1. Microscopic examination of primary cortex of a root in its absorption zone revealed that it consisted mainly of multilayer loose living parenchyma with amyloid granules. It is called:

a. Phellogene
b. Mesoderm
c. Exoderm
d. Endoderm
e. Collenchyme

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

a. Lycopodiophyta
b. Polypodiophyta
c. Magnoliophyta
d. Pinophyta
e. Eguisetophyta

3. Morphological analysis of an inflorescence revealed that its flowers were attached to the same axis at different levels but due to the various length of peduncle they grew in the same plane. Such inflorescence is called:

a. Corymb
b. Glomus
c. Spike
d. Umbel
e. Anthodium

4. Leaves of a plant under examination have a distinct main nerve in the middle with regularly diverging side nerves. What type of nervation is it?

a. Dichotomic
b. Pinnate
c. Arcwise
d. Digitate
e. Parallel

5. Examination of an inflorescence of sweet flag Acorus calamus L. revealed that it was encircled with a covering leaf (spathe) and small sessile flowers grew compactly on the thickened pulpy axis. Such inflorescence is called:

a. Ear
b. Spike
c. Corymb
d. Umbel
e. Glomus

6. Hop sprouts wind around a support and climb upwards. That means that they are:

a. Creeping
b. Arrect
c. Trailing
d. Tenent
e. Recumbent

7. Pulp of a needle leaf consists of living tissue with inner ansiform protuberances of membrane and chloroplasts along them. What is type of this leafs parenchyma?

a. Storage
b. Aeriferous
c. Spongioid
d. Palisade
e. Plicate

8. Corolla of the origanum flower is zygomorphic, sympetalous and consists of a tube and two limbs.

The upper limb is bilobate and the lower is trilobate. Such corolla is called:

a. -

b. Bilabiate

c. Lingulate

d. Unilabiate

e. Thimble-like

9. A plant under examination has papilionaceous flower. This plant belongs in the family:

a. Scrofulariaceae

b. Lamiaceae

c. Asteraceae

d. Fabaceae

e. Ranunculaceae

10. Microscopic analysis of a root revealed the following features: primary structure, endodermal cells with horseshoe-shaped areas, radial fascicle of the central cylinder, more than six xylem rays. Such root structure is typical for the following plants:

a. Gymnosperms, gnetalians

b. Pteridosperms

c. Angiosperms, dicotyledons

d. Gymnosperms, conifers

e. Angiosperms, monocotyledons

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

a. Solanaceae

b. Brassicaceae

c. Scrophulariaceae

d. Apiaceae

e. Fabaceae

12. One of the examined soft fruits is characterized by essential-oil exocarp, spongioid mesocarp and overgrown endocarp that consists of juice saccules. What fruit was under examination?

a. Multicoccus

b. Pepo

c. Hesperidium

d. Drupe

e. Bacca

13. Analysis of a plant revealed essential-oil glands with several layers of cells arranged in pairs. This allows for the possibility that the plant relates to the family:

a. Asteraceae

b. Solanaceae

c. Lamiaceae

d. Apiaceae

e. Scrofulariaceae

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

a. Segmented lacticifers

b. Nonsegmented lacticifers

c. Schizogenous receptacles

d. Resin ducts

e. Lysigenous receptacles

15. A sour cherry has shortened principal axis of inflorescence, pedicles have nearly equal length and

emerge like from the same point. It is typical for the following type of inflorescence:
a. Corymb
b. Ear
c. Anthodium
d. Umbel
e. Truss

16. 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. Fixation and conduction
b. Absorption
c. Root cap (pileorhiza)
d. Dividing cells
e. Growth and distension

17. Examination of a root revealed a tissue that has root fibrils and doesnt have stomata and cuticle. What tissue is it?
a. Endoderm
b. Exoderm
c. Epiderm
d. Periderm
e. Epiblema

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

19. Histochemical test for fixed oils with sudan III results in the following stain colour:
a. Raspberry-red
b. Black and purple
c. Blue and violet
d. Lemon-yellow
e. Pink and orange

20. A herbaceous plant under examination has segmented lacticifers with anastomoses filled with white latex. This is typical for:
a. Urtica dioica
b. Anethum graveolens
c. Thymus vulgaris
d. Taraxacum officinale
e. Chelidonium majus

21. A sample section of an axial body shows a complex consisting of phellogen and its derivatives - cork and phelloderm. This tissue is called:
a. Periderm
b. Sclerenchyma
c. Epidermis
d. Epiblema
e. Colenchyma

22. Underneath the stem epidermis some layers of living perenchymal cells were found. The cells contained chloroplasts and had cellulose membranes with thickened angles. This tissue is called:
a. Angular collenchyme

b. Lamellar collenchyme
c. Chlorophyll-containing parenchyme
d. Storage parenchyme
e. Lacunar collenchyme

23. A section of beet root has several layers of cambium that form additional conducting bundles. What is the structure of the given root?
a. Primary, polycambial
b. Secondary monocambial
c. Secondary, polycambial
d. Primary, monocambial
e. Transitional, monocambial

