

1. A patient with heart failure induced by a long-term coronary vessel disorder can be administered a drug produced out of the following herbal raw material:

- a. Ginseng roots
- b. Calendula flowers
- c. Hawthorn
- d. Aralia roots
- e. Berberis roots

2. A patient came to a drugstore and ordered cowberry leaves. Which of the available herbal raw materials can be offered as a substitute?

- a. *Folium Uvae ursi*
- b. *Rizoma et radix Sanquisorbae officinalis*
- c. *Radix Taraxaci officinalis*
- d. *Herba Achilleae millefolii*
- e. *Rizoma Calami*

3. Preparations on the basis of dandelion roots are recommended for better digestion and as a choleric because this herbal raw material contains:

- a. Bitters
- b. Balsams
- c. Flavonoids
- d. Saponins
- e. Essential oil

4. Preparations made of ginseng roots have tonic and adaptogenic properties, improve mental and physical performance. If the ginseng tincture cannot be found in a pharmacy, it can be substituted by the analogous preparations made of the following raw material:

- a. *Radices Eleutherococci*
- b. *Radices Inulae*
- c. *Radices Rhei*
- d. *Radices Ononis*
- e. *Radices Valerianae*

5. Coltsfoot preparations are used for upper airways treatment. During procurement of this herbal raw material the following admixture may appear:

- a. Common plantain (*Plantago major*)
- b. Marsh mallow (*Althaea officinalis*)
- c. Pot marjoram (*Origanum vulgare*)
- d. Great bur (*Arctium lappa*)
- e. Spring adonis (*Adonis vernalis*)

6. If the internal surface of buckthorn rind is moistened with 5% alkaline solution, it becomes cherry-red colouring. This is the evidence of presence of the following substance:

- a. Tannins
- b. Anthracene derivatives
- c. Saponins
- d. Alkaloids
- e. Flavonoids

7. Leaves of belladonna, henbane and datura containing tropane alkaloids must be stored according to the following list requirements:

- a. List of substances equivalent to narcotics
- b. B list (these drug substances require caution in handling, storage or use)
- c. General sales list
- d. A list (poisonous drug substances)
- e. Essential oil materials list

8. One of the ways to derive essential oil is enfleurage, or maceration. Essential oil can be derived by

enfleurage from the following herbal raw material:

- a. Coriander fruits
- b. Lemon skin
- c. Petals of Damascus rose**
- d. Mint leaves
- e. Camomile flowers

9. Tannins have astringent effect and are used for treatment of colitis, enterocolitis, diarrhea. What herbal raw material contains a lot of tannins?

- a. Fructus Rhamni catharticae
- b. Fructus Frangulae
- c. Fructus Sambucci nigri
- d. Fructus Ribes nigri
- e. Fructus Myrtillii**

10. Emodin, an anthracene derivative, has purgative effect. Large quantities of anthracene-derived groups of emodin are contained in the fruits of the following plant:

- a. Elder (Sambucus)
- b. Blueberry (Vaccinium myrtillus)
- c. Alder buckthorn (Frangula alnus)
- d. Buckthorn**
- e. Blackcurrant

11. Cardioglycosides of Adonis vernalis are used for heart failure treatment. This plant raw material should be stored:

- a. Protected from CO<sub>2</sub>
- b. In metal containers
- c. According to the list A
- d. Under normal conditions
- e. According to the list B**

12. In order to determine the purity a drop of lavender essential oil was applied on a strip of filter paper and warmed up in the stream of warm air. Some time later the stain increased in diameter. What impurity substance was found in the lavender oil?

- a. Acetone
- b. Diethyl ether
- c. Phenol
- d. Ethanol
- e. Fatty or mineral oil**

13. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

- a. Sedative and anticonvulsant
- b. Expectorant and antiseptic
- c. Bactericidal and astringent
- d. Diuretic and choleric**
- e. Cardiotonic and antiarrhythmic

14. Yellow gentian contains bitter glycosides. Raw material of this plant is recommended for production of drugs with the following effect:

- a. Tonic
- b. Hepatoprotective
- c. Venotonic
- d. Stimulates appetite**
- e. Diuretic

15. Preparations of common valerian are used in medical practice as sedative drugs. The main feature that allows to distinguish valerian from the admixtures is:

- a. Specific taste
- b. No specific odor
- c. Specific odor**
- d. Specific color of raw materials
- e. Stems remains

16. One of the methods of quantitative analysis of active substances in the raw material is the biological standardization. It can be applied with the following group of biologically active substances:

- a. Tannins
- b. Mucilages
- c. Alkaloids
- d. Fatty oils
- e. Cardiac glycosides**

17. A phytopreparation "Flacarbinum" has spasmolytic, anti-inflammatory and antiulcer effect. This preparation is produced out of the following plant:

- a. Mountain angelica (*Aralia mandshurica*)
- b. Pot marigold (*Calendula officinalis*)
- c. Jacobs ladder blue (*Polemonium caeruleum*)
- d. Buckeye (*Aesculus*)
- e. Licorice (*Glycyrrhiza*)**

18. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

- a. Sedative and anticonvulsive drug
- b. Cardiotonic and antiarrhythmic drug
- c. Expectorant and antitussive drug
- d. Bactericidal and astringent drug
- e. Diuretic and choleric drug**

19. Fatty oil containing unsaturated fatty acids are used for atherosclerosis prevention. What herbal raw material contains such fatty oil?

