

1. Marketing department of the Public Company "Lugansk Chemical Pharmaceutical Factory" determined that the demand for a herbal cough remedy, manufactured for children as a syrup, fluctuates significantly within a year. Such demand is considered to be:

- a. Irrational
- b. Unrealized
- c. Inadequate
- d. Incorrect
- e. Irregular**

2. To restore the demand for a traditional medicine, the manufacturer has improved its characteristics, increased advertising costs, reduced prices, and involved new intermediaries. What type of marketing is used in this case?

- a. -
- b. Remarketing**
- c. Countermarketing
- d. Conversion marketing
- e. Synchromarketing

3. A pharmaceutical company uses various methods of advertising. What method of advertising foresees its distribution to everyone, not just the target audience?

- a. Postal cards and pamphlets
- b. Professional-targeted advertising
- c. -
- d. Out-of-home advertising**
- e. Advertising souvenirs

4. Capsaicin is the main active substance of *Capsicum annuum*. It belongs to the following class of bioactive substances:

- a. Alkaloids**
- b. Iridoids
- c. Anthracene derivatives
- d. Flavonoids
- e. Phenolic compounds

5. A pharmaceutical company produces medicinal syrups. What substances ensure the microbial stability of this dosage form?

- a. Pectin substances
- b. Thickeners
- c. Emulsifiers
- d. Solubilizers
- e. Preservatives**

6. A 74-year-old man came to the pharmacy. He had been prescribed ampicillin for antibiotic treatment of dysenteric gastroenterocolitis. What group of drugs should be recommended for dysbiosis prevention in this case?

- a. Antacids
- b. Probiotics**
- c. Sorbents
- d. Immunosuppressants
- e. Enzymatic agents

7. A pharmaceutical company that specializes in the manufacture of herbal medicines is expanding its scope of work and establishes the production of cosmetics. What development strategy did the company choose?

- a. Modernization
- b. Stability
- c. -
- d. Diversification**

e. Survival

8. The extemporaneous compounding department of a pharmacy prepares eye drops. Which one of the listed substances is a preservative?

a. Methyl cellulose

b. Acetate buffer

c. Benzalkonium chloride

d. Polyvinyl alcohol

e. Sodium chloride

9. Solutions of protected forms of colloids are used in medical practice. What substance is a protected colloid?

a. Potassium iodide

b. Basic bismuth nitrate

c. Camphor

d. Protargol

e. Sodium chloride

10. Purpurea glycoside A and purpurea glycoside B are the main active substances of Digitalis purpurea. They belong to the following class of bioactive substances:

a. Phenolic compounds

b. Flavonoids

c. Anthracene derivatives

d. Alkaloids

e. Cardiac glycosides

11. A pharmaceutical factory uses maceration technique to produce tinctures. How long must herbal raw materials be steeped according to this technique?

a. 2 days

b. 7 days

c. 5 days

d. 12 hours

e. 24 hours

12. To replenish its fixed assets, the pharmacy made a decision to arrange a credit with the trading bank. What document must be concluded in writing between the creditor and the debtor in this case?

a. Full material liability contract

b. License

c. Balance sheet

d. Auditor's conclusion

e. Credit contract

13. What device is used to disperse medicinal substances and homogenize ointments?

a. Disintegrator

b. Dismembrator

c. Three-roll ointment mill

d. Double-slide tablet press machine

e. Excelsior

14. A pharmacy owner starts a business in the retail sale of medicines. What document allows the pharmacy owner to trade for cash in his pharmacy?

a. State registration certificate

b. Trade patent

c. License for production of medicines

d. Quality certificate

e. -

15. Eradication therapy must be prescribed for a patient with peptic ulcer disease of the duodenum. What antisecretory agent must be included into the eradication therapy scheme?

- a. Phosphalugel (Aluminum phosphate)
- b. Ranitidine
- c. Omeprazole**
- d. Almagel
- e. Famotidine

16. The "Dr Ram" pharmaceutical company organizes scientific conferences and workshops for doctors and pharmaceutical workers. What element of marketing communications is used by this pharmaceutical company?

- a. Direct marketing
- b. Personal selling
- c. Public relations**
- d. Merchandising
- e. Sales stimulation

17. Who determines the amount of cash that may remain in the cash register at the end of a workday?

- a. A statistics authority
- b. The Ministry of Finance
- c. A revenue and duties authority
- d. The National Bank of Ukraine
- e. The company itself**

18. What pharmacological group of drugs **CANNOT** be combined with expectorants?

- a. Decongestants
- b. Antibacterial drugs
- c. Polyvitamins
- d. Mucolytic agents
- e. Antitussive drugs**

19. A woman with diabetes mellitus has developed hypoglycemia after insulin overdose. What measures should be taken at the first signs of hypoglycemia?

- a. Make an intramuscular injection of caffeine
- b. Give nitroglycerine sublingually
- c. Make an insulin injection
- d. Introduce 0.1% adrenaline solution subcutaneously
- e. Give the patient a sugar lump to eat and a cup of warm sweetened tea**

20. The "Aromeline" phytodrug exhibits P-vitamin activity. What herbal raw material is used in production of this drug?

- a. Fructus Crataegi
- b. Fructus Sambuci nigrae
- c. Fructus Aroniae melanocarpae**
- d. Fructus Sorbi
- e. Fructus Viburni

21. To identify acetylsalicylic acid, the substance is subjected to alkaline hydrolysis. After acidification of the reaction mixture, acetic acid is formed, which can be detected using the reaction with ethanol in the presence of concentrated sulfuric acid. What reaction product causes the characteristic odor in this case?

- a. Ammonia
- b. Pyridine
- c. Benzaldehyde
- d. Sulfur dioxide
- e. Ethyl acetate**

22. A pharmacy has received a prescription, written in an incorrect format. In this case, the dispensing chemist, tasked with the incoming control of the prescriptions, must do the following:

- a. Sell this medicine to the patient

b. Give the patient a copy of the prescription

**c. Affix the <<Invalid prescription>> stamp to the prescription and return it to the patient**

d. Register the prescription in the log book and sell this medicine to the patient

e. Notify the head manager of the pharmacy

23. How long must a pharmacy keep its logbooks with the records about the balance of narcotic drugs, psychotropic substances, and precursors?

a. 3 years

b. 1 year after the current one

c. 2 years after the current one

d. 7 years after the current one

**e. 5 years**

24. In what capacity is benzyl alcohol used as a component of solutions for parenteral administration?

a. Antioxidant

b. Isotonicity regulator

c. Buffer solution

d. pH regulator

**e. Antimicrobial preservative**

25. When examining a substance with an ester group, you can conduct a reaction that produces:

a. Indophenol

**b. Iron(III) hydroxamate**

c. Azo dye

d. Diazonium salt

e. Berlin blue

26. At the exhibition, calendars, notebooks, and business gifts with the logo of a pharmaceutical company were handed out to the exhibition visitors for free. What is this type of advertising called?

**a. Souvenir advertising**

b. Point-of-sale advertising

c. Out-of-home advertising

d. Print advertising

e. Film advertising

27. The ampoule workshop of a factory produces a 5% oil-based solution of tocopherol acetate for injections. What filling technique should be used to fill the ampoules with this solution?

a. Vapor condensation

b. Syringe and vacuum

**c. Syringe**

d. Vacuum

e. Syringe and vapor condensation

28. Quality of dried extracts is assessed according to several criteria. Specify the highest acceptable amount of moisture in dried extracts according to the State Pharmacopoeia of Ukraine:

**a. 5%**

b. 95%

c. 25%

d. 20%

e. 75%

29. In his management policy, the head manager of the <<Health Formula>> pharmacy actively uses planning, material incentives and sanctions, pricing, and distribution of profits and capital investments. These means and approaches belong to the following group of management methods:

a. Legal management methods

b. Indirect control methods

c. Organizational management methods

**d. Economic management methods**

e. Psychosocial management methods

30. What pharmacy department carries out the individual production of extemporaneous medicines, their quality control, and their dispensing to consumers?

- a. Over-the-counter sales
- b. Stock of goods
- c. Prescription and production**
- d. Ready-made dosage forms
- e. Medical cosmetics

31. Concentrated solutions are used to speed up the preparation of mixtures. What volume of a 5% sodium bicarbonate solution (1:20) must be taken to prepare a mixture that contains 6.0 g of the medicinal substance?

- a. 60 mL
- b. 90 mL
- c. 7.5 mL
- d. 120 mL**
- e. 30 mL

32. A pharmacy has decided to obtain a license to make extemporaneous preparations. For this purpose it purchased a refrigerator, a cabinet dryer, and other industrial equipment. The purchased equipment belongs to the following type of assets:

- a. Fixed assets**
- b. Non-negotiable tangible assets
- c. Not accounted as assets
- d. Package
- e. Goods

33. A pharmaceutical company produces tablets. Tableting by means of direct compression requires:

- a. Application of hydraulic press
- b. Prior granulation
- c. Formation of masses
- d. Prior homogenization
- e. No prior granulation**

34. If a pharmacy plans to temporarily close for repairs or re-equipment, the State Service of Ukraine on Medicines and Drugs Control must be notified in advance no later than:

- a. 1 month before the closure
- b. 10 working days before the closure**
- c. 3 months before the closure
- d. Notification is optional
- e. 20 working days before the closure

35. To check the authenticity of *Helichrysum arenarium* flowers, magnesium powder and concentrated HCl were added to the extract obtained from the herbal raw material. What class of compounds is indicated in this case, if this reaction produces a red coloring?

