has glandular exocarp, spongy mesocarp and grown endocarp, which looks like juicy sacks. This fruit is …

A. legume; B. silique; C. drupe; D. hesperidium; E. berry.

2.66. We have selected monocarpous one-seeded fruit, its endocarp is lignificated, with sclereids, and mesocarp is fleshy. This is …
A. legume; B. silique; C. fruitcase; D. drupe; E. berry.

2.67. It is determined, that in the seed without endosperm and perisperm nutrients are accumulated in the …
A. embryonic root; B. cotyledon of the germ; C. embryonic stem; D. embryonic bud; E. skin of seed.

2.68. You need to specify a monocarpous one-seeded fruit with hard scleroid endocarp and soft mesocarp. This fruit is:
A. monodrupe; B. bacca; C. capsule; D. silique; E. legume.

2.69. The seed part of the flowering plan is investigated; it forms from triploid zygote and contains nutrients. This part is
A. cotyledons; B. embryonic root; C. endosperm; D. embryonic bud; E. seed cover.

2.70. When studying the flower it is observed that pistil is formed by one free carpel. So, gynoecium is called …

A. apocarpous; B. cenocarpous; C. monocarpous; D. lysicarpous; E. syncarpous.

2.71. Fruits belonging to apocarpous ones are...
A. capsule, berry; B. legume, nutlet; C. complex drupe, manyleaflet; D. pome, acorn; E. cremocarp, kalatch.

2.72. Fruits of the genus citrus are used for receiving essential oil. Fruit consists of orange exocarp, white spongy mesocarp and fleshy endocarp. This is …
A. hesperidium; B. pepo; C. fruitcase; D. pome; E. silique.

2.73. Fleshy false cenocarpous fruit of the Rosaceae (Rose) Family is formed from hypantium and inferior ovary. Seeds are surrounded by cartilaginous endocarp. This is …
A. pome; B. silicle; C. achene; D. silique; E. fruitcase.

2.74. 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:

A. fleshy fruit; B. follicetum; C. dry stone fruit; D. follicle; E. coccus.

2.75. The fruit is cenocarpous, seeded, indehiscent, its exocarp is more or less hard, dense, sometimes lignified, meso- and endocarps are juicy include overgrown placenta. It is...
A. berry; B. pome; C. granatum; D. pepo; E. hesperidium.

2.76. What is the type of a fruit with the following properties: many-seeded, indehiscent, with a juicy pericarp, it is produced from cenocarpous gynoecium:
A. silique; B. hesperidium; C. phraga; D. cynarodium; E. coenobium.

2.77. Investigated plant has box-shaped schizocarp fruit, which comes apart into three explosive mericarps when maturated. This is …
A. cremocarp; B. tetranutlet; C. hesperidium; D. capsule (or fruitcase); E. regma.

2.78.Morphological analysis of fruits shows that they are a combination of ripe fruits, formed from flowers of a single inflorescence. They are ...
A. polydrupes; B. regmas; C. multiple fruits; D. hesperidiums; E. capsules.2.77. While morphological analyses of the fruit it is determined, that it is dry, cenocarpous, multilocular, many-seeded, and dehiscent on the seams. This fruit is a … A. legume; B. fruitcase; C. polyfollicle; D. follicle; E. silique.

2.79 Fruit of wild radish is formed by two carpels, separated by false membranous septum, where seeds are located. After maturation it splits into segments. This is a ...
A. jointed follicle; B. kalatch; C. coenobium; D. capsule; E. disamara.

2.80. Specify the type of seed distribution, when during their maturation fruits crack and the seeds are ejected with strength.
A. autochore; B. hydrochore; C. geochore; D. zoochore; E. anemochore.

2.81. A one-seeded fruit is pseudomonocarpous with a lignificated pericarp. The seed accretes not with the pericarp. This is …

A. silicle; B. achene; C. silique; D. nutlet; E. pseudomonocarpous drupe.

2.82. Select the type of a fruit by the following properties: a coenocarp fruit whose mericarps have 5 axial main edges between which secondary edges can be contained. A lot of ethereal oils are contained in the ethereal channels of its pericarp.

A. cremocarp; B. cypsela; C. nut; D. legume; E. silique.

2.83. 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 …
A. nut; B. acorn; C. nutlet; D. disamara; E. corn seed.

• PLANT SYSTEMATIC

ALGAE, FUNGI, LICHEN

3.1. The studied cells have nucleus and have no chloroplasts; their cytoplasm reserves glycogen, the cell walls contain chitin. So, the cells belong to…

A. lichen; B. alga; C. higher plant; D. cyanobacteriae; E. fungi.

3.2. A microscopic alga of brown colour with trunk, rhizoids, and foliaceous part rich in alginates and iodine is ranked with genus of:

A. Laminaria; B. Chlorella; C. Ulothrix; D. Chlamydomonas; E. Spirogira.

3.3. A sterile form of xylotroph Inonotus obliquus (i.e. shelf fungus) is detached from a trunk of Betula pendula. In other terms this is:

A. polypore; B. fly agaric; C. ergot; D. champignon; E. tinder fungus.

3.4 Representatives of this Division reproduce vegetatively by means of special formations: Isis, soredia, lubul.These organisms are from Division...
A. Basidiomycota; B. Equisetophyta; C. Lichenes; D. Lycopodiophyta; E. Polypodiophyta.

3.5. It is known that representatives of Chlorophyta division have cells with different shapes of chromatophores. Band-shaped chromatophores are species of the genus...
A. Volvox; B. Clorella; C. Chlamidomonas; D. Spyrogyra; E. Spirulina.