- a. Cucurbit seeds**
- b. Chestnut (*Castanea*) seeds
- c. Scurfy pea (*Psoralea*) fruitages
- d. Parsnip fruitages
- e. Buckhorn plantain (*Plantago lanceolata*) seeds

20. Fatty oil containing saturated fatty acids is used for atherosclerosis prevention. Specify the medicinal plant that is used for oil production:

- a. Hawthorn fruits
- b. Flax seeds**
- c. Dill seeds
- d. Fennelflower seeds
- e. Black chokeberry fruits

21. A storehouse received a batch of althaea roots. For its verification a drop of ammonia solution was applied upon the root section; the spot of section turned yellow. This is the evidence of presence of the following substance:

- a. Mucilages**
- b. Gum
- c. Vitamin C
- d. Pectins
- e. Tannins

22. Upper airways diseases can be treated by means of herbal raw materials containing mucilages. The plant source of this compound class is:

- a. *Radix Belladonnae*

b. Radix Althaeae

c. Radix Ipecacuanhae

d. Radix Inulae

e. Radix Rhodiola

23. Preparations containing cardioteroids are produced out of the following herbal raw material:

a. Cortex Quercus

b. Folia Ficusi Caricae

c. Folia Sennae

**d. Herba Convallariae**

e. Radix Taraxaci

24. A laboratory received some herbal raw material for analysis. It is a composition of ovoid-pointed leaves up to 25 cm long and 20 cm wide; the leaf base is cuneate, the leaf edge is emarginate, The cutting is long and cylindric. The leaf venation is pinnatisect; the midrib and the first-order veins project significantly on the inferior surface of the leaf. The superior leaf surface is dark green, the inferior surface is light green. The plant has a weak narcotic smell. The taste cannot be determined.

The plant is poisonous! The described herbal raw material relates to the following plant:

a. Chelidonium majus

b. Passiflora incarnata

**c. Datura stramonium**

d. Vinca minor

e. -

25. Tanning agents of silverweed roots and rhizomes are used as an astringent. What species of silverweed is pharmacopoeial?

a. Potentilla anserina

**b. Potentilla erecta**

c. Potentilla pilosa

d. Potentilla argentea

e. Potentilla impolita

26. Some domestic and foreign hepatoprotective activity preparation are made of holy thistle bearing. Purity of this material is determined by the content of:

a. Coumarins

b. Vitamins

c. Terpenoids

**d. Flavolignan**

e. Alkaloids

27. Preparations made out of eleutherococcus roots and rhizomes are administered as a tonic and adaptogenic drug. If these preparations cannot be found in a pharmacy, they can be substituted by the analogous preparations made of the following raw material:

a. Elecampane roots

b. Polemonium roots

c. Acorus calamus roots

**d. Ginseng roots**

e. Rhizomes and roots of valerian

28. A biennial or perennial plant from the Apiaceae family has a blue-grey stem branching in its lower part. Its leaves are also blue-grey, finely dissected, with the ultimate filiform segments. The flowers are yellow, in compound umbels. Its fruit is used for production of "dill water". What plant is it?

a. Conium maculatum

**b. Foeniculum vulgare**

c. Petroselium crispum

d. Carum carvi

e. Coriandrum sativum

29. On the base of licorice root different drug dosage forms are produced, notably tablets, powders, syrups, teas. The only unused form is injection solution. Licorice roots exhibit haemolytic properties typical for the following active substances:

- a. Essential oils
- b. Alkaloids
- c. Saponins
- d. Iridoids
- e. Polysaccharides

30. Tincture of what medicinal plant can be applied as a tonic?

- a. Robinia pseudacacia
- b. Rhodiola rosea
- c. Orthosiphon stamineus
- d. Achillea millefolium
- e. Digitalis purpurea

31. Restharrow (*Ononis*) root is used for production of a tincture applied for treatment of haemorrhoidal haemorrhages. Isoflavonoids can be identified in the raw material by means of:

- a. Cyanidin test
- b. Biological standardization
- c. Foam number
- d. Chromatographic method
- e. Hemolytic index

32. Hawthorn flowers are used for production of cardiotonic drugs. During procurement of this crude drug the flowers of the following plant can appear in it:

- a. Brier
- b. Elder
- c. Buckthorn
- d. Bird-cherry
- e. Blackthorn

33. Common juniper is applied as a diuretic, anti-inflammatory and cholagogic agent. This plant gives the following medicinal raw material:

- a. Sprouts
- b. Roots
- c. Seeds
- d. Fruits
- e. Leaves

34. A pharmacy procured common origanum. What drying conditions should be applied for producing high quality crude drug?

- a. 35-40°C
- b. 60-70°C
- c. 70-80°C
- d. 50-60°C
- e. 80-90°C

35. A patient came to a drugstore and ordered cowberry leaves. Which of the available herbal raw materials can be offered as a substitute?