- a. Polysaccharides
- b. Tannins
- c. Flavonoids**
- d. Vitamins
- e. Alkaloids

36. The chemical name of 2-benzyl-1H-benzimidazole hydrochloride corresponds with the following medicinal substance:

- a. Dibazol (Bendazolum)**
- b. Vicasol (Menadione)
- c. Indometacin
- d. Phenazepam
- e. Omeprazole

37. Based on the results of marketing research, the CEO of a pharmaceutical company and a team of

marketologists have decided to take measures toward improvement of the competitive ability of the company's medical products. This kind of decision can be characterized as:

- a. Autocratic
- b. Personal
- c. Intuitive
- d. Collegial**
- e. -

38. During stock-taking at a pharmacy, a surplus of material goods was discovered. What should the inventory committee do with the discovered surplus?

- a. Elimination
- b. Confiscation
- c. Recording as received**
- d. Conducting an official investigation
- e. Writing off

39. To prepare a suspension a medicinal substance should be triturated with a small amount of liquid. Specify the optimal amount of liquid for trituration of 10 g of zinc oxide according to the Deriagin's rule:

- a. 0,5 ml
- b. 5 ml**
- c. 10 ml
- d. 2 ml
- e. 1 ml

40. A dispensing chemist has received his salary with a bonus for working at night. This bonus is paid for the following working hours:

- a. From 23.00 to 7.00
- b. From 22.00 to 6.00**
- c. From 24.00 to 8.00
- d. From 20.00 to 9.00
- e. From 21.00 to 9.00

41. Senna leaves decoction is being prepared in a pharmacy. The following is characteristic of the process of making an aqueous infusion of senna leaves:

- a. Infusion is made in a slightly alkaline medium
- b. Decoction is made and filtered after complete cooling**
- c. Infusion is made and acidated with hydrochloric acid
- d. Infusion is made by means of cold maceration
- e. Decoction is made and filtered immediately without cooling

42. Birch buds are used as a diuretic. Quality of the herbal raw material is determined by its content of:

- a. Lipids
- b. Iridoids
- c. Saponins
- d. Vitamins
- e. Essential oil**

43. A woman came to a doctor with complaints of heartburn. She has been taking diclofenac sodium for a long time due to diagnosed rheumatoid arthritis. What medicine can the doctor prescribe for the prevention of gastropathy?

- a. Papaverine hydrochloride
- b. Acetylsalicylic acid
- c. Metoclopramide
- d. Omeprazole**
- e. Clarithromycin

44. Adonis-derived drugs are popular cardiotoxic agents. The stock of adonis herbal raw material is

assessed by the method of:

- a. Model specimen
- b. Projective cover
- c. Geodesic
- d. By eye

**e. Permanent quadrates**

45. To identify pilocarpine hydrochloride it is necessary to use reaction with sodium nitroprusside in an alkaline medium (Legal's test). Resulting cherry-red coloring confirms presence of the following in the pilocarpine structure:

- a. Methyl group
- b. Chloride ions

**c. Lactonic ring**

- d. Methylene group
- e. Imidazole ring

46. Tosylchloramide sodium (chloramine) has a disinfecting effect due to the release of active chlorine in an acidic medium. What method is used to quantify it?

- a. Permanganatometry
- b. Complexonometry

**c. Iodometry**

- d. Nitritometry
- e. Iodochlorometry

47. A patient diagnosed with acute rhinitis was using xylometazoline drops. After 7 days of treatment, the patient notes that the effect of the medicine decreased and was not restored after an increase in the dosage. What medical term characterizes a sudden decrease in the sensitivity to a medicine?

**a. Tachyphylaxis**

- b. Antagonism
- c. Tolerance
- d. Synergism
- e. Withdrawal syndrome

48. Nitroxoline with sodium hydroxide solution produces:

a. Violet coloration

**b. Orange-red coloration**

- c. Yellow precipitate
- d. Green-black coloration
- e. White precipitate

49. When is it necessary to renew the agreement on collective (team) material responsibility?

a. Whenever an employee leaves the team

**b. When 50% of employees from the original team leave the team**

- c. Whenever a new employee joins the team
- d. When 30% of employees from the original team leave the team
- e. When 25% of employees from the original team leave the team

50. A potassium permanganate solution needs to be prepared for a patient. What solvent should be used in this case?

- a. Ethyl alcohol
- b. Demineralized water
- c. Water for injections

**d. Freshly prepared purified water**

e. Mint water

51. Name the main indicator that differentiates water for injection from purified water:

a. Absence of mechanical inclusions

**b. Apyrogenicity**

c. The way in which it was obtained

- d. Absence of heavy metals
- e. pH value

52. Mandatory payroll deductions are withheld from the salary of pharmacy workers. Specify the tax rate on income of natural persons:

- a. 18%**
- b. 0%
- c. 20%
- d. 15%
- e. 5%

53. Phenylsalicylate can be identified by the smell of phenol that is produced when the following is added into the preparation:

- a.  $\text{AgNO}_3$
- b.  $\text{NaCl}$
- c.  $\text{CuSO}_4$
- d.  $\text{CoCl}_2$
- e.  $\text{H}_2\text{SO}_4$**

54. Powders made with a certain medicinal substance need to be prepared at a separate workplace, using separate scales and mortar. Name this substance:

- a. Xeroform (bismuth tribromphenolate and bismuth oxide complex)**
- b. Zinc oxide
- c. Glucose
- d. Ascorbic acid
- e. Magnesium oxide

55. Menthol has an antispasmodic and analgesic effect. What herbal raw material is a source of menthol?

- a. *Folia Absinthii*
- b. *Folia Menthae piperitae***
- c. *Folia Betulae*
- d. *Folia Salviae*
- e. *Folia Eucalypti*

56. The presence of a primary aromatic amino group in sulfanilamide structure can be confirmed with a reaction that produces:

- a. Diazonium salts
- b. Murexide
- c. Iodoform
- d. Azo dye**
- e. Fluorescein

57. What topical antiviral agent should be recommended to the patient with herpetic lesions on the lips?

- a. Arbidol (Umifenovir)
- b. Aflubin
- c. Amizon (Enisamium iodide)
- d. Acyclovir**
- e. Anaferon

58. In the process of making an aqueous solution of protargol the pharmacist has used the following technology:

- a. Dissolved during comminution
- b. Dissolved in cold water
- c. Added the powder onto the water surface and waited until complete dissolution**
- d. Dissolved in warm water
- e. Dissolved in purified water in a vial for dispensing



59. Drugs derived from Rauvolfia serpentina roots are used in hypertension treatment. Authenticity of Rauvolfia serpentina herbal raw material can be confirmed by its content of:

- a. Adonitoxin
- b. Reserpine**
- c. Vinblastine
- d. Atropine
- e. Hyoscyamine

60. In production of extraction drugs with maximum purity level, the extracts are purified using the method of liquid-liquid extraction, which is the process of:

- a. Heating the extract
- b. Electrolyte action
- c. Extraction from one liquid using another**
- d. Ultrasound exposure
- e. Dialysis

61. A 62-year-old woman has been diagnosed with acute pyelonephritis. She was prescribed gentamicin. Additionally, she takes furosemide. What are the possible complications of such treatment?

- a. High risk of seizures
- b. Increased ototoxicity of aminoglycosides**
- c. Increased hepatotoxic action of aminoglycosides
- d. Increased hematotoxicity of gentamicin
- e. High risk of allergic reactions

62. During a practical session in pharmaceutical chemistry, a pharmaceutical student performs quantitative determination of caffeine substance. What method according to the State Pharmacopoeia of Ukraine should be used for this purpose?

- a. Permanganatometry
- b. Complexometric titration
- c. Acid-base titration in nonaqueous medium**
- d. Cerimetry
- e. Bromometry

63. What amount of the standard pharmacopoeial formaldehyde solution must be taken to prepare 100 mL of a 20% formalin solution?

- a. 54 mL
- b. 20 mL**
- c. 5 mL
- d. 10 mL
- e. 30 mL

64. A patient from the oncology department came to a pharmacy with a prescription for a drug that is needed for the treatment of his main disease. How will the pharmacist provide this medicine?

- a. 100% free**
- b. With a 25% discount
- c. For the full cost
- d. With a 10% discount
- e. For 50% of the cost

65. A patient with arterial hypertension was prescribed enalapril, but after two weeks of treatment, taking this drug at the dose of 10 mg twice a day, the patient developed a dry non-productive cough. What is the likely cause of this side effect?

- a. Inhibition of histamine synthesis
- b. Exacerbation of chronic bronchitis
- c. Gastroesophageal reflux
- d. Increased tone of the cough center
- e. Accumulation of residual bradykinin in the blood**

66. The herbal raw material of a foxglove is a source, from which cardiogenic agents are obtained. What organs of the *Digitalis purpurea* are harvested as a herbal raw material?

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

67. Collective labour agreement is concluded by a trade union committee with the business owner on behalf of the workforce. Any collective agreement is worked out in written form. Which article of the Labour Code regulates the duration of the collective agreement?

- a. 17**
- b. 38
- c. 36
- d. 40
- e. 41

68. A pharmacy dispenses medical products, the cost of which must be reimbursed based on electronic prescriptions. What authority reimburses the pharmacy for the cost of dispensed drugs?