24. 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. Carotins
b. Phycobilins
c. Chlorophylls
d. Anthocyanins
e. Xanthophylls

25. Microscopic examination of a perennial stem revealed integumentary tissue of secondary origin that was formed as a result of cell division of:
a. Phellogen
b. Cambium
c. Protoderma
d. Pericycle
e. Procambium

26. Which of the following plants has pome fruit?
a. Rosa majalis
b. Prunus padus
c. Prunus domestica L
d. Amygdalus communis
e. Sorbus aucuparia

27. Examination of a medicinal plant revealed that its underground organ had nodes, internodes, cataphylls, gemmae and secondary roots. Therefore, this underground organ is:
a. Rhizome
b. Root bulb
c. Tuber
d. Stolon
e. Storage root

28. A higher nonvascular plant has distinct alternation of dominant sexual (gametophyte) and reduced asexual (sporophyte) generations. This indicates that the plant belongs to the following division:
a. Bryophyta
b. Equisetophyta
c. Gymnospermae
d. Pteridophyta
e. Lycopsida

29. A plant under study has stipules fused together and thus forming a tight tube - ochrea, that is a diagnostic feature of the following family:
a. Gramineae
b. Papaveraceae
c. Clusiaceae

d. Polygonaceae
e. Rosaceae

30. A fruit under examination is pseudomonocarpic, with woody pericarp and one seed. The seed cuticle remains unfused with the pericarp. Such fruit is called:
a. Nut
b. Achenocarp
c. Pseudomonocarpic drupe
d. Caryopsis
e. Cremocarp

31. It is known that a seed without endosperm and perisperm has its nutrients accumulated in:
a. Embryo cotyledons
b. Embryo stalk
c. Seed coat
d. Gemma
e. Embryo root

32. The birch has compound inflorescences with drooping main axis bearing dichasia composed of unisexual cells. Therefore, this inflorescence is called:
a. Spadix
b. Raceme
c. Ament
d. Spike
e. Glomus

33. While studying a stem covered with periderm, the researcher realized that gas exchange takes place through ...
a. Hydatodes
b. Lenticels
c. Pores
d. Stomata
e. Non-suberized (conducting) cells

34. 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. Equidichotomic
b. Nonequidichotomic
c. Bush
d. Pseudodichotomic
e. Monopodial

35. During examination of a plant cell under the electron microscope some structures in form of a stack of flattened membrane cisterns and vesicles were found. What organelles are these?
a. Endoplasmic reticulum
b. Mitochondrions
c. Microbodies
d. Golgi apparatus
e. Plastids

36. 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. Starch granules
b. Drops of fatty oil
c. Calcium oxalate crystals
d. Insulin crystals
e. Aleurone grains

37. Prevailing plants of a foliage forest are monoecious high trees coated with thick dark-grey rind

with deep cracks. Their leaves are short-petiolar, pinnatilobate. Their fruit is acorn. Therefore, the dominating species is:

a. Aesculus hippocastanum
b. Robinia pseudoacacia
c. Quercus robur
d. Tilia cordata
e. Betula verrucosa

38. 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. Follicle
b. Multifollicle
c. Fruitcase
d. Coenobium
e. Aggregate achene

39. A flower has the androecium consisting of two long and two short stamens. Therefore the flowers androecium is:

a. Diadelphous
b. Tetradynamous
c. Didynamous
d. Tetradelphous
e. Polyadelphous

40. Microscopic examination of leaf serration revealed secretory structures secreting some liquid. What are these structures called?

a. Nectaries
b. Glandules
c. Osmophores
d. Hydatodes
e. Stomata

41. 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 perenchyma
c. Angular collenchyma
d. Lacunar collenchyme
e. Bast fibers

42. Microscopic examination of ground tissue of a small branch revealed cork and felloderm. These are the derivates of:

a. Protoderm
b. Pericycle
c. Cambium
d. Procambium
e. Phellogen

43. A big brown alga has a stipe, rhizoids and laminae rich in alginates and iodine. It belongs to the following genus:

a. Chlorella
b. Spirogira
c. Ulothrix
d. Laminaria
e. Chlamydomonas

44. Microscopic examination of a ficus leaf revealed in some cells of its epidermis a protrusion of the

cell membrane with an accumulation of crystals that dissolve in the hydrochloric acid and release carbonic acid gas. This structure is called:

a. Druse
b. Raphide
c. Cystolith
d. Single crystal
e. Styloid

45. While examining structure of a root the students payed attention to an area where the superficial cells formed root fibrils. What root zone is it?

a. Pileorhiza
b. Suction
c. Extension
d. Cell division
e. Conduction

46. Microscopical examination of a leaf revealed water stomata on its serration. These stomata are for exudation of liquid-drop moisture. This process is called:

a. Internal secretion
b. Gas exchange
c. Guttation
d. Transpiration
e. Photosynthesis