- a. Radix Taraxaci officinalis
- b. Folium Uvae ursi
- c. Rizoma et radix Sanqisorbæ officinalis
- d. Rizoma Calami
- e. Herba Achilleæ millefolii

36. A pharmacy depot received a batch of common plantain leaves. According to the requirements of the Pharmacopoeia, this herbal raw material is of adequate quality if it contains the following active

substances:

- a. Anthracene derivatives
- b. Essential oils
- c. Flavonoids
- d. Tannins
- e. Polysaccharides

37. Coltsfoot preparations are used for upper airways treatment. During procurement of this herbal raw material the following admixture may appear:

- a. Spring adonis (*Adonis vernalis*)
- b. Common plantain (*Plantago major*)
- c. Great bur (*Arctium lappa*)
- d. Marsh mallow (*Althaea officinalis*)
- e. Pot marjoram (*Origanum vulgare*)

38. Leaves of belladonna, henbane and datura containing tropane alkaloids must be stored according to the following list requirements:

- a. General sales list
- b. A list (poisonous drug substances)
- c. B list (these drug substances require caution in handling, storage or use)
- d. Essential oil materials list
- e. List of substances equivalent to narcotics

39. Specify the herbal raw material with high concentration of carotenoids which is used for production of phytopreparations:

- a. Parsley roots
- b. Sea-buckthorn fruits
- c. Caseweed grass
- d. Currant leaflets
- e. Wild strawberry leaves

40. One of the ways to derive essential oil is enfleurage, or maceration. Essential oil can be derived by enfleurage from the following herbal raw material:

- a. Petals of Damascus rose
- b. Coriander fruits
- c. Camomile flowers
- d. Mint leaves
- e. Lemon skin

41. Calamus rhizome is likely to be confused with some other plant rhizome that can be found as an admixture in the herbal raw material. Specify the most likely admixture:

- a. Phlojodicarpus roots
- b. Iris rhizome
- c. Elecampane roots
- d. Valerian rhizome
- e. Althaea roots

42. Tannins can be used as an antidote for alkaloid poisoning. What herbal remedy should be applied in case of such intoxication:

- a. Calamus rhizome
- b. Rhizome and roots of madder
- c. Elecampane root
- d. Cinquefoil root
- e. Althaea root

43. Emodin, an anthracene derivative, has purgative effect. Large quantities of anthracene-derived groups of emodin are contained in the fruits of the following plant:

- a. Blueberry (*Vaccinium myrtillus*)

b. Alder buckthorn (*Frangula alnus*)

c. Elder (*Sambucus*)

d. Blackcurrant

**e. Buckthorn**

44. Cardioglycosides of *Adonis vernalis* are used for heart failure treatment. This plant raw material should be stored:

a. According to the list A

b. Protected from CO<sub>2</sub>

c. In metal containers

**d. According to the list B**

e. Under normal conditions

45. In order to determine the purity a drop of lavender essential oil was applied on a strip of filter paper and warmed up in the stream of warm air. Some time later the stain increased in diameter. What impurity substance was found in the lavender oil?

a. Ethanol

b. Phenol

**c. Fatty or mineral oil**

d. Acetone

e. Diethyl ether

46. Underground organs of medicinal plants that accumulate the most of active substances should be collected:

a. At the stem extension stage

**b. After the seeds have ripened and the overground parts died off**

c. During the green fruiting

d. At the flowering stage

e. At the budding stage

47. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

a. Cardiotonic and antiarrhythmic

b. Sedative and anticonvulsant

**c. Diuretic and choleric**

d. Expectorant and antibeptic

e. Bactericidal and astringent

48. Yellow gentian contains bitter glycosides. Raw material of this plant is recommended for production of drugs with the following effect:

a. Hepatoprotective

b. Venotonic

c. Tonic

d. Diuretic

**e. Stimulates appetite**

49. It is required to analyse some herbal raw material in form of shiny black drupes up to 6-8 mm in diameter; the bone is large, very firm, spherical, light brown, with a single seed; it has a sweet, slightly astringent taste. This herbal raw material should be qualified as a fruit of:

**a. Bird cherry**

b. Black chokeberry

c. Hawthorn

d. Buckthorn

e. Blueberry

50. Essential oil of rose is used as an anti-inflammatory and antispasmodic agent. It is localized in the following excretory organs:

a. Secretory cells

- b. Glandular hairs
- c. Essential oil glandules
- d. Essential oil conceptacles

**e. Glandular spots**

51. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

- a. Cardiotonic and antiarrhythmic drug

**b. Diuretic and choleric drug**

- c. Bactericidal and astringent drug
- d. Expectorant and antitussive drug
- e. Sedative and anticonvulsive drug

52. The main active components of hawthorn berries are flavonoids. What is their pharmacological effect?

**a. Hypotensive and sedative**

- b. Tonic and antispasmodic
- c. Antispasmodic and anti-inflammatory
- d. Diuretic and styptic
- e. Laxative and sedative

53. Fatty oil containing unsaturated fatty acids are used for atherosclerosis prevention. What herbal raw material contains such fatty oil?

- a. Buckhorn plantain (*Plantago lanceolata*) seeds
- b. Parsnip fruitages
- c. Scurvy pea (*Psoralea*) fruitages

**d. Cucurbit seeds**

- e. Chestnut (*Castanea*) seeds

54. Fatty oil containing saturated fatty acids is used for atherosclerosis prevention. Specify the medicinal plant that is used for oil production:

- a. Fennelflower seeds
- b. Black chokeberry fruits
- c. Hawthorn fruits

**d. Flax seeds**

- e. Dill seeds

55. A storehouse received a batch of althaea roots. For its verification a drop of ammonia solution was applied upon the root section; the spot of section turned yellow. This is the evidence of presence of the following substance:

- a. Gum
- b. Tannins
- c. Mucilages**
- d. Pectins
- e. Vitamin C

56. Upper airways diseases can be treated by means of herbal raw materials containing mucilages. The plant source of this compound class is:

- a. *Radix Rhodiola*
- b. *Radix Belladonnae*
- c. *Radix Inulae*
- d. *Radix Ipecacuanhae*
- e. *Radix Althaeae***

57. The main active components of senna leaves and fruits are sennosides A, B, C, D. They relate to the following class of biologically active substances:

- a. Flavonoids
- b. Phenolic acids

c. Anthracene derivatives

- d. Iridoids
- e. Thioglycosides

58. Preparations containing cardioteroids are produced out of the following herbal raw material:

- a. Folia Ficusi Caricae
- b. Folia Sennae
- c. Cortex Quercus
- d. Radix Taraxaci
- e. Herba Convallariae**

59. A laboratory received some herbal raw material for analysis. It is a composition of ovoid-pointed leaves up to 25 cm long and 20 cm wide; the leaf base is cuneate, the leaf edge is emarginate. The cutting is long and cylindric. The leaf venation is pinnatisect; the midrib and the first-order veins project significantly on the inferior surface of the leaf. The superior leaf surface is dark green, the inferior surface is light green. The plant has a weak narcotic smell. The taste cannot be determined.