- a. State Service of Ukraine on Medicines and Drugs Control
- b. National Health Service of Ukraine**
- c. State Fiscal Service of Ukraine
- d. State Expert Center of the Ministry of Health of Ukraine
- e. Ministry of Labor and Social Policy of Ukraine

69. The head of a pharmacy uses a flexible system of pharmacy management methods. Select from the list below a measure that corresponds with organizational influence methods:

- a. -
- b. Meeting the cultural and social needs of employees
- c. Clear distribution of tasks between the employees**
- d. Material reward (bonuses, increments, pay rise)
- e. Promotion

70. The calculation of isotonic concentration using the cryoscopic method is based on the following law:

- a. Boyle-Mariotte law
- b. Clapeyron-Mendeleev equation
- c. Dalton's law
- d. -
- e. Raoult's law**

71. A 43-year-old woman has come to a pharmacy with complaints of sharp headache in the occipital area, palpitations, "visual snow" in her eyes, nausea; her BP is 180/110 mm Hg. These symptoms correspond with:

- a. Exertional angina pectoris attack
- b. Hypertensive crisis**
- c. Acute conjunctivitis
- d. Migraine attack
- e. Cervical osteochondrosis

72. What medicinal plant has anti-inflammatory and expectorant properties due to its content of triterpene saponins?

- a. *Orthosiphon stamineus*
- b. *Astragalus dasyanthus*
- c. *Panax ginseng*
- d. *Aralia mandshurica*
- e. *Glycyrrhiza glabra***

73. A pharmacy has received from its supplier a shipment of drugs that are included into the National

Essential Drugs List. What is the pricing policy regarding these drugs?

- a. Indicative price
- b. Controlled price**
- c. Free-of-control price
- d. Contract price
- e. Fixed price

74. What pathological condition can develop during a long-term treatment with prednisolone?

- a. Gastrointestinal bleeding**
- b. Salivation
- c. Myocarditis
- d. Pneumonia
- e. Pyelonephritis

75. A dispensing chemist was hired to work a night shift at a pharmacy. What time is considered to be a night time according to the Ukrainian legislation currently in force?

- a. From 22:00 to 7:00
- b. From 22:00 to 6:00**
- c. From 00:00 to 8:00
- d. From 21:00 to 6:00
- e. From 22:00 to 10:00

76. Specify the indicator that measures the total contribution of various solutes to the osmotic pressure of the solution:

- a. Isotonicity
- b. Isohydricity
- c. Isoviscosity
- d. Apyrogenicity
- e. Osmolality**

77. What reagent can confirm that alanine is an alpha-amino acid?

- a. Sulfosalicylic acid solution
- b. Saturated sodium bicarbonate solution
- c. Barium hydroxide solution
- d. Ninhydrin solution**
- e. Sulfuric acid solution

78. What antibacterial drug is most effective against chronic gastritis associated with *Helicobacter pylori* infection?

- a. Clarithromycin**
- b. Co-trimoxazole
- c. Levomycetin (Chloramphenicol)
- d. Ceftriaxone
- e. Lincomycin

79. The method of stirring-up (dispersion) is used to make suspensions with a certain substance. Name this substance:

- a. Basic bismuth nitrate**
- b. Camphor
- c. Streptocide (Sulfanilamide)
- d. Sulfur
- e. Ethazole

80. What should be used by a dispensing chemist-analyst for identification of bismuth-containing medicinal substances?

- a. Thiourea solution**
- b. Iron(III) sulfate solution
- c. Cobalt nitrate solution
- d. Potassium permanganate solution

e. Beta-naphthol solution

81. What medicine would be most advisable for symptomatic treatment of constipation in pregnant women?

- a. Bisacodyl
- b. Senadexine (sennosides A and B)
- c. Macrogol
- d. Ononis herbal medicine

**e. Lactulose**

82. One of the most important market characteristics is a goods economic trend. What economic trend can be characterized by relative stability of high prices and the highest activity of manufacturers and customers?

- a. Sluggish
- b. Low
- c. Subsiding
- d. High (stable)**
- e. Downward

83. A pharmaceutical company plans to start selling its products abroad by transferring them into the ownership of a foreign reseller. This company will enter the foreign market by means of:

- a. Joint venture
- b. Franchise
- c. Export**
- d. Direct investments
- e. Licensing

84. Hemodes and Neohemodes preparations are used as blood plasma substitutes. What is their active substance?

- a. Piracetam
- b. Midantan (Amantadine)
- c. Thiopental sodium
- d. Polyvinylpyrrolidone**
- e. Menthol

85. A patient with iron-deficiency anemia was prescribed iron sulfate. What side effect is characteristic of iron preparations?

- a. Elevated blood pressure
- b. Constipation**
- c. Dysbiosis
- d. Osteoporosis
- e. Bradycardia

86. A patient complaining of stuffy nose, fatigability, and headache came to a dispensing chemist. What medicine should be recommended to treat stuffy nose in this case?

- a. Paracetamol
- b. Xylometazoline**
- c. Lactulose
- d. Acyclovir
- e. Dexamethasone

87. Phospholipids are used in medicine in production of hepatoprotectors. What oil is a source of phospholipids?

- a. Oleum Ricini
- b. Oleum Amygdalarum
- c. Oleum Lini
- d. Oleum Cucurbitae
- e. Oleum Sojae**

88. An analytical chemist performs collargol identification by means of ashing. Obtained residue is then dissolved in hydrochloric acid. Specify the analytical effect that is observed in this case:

- a. Blue precipitate
- b. Yellow precipitate
- c. Black precipitate
- d. White precipitate**
- e. Light green precipitate

89. The procedure for circulation of narcotic drugs, psychotropic substances, and precursors in pharmacies is regulated by law. Which one of the medicines listed below is a narcotic drug?

- a. Atropine sulfate
- b. Tramadol**
- c. Zopiclone
- d. Prednisolone
- e. Ethyl alcohol

90. The chemical structure of Strophanthus cardiac glycosides can be characterized by the presence of the following in position 10 of the steroid ring:

- a. Ethoxy group
- b. Methoxy group
- c. Phenolic hydroxyl
- d. Aldehyde group**
- e. Alcoholic hydroxyl

91. What side effect is observed in cases of long-term use of digoxin?

- a. Hypokalemia
- b. Constipation
- c. Hypotension
- d. Bradycardia**
- e. Hypertension

92. A 52-year-old patient, who takes heparin, developed signs of the drug overdose. What antidote should be used in this case?

- a. Potassium chloride
- b. Naloxone
- c. Unithiol
- d. Protamine sulfate**
- e. Acetylcysteine

93. A 3-year-old child is intolerant to paracetamol. What antipyretic drug can be taken instead?

- a. Acetylsalicylic acid
- b. Ibuprofen**
- c. Nimesulide
- d. Diclofenac sodium
- e. Naproxen

94. To identify a medicinal substance, an analytical chemist performed a reaction of azo dye formation. This reaction is characteristic of the following medicine:

- a. Phenyl salicylate
- b. Benzocaine**
- c. Acetylsalicylic acid
- d. Chlorpropamide
- e. Resorcinol

95. Propellants are used in aerosols production. Specify the function of propellants:

- a. Action prolongation
- b. Stabilization
- c. Dispersion
- d. Create pressure in the package**

e. Emulsification

96. A thymol-containing herbal raw material is stored in the warehouse of a pharmaceutical company. What are its proper storage conditions?

- a. Under normal conditions
- b. Under CO<sub>2</sub>-free conditions
- c. Separate from the others**
- d. In metal containers
- e. Under the temperature of -5°C

97. What medicine is used for anesthesia and cannot be prescribed to outpatients, according to Decree №360?

- a. Suprastin (Chloropyramine)
- b. Sodium thiopental**
- c. Anaesthesin (Benzocaine)
- d. Midecamycin
- e. Metoprolol

98. A 48-year-old woman, who undergoes a prolonged treatment for chronic hepatitis, was diagnosed with pneumonia. What antibacterial agent should she be prescribed in this case?

- a. Streptomycin
- b. Biseptol (Co-trimoxazole)
- c. Amoxicillin**
- d. Tetracycline
- e. Rifampicin

99. During an asphyxiating attack the patient with bronchial asthma was given intravenously a drug that caused nausea, headache, excitation, and palpitations as side effects. What drug can cause such reaction?

- a. Euphylline (Aminophylline)**
- b. Suprastin (Chloropyramine)
- c. Ambroxol
- d. Prednisolone
- e. Papaverine hydrochloride

100. Specify the control methods aimed at detecting mechanical impurities in parenteral solutions:

- a. NMR and UV-visible spectroscopy
- b. Gravitational
- c. Limulus test
- d. Visual optical**
- e. Amperometric

101. Organizationally, a pharmacy is divided into separate departments: Prescription and Extemporaneous Medicines, Stock Department, and Over-the-Counter Medicines. What organizational management structure can be characterized by such a division?

- a. Line and staff
- b. Divisional
- c. Functional**
- d. Matrix
- e. Linear

102. To identify an alkaloid drug, an analytical chemist used the reaction that produces purple-red murexide. What substance can be identified using this reaction?

- a. Morphine
- b. Atropine
- c. Codeine
- d. Papaverine
- e. Caffeine**

103. "Avicenna", a newly founded pharmaceutical company, operates round-the-clock. What employees cannot be assigned to night shifts?

- a. Employees under 30
- b. -
- c. Employees under 25
- d. Employees of retirement age
- e. Employees under 18 (underage)**

104. Thymol and carvacrol are the main active substances of *Thymus vulgaris*. They belong to the following class of bioactive substances:

- a. Alkaloids
- b. Iridoids
- c. Flavonoids
- d. Essential oils**
- e. Anthracene derivatives

105. Each medical product that a pharmacy receives should have its quality certificate. How long should these certificates be kept by a pharmacy?