47. An essential oil plant under examination has a square stem, flowers with bilabiate corolla, coenobium fruit. These characteristics are typical for the following family:

a. Papaveraceae
b. Solanaceae
c. Scrophulariaceae
d. Lamiaceae
e. Polygonaceae

48. The analyzed plant has hollow ribbed stems, compound umbel inflorescence, schizocarpic fruit (cremocarp) and is rich in essential oils, which is a characteristic of:

a. Ericaceae
b. Fabaceae
c. Apiaceae
d. Brassisaceae
e. Asteraceae

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

a. Spadix
b. Spike
c. Anthodium
d. Glomus
e. Raceme

50. Destruction of intercellular substance and cell breakaway in overripe fleshy fruits is a result of:

a. Mineralization
b. Lignification
c. Maceration
d. Sliming
e. Gummosis

51. As a result of staining of a plant microslide with Sudan III solution the cell membranes turned pink. This indicates the presence of:

a. Cellulose

b. Pectin
c. Hemicellulose
d. Suberin
e. Lignin

52. After a plant microslide had been processed with phloroglucinol together with concentrated hydrochloric acid, the cell membranes turned crimson red. This indicates presence of:
a. Hemicellulose
b. Suberin
c. Pectin
d. Cellulose
e. Lignin

53. An annual plant of the Asteraceae family has tripartite leaves, apical anthodia with tubular flowers, flat achenocarps that are tenent due to 2-3 bristly serratures. This plant is:
a. Bidens tripartita
b. Centaurea cyanus
c. Artemisia vulgaris
d. Echinacea purpurea
e. Chamomilia recutita

54. Inflorescence of Ledum palustre has a significantly shortened rachis, connivent nodes, pedicles of the quite similar length. This inflorescence is called:
a. Bostryx
b. Glomus
c. Umbel
d. Spike
e. Ament

55. Which representative of the Rosaseae family has spring bloom in form of white, fragrant flowers gathered in pendulous racemes at the ends of short shoots?
a. Padus rasemosa (P. avia)
b. Sorbus aucuparia
c. Crataegus sanquinea
d. Cerasus vulgaris
e. Potentilla erecta

56. One of the common characteristics of subfamily Prunoidea representatives (family Rosaceae) is that their fruit is:
a. Pome
b. Pepo
c. Aggregate-accessory fruit
d. Bacca
e. Drupe

57. Crop production includes cultivation of medicinal essential oil plants that dont grow in Ukraine wildely, namely Mentha piperita, Ortosiphon stamineus, and also:
a. Leonurus quinquelobatus
b. Salvia officinalis
c. Leonurus cardiaca
d. Origanum vulgare
e. Thymus serpyllum

58. Essential oil glandules consisting of 8 secretory cells arranged in two rows and four tiers can be found in most plants of the following family:
a. Scrophulariaceae
b. Asteraceae
c. Lamiaceae

d. Apiaceae
e. Rosaceae

59. Examination of five herbarium specimens of medicinal plants showed that one of them belonged to the legume family, namely:
a. Datura stramonium
b. Solanum dulcamara
c. Atropa belladonna
d. Hyoscyamus niger
e. Glycyrhiza glabra

60. Bacca fruit is typical for the following representative of Solanaceae family:
a. Datura innoxia
b. Atropa belladonna
c. Datura stramonium
d. Hyoscyamus niger
e. Nicotiana tabacum

61. One of the plants under examination has a zygomorphic flower and papilionaceous corolla. This plant is called:
a. Mentha piperita
b. Urtica dioica
c. Rosa canina
d. Melilotus officinalis
e. Valeriana officinalis

62. A student had to analyze an axial plant organ characterized by radial symmetry, unlimited growth, positive geotropism. It provided nutrition, vegetative propagation, anchorage of plant in the soil. This organ was identified as ...
a. Leaf
b. Stem
c. Root
d. Rhizome
e. Seed

63. Microscopical examination of transverse section of a root revealed investing tissue consisting of thin-walled, closely joining cells with root fibrilla. This tissue is called:
a. Epiderm
b. Epiblem
c. Periderm
d. Root cap (pileorhiza)
e. Endoderm

64. Cross section of a root conducting zone shows pericycle that gives rise to:
a. Adventitious roots
b. Trichomes
c. Lateral roots
d. Root fibrilla
e. Root cap

65. A medicinal herb under examination has the capsule fruit with lacticifers and small openings. This herb is called:
a. Chelidonium majus
b. Mentha piperita
c. Sanquisorba officinalis
d. Papaver somniferum
e. Zea mays

66. 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. Paracytic
b. Tetracytic
c. Anisocytic
d. Diacytic
e. Anomocytic

67. 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. Thyrsoid
b. Simple botrioid
c. Cymose
d. Complex botrioid
e. Aggregate

68. A leaf has glumaceous ochrea. It clasps bottom of internode and is a modificated stipule. This is diagnostic sign of the following family:
a. Legumes
b. Solanaceae
c. Gramineae
d. Rosaceae
e. Polygonaceae