The plant is poisonous! The described herbal raw material relates to the following plant:

- a. Passiflora incarnata
- b. Vinca minor
- c. -
- d. Datura stramonium**
- e. Chelidonium majus

60. Tanning agents of silverweed roots and rhizomes are used as an astringent. What species of silverweed is pharmacopoeial?

- a. Potentilla impolita
- b. Potentilla anserina
- c. Potentilla argentea
- d. Potentilla pilosa
- e. Potentilla erecta**

61. Some domestic and foreign hepatoprotective activity preparation are made of holy thistle bearing. Purity of this material is determined by the content of:

- a. Alkaloids
- b. Coumarins
- c. Flavolignan**
- d. Vitamins
- e. Terpenoids

62. A biennial or perennial plant from the Apiaceae family has a blue-grey stem branching in its lower part. Its leaves are also blue-grey, finely dissected, with the ultimate filiform segments. The flowers are yellow, in compound umbels. Its fruit is used for production of "dill water". What plant is it?

- a. Petroselium crispum
- b. Carum carvi
- c. Foeniculum vulgare**
- d. Coriandrum sativum
- e. Conium maculatum

63. On the base of licorice root different drug dosage forms are produced, notably tablets, powders, syrups, teas. The only unused form is injection solution. Licorice roots exhibit haemolytic properties typical for the following active substances:

- a. Iridoids
- b. Polysaccharides
- c. Alkaloids
- d. Essential oils
- e. Saponins**

64. Tincture of what medicinal plant can be applied as a tonic?

- a. Orthosiphon stamineus
- b. Achillea millefolium
- c. **Rhodiola rosea**
- d. Digitalis purpurea
- e. Robinia pseudacacia

65. A laboratory received some herbal raw material for analysis. The plant had flowerheads up to 4 cm in diameter, the marginal flowers were agamic, blue, funnel-shaped; the inner flowers were bisexual, purple, tubular. What plant has these features?

- a. Solidago virgaurea
- b. Scutellaria baicalensis
- c. Viola tricolor
- d. Centaurea cyanus**
- e. Polygonum persicaria

66. Restarrow (*Ononis*) root is used for production of a tincture applied for treatment of haemorrhoidal haemorrhages. Isoflavonoids can be identified in the raw material by means of:

- a. Biological standardization
- b. Foam number
- c. Cyanidin test
- d. Hemolytic index
- e. Chromatographic method**

67. Hawthorn flowers are used for production of cardiotonic drugs. During procurement of this crude drug the flowers of the following plant can appear in it:

- a. Elder
- b. Blackthorn**
- c. Bird-cherry
- d. Buckthorn
- e. Brier

68. Common juniper is applied as a diuretic, anti-inflammatory and cholagogic agent. This plant gives the following medicinal raw material:

- a. Roots
- b. Seeds
- c. Sprouts
- d. Leaves
- e. Fruits**

69. A pharmacy procured common origanum. What drying conditions should be applied for producing high quality crude drug?

- a. 70-80°C
- b. 35-40°C**
- c. 60-70°C
- d. 80-90°C
- e. 50-60°C

70. A pharmacy depot received a batch of common plantain leaves. According to the requirements of the Pharmacopoeia, this herbal raw material is of adequate quality if it contains the following active substances:

- a. Tannins
- b. Flavonoids
- c. Polysaccharides**
- d. Anthracene derivatives
- e. Essential oils

71. Preparations on the basis of dandelion roots are recommended for better digestion and as a choleretic because this herbal raw material contains:

- a. Balsams
- b. Essential oil
- c. **Bitters**
- d. Saponins
- e. Flavonoids

72. Preparations made of ginseng roots have tonic and adaptogenic properties, improve mental and physical performance. If the ginseng tincture cannot be found in a pharmacy, it can be substituted by the analogous preparations made of the following raw material:

- a. Radices Inulae
- b. Radices Valerianae
- c. **Radices Eleutherococci**
- d. Radices Ononis
- e. Radices Rhei

73. Medicinal plant Rhamnus cathartica is used as a laxative. What part of this plant is used as herbal raw material?

- a. Shoots
- b. **Fruits**
- c. Rind
- d. Leaves
- e. Roots

74. Leaves of belladonna, henbane and datura containing tropane alkaloids must be stored according to the following list requirements:

- a. Essential oil materials list
- b. List of substances equivalent to narcotics
- c. A list (poisonous drug substances)
- d. General sales list
- e. **B list (these drug substances require caution in handling, storage or use)**

75. Specify the herbal raw material with high concentration of carotenoids which is used for production of phytopreparations:

- a. Caseweed grass
- b. Currant leaflets
- c. **Sea-buckthorn fruits**
- d. Wild strawberry leaves
- e. Parsley roots