- a. 5 years
- b. 1 year
- c. 2 years
- d. 3 years**
- e. 6 years

106. What herbal raw material is used for the industrial production of Quercetin medicine?

- a. *Herba Polygonii avicularis*
- b. *Fructus Sophorae japonicae***
- c. *Fructus Hippophaes rhamnoides*
- d. *Herba Violae tricoloris*
- e. *Flores Helichrysi arenarii*

107. A powder with a hard to disintegrate substance has been made in a pharmacy. Specify this substance:

- a. Sodium chlorides
- b. Camphor**
- c. Sugar
- d. Osarsolum (Acetarsol)
- e. Talcum

108. The head manager of the "Ecopharm" pharmacy has entrusted the deputy head manager with some of his duties. The process when an executive partially transfers the authority to perform certain tasks to his or her subordinates is called:

- a. Dissolution of authority
- b. -
- c. Reduction of authority
- d. Delegation of authority**
- e. Withdrawal of authority

109. What medicinal substance can be mixed with the powder mass without an additional comminution?

- a. Streptocide (Sulfanilamide)
- b. Starch**
- c. Camphor
- d. Salicylic acid
- e. Menthol

110. Snake venom-based drugs are widely applied in treatment of locomotor apparatus diseases. Main components of these venoms are:

- a. Toxic proteins**

- b. Phenol-alcohols
- c. Alkaloids
- d. Glucosinolates
- e. Cardiac glycosides

111. Essential oil of a certain plant contains up to 80% of cineole. Specify the herbal raw material that is collected from this plant:

- a. Folia Menthae piperitae
- b. Folia Absinthii
- c. Folia Melissa
- d. Folia Betulae
- e. Folia Eucalypti**

112. What qualitative reaction proves the presence of anthracene-derived compounds in a herbal raw material?

- a. Reaction with iron sulfate
- b. Reaction with Fehling's reagent
- c. Reaction with an alkali**
- d. Reaction with ammonium iron(III) sulfate
- e. Reaction with Dragendorff's reagent

113. A patient needs eye drops with riboflavin. What substance should the pharmacist add to the solution to ensure its isotonicity, if there are no specific instructions in the doctor's prescription?

- a. Glucose
- b. Sodium chloride**
- c. Sodium nitrate
- d. Boric acid
- e. Sodium sulfate

114. A pharmacy has received a prescription for tincture. What herbal raw material can be used to make this dosage form?

- a. Buckthorn bark
- b. Valerian rootstock**
- c. Arrow-wood bark
- d. Rhubarb roots
- e. Oak bark

115. For the treatment of cystitis, the doctor prescribed the patient a herbal drug. This drug is used in cases of acute and chronic infectious diseases of the kidneys and bladder. What herbal raw material that contains iridoids and xanthones is a component of this drug?

- a. Birch leaves
- b. Equisetum arvense grass
- c. Centaurea cyanus flowers
- d. Centaurium grass**
- e. Vaccinium vitis-idaea leaves

116. When a pharmacy restocks its medical products, the incoming products must undergo quality assessment. Who conducts the assessment in this case?

- a. An authorized person**
- b. A representative of the laboratory
- c. A pharmacist
- d. A financially accountable person
- e. The head manager of the pharmacy

117. A 45-year-old man complains of wet cough. He has been suffering from chronic bronchitis for 20 years. The patient is a smoker. He needs a mucolytic agent that will facilitate expectoration and production of surfactant. What drug can be recommended to the patient in this case?

- a. Ambroxol**
- b. Licorice root



- c. Potassium iodide
- d. Proteolytic enzymes
- e. Thermopsis preparations

118. A patient receives heparin for acute myocardial infarction. On the third day the patient developed hematuria and subcutaneous hematomas. What medicine should be prescribed as an antidote in this case?

- a. Clopidogrel
- b. Protamine sulfate**
- c. Streptokinase
- d. Vicasol (Menadione)
- e. Acetylsalicylic acid

119. Who is responsible for the acceptance of goods and medical products with accompanying incoming quality control?

- a. Authorized representative**
- b. Pharmacy head manager
- c. Analyst
- d. Dispensing chemist
- e. Supplier pharmacist

120. Standard stactometer divides 1 ml of water into:

- a. 15 drops
- b. 25 drops
- c. 20 drops**
- d. 30 drops
- e. 10 drops

121. A pharmacy has received the following formulation: Rp.: Spiritus aethylici 20 ml Resorcini 0.2 M.D.S. Wipe the affected skin areas twice a day. endtabular What is the optimal preparation technique in this case?

- a. Measure out the substance into a vial for dispensing, measure out ethyl alcohol, shake the vial**
- b. Measure out the substance into a stand, measure out the solvent
- c. Commminute the substance in a mortar, add the solvent
- d. Measure out the solvent into a stand, measure out the substance
- e. Measure out ethyl alcohol into a vial for dispensing, measure out salicylic acid

122. A pharmaceutical company promotes a healthy lifestyle, provides sponsorship to an orphanage, and funds sporting events. Name this concept of the company activity:

- a. Manufacturing activity
- b. -
- c. Social responsibility**
- d. Commercial activity
- e. Financial activity

123. A patient was diagnosed with peptic ulcer disease of the stomach and prescribed a combined pharmacotherapy. Several days later, his feces turned black. What medicine is likely to cause this phenomenon?

- a. Bismuth subcitrate**
- b. Omeprazole
- c. Famotidine
- d. Lansoprazole
- e. Ranitidine

124. A pharmacy visitor approached the pharmacist with complaints of constricting retrosternal pain that radiates under the left scapula. The pain occurred after physical exertion and lasts approximately 5 minutes already. What medicine should be recommended to this visitor to stop the pain attack?

- a. Diclofenac sodium
- b. Bisoprolol**

- c. Drotaverine
- d. Captopril

**e. Nitroglycerin**

125. Adrenergic drug adrenaline tartrate contains phenolic hydroxyls in its structure. What solution should be used to conduct a reaction for their detection?

a. Copper (II) sulfate solution

**b. Iron (III) chloride solution**

- c. Sodium nitrate solution
- d. Potassium bromide solution
- e. Magnesium sulfate solution

126. What indicator of the pharmacy's financial performance is determined by the volume of sales, where the income from sales is equal to the expenses of the pharmacy?

- a. Profit
- b. Profitability
- c. Markup level
- d. Goods turnover

**e. Breakeven point**

127. The doctor has prescribed the patient an antispasmodic agent bendazol hydrochloride (Dibazol). Based on its chemical structure, bendazol hydrochloride is a derivative of:

- a. Purine
- b. Phenothiazine
- c. Indole

**d. Benzimidazole**

e. Acridine

128. According to the law regulating labour remuneration, the businesses must establish their compensation plan in the following document:

- a. Decree
- b. Contract of delivery
- c. Statement

**d. Collective agreement**

e. Job description

129. What is the amount of the value added tax (VAT) on the medical products sold by a pharmacy.

- a. 10%
- b. 15%
- c. 25%

**d. 7%**

e. 5%

130. A pharmaceutical company uses the Boston Consulting Group matrix to analyze the state of its strategic business units (drugs). What is the BCG Matrix based on?

- a. Competitive Intensity
- b. Business opportunities
- c. Attractiveness of the industry
- d. Market segments

**e. Market share and market growth rate**

131. A patient with arterial hypertension, who takes captopril, was prescribed a potassium-sparing diuretic, spironolactone. What complication can develop in the patient due to this combination of drugs?

**a. Hyperkalemia**

- b. Hybernatriemia
- c. Hypocalcemia
- d. Hypoglycemia
- e. Hyponatremia

132. A pharmacist has a labour dispute with the pharmacy administration about rescheduling his annual vacation leave. The employee can appeal against the decision of the pharmacy administration to the following body:

- a. Trade union committee
- b. Labour disputes committee (LDC)**
- c. Highest management bodies of pharmaceutical service at the regional level
- d. The Ministry of Public Health of Ukraine
- e. Commercial court

133. The chemical name of 5-Nitro-8-hydroxyquinoline corresponds with the following drug:

- a. Nitroxoline**
- b. Ofloxacin
- c. Quinocide
- d. Chingamin (Chloroquine)
- e. Dibazol (Bendazol)

134. Practically no microorganisms can develop in the sugar syrup, if its concentration is optimal. Why is it so?

- a. Because of decreased surface tension between the solution and the microbial cell
- b. Because osmotic pressure in the solution is higher than in the microbial cell**
- c. Because of high pH
- d. Only because preservatives were added into the syrup
- e. Because of low pH

135. To confirm the presence of sulfat ions in the medicinal preparation of magnesium sulfate an analytical chemist of a pharmacy uses the following solutions:

- a. Benzenesulfonic acid
- b. Silver nitrate and nitric acid
- c. Barium chloride and hydrochloric acid**
- d. Ammonium chloride and ammonium hydrate
- e. Diphenylamine

136. Dosage precision during tablet making mainly depends on the following technological property of tablet mass:

- a. Compressibility
- b. Compression ratio
- c. Flowability**
- d. Lyophilic property
- e. Relative density

137. An analytical chemist performs quantitative analysis of isoniazid by means of direct bromatometry with volumetric solutions of potassium bromate, potassium bromide, hydrochloric acid and methyl red as an indicator. This method is based on the following reaction:

- a. Oxidation of the hydrazine residue with potassium bromide
- b. Reduction of the hydrazine residue with bromine
- c. Oxidation of the hydrazine group with bromine**
- d. Bromination of the pyridine ring
- e. Opening of the pyridine ring

138. Employees of a wholesale pharmaceutical company have undergone an assessment for their compliance with the requirements of their respective positions. Specify the type of human resources assessment:

- a. Financial
- b. Concluding**
- c. Concurrent
- d. Preliminary
- e. -

139. To identify a drug, an analytical chemist of the State Inspectorate for Drug Quality Control

performs a reaction with ninhydrin solution. Specify the drug being identified:

- a. Ascorbic acid
- b. Streptocide
- c. Paracetamol
- d. Methionine**
- e. Cortisone acetate

140. A pharmacy underwent a drug quality inspection on 25.02.2018. The inspector discovered that the pharmacy had a batch of Nimesil (Nimesulide) drug, dosage form 2 g x 30 sachets, with its registration certificate expired on 24.02.2018. Is the pharmacy allowed to sell this drug?