69. A citrus fruit is characterized by the glandular exocarp, spongiose mesocarp and overgrown endocarp consisting of juice sacs. Such fruit is called:
a. Legume
b. Drupe
c. Bacca
d. Hesperidium
e. Pod

70. You need to specify a monocarpous one-seeded fruit with hard scleroid endocarp and soft mesocarp. This fruit is:
a. Silique
b. Legume
c. Drupe
d. Capsule
e. Bacca

71. One of the herbarium specimens of medicinal plants relates to the Asteraceae family. This plant is:
a. Atropa belladonna
b. Urtica dioica
c. Rubus idaeus
d. Arctica lappa
e. Cassia acutifolia

72. 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. Palmatilobate
c. Pinnatisected
d. Palmatipartite
e. Palmatisected

73. The section of a sunflower seed has been treated with Sudan III solution that caused pink-and-orange staining. This is the evidence of presence of:
a. Protein

b. Inulin
c. Cellulose
d. Fatty oil
e. Starch

74. The study of the main root ontogenesis shows that it has developed from:
a. Intercalary meristem
b. Radicle
c. Pericycle
d. Apical meristem
e. Lateral meristem

75. Calendula officinalis which a representative of the aster family is characterized by the following inflorescence type:
a. Flowerhead
b. Catkin
c. Cyme
d. Glome
e. Umbel

76. Which medicinal plant of the Asteraceae family has only disk flowers in the flowerhead?
a. Common yarrow (Achillea millefolium)
b. Three-part beggarticks (Bidens tripartita)
c. Echinacea purpurea
d. Dandelion (Taraxacum officinale)
e. Cornflower (Centaurea cyanus)

77. Spore and pollen analysis revealed in the pollen some tetrahedral spores with a semi-circular base and a reticular surface, which may belong to:
a. Equisetiphyta
b. Polypodiophyta
c. Pinophyta
d. Lycopodiophyta
e. Bryophyta

78. In the practice of harvesting herbal raw material of Asteraceae family the term "flowers" means both individual flowers and inflorescences. However, the notion of "flowers" is botanically correct only for:
a. Echinops ritro
b. Bidens tripartita
c. Gnaphalium uliginosum
d. Arnica montana
e. Centaurea cyanus

79. Characteristic peculiarity of mechanic plant tissues is that they consist mainly of dead cells, but there is one type of mechanic tissues consisting of living cells. Which of the listed mechanic tissues contains the living protoplast?
a. Phloem fibers
b. Collenchyme
c. Libriform
d. Scleroids
e. Perivascular fibers

80. A perennial herbaceous plant has ascending quadrangular stem and oppositely arranged leaves. The flowers with bilabiate corolla are zygomorphic, bisexual, arranged in whorls in the leaf axils. The fruit type is coenobium. The described medicinal plant relates to the following botanic family:
a. Lamiaceae
b. Poaceae

c. Rosaceae
d. Brassicaceae
e. Asteraceae

81. Choose a plant whose apical sprouts are used in medical practice for sedative drug production:
a. Fagopyrum sagittatum
b. Leonurus cardiaca
c. Digitalis purpurea
d. Glycyrrhiza glabra
e. Ledum palustre

82. While determining the type and characteristics of conducting bundles of axial organs one should take into account the positional relation between phloem and xylem and ...
a. Phellogen
b. Cambium
c. Collenchyme
d. Procambium
e. Pericycle

83. Many species of wild rose are a source of vitamins, fatty oils and herbal material. Specify the juicy pseudocarps that are procured as herbal raw material:
a. Rose hips
b. Hesperides
c. Cenocarp stone-fruits
d. Aggregate-accessory fruits
e. Coenobia

84. Mycothallus of the fungus under study consists of a stipe, pileus, lamellar hymenophore. This fungus belongs in the class:
a. Deuteromycetes
b. Oomycetes
c. Ascomycetes
d. Zygomycetes
e. Basidiomycetes

85. Morphological analysis of poplar inflorescence showed that it is a simple monopodial inflorescence: main axis is drooping, the flowers are sessile, unisexual. Specify the type of inflorescence:
a. Capitulum
b. Head
c. Catkin
d. Cyme
e. Panicle

86. Inflorescence of greater plantain grows out at apex, the main axis is long, and flowers are sessile. This type of inflorescence is called:
a. Thyrsus
b. Spike
c. Spadix
d. Panicle
e. Capitulum

87. Diaphoretic herbal tea includes dichasial cymes with light-yellow, oblong, wing-like, squamelliferous perianth. The flowers are fragrant, yellowish. These inflorescences belong to:
a. Viburnum opulus
b. Mentha piperita
c. Padus avium
d. Tilia cordata

e. Robinia pseudoacacia

88. What type of conducting bundles is characteristic of all root zones of one-seeded plants?
a. Bilateral
b. Collateral
c. Central phloem
d. Central xylem
e. Radical

89. Astragalus dasyanthus has sessile flowers gathered into inflorescences with a short thick axis. This inflorescence is called:
a. Capitulum
b. Truss
c. Head
d. Spike
e. Cyme