76. Select a reagent that should be applied by an analytical chemist in order to detect alkaloids in the herbal raw material:

- a. Alkaline solution
- b. Bromine water
- c. **Dragendorff reagent**
- d. Stahls reagent
- e. Trim-Hill reagent

77. Preparations of sorrel roots can have both a laxative and astringent effect. This is due to the presence of the following biologically active substances:

- a. Coumarins and phenol glycosides
- b. Iridoids and vitamins
- c. Flavonoids and essential oils
- d. Essential and fatty oils
- e. **Anthracene derivatives and tannins**

78. Calamus rhizome is likely to be confused with some other plant rhizome that can be found as an admixture in the herbal raw material. Specify the most likely admixture:

- a. Valerian rhizome

- b. Althaea roots
- c. Phlojodicarpus roots
- d. Iris rhizome**
- e. Elecampane roots

79. Tannins have astringent effect and are used for treatment of colitis, enterocolitis, diarrhea. What herbal raw material contains a lot of tannins?

- a. Fructus Frangulae
- b. Fructus Myrtilli**
- c. Fructus Ribes nigri
- d. Fructus Sambucci nigri
- e. Fructus Rhamni catharticae

80. Emodin, an anthracene derivative, has purgative effect. Large quantities of anthracene-derived groups of emodin are contained in the fruits of the following plant:

- a. Elder (Sambucus)
- b. Blueberry (Vaccinium myrtillus)
- c. Alder buckthorn (Frangula alnus)
- d. Buckthorn**
- e. Blackcurrant

81. Cardioglycosides of Adonis vernalis are used for heart failure treatment. This plant raw material should be stored:

- a. Under normal conditions
- b. According to the list A
- c. According to the list B**
- d. Protected from CO<sub>2</sub>
- e. In metal containers

82. The possible admixture in the crop of raw coltsfoot leaves (*Tussilago farfara*) is the leaf of:

- a. Common plantain
- b. Marshmallow (*Althaea officinalis*)
- c. *Primula officinalis*
- d. Cotton burdock (*Arctium tomentosum*)**
- e. Nettle

83. In order to determine the purity a drop of lavender essential oil was applied on a strip of filter paper and warmed up in the stream of warm air. Some time later the stain increased in diameter. What impurity substance was found in the lavender oil?

- a. Phenol
- b. Acetone
- c. Diethyl ether
- d. Fatty or mineral oil**
- e. Ethanol

84. A pharmacy received a batch of raw material - chamomile flowers. How should this material be stored?

- a. According to the list A requirements
- b. According to the list B requirements
- c. Separately from all other kinds of raw material**
- d. As a narcotic raw material
- e. In a light room

85. Underground organs of medicinal plants that accumulate the most of active substances should be collected:

- a. After the seeds have ripened and the overground parts died off**
- b. During the green fruiting
- c. At the stem extension stage

- d. At the budding stage
- e. At the flowering stage

86. Yellow gentian contains bitter glycosides. Raw material of this plant is recommended for production of drugs with the following effect:

- a. Venotonic
- b. Stimulates appetite**
- c. Diuretic
- d. Tonic
- e. Hepatoprotective

87. It is necessary to analyze herbal raw material in form of black glossy drupes 6-8 mm in diameter, with a large, firm, globular, light brown kernel containing one seed. The drupes have sweet and slightly astringent taste. This herbal raw material should be identified as fruits of:

- a. Blueberry
- b. Buckthorn
- c. Hawthorn
- d. Bird cherry**
- e. Black chokeberry

88. Having ascertained that the quality of raw material meets the requirements of the analytical normative documentation the quality control department should issue a document. Specify this document:

- a. Order
- b. Pharmacopoeia entry
- c. Certificate of analysis**
- d. Request
- e. Standard

89. Preparations of common valerian are used in medical practice as sedative drugs. The main feature that allows to distinguish valerian from the admixtures is:

- a. Specific odor**
- b. Specific taste
- c. Stems remains
- d. Specific color of raw materials
- e. No specific odor

90. One of the methods of quantitative analysis of active substances in the raw material is the biological standardization. It can be applied with the following group of biologically active substances:

- a. Fatty oils
- b. Alkaloids
- c. Cardiac glycosides**
- d. Tannins
- e. Mucilages

91. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

- a. Bactericidal and astringent drug
- b. Expectorant and antitussive drug
- c. Diuretic and choleric drug**
- d. Sedative and anticonvulsive drug
- e. Cardiotonic and antiarrhythmic drug

92. The main active components of hawthorn berries are flavonoids. What is their pharmacological effect?

- a. Antispasmodic and anti-inflammatory
- b. Hypotensive and sedative**
- c. Tonic and antispasmodic

- d. Laxative and sedative
- e. Diuretic and styptic

93. Fatty oil containing unsaturated fatty acids are used for atherosclerosis prevention. What herbal raw material contains such fatty oil?

- a. Parsnip fruitages
- b. Scurvy pea (*Psoralea*) fruitages
- c. Buckhorn plantain (*Plantago lanceolata*) seeds
- d. Chestnut (*Castanea*) seeds
- e. Cucurbit seeds**

94. Fatty oil containing unsaturated fatty acids is used for the prevention of atherosclerosis. Specify the herbal raw material used for oil production:

- a. Fruits of black chokeberry
- b. Hawthorn berries
- c. Seeds of fennelflower
- d. Fruits of dill
- e. Seeds of flax**

95. A storehouse received a batch of althaea roots. For its verification a drop of ammonia solution was applied upon the root section; the spot of section turned yellow. This is the evidence of presence of the following substance:

- a. Tannins
- b. Pectins
- c. Vitamin C
- d. Mucilages**
- e. Gum

96. Upper airways diseases can be treated by means of herbal raw materials containing mucilages.

The plant source of this compound class is:

- a. *Radix Ipecacuanhae*
- b. *Radix Inulae*
- c. *Radix Althaeae***
- d. *Radix Rhodiola*
- e. *Radix Belladonnae*

97. Tanning agents of silverweed roots and rhizomes are used as an astringent. What species of silverweed is pharmacopoeial?