3.6. The structure of gill-bearing hymenophore is considered by way of example of poisonous pileate fungus from the Basidiomicota class –
A. champignon; B. fly agaric; C. shelf fungus; D. ergot; E. polypore.

SPORE-BERING PLANTS

3.7. 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.

3.8. 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?
A. diploid; B. triploid; C. haploid; D. tetraploid; E. polyploidy.

3.9. 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?
A. Bryophyta; B. Magnoliophyta; C. Pynophyta; D. Lycopodiophyta; E. Polypodiophyta.

3.10. A higher nonvascular plant has precise heterogenesis, where gametophyte is dominant (sexual generation) and sporophyte (unisexual generation) is reduced. So, a plant belongs to…
A. Lycopodiophyta (club mosses); B. Bryophyta (mosses);C. Equisetophyta (horsetails); D. Polipodiophyta (ferny); E. Gymnospermae (conifers).

3.11. The sporophyte of the studied plant is a rhizome perennial. The plant frond leaves are pinnatisected; they have soruses with spores on the underside. The plant belongs to division…
A. Polypodiophyta; B. Bryophyta; C. Lycopodiophyta; D. Equisetofyta; E. Gymnosperme.

3.12. Sphagnum possesses quick absorbability and strong water retention because …
A. alive near reservoirs; B. presence of roots; C. there are special hyaline cells; D. absence of transpiration; E. a leave surface has a dense layer of cutin.

3.13. The investigated plant has a rhizome, spring nonchlorophyllic brown sporiferous shoots and summer green vegetative shoots. This is…
A. Polytrichum commune; B. Dryopteris filix mas; C. Lycopodium clavatum; D. Ephedra distachium; E. Equisetum arvense.

3.14. The plant with phylloids and rhizoids has no natural conductive tissues; its gametophyte is dominating in the development cycle. So, this plant belongs to...
A. Lycopodiophyta; B. Equisetofyta; C. Polypodiophyta; D. Gymnosperme; E. Bryophyta.

3.15. As a dietary supplement, a source of complete protein and vitamins used spirulina - representative of the division ...

A. green algae; B. diatoms; C. cyanobacterium; D. askomicotus; E. zigomicotus.

3.16. 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. Lycopodiophyta; B. Polypodiophyta; C. Magnoliophyta; D. Pinophyta; E. Eguisetophyta.

3.17. On the marshland we have collected Sphagnum palustre. 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...

A. monoecious gametophyte; B. dioecious gametophyte; C. sporophyte; D. protonema; E. sporogonia.

GYMNOSPERMOUS

3.18. In their practical classes, students have identified gymnosperms with dark blue cones, covered with a waxy bloom. This is...
A. Thuja occidentalis; B. Taxus baccata; C. Juniperus communis; D. Abies sibirica; E. Cedrus libani.

3.19. 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?
A. 2; B. 5; C. 3; D. 8; E. many.

3.20. 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 …
A. Abies (abies); B. Pinus (pine); C. Picea (spruce); D. Larix (larch); E. Cedar (cedrus).

3.21. 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?

A. Pynophyta; B. Magnoliophyta; C. Bryophyta; D. Lycopodiophyta; E. Polypodiophyta.

3.22. 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...
A. Larix sibirica; B. Pinus sylvestris; C. Juniperus communis; D. Ephedra equisetina; E. Picea abies.

3.23. The main diagnostical feature for distinguishing the species of pine-tree is quantity of needles on the shortened shoots. The pine-tree has …
A. five needles; B. two needles; C. three needles; D. eight needles; E. many needles.

ANGIOSPERMS

THE BRASSICACEAE FAMILY

3.24. Seeds of the Brassicaceae (Mustard) Family plants have poignant taste and used for production of the mustard plasters and fatty oil. These seeds are taken from such plants as …
A. Brassica oleracea (cabbage), Brassica nigra (black mustard) and Brassica juncea (chinese mustard); B. Capsella bursa-pastoris (shepherd,s purse), Sinapis alba (white mustard) and Brassica juncea (chinese mustard); C. Brassica nigra (black mustard), Capsella bursa-pastoris (shepherd,s purse) and Sinapis alba (white mustard); D. Erysimum canescens (treacle mustard), Brassica nigra (black mustard) and Brassica juncea (chinese mustard); E. Brassica nigra (black mustard), Sinapis alba (white mustard) and Brassica juncea (chinese mustard).

3.25. Plants which have flowers with cruciform calyx and corolla, tetradymous androecium and fruits – silique and silicle, are typical for family …
A. Solanaceae (Potato); B. Fabaceae (Legume); C. Apiaceae (Carrot); D. Brassicaceae (Mustard); E. Scrophulariaceae (Figwort).

3.26. Flowers of Brassica oleracea (cultivated cabbage) have four long stamens and two – short. So, the type of the androecium is …
A. tetradymous; B. didymous; C. monoadelphous; D. diadelphous; E. polyadelphous.

3.27. The morphological comparison of the plants of Brassicaceae (Mustard) Family shows that most of the representatives have small flowers gathered in inflorescences - …

A. corymb, umbel; B. glom, anthodium; C. raceme, panicle; D. spadix, spike; E. compound umbel.

3.28. According to the presence of typical features - cruciform (or cross-shaped) calyx, tetradymous androecium, and fruit silicle, plant belongs to the …
A. Solanaceae (Potato) Family; B. Brassicaceae (Mustard) Family; C. Apiaceae (Carrot) Family; D. Fabaceae (Legume) Family; E. Rosaceae (Rose) Family.