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

91. Examination of the leaf epidermis revealed cells containing cystoliths. Presence of cystoliths is typical for plants of the following family:
a. Fabaceae
b. Brassicaceae
c. Urticaceae
d. Solanaceae
e. Papaveraceae

92. A plant under examination has a rhizome, big pinnatisected leaves with sori and sporangia on their undersurface. According to this data the plant should be related to one of the following divisions:
a. Polypodiophyta
b. Magnoliophyta
c. Lycopodiophyta
d. Eguisetophyta
e. Pinophyta

93. Morphological analysis of an inflorescence revealed that its flowers were attached to the same axis at different levels but due to the various length of peduncle they grew in the same plane. Such inflorescence is called:
a. Glomus
b. Anthodium
c. Corymb
d. Umbel
e. Spike

94. Leaves of a plant under examination have a distinct main nerve in the middle with regularly diverging side nerves. What type of nervation is it?
a. Digitate
b. Parallel
c. Dichotomic
d. Pinnate
e. Arcwise

95. Examination of an inflorescence of sweet flag Acorus calamus L. revealed that it was encircled

with a covering leaf (spathe) and small sessile flowers grew compactly on the thickened pulpy axis. Such inflorescence is called:

a. Umbel
b. Corymb
c. Glomus
d. Spike
e. Ear

96. Hop sprouts wind around a support and climb upwards. That means that they are:

a. Arrect
b. Recumbent
c. Creeping
d. Tenent
e. Trailing

97. Pulp of a needle leaf consists of living tissue with inner ansiform protuberances of membrane and chloroplasts along them. What is type of this leaf's parenchyma?

a. Aeriferous
b. Plicate
c. Palisade
d. Spongioid
e. Storage

98. Corolla of the origanum flower is zygomorphic, sympetalous and consists of a tube and two limbs. The upper limb is bilobate and the lower is trilobate. Such corolla is called:

a. Lingulate
b. Unilabiate
c. Bilabiate
d. Thimble-like
e. -

99. A plant under examination has papilionaceous flower. This plant belongs in the family:

a. Lamiaceae
b. ScrofulariaceaeC Ranunculaceae
c. Fabaceae
d. Asteraceae
e.

100. Microscopic analysis of a root revealed the following features: primary structure, endodermal cells with horseshoe-shaped areas, radial fascicle of the central cylinder, more than six xylem rays. Such root structure is typical for the following plants:

a. Angiosperms, monocotyledons
b. Gymnosperms, conifers
c. Pteridosperms
d. Gymnosperms, gnetalians
e. Angiosperms, dicotyledons

101. One of the examined soft fruits is characterized by essential-oil exocarp, spongioid mesocarp and overgrown endocarp that consists of juice saccules. What fruit was under examination?

a. Bacca
b. Hesperidium
c. Multicoccus
d. Pepo
e. Drupe

102. Analysis of a plant revealed essential-oil glands with several layers of cells arranged in pairs. This allows for the possibility that the plant relates to the family:

a. Apiaceae

b. Lamiaceae
c. Scrofulariaceae
d. Solanaceae
e. Asteraceae

103. It is known that rhizome and roots of Inula helenium have cavities without distincts inner boundaries filled with essential oils. They are called:
a. Resin ducts
b. Schizogenous receptacles
c. Lysigenous receptacles
d. Segmented lacticifers
e. Nonsegmented lacticifers

104. A sour cherry has shortened principal axis of inflorescence, pedicles have nearly equal length and emerge like from the same point. It is typical for the following type of inflorescence:
a. Anthodium
b. Umbel
c. Truss
d. Corymb
e. Ear

105. Examination of a root revealed a tissue that has root fibrils and doesn't have stomata and cuticle. What tissue is it?
a. Epiblema
b. Periderm
c. Exoderm
d. Endoderm
e. Epiderm

106. During identification of a perennial herb of Ranunculacea? family it was found to have: apical flowers of regular form up to 6 cm in diameter; 5 downy violet-and-green calyx lobes of irregular serrate form; up to 20 bright yellow glossy petals without nectarostigma. What plant is it?
a. Adonis vernalis
b. Ranunculus acris
c. Aconitum napellus
d. Delphinium elatum
e. Helleborus purpurascens

107. Histochemical test for fixed oils with sudan III results in the following stain colour:
a. Black and purple
b. Pink and orange
c. Lemon-yellow
d. Blue and violet
e. Raspberry-red

108. A herbaceous plant under examination has segmented lacticifers with anastomoses filled with white latex. This is typical for:
a. Taraxacum officinale
b. Chelidonium majus
c. Thymus vulgaris
d. Anethum graveolens
e. Urtica dioica

109. Underneath the stem epidermis some layers of living perenchymal cells were found. The cells contained chloroplasts and had cellulose membranes with thickened angles. This tissue is called:
a. Lacunar collenchyme
b. Storage parenchyme
c. Chlorophyll-containing parenchyme

d. Angular collenchyme
e. Lamellar collenchyme

110. 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. Anthocyanins
b. Xanthophylls
c. Chlorophylls
d. Phycobilins
e. Carotins

111. Microscopic examination of a perennial stem revealed integumentary tissue of secondary origin that was formed as a result of cell division of:
a. Protoderma
b. Phellogen
c. Cambium
d. Procambium
e. Pericycle

112. Which of the following plants has pome fruit?
a. Sorbus aucuparia
b. Amygdalus communis
c. Prunus padus
d. Rosa majalis
e. Prunus domestica L.