- a. Yes, with permit from the Pharmacopoeia Center
- b. Yes, it can sell all the batch that is already in its possession
- c. Yes, if approved by the head manager of the pharmacy
- d. Yes, with permit from the State Inspectorate
- e. No**

141. An analytical chemist uses nitritometry for quantitative determination of procainamide hydrochloride. What indicator is used in this case to determine the titration endpoint?

- a. Phenolphthalein
- b. Methyl red
- c. Methyl orange
- d. Xylenol orange
- e. Tropeolin OO**

142. A pharmacist prepares powders with riboflavin. How should riboflavin be introduced into the powder mixture?

- a. Mix the components in the descending order based on their amount
- b. Mix the components in the ascending order based on their amount
- c. Riboflavin powder should be sifted in advance
- d. Riboflavin should be added on the top of the prepared mixture of other ingredients
- e. "Three layers" method**

143. What factor enables the extraction of maximum amount of alkaloids from the herbal raw material?

- a. Preliminary processing of raw materials for their saturation with 96% alcohol
- b. Intense heating
- c. Slight heating
- d. Certain value of the solution pH**
- e. Herbal raw material should be fresh

144. There are various groups of adjuvants used in tablet production. What is the function of excipients?

- a. To make pills of a certain weight**
- b. To improve the taste
- c. To create necessary adhesive force between particles
- d. To improve the flowability of granular material
- e. To improve disintegration

145. Pharmaceutical workers decided to organize a business. What is the basis of the concept of "limited liability company"?

- a. A company, the members of which bear additional solidary liability for the company's obligations with all their property
- b. A company, the members of which bear the liability for the company's debts within the amount of their contributions**
- c. A company, the members of which bear full liability
- d. A company, the members of which bear the liability for the company's debts within the amount of their contributions, and if these amounts are insufficient, all the members are equally liable to cover the debt with their personal property

e. A company, the members of which bear additional solidary liability for the company's obligations with all their property, while the company's investors bear liability only in the amount of their investments

146. During merchandise analysis a dispensing chemist should reject herbal raw material if it:

- a. Contains poisonous plants
- b. Contains excessive moisture
- c. Contains other non-poisonous plants
- d. Contains other parts of the target plant
- e. Has first-degree vermin infestation

147. Why are leavening agents introduced into the tablet mass?

- a. Making it easier to push the tablets out of the matrix
- b. Taste improvement
- c. Improvement of the granulation process
- d. Ensuring rapid mechanical destruction of the tablets in a liquid medium
- e. Obtaining tablets of the required weight

148. When developing a new medicine, marketologists of the pharmaceutical company have conducted an isolated research to determine the doctors' opinion of the medicines currently available on the market. What method of marketing research was used?

- a. Survey
- b. Panel
- c. Observation
- d. Testing
- e. Experiment

149. To increase its sales, the "Have a good day!" pharmacy introduced a discount system. According to this system if a customer buys 100 UAH worth of medical products, this customer receives 2% discount. What marketing communication has this pharmacy implemented?

- a. Salesmen-oriented sales promotion
- b. Public relations, sponsorship
- c. Consumer-oriented sales promotion
- d. Personal sale
- e. Middlemen-oriented sales promotion

150. Rhamnus cathartica fruits contain anthracene derivatives. What qualitative reaction is used to determine the presence of these substances in a herbal raw material?

- a. Reaction with ammonium iron(III) sulfate
- b. Reaction with Fehling reagent
- c. Reaction with an alkali
- d. Reaction with Molisch reagent
- e. Reaction with iron(II) sulfate

151. Silibor is a herbal drug that is used as a hepatoprotector. This drug is made from:

- a. Flores Tanacetii
- b. Semina Sylibi
- c. Flores Crataegi
- d. Herba Equiseti arvensis
- e. Flores Centaureae cyani

152. What fatty oil is nondrying due to its oleic acid glyceride content?

- a. Lini oleum
- b. Ricini oleum
- c. Helianthi oleum
- d. Maydis oleum
- e. Cucurbitae oleum

153. A pharmacy prepares sodium chloride solutions for injections or infusions. What are the

additional requirements to the quality of sodium chloride for infusion solutions?

- a. No manganese salt admixtures
- b. Anhydrous, analytical grade pure
- c. Analytical grade pure
- d. Chemically pure, depyrogenated**
- e. Type <<for injections>>

154. What medicinal substance can be identified using hydroxamic test?

- a. Metronidazole
- b. Aceclidine**
- c. Nicotinic acid
- d. Bendazol
- e. Nitroxoline

155. A pharmacist has prepared an oak bark decoction. What is the ratio of the herbal raw material to extractant?

- a. 1:400
- b. 1:10**
- c. 1:30
- d. 1:20
- e. 1:5

156. A phytochemical department of a factory produces Calendula tincture. What herbal raw material is used in the manufacturing process?

- a. Roots
- b. Grass
- c. Roots, rhizomes, and grass
- d. Flowers**
- e. Leaves and essential oil

157. What quantification method must be used for the analysis of isoniazid substance, according to the regulations of the State Pharmacopoeia of Ukraine?

- a. Bromatometry**
- b. Acidimetry in a non-aqueous medium
- c. Photocolorimetry
- d. Alkalimetry
- e. Nitritometry after alkaline hydrolysis

158. What drug should be used first in case of anaphylactic shock?

- a. Dibazol (Bendazol)
- b. Prednisolone**
- c. Loratadine
- d. Euphyllin (Aminophylline)
- e. Fexofenadine

159. There are six types of intra-pharmacy control. Which of them requires determination of total mass or volume of a dosage form, as well as the number of doses and the mass of each dose?

- a. Survey control
- b. Written control
- c. Chemical control
- d. Physical control**
- e. Organoleptic control

160. Accounting records are classified by the type of asset accounting or by their sources. Active accounts keep record of the following:

- a. Equity capital
- b. Salaries payment
- c. Monetary funds**
- d. Debt settlement with the creditors

e. Bank loans

161. A 63-year-old man suffering from ischemic heart disease was diagnosed with angle closure glaucoma. What group of drugs is CONTRAINDICATED in this case?

- a. Statins
- b. Calcium antagonists
- c. beta-adrenergic blockers
- d. Anticoagulants

**e. Nitrates**

162. A man has bought nitroglycerine for sublingual administration in a pharmacy. He wants to know, what side effect might develop after taking this medicine:

**a. Headache**

- b. Increased blood pressure
- c. Dry cough
- d. Urinary retention
- e. Drowsiness

163. What antacid can cause constipations, osteoporosis, and encephalopathy when taken for a long period of time?

- a. Sodium bicarbonate
- b. Calcium carbonate
- c. Magnesium oxide

**d. Aluminium hydroxide**

e. Sodium alginate

164. A pharmaceutical factory produces soft dosage forms. What soft dosage form melts at the body temperature?

a. Gel

**b. Liniment**

- c. Ointment
- d. Cream
- e. Paste

165. To minimize business risks, the board of directors of a pharmaceutical company decides to expand into a market of plant protection products. Such approach to risk management is called:

- a. Integration
- b. Intensification
- c. Insurance
- d. Consolidation

**e. Diversification**

166. An analytical pharmacist is testing a thiamine hydrobromide substance. What solution would the pharmacist use to determine sulfate impurities?

**a. Barium chloride solution**

- b. Sodium nitrite solution
- c. Ammonium oxalate solution
- d. Calcium chloride solution
- e. Sodium benzoate solution

167. A man with gastric ulcer is prescribed anti-Helicobacter pylori therapy. On the 3rd day the patient developed black coloring of feces. What had caused such changes?

- a. Metronidazole
- b. Tinidazole
- c. Tetracycline
- d. Omeprazole

**e. Bismuth subcitrate**

168. A patient with severe progression of bronchial asthma has been taking an inhalation

corticosteroid for a long time to relieve asphyxia attacks. What side effect is the most likely to develop in this case?

- a. Cushing's syndrome
- b. Oral candidiasis**
- c. Steroid diabetes
- d. Osteoporosis
- e. Osteoarthritis

169. A certain drug explodes when heated to  $180^{\circ}\text{C}$  or upon impact and, therefore, must be handled carefully during receipt and storage. This drug is:

- a. Calcium chloride
- b. Nitroglycerine solution**
- c. Barium chloride
- d. Alcoholic iodine solution
- e. Activated carbon

170. The marketing department of the "Aphrodite" company that specializes in production of anti-aging cosmetics has divided the customers into groups, based on their age. What principle of segmentation is the basis for this customer classification?

- a. Behavioral
- b. Social and economic
- c. Psychographic
- d. Geographical
- e. Demographic**

171. What medicinal substance during interaction with a silver nitrate solution forms a white precipitate that quickly colors yellowish and then turns black?

- a. Sodium thiosulfate**
- b. Sodium iodide
- c. Hydrogen peroxide
- d. Sodium bromide
- e. Sodium chloride

172. When preparing suspensions, the medicinal substance is ground with a small amount of liquid. What is the optimal amount of liquid for comminution of 20 mg of zinc oxide according to the Deriagin's rule?

- a. 5 mL
- b. 1 mL
- c. 2 mL
- d. 10 mL**
- e. 0.5 mL

173. A pharmaceutical company produces biogenic stimulants. In the course of manufacturing process the raw materials are being subjected to adverse conditions. What is the purpose of this procedure?

- a. Prevention of hydrolysis of bioactive substances
- b. Formation of biostimulants**
- c. Acceleration of bioactive substances extraction
- d. Extending the shelf life of raw materials
- e. Reducing the content of ballast substances

174. 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. Atropa belladonna
- b. Solanum tuberosum
- c. Datura Stramonium
- d. Hyoscyamus niger



**e. Solanum laciniatum**

175. A patient with atrophic hypoacid gastritis type A has been diagnosed with a complication in the blood system - the development of B<sub>12</sub>-deficiency anemia. What medicine is pathogenetically justified in this case?