3.29. Among the samples of the plants we determine the species that belongs to the Brassicaceae (Mustard) Family. This is …
A. Erysimum canescens (treacle mustard); B. Ledum palustre (marsh tea); C. Salvia officinalis (garden sage); D. Taraxacum officinale (dandelion); E. Calendula officinalis (pot marigold).

3.30. Small yellow flowers of the Brassicaceae (Mustard) Family plant aggregate in inflorescence, which is called …
A. corymb, umbel; B. head, anthodium; C. raceme, panicle; D. spike, spadix; E. compound umbel, compound corymb.

3.31. By comparison of five medicinal plants it is determined that one of them belongs to the Brassicaceae (Mustard) Family, namely …
A. Rosa canina (dog rose); B. Arctostaphylos uva-ursi (bearberry); C. Urtica dioica (great nettle); D. Polygonum aviculare (knot grass); E. Erysimum canescens (erysimum).

3.32. A fruit of plants of the Cabbage Family has approximately the same length and width, consists of two flaps and false membranous septum on both sides of which the seed is located. This fruit is - ...

A. legume; B. silicle; C. berry; D. achene; E. samara.

3.33. Capsella bursa-pastoris (shepherd,s purse) is annual plant, which has …
A. pinnatisected and pinnatipartite leaves and triangular silicles; B. entire leaves and roundish silicles; C. pinnatilobate leaves and cylindrical siliques; D. pinnately compound leaves and loment siliques; E. pinnatipartite leaves and cylindrical siliques.

THE PAPAVERACEAE FAMILY

3.34. The plant from the Poppy Family contains milky sap of yellow coloring, it has umbel-shaped inflorescence, flowers with deciduous calyx and 4 yellow petals. This is …
A. Robinia pseudoacacia (black locust); B. Papaver somniferum (opium poppy); C. Chelidonium majus (rock poppy); D. Taraxacum officinale (dandelion); E. Glaucium flavum (yellow horned poppy).

3.35. The determinated medicinal plant has a pistil formed with big quantities of carpels; its fruit is fruitcase which dehisce by small holes. This is …
A. Papaver somniferum (opium poppy); B. Chelidonium majus (rock poppy); C. Zea mays (maize); D. Mentha piperita (peppermint); E. Sanguisorba officinalis (greater bumet).

3.36. Investigated plant of the Papaveraceae (Poppy) Family has lacticifers with yellow and orange latex in all its organs. It’s typical for …
A. Ranunculus acris (species of buttercup); B. Adonis vernalis (spring vernalis); C. Papaver somniferum (opium poppy); D. Aconitum napellus (aconite); E. Chelidonium majus (rock poppy).

THE FABACEAE FAMILY

3.37. The representative of the Fabaceae Family has pinnately compound leaves, stipules, modified as spines, and a droop white raceme. This is …
A. Artemisia vulgaris (mugwort); B. Robinia pseudoacacia (black locust); C. Aronia melanocarpa (black chokeberry); D. Pisum sativum (garden pea); E. Quercus robur (english oak).

3.38. The flowers of Astragalus dasyanthus (milk vetch) sit on the shorted and thickened main axis, forming simple inflorescence, which is called ...
A. corymb; B. glome; C. catkin; D. panicle; E. spike.

3.39. Investigated flowers have papilionaceous type of the corolla. This is plant belong to the … Family. A. Fabaceae (Legume); B. Scrophulariaceae (Figwort); C. Ranunculaceae (Buttercup); D. Lamiaceae (Mint); E. Asteraceae (Sunflower).

3.40. Comparative analysis of 5 medicinal plants of Fabaceae (Legume) Family discovers that 4 of them have tricompound leaves, and the 5th has pinnately compound leaves.This plant is …
A. Melilotus officinalis (sweet clover); B. Glicine hispida (soya bean); C. Ononis arvensis (restharrow); D. Phaseolus vulgaris (kidney bean); E. Robinia pseudoacacia (black locust).

3.41. A plant has compound leaves and papilionaceous flowers, its fruit is legume. Most probably it belongs to the family …
A. Scrophulariaceae; B. Ranunculaceae; C. Fabaceae; D. Lamiaceae; E. Asteraceae.

3.42. Leaves of the Pisum sativum (pea) attach to prop with help of the tendrils. These tendrils are metamorphoses of …
A. leaflets of the compound leaf; B. petiole of the compound leaf; C. simple leaves; D. petioles; E. stipules.

3.43. While studying 5 herbarium specimens of medicinal plants, it was determined that one plant belong to the Fabaceae (Legume) Family namely …
A. Mellilotus officinalis; B. Atropa belladonna; C. Hyoscyamus niger; D. Datura stramonium; E. Solanum tuberosum.

3.44. Plant of Fabaceae (Legume) Family has well developed rhizome with roots and stolons, pinnately compound leaves with 5 or 7 pairs egg-shaped, glandulosous leaves, and friable and axillary racemes. Flowers are faintly – violet. Legumes are indehiscent. Underground organs are used as expectorant drug and for improvement of the drug taste. This plant is …

A. Glycyrrhiza glabra (sweet root); B. Melilotus officinalis (sweet clover); C. Robinia pseudoacacia (black locust); D. Ononis arvensis (restharrow); E. Astragalus dasyanthus (milk vetch).

3.45. While studying 5 herbarium specimens of medicinal plants, it is determined that one plant belongs to Fabaceae (Legume) Family, namely …
A. Atropa belladonna (belladonna); B. Glycyrrhiza glabra (licorice); C. Hyoscyamus niger (poison tobacco); D. Datura stramonium (datura); E. Solanum tuberosum (potato).