113. Examination of a medicinal plant revealed that its underground organ had nodes, internodes, cataphylls, gemmae and secondary roots. Therefore, this underground organ is:
a. Tuber
b. Rhizome
c. Root bulb
d. Storage root
e. Stolon

114. A higher nonvascular plant has distinct alternation of dominant sexual (gametophyte) and reduced asexual (sporophyte) generations. This indicates that the plant belongs to the following division:
a. Equisetophyta
b. Lycopsida
c. Bryophyta
d. Pteridophyta
e. Gymnospermae

115. A plant under study has stipules fused together and thus forming a tight tube - ochrea, that is a diagnostic feature of the following family:
a. Clusiaceae
b. Polygonaceae
c. Rosaceae
d. Gramineae
e. Papaveraceae

116. It is known that a seed without endosperm and perisperm has its nutrients accumulated in:
a. Embryo stalk
b. Embryo root
c. Embryo cotyledons
d. Gemma
e. Seed coat

117. The birch has compound inflorescences with drooping main axis bearing dichasia composed of

unisexual cells. Therefore, this inflorescence is called:

a. Ament
b. Spadix
c. Glomus
d. Spike
e. Raceme

118. While studying a stem covered with periderm, the researcher realized that gas exchange takes place through:

a. Pores
b. Stomata
c. Lenticels
d. Non-suberized (conducting) cells
e. Hydatodes

119. 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. Pseudodichotomic
b. Monopodial
c. Bush
d. Nonequidichotomic
e. Equidichotomic

120. Prevailing plants of a foliage forest are monoecious high trees coated with thick dark-grey rind with deep cracks. Their leaves are short-petiolar, pinnatilobate. Their fruit is acorn. Therefore, the dominating species is:

a. Betula verrucosa
b. Quercus robur
c. Aesculus hippocastanum
d. Robinia pseudoacacia
e. Tilia cordata

121. A flower has the androecium consisting of two long and two short stamens. Therefore the flowers androecium is:

a. Tetradynamous
b. Tetradelphous
c. Polyadelphous
d. Didynamous
e. Diadelphous

122. Microscopic examination of leaf serration revealed secretory structures secreting some liquid. What are these structures called?

a. Hydatodes
b. Stomata
c. Osmophores
d. Glandules
e. Nectaries

123. 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. Bast fibers
b. Angular collenchyma
c. Lamellar collenchyme
d. Spongy perenchyma
e. Lacunar collenchyme

124. Microscopic examination of ground tissue of a small branch revealed cork and felloderm. These are the derivates of:

a. Procambium
b. Cambium
c. Phellogen
d. Protoderm
e. Pericycle

125. A big brown alga has a stipe, rhizoids and laminae rich in alginates and iodine. It belongs to the following genus:
a. Laminaria
b. Chlamydomonas
c. Ulothrix
d. Spirogira
e. Chlorella

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

127. While examining structure of a root the students payed attention to an area where the superficial cells formed root fibrils. What root zone is it?
a. Extension
b. Cell division
c. Suction
d. Conduction
e. Pileorhiza

128. Microscopical examination of a leaf revealed water stomata on its serration. These stomata are for exudation of liquid-drop moisture. This process is called:
a. Transpiration
b. Photosynthesis
c. Gas exchange
d. Internal secretion
e. Guttation

129. An essential oil plant under examination has a square stem, flowers with bilabiate corolla, coenobium fruit. These characteristics are typical for the following family:
a. Polygonaceae
b. Papaveraceae
c. Lamiaceae
d. Solanaceae
e. Scrophulariaceae

130. The analyzed plant has hollow ribbed stems, compound umbel inflorescence, schizocarpic fruit (cremocarp) and is rich in essential oils, which is a characteristic of:
a. Apiaceae
b. Ericaceae
c. Asteraceae
d. Brassisaceae
e. Fabaceae

131. During the field practice a student found a plant with disk-shaped structure of its rachis, sessile flowers and husk. This inflorescence is called:
a. Glomus

b. Raceme
c. Spike
d. Spadix
e. Anthodium

132. Destruction of intercellular substance and cell breakaway in overripe fleshy fruits is a result of:
a. Lignification
b. Sliming
c. Gummosis
d. Maceration
e. Mineralization

133. As a result of staining of a plant microslide with Sudan III solution the cell membranes turned pink. This indicates the presence of:
a. Pectin
b. Hemicellulose
c. Cellulose
d. Lignin
e. Suberin