- a. Pyridoxine
- b. Nicotinic acid

**c. Cyanocobalamin**

- d. Riboflavin
- e. Thiamine

176. A woman wants to stock the home first aid kit for her 4-month-old baby. She asked a dispensing chemist to recommend her an antipyretic for this purpose. What medicine and what dosage form would you recommend in this case?

- a. Acetylsalicylic acid tablets
- b. Diclofenac sodium tablets
- c. Ibuprofen tablets

**d. Paracetamol rectal suppositories**

- e. Acetylsalicylic acid powder

177. Prescriptions for psychotropic drugs remain in the pharmacy after the sale. How long must they be kept?

- a. One year
- b. Three years
- c. One month

**d. Five years**

- e. The prescription must be returned to the patient

178. Ampoule workshop of a factory produces 5% oil solution of tocopherol acetate for injections. What method of filling the ampoules is optimal in this case?

- a. Syringe and vacuum

**b. Syringe**

- c. Devaporation
- d. Syringe and devaporation
- e. Vacuum

179. The medicinal plants of the Fabaceae family contain various groups of bioactive substances. What representative of this family contains flavonoids and is used as an industrial source of rutin?

- a. Thermopsis alterniflora
- b. Bidens tripartita
- c. Glycyrrhiza glabra
- d. Ononis arvensis

**e. Styphnolobium japonicum**

180. The tableting department of a pharmaceutical company begins to produce "fizzy" vitamin tablets. Name the groups of gas-producing leavening agents:

- a. Citric acid and aerosil (fumed silica)
- b. Tartaric acid and magnesium stearate
- c. Ascorbic acid and aerosil (fumed silica)

**d. Tartaric acid and sodium bicarbonate**

- e. Citric acid and magnesium stearate

181. A factory workshop producing suspensions and emulsions is going to develop the manufacture of new drugs. What mechanisms can be used for the ultrasound processing of drugs?

- a. Centrifugal mixer with rotating housing
- b. Rotor-pulsation apparatus, dismembrator
- c. Disintegrator, liquid whistle

**d. Liquid whistle, magnetostrictive source**

- e. Dismembrator, electrical impulse plasmolyzer

182. A domestic pharmaceutical company introduces to the market a generic drug at a significantly lower price than its imported brand name counterparts. What pricing strategy has this domestic company chosen?

a. Deep penetration into the market

b. Following the leader

c. Tender pricing strategy

d. -

e. "Skim-the-cream" strategy

183. A 67-year-old man with chronic heart failure takes digoxin. To reduce the side effects of digoxin, his doctor recommended him to combine this drug with:

a. Calcium gluconate

b. Hydrochlorothiazide

c. Euphyllin (Aminophylline)

d. Potassium aspartate and magnesium aspartate

e. Calcium chloride

184. Herbal mixtures contain several types of comminuted or non-comminuted herbal raw material. What stage is **NOT** a part of herbal mixture production?

a. Sifting

b. Packing

c. Extraction

d. Marking

e. Mixing

185. Inulin improves digestion and has a positive effect on carbohydrate metabolism. What plant is used as a source of inulin?

a. *Helianthus tuberosus*

b. *Hypericum maculatum*

c. *Brassica juncea*

d. *Althaea officinalis*

e. *Astragalus dasyanthus*

186. A pharmaceutical factory produces suppositories with hydrophilic bases. What parameter is measured during standardization of such suppositories?

a. Dry residue

b. Resuspension

c. Dissolution time

d. Mechanical strength

e. Boiling point

187. During storage, suspension instability manifests itself as:

a. Dissolution of particles

b. Sedimentation of particles

c. Caking of particles

d. Flocculation of particles

e. Change of particles shape

188. For rapid analysis of a dosage form with procaine hydrochloride, an analytical chemist performed necessary chemical reactions. What reaction is a variation of Schiff base formation?

a. Lignin test

b. Iodoform test

c. Hydroxamic reaction

d. Azo dye formation

e. <<Silver mirror>> reaction

189. At what cost will protargol nasal drops be dispensed at a pharmacy if a pediatrician prescribes it for treatment of a 2-year-old child?

a. With 30% discount

b. With 50% discount

**c. Free of charge**

d. At full cost

e. With 70% discount

190. A pharmacy supplies with medicines various groups of patients. Children of what age group receive drugs for free during their outpatient treatment?

a. Under 6 years of age

b. Under 10 years of age

**c. Under 3 years of age**

d. Under 16 years of age

e. From 3 to 6 years of age

191. An analytical chemist has conducted a qualitative reaction to confirm the presence of a steroid ring in the prednisolone molecule. For this purpose the following reagent was used:

a. Hydroxylamine hydrochloride

b. Phenylhydrazine sulfate

c. Copper tartrate reagent

d. Acetic anhydride

**e. Concentrated sulfuric acid**

192. Agar-agar is used as a detoxifying absorbent and the basis of a nutrient medium for growing microorganisms. What class of bioactive substances does it belong to?

a. Coumarins

b. Vitamins

**c. Polysaccharides**

d. Iridoids

e. Flavonoids

193. An analyst of a chemical laboratory had received a glucose substance for analysis. To check its quality he used a polarimeter. The analyst measured:

**a. Angle of rotation**

b. Melting point

c. Specific gravity

d. Optical density

e. Refractive index

194. Sodium and potassium oxides are introduced into the ampoule glass to:

a. Increase its dimming ability

b. Increase its chemical stability

**c. Decrease its melting point**

d. Increase its mechanical stability

e. Increase its thermal stability

195. A woman suddenly developed an angina pectoris attack. To arrest the attack, she took a medicine that caused her a severe headache, facial hyperemia, and tachycardia. Such side effects are characteristic of the following group of drugs:

a. Beta-adrenergic antagonists

**b. Nitrates**

c. Antispasmodics

d. Calcium channel blockers

e. Alpha-adrenergic agonists

196. A pharmaceutical company focuses on selling a diverse range of products covering different customer groups and regions. What kind of organizational structure is typical for such company?

**a. Divisional**

b. Decentralized

c. Bureaucratic

d. Functional

e. Centralized

197. A pharmacist has prepared a tincture from Adonis vernalis grass. What special technique was necessary in this case to extract the active substances?

- a. They must be extracted in a slightly alkaline medium
- b. They must be extracted in an alkaline medium
- c. They must be extracted in a weakly acidic medium
- d. They must be extracted in an acidic medium
- e. They must be extracted in a neutral medium**

198. What type of marketing should be used by a pharmaceutical company in a situation, when the demand for medicines declines?

- a. Stimulational marketing
- b. Synchromarketing
- c. Evolving marketing
- d. Conversion marketing
- e. Remarketing**

199. A pharmacy offers to its customers a chance to measure their blood pressure. What type of goods is it?

- a. Service**
- b. Nondurable goods
- c. Convenience goods
- d. Specialty goods
- e. Unsought goods

200. A pharmaceutical company, wanting to strengthen its market position in a competitive environment, decided to use trademarks during the implementation of its product policy. What is the purpose of a trademark?

- a. Differentiation and protection of the company-produced medicines on the market**
- b. Marketing research
- c. Market segmentation
- d. Determining the need for medicines
- e. Study of quantitative characteristics of the market

201. Suspension stability increases, when the substances that increase the viscosity of a continuous medium are introduced to a suspension. Specify a substance that has such a property:

- a. Ethyl alcohol
- b. Purified water
- c. Atropa belladonna tincture
- d. Glycerine**
- e. Dimexide (dimethyl sulfoxide)

202. A pharmacist approached the chief manager of the pharmacy with a request for pay raise. The chief manager turned down this request. What type of conflict is it?

- a. Conflict between individual and group
- b. Intrapersonal conflict
- c. Interpersonal conflict**
- d. Intergroup conflict
- e. Dysfunctional conflict

203. In a pharmacy each employee is subordinate to only one manager, who makes all the management decisions. What type of organizational structure of the pharmacy's management is it?

- a. Functional
- b. Linear**
- c. Productive
- d. Matrix
- e. Adaptive

204. What is the minimum permissible total area of a pharmaceutical sales point, according to the current Licensing Requirements?

- a. No less than 30 m<sup>2</sup>
- b. No less than 40 m<sup>2</sup>
- c. No less than 250 m<sup>2</sup>
- d. No less than 18 m<sup>2</sup>**
- e. No less than 50 m<sup>2</sup>

205. A pharmaceutical factory produces juices from fresh herbal raw materials. What technological operation is performed at the stage of juice purification?

- a. Heating followed by rapid cooling**
- b. Adsorption
- c. Crystallization
- d. Sedimentation
- e. Filtration

206. An analytical pharmacist analyzes the antianginal agent glyceryl trinitrate (nitroglycerin). What solution would the pharmacist use to identify the nitrate ions that form after hydrolysis?

- a. Glyoxal-hydroxanil solution
- b. Lanthanum(III) nitrate solution
- c. Thiourea solution
- d. Diphenylamine solution**
- e. Chloramine solution

207. An analytical chemist during the identification of phenylephrine hydrochloride (mesaton) performed a reaction with a solution of iron(III) chloride, which resulted in a purple coloring. The presence of what functional group in the structure of the drug was confirmed as a result?

- a. Ester group
- b. Aliphatic amino group
- c. Carboxyl group
- d. Phenolic hydroxyl**
- e. Primary aromatic amino group

208. After a surgery, a man was receiving promedol (trimeperidine) for a long time. When this drug was discontinued, the patient developed psychic and somatic disturbances. What phenomenon is it?

- a. Withdrawal syndrome**
- b. Rebound effect
- c. Steal syndrome
- d. Idiosyncrasy
- e. Tachyphylaxis

209. To improve iodine solubility in the purified water, iodine must be:

- a. Dispersed with glycerine
- b. Comminuted with alcohol
- c. Dissolved in the saturated solution of potassium iodide**
- d. Reduced to fine powder
- e. Dissolved in the boiling water

210. A pharmacist needs to prepare a trituration of platyphylline hydrotartrate (1:10). What filler would be optimal for making this trituration?