3.46. At the medicinal pectoral collection we discover brightly yellow pieces of the root with a sweet taste. It is determined that this root is of the …:

A. Althea officinalis (sweatweed); B. Acorus calamus (sweet flag); C. Glycyrrhiza glabra (licorice); D. Valeriana officinalis (common valerian); E. Sanguinea officinalis (greater burnet).

3.47. The industrial source of rutin and of quercetin is flowers of a plant from the Fabaceae (Legume) Family:

A. locust pseudo-acacia; B. caragana; C. astragalus; D. silver wattle acacia; E. sophora japonica.

THE ROSACEAE FAMILY

3.48. A fruit-tree of the Rosaceae Family has short-cut thorny shoots; its fruit is pome of characteristic shape and has stone cells in the pulp. This is…

A. Malus domestica (apple); B. Cerasus vulgaris (cherry-tree); C. Armeniaca vulgaris (apricot-tree); D. Pyrus communis (pear-tree); E. Prunus domestica (plum-tree).

3.49. One of the common features of the representatives of subfamily Prunoideae from the Rosaceae (Rose) Family is that their fruit is …
A. drupe; B. aggregate-accessory; C. berry; D. apple; E. pepo.

3.50. Which of the following plants has pome fruits?
A. Amygdalus communis; B. Prunus padus; C. Prunus domestica; D. Rosa majalis; E. Sorbus aucuparia.

3.51. Fleshy false cenocarpous fruit of the Rosaceae (Rose) Family is formed from hypantium and inferior ovary. Seeds are surrounded by cartilaginous endocarp. This is …
A. silicle; B. pome; C. achene; D. silique; E. fruitcase.

3.52. The macroscopical analysis of the branch of the Crataegus (Hawthorn) with a thorn testifies that the thorn is a metamorphosis of the …
A. stipules; B. leaf blade; C. petiole; D. cells of the epidermis; E. shoot.

3.53 Among the plants studied a berrylike pome is typical for the species of …
A. Prunus spinosa (blackthorn); B. Rosa canina (dog rose); C. Aronia mellanocarpa (black chokeberry); D. Padus racemose (bird cherry); E. Amygdalus communis (common almond).

3.54. Among the investigated herabarium plants choose those which belong to the Rosaceae (Rose) Family …
A. Crategus sanguine; B. Mellilotus officinalis; C. Conium maculatum; D. Capsella bursa-pastoris; E. Polygonum persicaria.

3.55. The fruits of chokeberry Aronia are false, formed from the inferior, five-nesting ovaries and overgrown juicy hypanthium. Nests with one seed; separated by cartilaginous walls. The fruit is a ...
A. syncarpous drupe; B. juicy follicle; C. fraga; D. pseudomonocarpous drupe; E. pome;

3.56. In spring the tree of the Rosaceae Family (Rose) blossoms with white, fragrant flowers collected on the top of the shortened shoots in the drooping raceme. This is …
A. Padus racemose (cluster cherry); B. Potentilla erecta (tormentil); C. Sorbus aucuparia (mountain ash); D. Malus domestica (apple); E. Crataegus sanguinea (redhaw).

THE HEATH FAMILY

3.57. Leaves of the representative the Ericaceae (Heath) Family are oblong, obovate, narrow at the base into a short petiole, from above it is dark-green, from below - lighter, without dark dotty glandules with well seen net of veins. This is …

A. Vaccinium vitis-idaea (foxberry); B. Arctostaphylos uva-ursi (bearberry); C. Ledum palustre (marsh tea); D. Vaccinium oxycoccus (wild cranberry); E. Vaccinium myrtyllus (bilberry).

3.58. It is determined that one of the common features for Vaccinium vitis-idaea (foxberry) and Vaccinium myrtillus (bilberry) is that their type of the fruit is …
A. berry; B. fruitcase; C. follicle; D. drupe; E. cremocarp.

3.59. Studied leaves of the Ericaceae (Heath) Family are alternate, short-petiolar, glabrous, elliptical with emarginated apex, with reflected down edges; from above – rifle-green; from below – with dark dotted glandules. These leaves are typical for …
A. Vaccinium vitis-idaea (foxberry); B. Arctostaphylos uva-ursi (bearberry); C. Ledum palustre (marsh tea); D. Vaccinium oxycoccus (wild cranberry); E. Vaccinium myrtyllus (bilberry).

3.60. Studied leaves of the Ericaceae (Heath) Family are short-petiolar, oblong-linear with reflected down edges; from above – coriaceous, glabrous, brown and green; from below - red-haired and densely downy. These leaves are typical for …

A. Arctostaphylos uva-ursi (bearberry); B. Vaccinium vitis-idaea (foxberry); C. Vaccinium myrtillus (bilberry); D. Ledum palustre (marsh tea); E. Oxycoccus palustris (wild cranberry).

3.61. While analysis of the vital form of Arctostaphylos uva-ursi (bearberry), Vaccinium vitis ideae (foxberry), Vaccinium myrtillus (bilberry) we determine that they are …
A. lianas; B. herbs; C. bushes; D. undershrubs; E. subshrubs.

3.62. We have collected black berries with glaucous bloom, roundish, flattened at the top, with a ring of small cloves cup, a pit in the center and a column. These are fruits of ...
A .bilberry; B. labrador tea marsh; C. bearberry; D. cranberry; E. cowberry.

3.63 It is determined that the leaves of evergreen plants studied are adapted to saving water: they are leathery, pubescent, scaly, wrinkled or flat with edges curved down. This is probably the species of the family ...