134. After a plant microslide had been processed with phloroglucinol together with concentrated hydrochloric acid, the cell membranes turned crimson red. This indicates presence of:
a. Cellulose
b. Pectin
c. Lignin
d. Hemicellulose
e. Suberin

135. Inflorescence of Ledum palustre has a significantly shortened rachis, connivent nodes, pedicles of the quite similar length. This inflorescence is called:
a. Ament
b. Umbel
c. Bostryx
d. Glomus
e. Spike

136. One of the common characteristics of subfamily Prun??d?a representatives (family Rosa????) is that their fruit is:
a. Pepo
b. Drupe
c. Bacca
d. Aggregate-accessory fruit
e. Pome

137. Crop production includes cultivation of medicinal essential oil plants that dont grow in Ukraine wildely, namely Mentha piperita, Ortosiphon stamineus, and also:
a. Origanum vulgare
b. Thymus serpyllum
c. Leonurus quinquelobatus
d. Salvia officinalis
e. Leonurus cardiaca

138. Essential oil glandules consisting of 8 secretory cells arranged in two rows and four tiers can be be found in most plants of the following family:
a. Lamiaceae
b. Apiaceae
c. Asteraceae
d. Rosaceae

e. Scrophulariaceae

139. Examination of five herbarium specimens of medicinal plants showed that one of them belonged to the legume family, namely:

a. Glycyrhiza glabra
b. Hyoscyamus niger
c. Solanum dulcamara
d. Datura stramonium
e. Atropa belladonna

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

a. Datura stramonium
b. Hyoscyamus niger
c. Atropa belladonna
d. Nicotiana tabacum
e. Datura innoxia

141. One of the plants under examination has a zygomorphic flower and papilionaceous corolla. This plant is called:

a. Urtica dioica
b. Rosa canina
c. Mentha piperita
d. Valeriana officinalis
e. Melilotus officinalis

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

a. Periderm
b. Root cap (pileorhiza)
c. Epiblem
d. Endoderm
e. Epiderm

143. Cross section of a root conducting zone shows pericycle that gives rise to:

a. Root cap
b. Lateral roots
c. Adventitious roots
d. Trichomes
e. Root fibrilla

144. 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. Anisocytic
b. Diacytic
c. Tetracytic
d. Anomocytic
e. Paracytic

145. 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. Simple botrioid
b. Cymose
c. Thyrsoid
d. Aggregate
e. Complex botrioid

146. A citrus fruit is characterized by the glandular exocarp, spongiose mesocarp and overgrown endocarp consisting of juice sacs. Such fruit is called:

a. Bacca
b. Hesperidium
c. Pod
d. Legume
e. Drupe

147. You need to specify a monocarpous one-seeded fruit with hard scleroid endocarp and soft mesocarp. This fruit is:
a. Drupe
b. Silique
c. Bacca
d. Capsule
e. Legume

148. The section of a sunflower seed has been treated with \emph{Sudan III} solution that caused pink-and-orange staining. This is the evidence of presence of:
a. Cellulose
b. Fatty oil
c. Starch
d. Protein
e. Inulin

149. The study of the main root ontogenesis shows that it has developed from:
a. Lateral meristem
b. Intercalary meristem
c. Apical meristem
d. Pericycle
e. Radicle

150. Calendula officinalis which a representative of the aster family is characterized by the following inflorescence type:
a. Umbel
b. Glome
c. Cyme
d. Flowerhead
e. Catkin

151. Which medicinal plant of the Asteraceae family has only disk flowers in the flowerhead?
a. Cornflower (Centaurea cyanus)
b. Common yarrow (Achillea millefolium)
c. Dandelion (Taraxacum officinale)
d. Echinacea purpurea
e. Three-part beggarticks (Bidens tripartita)

152. Spore and pollen analysis revealed in the pollen some tetrahedral spores with a semi-circular base and a reticular surface, which may belong to:
a. Pinophyta
b. Lycopodiophyta
c. Bryophyta
d. Equisetiphyta
e. Polypodiophyta

153. In the practice of harvesting herbal raw material of /emph/Asteraceae/ family the term flowers means both individual flowers and inflorescences. However, the notion of flowers is botanically correct only for:
a. Echinops ritro
b. Bidens tripartita
c. Gnaphalium uliginosum

d. Arnica montana
e. Centaurea cyanus

154. Characteristic peculiarity of mechanic plant tissues is that they consist mainly of dead cells, but there is one type of mechanic tissues consisting of living cells. Which of the listed mechanic tissues contains the living protoplast?
a. Libriform
b. Scleroids
c. Collenchyme
d. Perivascular fibers
e. Phloem fibers

155. A perennial herbaceous plant has ascending quadrangular stem and oppositely arranged leaves. The flowers with bilabiate corolla are zygomorphic, bisexual, arranged in whorls in the leaf axils. The fruit type is coenobium. The described medicinal plant relates to the following botanic family:
a. Rosaceae
b. Lamiaceae
c. Poaceae
d. Asteraceae
e. Brassicaceae