- a. Mannitol
- b. Refined sugar
- c. Lactose**
- d. Rice starch
- e. Corn starch

211. Specify the formula of extractant calculation in the process of creating a tincture:

- a.  $E = \frac{m_{\text{losses}}}{m_{\text{raw material}}} \cdot 100\%$
- b.  $V = V_{\text{tincture}} \cdot n + m_{\text{raw material}} \cdot K_{\text{alcohol absorption}}$

c.  $V = V_{\text{tincture}} + m_{\text{raw material}} \cdot K_{\text{alcohol absorption}}$

d.  $m_{\text{raw material}} = m_{\text{end product}} + m_{\text{losses}}$

e.  $\mu = \frac{m_{\text{end product}}}{m_{\text{raw material}}} \cdot 100\%$

212. A pharmaceutical company produces various medicines. Name the dosage form consisting of separate hard dry particles disintegrated to varying degree:

a. Powders

b. Dried extract

c. Emulsions

d. Suspensions

e. Tablets

213. What is the name of the ability to restore the properties of a heterogeneous system by perturbation?

a. Dispersion

b. Resuspension

c. Extraction

d. Granulation

e. Emulsification

214. The market can be characterized by the following conditions: there are many sellers and buyers, who have no influence over current prices; similar and interchangeable competing goods are available; there are no price limits. What type of market is it?

a. Pure monopoly

b. Oligopoly

c. Pure competition

d. Economic planning

e. Monopolistic competition

215. A pharmacy has received goods from a warehouse, which were delivered by the warehouse transport. Therefore, goods receipt requires the following accompanying document:

a. Contract of delivery

b. All of the listed

c. Motor waybill

d. Specifications to the contract of delivery

e. Financial statement of the supplier

216. A system of indicators characterizes financial and business activity of an organization and the state of its assets and sources on the certain day in the monetary unit. Name this system:

a. Double entry

b. Balance sheet

c. Business transactions log book

d. Turnover balance sheet

e. Receipts and expenditures report

217. Commercial and financial activity of the pharmacies can be measured using a system of parameters. What parameter can be described as the sum of sold goods per employee (taking the average number of employees during the analyzed period)?

a. Price index

b. Profitability

c. Labor productivity

d. Stock of goods

e. Turnover

218. Profitability is one of the economic indicators of the pharmacy's trading activity. It is calculated as a:

a. -

b. Ratio of the sum of profits to the total cost of fixed assets  $\times 100\%$

c. Ratio of the sum of profits to the sum of cost price of the goods  $\times 100\%$

d. Ratio of the sum of profits to the sum of expenses  $\times 100\%$

e. Ratio of the sum of profits to the sum of turnover  $\times 100\%$

219. A patient measures out a necessary dose of a mixture, using a tablespoon. How many milliliters of liquid does one tablespoon contain?

a. 20

b. 15

c. 10

d. 5

e. 25

220. Calendula Ointment is placed on the shelf next to Dr. Theiss Calendula Ointment. What approach to the shelf layout is used in this pharmacy?

a. By package size

b. Seasonality

c. Among competitors

d. Corporate block layout

e. Doubling product facings

221. What medicinal substance must fill only 2/3 of the vial before sterilization?

a. Euphyllin (Aminophylline)

b. Hexamethylenetetramine

c. Sodium chloride

d. Calcium chloride

e. Sodium bicarbonate

222. A patient diagnosed with hypertension and bronchial asthma had a bronchospasm attack, while undergoing therapy. What drug has most likely caused this complication?

a. Fenoterol

b. Amlodipine

c. Propranolol

d. Verapamil

e. Nitroglycerin

223. A medical product reaches its final consumer according to the following scheme: manufacturer  $\rightarrow$  wholesale house  $\rightarrow$  pharmacy  $\rightarrow$  final consumer. Determine the level of the distribution channel:

a. Two-level channel

b. Zero-level channel

c. Four-level channel

d. One-level channel

e. Three-level channel

224. An analytical chemist performs the identification of ascorbic acid in an injection solution according to the State Pharmacopoeia of Ukraine. Its interaction with a certain solution produces a gray precipitate. Name this solution:

a. Sodium nitrite

b. Calcium chloride

c. Ammonium hydroxide

d. Silver nitrate

e. Sodium carbonate

225. Companies draw up their balance sheets to obtain information about the availability and composition of their property. What section of the balance sheet includes accounts receivable for goods?

a. Assets

b. Current liabilities

c. Equity capital

d. Non-current assets

e. Long-term liabilities

226. Most drugs contain heterocyclic fragments in their structure. Which of the following drugs is a pyrrole derivative?

- a. Bendazol
- b. Phencarol (Quifenadine)
- c. Tolbutamide
- d. Piracetam**
- e. Furosemide

227. A pharmacy prepares drugs by individual prescriptions. How often should the floors be mopped down in the prescription department?

- a. Once every 5 days
- b. Once in a shift**
- c. Once in a week
- d. Once every 10 days
- e. Once every 3 days

228. How long should the pharmacy keep a receipt for Morphin-ZN tablets, package №50?

- a. One year, not counting the current one
- b. One month, not counting the current one
- c. Three years, not counting the current one
- d. Five years, not counting the current one**
- e. The receipt form is not kept by the pharmacy

229. Several independent mediators work in resale of medical equipment. What group of mediators includes persons and legal entities that specialize in sales of durable goods that require considerable after-sales service?

- a. Agent
- b. Broker
- c. Consignee
- d. Dealer**
- e. Commission agent

230. A manufacturing company initiates changes to the package insert of a drug, which are aimed at limitation of its use. What type of marketing is used by the company in this case?

- a. Synchromarketing
- b. Counteractive**
- c. Stimulating
- d. Remarketing
- e. Conversion

231. A certain injection solution cannot undergo thermal sterilization, because high temperatures lead to its hydrolysis with formation of formaldehyde and ammonia. Name this solution:

- a. Novocaine (procaine) solution
- b. Aminazine solution
- c. Glucose solution
- d. Hexamethylenetetramine solution**
- e. Diprazine (promethazine) solution

232. A 65-year-old man has been taking nitroglycerin continuously for 2 months. Lately, he has been observing a gradual decrease in its clinical effect. Name the concept that describes this phenomenon:

- a. Reye syndrome
- b. Idiosyncrasy
- c. Anaphylactic reaction
- d. Withdrawal syndrome
- e. Tolerance**

233. A pharmacist has prepared an ascorbic acid solution for injections. What stabilizer was used in



this case?

**a. Sodium sulfite**

- b. 0.1 M solution of hydrochloric acid
- c. Weibel stabilizer
- d. Boric acid
- e. 0.1 M solution of sodium hydroxide

234. What is the fundamental difference of the Japanese management model?

a. Individualism

**b. Collectivism**

- c. Focus on individual results
- d. Strictly formalized management system
- e. Strict control procedure

235. An analytical chemist should use the following solution to identify sodium-containing substances:

- a. Barium hydroxide
- b. Sodium citrate
- c. Potassium carbonate

**d. Potassium pyroantimonate**

e. Potassium permanganate

236. A pharmacist at the extemporaneous compounding department of a pharmacy has received a prescription for an infusion marked "Cito". How long such an aqueous extract must be infused in a water bath?

a. 30 minutes

**b. 25 minutes**

- c. 10 minutes
- d. 45 minutes
- e. 15 minutes

237. A certain drug can be quantitatively assessed by means of direct alkalimetry in glycerine, mannitol, or other polyhydric alcohol medium. This drug is:

- a. Benzoic acid
- b. Acetylsalicylic acid
- c. Glutaminic acid

**d. Boric acid**

e. Salicylic acid

238. Doctor's prescription has several functions. What function of the prescription allows its participation in the process of payment in cases when medicines should be issued free of charge or at a reduced price?

- a. Technological
- b. Medical

**c. Economic**

- d. Legal
- e. Social

239. According to ecological survey, a certain pharmaceutical manufacturer holds the first place among the local "green" industries. What marketing concept is chosen by this manufacturer in relations with its customers?

- a. Product development
- b. Integrated marketing
- c. Intensification of commercial effort
- d. Production development

**e. Socio-ethical marketing**

240. Schisandra chinensis seeds contain lignans. What pharmacological effect will the preparations made of Schisandra chinensis have?

a. Sedative

**b. Tonic**

- c. Antitumor
- d. Hepatoprotective
- e. Reparative

**241. What is the purpose of injectable tablets?**

- a. Oral use
- b. Implantation
- c. Obtaining solutions for various pharmaceutical purposes

**d. Obtaining injectable solutions**

- e. Sublingual use

**242. A pharmaceutical company wants to strengthen its position in the competitive market environment. It decides to use brand names as a part of its trade policy. What is the purpose of a brand name?**

- a. Justification of a higher price for the medicine

**b. Differentiation between the competing medicines on the market**

- c. Eligibility for registration in the List of medicines and medical products with state-controlled prices
- d. Ensuring the necessary quality of medicines
- e. It is a mandatory condition to be able to sell medicines at a reduced price to certain population groups

**243. What medicinal substance is a derivative of morphinan?**

- a. Cocaine hydrochloride

**b. Codeine**

- c. Quinine sulfate
- d. Pachycarpine hydroiodide
- e. Caffeine

**244. A pharmacist uses Vitepsol to prepare rectal suppositories. What fluid should be used in this case to lubricate the suppository form?**

- a. Ethyl alcohol
- b. Purified water
- c. Vaseline oil (liquid paraffin)
- d. Peach oil