A. Brassicaceae; B. Papaveraceae; C.Fabaceae; D.Rosaceae; E. Ericaceae.

THE POLYGONACEAE FAMILY

3.64. While comparative analysis of the plant leaves of Polygonaceae (Knotweed) Family we find that their common feature is the presence of …
A. ocrea; B. vaginal; C. tendrils; D. spines; E. bracts.

3.65. Cultivated food plant of the Polygonaceae (Knotweed) Family has a reddish stem and cordate-arrow-shaped leaves. The fruit is a triquetrous nut. This plant is …
A. Fagopirum saggitattum; B. Polygonum bistorta; C. Polygonum hydropiper; D. Polygonum aviculare; E. Rumex confertus.

3.66. Perennial herbal plant of the Polygonaceae (Knotweed) Family has thick, horizontal, serpentine rhizome and apical spicate inflorescence, which consists of small pink flowers. This is …
A. Polygonum persicaria (spotted knotweed); B. Polygonum hudropiper (water pepper); C. Polygonum aviculare (bird's knotgrass); D. Polygonum bistorta (snake-root knotweed); E. Rumex acetosa (garden sorrel).

3.67. The leaf investigated has a filmy ocrea that embraces the base of internode. The presence of such modified stipules is a diagnostical feature of the … Family
A. the Gramineae (Grass) Family; B. the Rosaceae (Rose) Family; C. Polygonaceae (the Knotweed) Family; D. the Fabaceae (Legume) Family; E. the Solanaceae (Potato or Nightshade) Family.

3.68. The medicinal plant of the Polygonaceae (Knotweed) Family is determined according to the typical features: stem is reddish, leaves are triangular and cordate, inflorescences are panicle of corymbs and flowers are pink, which are adapted for cross-pollination. This is…

A. Polygonum bistorta (snake-root); B. Fagopyrum sagitattum (common buckwheat); C. Polygonum aviculare (bird's knotgrass); D. Rumex acetosa (garden sorrel); E. Rumex confertus (horse sorrel).

3.69. The Rumex acetosa (garden sorrel) early in spring forms radial rosette of macropodous leaves; their leaf blade in its form is …
A. spear-shaped (or hastate); B. cordate; C. kidney-shaped; D. diamond (or rhombus)-shaped; E. falcated.

3.70. The plant of Polygonaceae (Knotweed) Family has a dense, upright, spike-shaped inflorescence; its leaves are lanceolate with brown, U-shaped spot; red-brown, ciliated on the sides' ocreas. These features allow to suppose that this plant is …
A. Polygonum aviculare (knot grass); B. Polygonum bistorta (snake-root); C. Rumex confertus (horse sorrel); D. Fagopyrum sagitatum (common buckwheat); E. Polygonum persicaria (spotted knotweed).

THE APIACEAE FAMILY

3.71. Investigated plant has edible root; ribbed-striated and fistular stems; leaves are repeatedly pinatisected, petiole with vagina; inflorescences is compound umbel; fruit – cremocarp with gum ducts in pericarp. Such features are typical for plants of the family …
A. Apiaceae (Carrot); B. Solanaceae (Potato); C. Fabaceae (Legume); D. Brassicaceae (Mustard); E. Scrophulariaceae (Figwort).

3.72. The determined plant has fistular, costate stems, inflorescence is compound umbel, fruit is schizocarpous – cremocarp, which contains ether oils; which is typical for …
A. the Fabaceae (Legume) Family; B. the Ericaceae (Heath) Family; C. the Apiaceae (Carrot) Family; D. the Brassicaceae (Mustard) Familyl; E. the Asteraceae (Sunflower) Family.

3.73. While studying the plants we determine common features of fruits. They fall into two parts, which have longitudinal ribs with conductive bundles and furrows with ether oil tubules. So, the plant belongs to the … Family

A. the Lamiaceae (Mint) Family; B. the Papaveraceae (Poppy) Family; C. the Solanaceae (Potato or Nightshade) Family; D. the Fabaceae (Legume) Family; E. the Apiaceae (Carrot) Family.

3.74. Some medicinal plants can be poisonous. Choose such a plant of the Apiaceae (Carot) Family from the list below …
A. Viburnum opulus; B. Cicuta virosa; C. Valeriana officinalis; D. Plantago major; E. Arctium lappa.

3.75. Some of the investigated plants have fruits with common features. They explode into 2 mericarps, which have longitudinal costas with conductive bundles and intercostals scrobiculus with essential oil canaliculus. So, these plants belong to the family …
A. Lamiaceae (Mint); B. Apiaceae (Carrot); C. Papaveraceae (Poppy); D. Solanaceae (Potato); E. Rosaceae (Rose).

3.76. Select the type of a fruit by the following properties: a coenocarp fruit whose mericarps have 5 axial main edges between which secondary edges can be contained. A lot of ethereal oils are contained in the ethereal channels of its pericarp.

A. cypsela; B. nut; C. legume; D. silique; E. cremocarp.

3.77. Plant of the Apiaceae (Carrot) Family has large thrice-pinnatisected leaves on the filamentous segments; inflorescences - compound umbels; yellow flowers and small oblong fruits – cremocarp. Fruits are used for preparation dill water. This is …
A. Foeniculum vulgare (fennel); B. Anethum graveolens (dill); C. Carum carvi (caraway); D. Petroselinum crispum (parsley); E. Daucus sativus (species of carrot).

3.78. A plant under examination has storage root; its stems are ribbed and channeled, hollow; leaves are many times pinnatisected, compound umbel; frut is the cremocarp in the pericarp. Such characteristics are typical for the plants of the following family:

A. Solanaceae; B. Scrofulariaceae; C. Brassicaceae; D. Apiaceae; E. Fabaceae.

3.79. This poisonous plant of the Apiaceae Family has red-violet points on the stem and obnoxious mouse odour. This is …
A. Anisum vulgare; B. Apium graveolens; C. Conium maculatum; D. Anethum graveolens; E. Foeniculum vulgare.