- a. *Potentilla pilosa*
- b. *Potentilla argentea*
- c. *Potentilla erecta***
- d. *Potentilla impolita*
- e. *Potentilla anserina*

98. Admixtures can get into the herbal raw material during harvesting, drying and primary processing. Mineral admixtures include:

- a. Metal objects
- b. Droppings of birds and rodents
- c. Other organs of the same plant
- d. Sand, earth, stones**
- e. Other similar plants

99. Some domestic and foreign hepatoprotective activity preparation are made of holy thistle bearing. Purity of this material is determined by the content of:

- a. Flavolignan**
- b. Alkaloids
- c. Terpenoids
- d. Vitamins

e. Coumarins

100. Preparations made out of eleutherococcus roots and rhizomes are administered as a tonic and adaptogenic drug. If these preparations cannot be found in a pharmacy, they can be substituted by the analogous preparations made of the following raw material:

- a. Rhizomes and roots of valerian
- b. Elecampagne roots
- c. Ginseng roots
- d. Polemonium roots
- e. Acorus calamus roots

101. A biennial or perennial plant from the Apiaceae family has a blue-grey stem branching in its lower part. Its leaves are also blue-grey, finely dissected, with the ultimate filiform segments. The flowers are yellow, in compound umbels. Its fruit is used for production of "dill water". What plant is it?

- a. Coriandrum sativum
- b. Conium maculatum
- c. Carum carvi
- d. Petroselium crispum
- e. Foeniculum vulgare

102. A teenager with hyporexia has been recommended to drink medicinal herbal tea of the following composition: Herba Absinthii, Herba Millefolii. Specify the characteristic microscopic features of Artemisia absinthium, which indicate its presence in the herb mixture:

- a. Retor-shaped hairs
- b. Branched and capitate hairs
- c. Simple and capitate hairs
- d. Branched, simple and ciliated hairs
- e. T-shaped hairs along the leaf edge

103. Tincture of what medicinal plant can be applied as a tonic?

- a. Achillea millefolium
- b. Digitalis purpurea
- c. Robinia pseudacacia
- d. Rhodiola rosea
- e. Orthosiphon stamineus

104. A laboratory received some herbal raw material for analysis. The plant had flowerheads up to 4 cm in diameter, the marginal flowers were agamic, blue, funnel-shaped; the inner flowers were bisexual, purple, tubular. What plant are these features typical for?

- a. Viola tricolor
- b. Centaurea cyanus
- c. Polygonum persicaria
- d. Solidago virgaurea
- e. Scutellaria baicalensis

105. Restharrow (Ononis) root is used for production of a tincture applied for treatment of haemorrhoidal haemorrhages. Isoflavonoids can be identified in the raw material by means of:

- a. Chromatographic method
- b. Hemolytic index
- c. Foam number
- d. Biological standardization
- e. Cyanidin test

106. Common juniper is applied as a diuretic, anti-inflammatory and cholagogic agent. This plant gives the following medicinal raw material:

- a. Seeds
- b. Fruits

- c. Leaves
- d. Sprouts
- e. Roots

107. A pharmacy procured common origanum. What drying conditions should be applied for producing high quality crude drug?

- a. 80-90°C
- b. 50-60°C
- c. 70-80°C
- d. 35-40°C**
- e. 60-70°C

108. A patient with heart failure induced by a long-term coronary vessel disorder can be administered a drug produced out of the following herbal raw material:

- a. Calendula flowers
- b. Aralia roots
- c. Berberis roots
- d. Hawthorn**
- e. Ginseng roots

109. Patients with heart failure caused by persisting cardiac and coronary vessel dysfunction can be recommended preparations produced from the following herbal raw material:

- a. Ginseng roots
- b. Calendula flowers
- c. Hawthorn fruits**
- d. Aralia roots
- e. Barberry roots

110. Rutin exhibits P-vitamin activity. What medicinal plant is used as starting materials for the industrial production of rutin?

- a. Fructus Hippophaes rhamnoides
- b. Herba Bidentis tripartitiae
- c. Herba Polygoni avicularis
- d. Fructus Sophorae japonicae**
- e. Flores Helichrysi arenarii

111. Pharmaceutical warehouse received a batch of herbal raw material of cinnamon rose. Under the State Pharmacopoeia, it is required to test this raw material for the following active substances:

- a. Tannins
- b. Flavonoids
- c. Ascorbic acid**
- d. Anthracene derivatives
- e. Essential oil

112. A pharmacy depot received a batch of common plantain leaves. According to the requirements of the Pharmacopoeia, this herbal raw material is of adequate quality if it contains the following active substances:

- a. Polysaccharides**
- b. Tannins
- c. Essential oils
- d. Anthracene derivatives
- e. Flavonoids

113. Preparations on the basis of dandelion roots are recommended for better digestion and as a choleretic because this herbal raw material contains:

- a. Flavonoids
- b. Bitters**
- c. Balsams

- d. Essential oil
- e. Saponins

114. Preparations made of ginseng roots have tonic and adaptogenic properties, improve mental and physical performance. If the ginseng tincture cannot be found in a pharmacy, it can be substituted by the analogous preparations made of the following raw material:

- a. Radices Rhei
- b. Radices Eleutherococci**

- c. Radices Inulae
- d. Radices Valerianae
- e. Radices Ononis

115. Ergot (*Secale cornutum*) is used as an uterotonic agent in obstetric practice and for the treatment of cardiovascular diseases. The authenticity of the raw materials is proved by the content of:

- a. Hyoscyamine
  - b. Atropine
  - c. Ergotoxine**
- d. Reserpine
  - e. Ajmaline

116. Coltsfoot preparations are used for upper airways treatment. During procurement of this herbal raw material the following admixture may appear:

- a. Marsh mallow (*Althaea officinalis*)
  - b. Pot marjoram (*Origanum vulgare*)
  - c. Common plantain (*Plantago major*)
  - d. Spring adonis (*Adonis vernalis*)
- e. Great bur (*Arctium lappa*)**

117. If the internal surface of buckthorn rind is moistened with 5% alkaline solution, it becomes cherry-red colouring. This is the evidence of presence of the following substance:

- a. Alkaloids
  - b. Flavonoids
  - c. Tannins
- d. Anthracene derivatives**
- e. Saponins

118. Medicinal plant *Rhamnus cathartica* is used as a laxative. What part of this plant is used as herbal raw material?

- a. Rind
  - b. Leaves
  - c. Fruits**
- d. Roots
  - e. Shoots

119. One of the ways to derive essential oil is enfleurage, or maceration. Essential oil can be derived by enfleurage from the following herbal raw material:

- a. Lemon skin
  - b. Mint leaves
  - c. Camomile flowers
- d. Petals of *Damascus rose***
- e. Coriander fruits

120. Select a reagent that should be applied by an analytical chemist in order to detect alkaloids in the herbal raw material:

- a. Stahls reagent
- b. Trim-Hill reagent**
- c. Bromine water
- d. Alkaline solution

e. Dragendorff reagent

121. Tannins can be used as an antidote for alkaloid poisoning. What herbal remedy should be applied in case of such intoxication:

- a. Elecampane root
- b. Cinquefoil root**
- c. Althaea root
- d. Calamus rhizome
- e. Rhizome and roots of madder

122. Tannins have astringent effect and are used for treatment of colitis, enterocolitis, diarrhea. What herbal raw material contains a lot of tannins?

- a. Fructus Sambuci nigri
- b. Fructus Rhamni catharticae
- c. Fructus Frangulae
- d. Fructus Myrtilli**
- e. Fructus Ribes nigri

123. Cardioglycosides of Adonis vernalis are used for heart failure treatment. This plant raw material should be stored:

- a. In metal containers
- b. According to the list B**
- c. Under normal conditions
- d. According to the list A
- e. Protected from CO<sub>2</sub>

124. The possible admixture in the crop of raw coltsfoot leaves (*Tussilago farfara*) is the leaf of:

- a. Primula officinalis
- b. Cotton burdock (*Arctium tomentosum*)**
- c. Nettle
- d. Common plantain
- e. Marshmallow (*Althaea officinalis*)

125. A pharmacy received a batch of raw material - chamomile flowers. How should this material be stored?

- a. In a light room
- b. Separately from all other kinds of raw material**
- c. According to the list A requirements
- d. According to the list B requirements
- e. As a narcotic raw material

126. Underground organs of medicinal plants that accumulate the most of active substances should be collected:

- a. At the budding stage
- b. At the stem extension stage
- c. At the flowering stage
- d. During the green fruiting
- e. After the seeds have ripened and the overground parts died off**

127. Styles of maize with stigmata containing fatty acids, vitamins, essential oils, saponins and other substances are used as:

- a. Expectorant and antiebetic
- b. Bactericidal and astringent
- c. Sedative and anticonvulsant
- d. Cardiotonic and antiarrhythmic
- e. Diuretic and choleric**

128. Yellow gentian contains bitter glycosides. Raw material of this plant is recommended for production of drugs with the following effect:

a. Stimulates appetite

b. Diuretic

c. Venotonic

d. Hepatoprotective

e. Tonic

129. It is necessary to analyze herbal raw material in form of black glossy drupes 6-8 mm in diameter, with a large, firm, globular, light brown kernel containing one seed. The drupes have sweet and slightly astringent taste. This herbal raw material should be identified as fruits of:

a. Black chokeberry

b. Blueberry

**c. Bird cherry**

d. Buckthorn

e. Hawthorn

130. Woolly foxglove is used as raw material for the production of the following drug:

a. Digitoxin

b. Corglycon

**c. Lantosidum**

d. Adonizid

e. Erysimosidum

131. Having ascertained that the quality of raw material meets the requirements of the analytical normative documentation the quality control department should issue a document. Specify this document:

a. Standard

**b. Certificate of analysis**

c. Order

d. Pharmacopoeia entry

e. Request

132. Preparations of common valerian are used in medical practice as sedative drugs. The main feature that allows to distinguish valerian from the admixtures is:

a. Stems remains

**b. Specific odor**

c. Specific taste

d. No specific odor

e. Specific color of raw materials

133. Essential oil of rose is used as an anti-inflammatory and antispasmodic agent. It is localized in the following excretory organs:

a. Glandular hairs

**b. Glandular spots**

c. Essential oil conceptacles

d. Essential oil glandules

e. Secretory cells

134. The main active components of hawthorn berries are flavonoids. What is their pharmacological effect?

a. Tonic and antispasmodic

b. Laxative and sedative

**c. Hypotensive and sedative**

d. Diuretic and styptic

e. Antispasmodic and anti-inflammatory

135. Fatty oil containing unsaturated fatty acids is used for the prevention of atherosclerosis. Specify the herbal raw material used for oil production:

**a. Seeds of flax**

- b. Fruits of dill
- c. Hawthorn berries
- d. Fruits of black chokeberry
- e. Seeds of fennelflower

136. A storehouse received a batch of althaea roots. For its verification a drop of ammonia solution was applied upon the root section; the spot of section turned yellow. This is the evidence of presence of the following substance:

- a. Pectins
- b. Vitamin C
- c. Tannins
- d. Gum

**e. Mucilages**

137. What herbal drug produced from alkaloid-containing raw materials can be recommended for neurasthenia, insomnia, menopausal disorders?

- a. Vinblastine
- b. Novopassit**
- c. Glaucine hydrochloride
- d. Ergotamine
- e. Securinine nitrate

138. A laboratory received some herbal raw material for analysis. It is a composition of ovoid-pointed leaves up to 25 cm long and 20 cm wide; the leaf base is cuneate, the leaf edge is emarginate. The cutting is long and cylindric. The leaf venation is pinnatisect; the midrib and the first-order veins project significantly on the inferior surface of the leaf. The superior leaf surface is dark green, the inferior surface is light green. The plant has a weak narcotic smell. The taste cannot be determined. The plant is poisonous! The described herbal raw material relates to the following plant:

- a. Passiflora incarnata
- b. Vinca minor
- c. -

**d. Datura stramonium**

- e. Chelidonium majus

139. Tanning agents of silverweed roots and rhizomes are used as an astringent. What species of silverweed is pharmacopoeial?

- a. Potentilla argentea
- b. Potentilla impolita
- c. Potentilla anserina

**d. Potentilla erecta**

- e. Potentilla pilosa

140. Admixtures can get into the herbal raw material during harvesting, drying and primary processing. Mineral admixtures include:

- a. Other organs of the same plant
- b. Sand, earth, stones**
- c. Other similar plants
- d. Metal objects
- e. Droppings of birds and rodents

141. Preparations made out of eleutherococcus roots and rhizomes are administered as a tonic and adaptogenic drug. If these preparations cannot be found in a pharmacy, they can be substituted by the analogous preparations made of the following raw material:

- a. Acorus calamus roots
- b. Ginseng roots**
- c. Rhizomes and roots of valerian
- d. Elecampane roots
- e. Polemonium roots

142. On the base of licorice root different drug dosage forms are produced, notably tablets, powders, syrups, teas. The only unused form is injection solution. Licorice roots exhibit haemolytic properties typical for the following active substances:

- a. Polysaccharides
- b. Saponins**
- c. Essential oils
- d. Alkaloids
- e. Iridoids

143. A teenager with hyporexia has been recommended to drink medicinal herbal tea of the following composition: Herba Absinthii, Herba Millefolii. Specify the characteristic microscopic features of Artemisia absinthium, which indicate its presence in the herb mixture:

- a. Branched, simple and ciliated hairs
- b. Simple and capitate hairs
- c. T-shaped hairs along the leaf edge**
- d. Retor-shaped hairs
- e. Branched and capitate hairs

144. Representatives of the family Solanaceae are widely used in medical practice as alkaloid-containing plants. Which representative is the source for production of semi-synthetic steroid hormones?

- a. Hyoscyamus niger
- b. Solanum tuberosum
- c. Atropa belladonna
- d. Datura Stramonium
- e. Solanum laciniatum**

145. After harvesting the calamus rhizomes the received material should be dried. What temperature range is required for obtaining good-quality raw material?

- a. 60-70°C
- b. 40-60°C
- c. 35-40°C**
- d. 70-80°C
- e. 80-90°C

146. Field horsetail grass is recommend as a diuretic. What herbal material can be used as a substitute?

- a. Herba Leonuri
- b. Herba Convallariae
- c. Herba Adonis
- d. Herba Aervae lanatae**
- e. Herba Menthae piperitae

147. Under the SPhU (appendix 2), leaves of ginkgo are standardized by the content of:

- a. Flavonoids**
- b. Alkaloids
- c. Chromones
- d. Coumarins
- e. Saponins

148. Alkaloid glaucine has an antitussive effect that is stronger and longer if compared to that of codeine, and exhibits no narcotic side effects. What medicinal plant contains glaucine?

- a. Yellow hornpoppy**
- b. Thermopsis lanceolata
- c. Henbane bell (Scopolia carniolica)
- d. Datura
- e. Celandine

149. Drug plant *Dioscorea nipponica* is the starting materials for the production of Polysponinum-drug which is used in the complex treatment of atherosclerosis. Specify the active compounds of dioscorea:

- a. Cardiac glycosides
- b. Triterpene saponins
- c. Alkaloids
- d. Essential oil
- e. Steroid saponins**

150. Restharrow (*Ononis*) root is used for production of a tincture applied for treatment of haemorrhoidal haemorrhages. Isoflavonoids can be identified in the raw material by means of:

- a. Hemolytic index
- b. Cyanidin test
- c. Chromatographic method**
- d. Biological standardization
- e. Foam number

151. A pharmacy procured common origanum. What drying conditions should be applied for producing high quality crude drug?

- a. 80-90 C
- b. 50-60 C
- c. 70-80 C
- d. 35-40 C**
- e. 60-70 C