156. Choose a plant whose apical sprouts are used in medical practice for sedative drug production:
a. Digitalis purpurea
b. Glycyrrhiza glabra
c. Leonurus cardiaca
d. Ledum palustre
e. Fagopyrum sagittatum

157. While determining the type and characteristics of conducting bundles of axial organs one should take into account the positional relation between phloem and xylem and ...
a. Collenchyme
b. Procambium
c. Cambium
d. Pericycle
e. Phellogen

158. Many species of wild rose are a source of vitamins, fatty oils and herbal material. Specify the juicy pseudocarps that are procured as herbal raw material:
a. Cenocarp stone-fruits
b. Rose hips
c. Hesperides
d. Coenobia
e. Aggregate-accessory fruits

159. Mycothallus of the fungus under study consists of a stipe, pileus, lamellar hymenophore. This fungus belongs in the class:
a. Basidiomycetes
b. Zygomycetes
c. Oomycetes
d. Deuteromycetes
e. Ascomycetes

160. Diaphoretic herbal tea includes dichasial cymes with light-yellow, oblong, wing-like, squamelliferous perianth. The flowers are fragrant, yellowish. These inflorescences belong to:
a. Tilia cordata}
b. Robinia pseudoacacia
c. Padus avium
d. Mentha piperita

e. Viburnum opulus

161. What type of conducting bundles is characteristic of all root zones of one-seeded plants?
a. Central phloem
b. Bilateral
c. Collateral
d. Radical
e. Central xylem

162. Astragalus dasyanthus has sessile flowers gathered into inflorescences with a short thick axis. This inflorescence is called:
a. Spike
b. Head
c. Cyme
d. Truss
e. Capitulum

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

164. Examination of the leaf epidermis revealed cells containing cystoliths. Presence of cystoliths is typical for plants of the following family:
a. Brassicaceae
b. Solanaceae
c. Papaveraceae
d. Urticaceae
e. Fabaceae

165. In the course of plant cells treatment with phloroglucinol with concentrated sulfuric acid their cell walls became crimson-red, which means:
a. Mineralization
b. Lignification
c. Mucification
d. Suberization
e. Cutinization

166. During practical field session students have detected plant with diversity of leaves that differ by their placement on stem, parts development, size, shape, lamina division. This phenomenon is called:
a. Metamorphosis
b. Phyllotaxy
c. Heterophylly
d. Leaf mosaic
e. Venation

167. Androecium of Brassica oleracea flower has six stamens, with four stamens of inner circle longer than two stamens of outer circle. What is this type of androecium called?
a. Monadelphous
b. Polydelphous
c. Didynamous
d. Diadelphous
e. Tetradynamous

168. You are studying the silvery downy plant of Asteraceae family, which is rich with essential oils and bitters. Harvested are apical sprouts with panicle of small round flower heads. This plant is:

a. Arctium lappa
b. Calendula officinalis
c. Chamomilla recutita
d. Artemisia absinthium
e. Bidens tripartita

169. Stinging nettle (Urtica dioica), hop (Humulus lupulus) and common elder (Sambucus nigra) are plants that require high nitrogen content in soil, which means that they are:
a. Halophytic
b. Nitrophilous
c. Calciphilous
d. Nitrophobous
e. Calciphobous

170. In spring birch and poplar buds are gathered. They essentially are:
a. Embryonic shoots
b. Gametophyte embryos
c. Reduced gametophytes
d. Reduced sporophytes
e. Sporophyte embryos

171. Quercus robur leaves have the following type of lamina shape and division:
a. Palmatilobate
b. Palmatipartite
c. Trilobate
d. Pinnatipartite
e. Pinnatilobate

172. When studying white mistletoe, - perennial medicinal semiparasite plant, - it was revealed that its embryonic root buries into higher plant stem tissue and reaches vascular tissue system. This type of roots is called:
a. Aerial roots
b. Haustorial roots
c. Aerating roots
d. Photosynthetic roots
e. Contractile roots

173. If aromatic secretory-downy plant has square in cross section stem, spike inflorescence made up from whorled dichasia, bilabiate corolla and its fruit consists of four nutlets, it probably belongs to the following family:
a. Scrofulariaceae
b. Apiaceae
c. Solanaceae
d. Lamiaceae
e. Brassicaceae

174. When root is studied under microscope, one leading bundle is detected in its maturation zone, where xylem and phloem areas interchange radially. It can be concluded that this bundle type is:
a. Collateral
b. Amphicribal
c. Amphivasal
d. Radial
e. Bicollateral

175. During morphological description of common periwinkle it was defined that it has shoot that trails on the ground and takes root. It allows to chatacterize such shoot as:
a. Scandent
b. Tenent

c. Recumbent
d. Twining
e. Creeping

176. ?rctostaphylos uva ursi, Vaccinium vitis ideae and Vaccinium myrtillus life forms can be defined as:

a. Shrub (frutex)
b. Subshrub (suffrutex, semifrutex)
c. Vine
d. Grass
e. Small shrub (fruticulus)