THE SOLANACEAE FAMILY

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

3.81. 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.

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

3.83. 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 tobacum (species of tobacco); E. Nicotiana rustica (rustic tobacco).

THE LAMIACEAE FAMILY

3.84. Select the family of the described officinal plant: "Perennial herbaceous plant with an ascending tetrahedral stem, opposite leaf aestivation and entire leafs. Flowers are zygomorphic, bisexual with bilabiate corolla and are united into semi-rings in leaf axils. The fruit is coenobium."

A. Asteraceae; B. Poaceae; C. Brassicaceae; D. Rosaceae; E. Lamiaceae.

3.85. 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.

3.86. 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. Scrophulariaceae (Figwort); B. Lamiaceae (Mint); C. Brassicaceae (Mustard); D. Apiaceae (Carrot); E. Solanaceae (Potato).

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

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

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

3.90. In the plant cultivation farming there cultivated officinal ether oil plants, which do not grow naturally in Ukraine, namely: Mentha piperita (peppermint), Ortosiphon stamineus (St. John's wort) and …

A. Origanum vulgare (common origanum); B. Salvia officinalis (garden sage); C. Leonurus cardiaca (motherwort); D. Thymus serpyllum (wild thyme); E. Melissa officinalis (lemon balm).

3.91. 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).

3.92. Low stem leafs of the Leonurus cardiaca are divided until the middle of lamina into 3 or 5 parts. This means that they are:
A. tripartite- or palmatidissected; B. tripartite- or palmaticompound; C. impari-pinnaticompound; D. impari-pinnatipartite; E. tripartite- or palmatipartite.

3.93. 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.

THE SCROPHULARIACEAE FAMILY

3.94. 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.

THE RANUNCULACEAE FAMILY

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

THE ASTERACEAE FAMILY

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

3.97. In antodiums of sunflower (Asteraceae) representatives we determined all stated types the flowers except …

A. tubular; B. ligulate; C. false-ligulate; D. bilabiate; E. thimble (funnelform).

3.98. The plant has ether oil glandule, its fruit is ashen and its inflorescence is anthodium. This is the diagnostic features of the family…
A. Scrophulariaceae; B. Asteraceae; C. Solanaceae; D. Lamiaceae; E. Rosaceae.

3.99. 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.

3.100. 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. Helianthus annuus; B. Taraxacum officinale; C. Artemisia absinthium; D. Bidens tripartite; E. Achillea millefolium.

3.101. 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).

3.102. 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. Chamomilla recutita (chamomile); B. Centaurea cyanus (blue cornflower); C. Echinacea purpurea (purple cone-flower); D. Artemisia vulgaris (mugwort); E. Bidens tripartita (bur-marigold).

3.103. 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.

3.104. 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. Achillea millefolium (common yarrow); B. Chamomilla recutita (common camomile); C. Artemisia absinthium (common wormwood); D. Taraxacum officinale (dandelion); E. Echinacea purpurea (purple cone-flower).

3.105. Calendula officinalis (cypselas of marigold) are falciform and hamiform with narrow beak, the surface is …
A. glabrate; B. softy hairy; C. prickly; D. felt hairy; E. bristled.

3.106. Calendula officinalis (pot marigold) has inflorescences, which is called …
A. head; B. raceme; C. anthodium; D. spadix; E. corymb.

3.107. 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.

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

A. Cychorium intybus; B. Calendula officinalis; C. Echinacea purpurea; D. Arnica Montana; E. Centaurea cyanus.

3.109. 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. Gnaphalium uliginosum; B. Centaurea cyanus; C. Arnica Montana; D. Echinops ritro; E. Bidens tripartite.

3.110. 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.

THE ALLIACEAE FAMILY

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

3.112. 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).

THE GRAMINEAE FAMILY

3.113. While studying under the magnifying glass the flowers of Zea mays (maize) gathered in inflorescence spadix it is determined that flowers are …
A. mail; B. bisexual; C. asexual; D. female; E. achlamydeous.

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

3.115. The perennial weed from Gramineae (Grass) Family occus 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

3.116. 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 …

A. simple corymb of the dichasiums; B. compound corymb of the dichasiums; C. corymbose panicle of the dichasiums; D. compound spike of the dichasiums; E. compound umbel of the dichasiums.

3.117. 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 …

A. entire;B. large-daedalous; C. serrate; D. ciliated; E. small-crenate.

3.118. 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 …
A. Rhamnus cathartica (common buckthorn); B. Aronia mellanocarpa (black chokeberry); C.

Frangula alnus (black dogwood); D. Sambucus nigra (european elder); E. Viburnum opulus (european dogwood).

3.119. 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 …
A. Rhamnus cathartica; B. Frangula alnus; C. Padus racemosa; D. Aronia melanocarpa; E. Sambucus nigrum.

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

3.121. 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. Hipericum perforatum (common St. John's wort).

3.122. 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. Rhamnus cathartica (common buckthorn); B. Aesculus hippocastanum (horse chestnut); C. Quercus robur (english oak); D. Hippophae rhamnoides (sea buckthorn); E. Apium graveolens (celery).

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

3.124. 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. Viburnum opulus; B. Tilia cordata; C. Robinia pseudoacacia; D. Mentha piperita; E. Padus avium.

3.125. 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:
A. fruitcase; B. multifollicle; C. agrigate achene; D. follicle; E. coenobium.

3.126. 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 …
A. Quercus robur (english oak); B. Robinia pseudoacacia (black locust); C. Aesculus hippocastanum (horse chestnut); D. Tilla cordata (small-leaved lime); E. Betula verrucosa (common birch).

3.127. 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. Ledum palustre; B. Bidens tripartite; C. Sanguisorba officinalis; D. Valerina officinalis; E. Acorus calamus.

3.128. While ascertainment the type of Hipericum perforatum (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 …

A. polyfollicle; B. follicle; C. coenobium; D. polynutlet; E. fruitcase.

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

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

3.131. The plant belongs to Berbereceae Family. This is …
A. Adonis vernalis; B. Chelidonium majus; C. Podophyllum peltatum; D. Saponaria officinalis; E. Hypericum perforatum.

3.132. A dioecious plant, Urtica dioica, has staminate and pistillate flowers with a greenish plain perianth. Therefore, the flowers are ...
A. calyciform, unisexual; B. calyciform, bisexual; C. coroliform, unisexual; D. corolliform, bisexual; E. doubleperianth, unisexual.

3.133. In gastric herbal mix there are oval brown lignified "cones" up to 1.5 cm long, which are ...
A. larch cone; B. seedheads alder; C. cypress cones; D. juniper cones; E. cones of hops.

3.134. … have leaves with long petioles, leathery, fan-like entire plate or the one with a few notches at the top and with dichotomic venation.
A. Cedrus libani; B. Juniperus communis; C. Picea abies; D. Ginkgo biloba; E. Abies sibirica.

ECOLOGY

4.1. Plants, settling on the trees, have aerial roots, feed individually (photosynthesize). So this is …
A. parasites; B. semiparasites; C. ephemers; D. succulents; E. epiphytes.

4.2. 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.

4.3. Perennial plant with hight of 5 m has some lignified stems, which branch near the soil. This is …
A. tree; B. bush; C. liana; D. subshrub; E. herb.

4.4. Plants, which grow in conditions of middle moisture, belong to such ecological group as …
A. hydrophyte; B. hygrophyte; C. mesophyte; D. xerophytes; E. succulent.

4,5, 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.

4.6. Many people develop allergic reactions during flowering of a quarantine weed, such as...
A. Equisetum arvense; B. Stellaria media; C. Ambrosia artemisiifolia; D. Erigeron Canadensis; E. Convolvulus arvensis.

4.7. Plant grows in dry place, so is …
A. hygrophyte; B. xerophytes; C. mesophyte; D. hydrophyte; E. epiphyte.

4.8. Herb plant is dipped into water, so this plant is …
A. hygrophyte; B. mesophyte; C. xerophytes; D. hydrophyte; E. epiphyte.

4.9. Herbs that are submerged into water belong to ...
A. hydrophytes; B. hygrophytes; C. mesophytes; D. xerophytes; E skiophites.

4.10. 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.

4.11. Lily-of-the-valley and ... belong to early-flowering of rhizomatous ephemeroids
A. Carum carvi; B. Állium cepa; C. Chamomilla recutita; D. Thymus serpyllum; E. Adonis vernalis.

4.12. 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. forest; B. marsh; C. meadow; D. steppe; E. ruderal.

ANSWERS

1. ANATOMY OF THE CELL, TISSUES AND VEGETATIVE ORGANS				
1.1. E	**1.36. A**	**1.71. A**	**1.106. D**	**1.141. B**
1.2. C	**1.37. E**	**1.72. C**	**1.107. B**	**1.142. E**
1.3. B	**1.38. B**	**1.73. D**	**1.108. A**	**1.143. A**
1.4. D	**1.39. D**	**1.74. A**	**1.109. C**	**1.144. A**
1.5. E	**1.40. A**	**1.75. D**	**1.110. C**	**1.145. E**
1.6. A	**1.41. B**	**1.76. C**	**1.111. A**	**1.146. B**
1.7. A	**1.42. A**	**1.77. E**	**1.112. C**	**1.147. B**
1.8. C	**1.43. C**	**1.78. A**	**1.113. C**	**1.148. E**
1.9. E	**1.44. E**	**1.79. E**	**1.114. C**	**1.149. D**
1.10.B	**1.45. A**	**1.80. D**	**1.115. A**	**1.150. B**
1.11. C	**1.46. B**	**1.81. C**	**1.116. A**	**1.151. A**
1.12. A	**1.47. E**	**1.82. B**	**1.117. A**	**1.152. C**
1.13. D	**1.48. D**	**1.83. E**	**1.118. E**	**1.153. C**
1.14. A	**1.49. C**	**1.84. C**	**1.119. D**	**1.154. B**
1.15. C	**1.50. A**	**1.85. E**	**1.120. E**	**1.155. A**
1.16. C	**1.51. C**	**1.86. A**	**1.121. A**	**1.156. A**
1.17. E	**1.52. E**	**1.87. A**	**1.122. B**	**1.157. E**
1.18. C	**1.53. B**	**1.88. E**	**1.123. D**	**1.158. C**
1.19. B	**1.54. A**	**1.89. B**	**1.124. D**	**1.159. A**
1.20. B	**1.55. D**	**1.90. B**	**1.125. E**	**1.160. B**
1.21. D	**1.56. E**	**1.91. E**	**1.126. A**	**1.161. D**
1.22. D	**1.57. D**	**1.92. B**	**1.127. A**	**1.162. D**
1.23. E	**1.58. D**	**1.93. C**	**1.128. D**	**1.163. A**
1.24. C	**1.59. C**	**1.94. A**	**1.129. C**	**1.164. A**
1.25. B	**1.60. A**	**1.95. B**	**1.130. E**	**1.165. E**
1.26. E	**1.61. E**	**1.96. A**	**1.131. A**	**1.166. A**
1.27. D	**1.62. B**	**1.97. D**	**1.132. C**	**1.167. E**
1.28. A	**1.63. A**	**1.98. A**	**1.133. B**	**1.168. A**
1.29. E	**1.64. C**	**1.99. C**	**1.134. E**	**1.169. B**
1.30. A	**1.65. A**	**1.100. A**	**1.135. C**	**1.170. C**
1.31. E	**1.66. E**	**1.101. D**	**1.136. B**	**1.171. C**
1.32. A	**1.67. B**	**1.102. E**	**1.137. D**	**1.172. E**
1.33. B	**1.68. E**	**1.103. B**	**1.138. A**	**1.173. A**
1.34. A	**1.69. A**	**1.104. D**	**1.139. C**	
1.35. D	**1.70. B**	**1.105. E**	**1.140. E**	
2. MORPHOLOGY OF THE VEGETATIVE AND GENERATIVE ORGANS				
2.1. A	**2.18. B**	**2.35. A**	**2.52. A**	**2.69. C**
2.2. B	**2.19. A**	**2.36. A**	**2.53. D**	**2.70. C**
2.3. A	**2.20. A**	**2.37. E**	**2.54. A**	**2.71. C**
2.4. D	**2.21. A**	**2.38. B**	**2.55. A**	**2.72. A**
2.5. E	**2.22. E**	**2.39. C**	**2.56. D**	**2.73. A**
2.6. A	**2.23. E**	**2.40. B**	**2.57. D**	**2.74. A**
2.7. D	**2.24. D**	**2.41. A**	**2.58. E**	**2.75. D**
2.8. C	**2.25. C**	**2.42. A**	**2.59. B**	**2.76. B**
2.9. A	**2.26. A**	**2.43. D**	**2.60. A**	**2.77. E**

2.10. D	**2.27. E**	**2.44. B**	**2.61. A**	**2.78. C**
2.11. D	**2.28. E**	**2.45. B**	**2.62. E**	**2.79. B**
2.12. B	**2.29. A**	**2.46. B**	**2.63. E**	**2.80. A**
2.13. A	**2.30. A**	**2.47. D**	**2.64. A**	**2.81. A**
2.14. E	**2.31. C**	**2.48. E**	**2.65. D**	**2.82. D**
2.15. A	**2.32. C**	**2.49. B**	**2.66. D**	**2.83. A**
2.16. C	**2.33. B**	**2.50. A**	**2.67. B**	**2.84. B**
2.17. B	**2.34. E**	**2.51. E**	**2.68. A**	
3. PLANT SYSTEMATIC				
3.1. E	**3.28. B**	**3.55. E**	**3.82. B**	**3.109. B**
3.2. A	**3.29. A**	**3.56. A**	**3.83. A**	**3.110. A**
3.3. A	**3.30. C**	**3.57. B**	**3.84. E**	**3.111. C**
3.4. C	**3.31. E**	**3.58. A**	**3.85. A**	**3.112. A**
3.5. D	**3.32. B**	**3.59. A**	**3.86. B**	**3.113. D**
3.6. B	**3.33. A**	**3.60. D**	**3.87. D**	**3.114. B**
3.7. A	**3.34. C**	**3.61. D**	**3.88. B**	**3.115. A**
3.8. C	**3.35. A**	**3.62. A**	**3.89. C**	**3.116. C**
3.9. A	**3.36. E**	**3.63. E**	**3.90. B**	**3.117. E**
3.10.B	**3.37. B**	**3.64. A**	**3.91. A**	**3.118. A**
3.11. A	**3.38. B**	**3.65. A**	**3.92. E**	**3.119. B**
3.12. C	**3.39. A**	**3.66. D**	**3.93. A**	**3.120. A**
3.13. E	**3.40. E**	**3.67. C**	**3.94. A**	**3.121. A**
3.14. E	**3.41. C**	**3.68. B**	**3.95. D**	**3.122. B**
3.15. C	**3.42. A**	**3.69. A**	**3.96. C**	**3.123. D**
3.16. B	**3.43. A**	**3.70. E**	**3.97. D**	**3.124. B**
3.17. A	**3.44. A**	**3.71. A**	**3.98. B**	**3.125. A**
3.18. C	**3.45. B**	**3.72. C**	**3.99. A**	**3.126. A**
3.19. A	**3.46. C**	**3.73. E**	**3.100. B**	**3.127. E**
3.20. D	**3.47. E**	**3.74. B**	**3.101. A**	**3.128. E**
3.21. A	**3.48. D**	**3.75. B**	**3.102. E**	**3.129. B**
3.22. E	**3.49. A**	**3.76. E**	**3.103. A**	**3.130. A**
3.23. B	**3.50. E**	**3.77. A**	**3.104. E**	**3.131. C**
3.24.E	**3.51. B**	**3.78. D**	**3.105. C**	**3.132. A**
3.25.D	**3.52. E**	**3.79. C**	**3.106. C**	**3.133. B**
3.26.A	**3.53. C**	**3.80.B**	**3.107. A**	**3.134. D**
3.27.C	**3.54. A**	**3.81.A**	**3.108. D**	
4. ECOLOGY				
4.1. E	**4.4. C**	**4.7. B**	**4.9. A**	**4.11. E**
4.2. A	**4.5. A**	**4.8. D**	**4.10. A**	**4.12. B**
4.3. B	**4.6. C**			