**e. Spiritus saponatus**

**245. The head manager of a pharmacy has transferred to the deputy head manager the authority to select the range of products for sale and make decisions about the nomenclature and amount of medicines and medical products to be purchased from suppliers and the terms of such purchase contracts. What is this action called in the management theory?**

**a. Delegation**

- b. Control
- c. Motivation
- d. Planning
- e. Organization

**246. A pharmacy makes aqueous extracts. What extractant is used in preparation of infusions and decoctions?**

- a. Ethyl alcohol
- b. Peach oil
- c. Glycerin

**d. Purified water**

- e. Mint oil

**247. To measure out a small amount of liquid, a stactometer is used. How many drops are there in 1 mL of purified water, if we are to use a standard stactometer?**

- a. 30
- b. 10

c. 20

d. 40

e. 50

248. A formaldehyde solution was received for analysis. What reagent should be used to identify this substance?

a. Benzoic acid

b. Tartaric acid

c. Chromotropic acid

d. Acetic acid

e. Sulfuric acid

249. What medicinal substance has an imidazole fragment in its structure?

a. Phenazone

b. Nicotinic acid

c. Pilocarpine hydrochloride

d. Nitrofural

e. Thiamine bromide

250. A patient has been receiving palliative treatment with morphine hydrochloride for a week. Following that the patient demands continuation of this treatment. What phenomenon has occurred in this case?

a. Dependence

b. Cumulation

c. Potentiation

d. Tolerance

e. Summation

251. What preparation has an antiemetic effect?

a. Sodium bicarbonate

b. Aluminum phosphate

c. Loperamide

d. Clarithromycin

e. Metoclopramide

252. A pharmaceutical manufacturer sets the price for a drug basing on its prime cost with premium. What model of pricing is it?

a. Cost-based

b. Breakeven

c. Competitive

d. Demand-based

e. Supply-based

253. Several species of Polygonum genus are used in medicine. One of these species has rootstocks rich in tanning agents, which are used to treat diarrhea. Name this species:

a. Polygonum hydropiper

b. Polygonum persicaria

c. Polygonum alpinum

d. Polygonum bistorta

e. Polygonum aviculare

254. Polyethylene oxide base belongs to the following group:

a. Hydrophobic

b. Amphiphilic

c. Fat

d. Emulsion

e. Hydrophilic

255. A patient with exertional angina pectoris had been taking isosorbide mononitrate orally for 2

months, when this drug lost its effectiveness. What is the likely cause of isosorbide mononitrate being no longer effective in this case?

- a. Physical dependence
- b. Sensitization
- c. Cumulation
- d. Psychological dependence

**e. Tolerance**

256. A pharmacist prepares a vaseline-based ointment. The vehicle was heated to 40°C. What substance was introduced into the heated vehicle?

**a. Camphor**

- b. Anesthesin
- c. Vinilin (polyvinyl butyl ether)
- d. Streptocide
- e. Benzoic acid

257. Specify the drugs recommended for prevention and correction of dysbiotic problems caused by antibiotic therapy:

- a. Cholagogues
- b. Antacids
- c. Uroseptics

**d. Probiotics**

- e. Prokinetics

258. A pharmacy prepares a drug that contains a high-molecular compound with unlimited swelling ability. Name this material:

- a. Gelatine
- b. Methylcellulose

**c. Pepsin**

- d. Protargol
- e. Starch

259. A large pharmaceutical company produces a homogeneous selection of medicinal products and sells them on the domestic market. What model of marketing service organization was chosen by this company?

- a. Regional

**b. Functional**

- c. Product-oriented
- d. Segment-oriented
- e. Market-oriented

260. To identify vicinol (menadione), an analytical chemist places this substance moistened with hydrochloric acid into a colorless burner flame. The yellow flame coloring that develops as a result indicates the presence of the following cations in the molecule:

- a. Calcium
- b. Magnesium
- c. Potassium

**d. Sodium**

- e. Zinc

261. A pharmaceutical company produces essential oils via a method that consists of essential oil transfer into gas phase followed by its absorption with fats and then its extraction with alcohol. Name this method:

- a. Dynamic sorption
- b. Hydrodistillation

**c. Enfleurage**

- d. Compression
- e. Extraction

262. A company manager analyzes, how effectively the available material assets are used, and identifies and eliminates the deviations arising in the course of work. What type of control is it?

- a. Financial
- b. Current**
- c. Preliminary
- d. -
- e. Final

263. At the end of a working day, a cashier prepares the sales proceeds received in cash for the transfer to the bank account through a collecting agent. What document must be issued by the cashier for the cash transfer in this case?

- a. Payment order
- b. Cheque payable
- c. Cash cheque
- d. Payment request and order
- e. Payment summary**

264. What substance can be determined using the Beilstein test during rapid analysis of drugs?

- a. Chlorine**
- b. Fluoride
- c. Hydrogen
- d. Nitrogen
- e. Oxygen

265. To prepare eyedrops with antibiotic a dispensing chemist has been using flowing steam sterilization under 100°C for 30 minutes. What antibiotic allows for such sterilization?

- a. Levomycetin (Chloramphenicol)**
- b. Sodium benzylpenicillin
- c. Biomycin
- d. Streptomycin sulfate
- e. Erythromycin

266. A medical facility located in Kyiv buys its diagnostic tools from a domestic manufacturer. What level of distribution channel is it?

- a. Zero-level channel**
- b. Four-level channel
- c. Three-level channel
- d. One-level channel
- e. Two-level channel

267. What is the mandatory component of medical product advertising for end users, according to the law of Ukraine "On Advertising"?

- a. Naming and mentioning celebrities, movie and cartoon characters, competent authorities
- b. Comparison with other medical products
- c. References to the cases of successful drug use
- d. Reference to the drug as the most effective
- e. Warning that self-medication can be harmful to health**

268. Batches of several fatty oils were sent to the analytical quality control laboratory. One of the criteria for the study of fatty oils is determining their solubility. What oil is well soluble in ethyl alcohol?

- a. Castor oil**
- b. Flaxseed oil
- c. Sunflower oil
- d. Olive oil
- e. Cocoa butter

269. A man with arterial hypertension was recommended the following to increase the antihypertensive effect of a diuretic:

- a. Increase the amount of table salt in the diet
- b. Decrease the amount of table salt in the diet**
- c. Increase the physical exertion
- d. Decrease the physical exertion
- e. Increase the amount of liquids in the diet

270. Which of the following pricing factors of a manufacturing pharmaceutical enterprise is internal?

- a. State regulation of prices
- b. Expenses**
- c. Participants in sales channels
- d. Competitors
- e. Consumers

271. What technology was used by a pharmacist to make a starch solution?

- a. Dissolved it in boiling water
- b. Mixed it with hot water and added cold water
- c. Dissolved it in cold water and heated
- d. Dissolved it in a vial for dispensing in freshly-distilled filtered purified water
- e. Mixed it with cold water, then poured the mixture into boiling water and boiled for 1-2 minutes**

272. Microscopy of a root of a certain medicinal plant reveals the following features: parenchyma cells contain inulin, there are laticifers, cambium line is clearly visible. This root belongs to:

- a. *Althaea officinalis*
- b. *Taraxacum officinalis***
- c. *Inula helenium*
- d. *Zingiber officinale*
- e. *Sanguisorba officinalis*

273. A young mother has come to a pharmacy to buy an antipyretic drug for her 3-month-old infant. What dosage form would you choose for the infant?

- a. Lozenges
- b. Capsules
- c. Tablets
- d. Spray
- e. Suppositories**

274. What medicine is recommended to reduce the risk of gastrointestinal bleeding during a long-term treatment with an acetylsalicylic acid-based antiaggregant?

- a. Ceftriaxone
- b. Spironolactone
- c. Prednisolone
- d. Metamizole sodium
- e. Omeprazole**

275. *Cynara scolymus* herbal raw material is a source of drugs with antisclerotic, choleretic, and hepatoprotective effect. What parts of the plant are harvested as a herbal raw material?

- a. Roots
- b. Grass
- c. Fruits
- d. Leaves and flower heads**
- e. Seeds

276. A patient with angina pectoris takes long-acting nitrates. Consult him what side-effect is the most common for these drugs:

- a. Nausea
- b. Constipation
- c. Diarrhea
- d. Headache**
- e. Vomiting

277. A pharmacist needs to weigh out a medicinal substance from the general list - glucose. What minimum amount of glucose can be weighed out using one-gram hand scales?

- a. 0.02 g
- b. 0.03 g
- c. 0.01 g
- d. 0.04 g
- e. 0.05 g

278. If potassium salts are put into the colorless flame of a gas burner, the flame colors:

- a. Green
- b. Violet
- c. Brick-red
- d. Red
- e. Yellow

279. What preparation has an antacid effect?

- a. Omeprazole
- b. Famotidine
- c. Pirenzepine
- d. Aluminum phosphate
- e. Ranitidine

280. An expert from an analytical quality control laboratory performs the quantitative determination of chlorpromazine in the tablets, according to the State Pharmacopoeia of Ukraine. The expert uses the method of ultraviolet spectrophotometry and measures the following with the spectrophotometer:

- a. Angle of rotation
- b. Refractive index
- c. Viscosity
- d. Solution pH
- e. Optical density

281. What method of analysis takes into account the strengths and weaknesses of a pharmaceutical company, as well as opportunities and threats at the pharmaceutical market, in order to determine marketing goals, strategies, and specific measures that would make it possible to adapt the company's potential to market trends and conditions?

- a. ABC analysis
- b. VEN analysis
- c. SWOT analysis
- d. Meta-analysis
- e. XYZ analysis

282. A pharmacist prepares an injection solution that must be stabilized with 0,1M of hydrochloric acid solution. What solution is to be prepared?

- a. Potassium chloride
- b. Hexamethylenetetramine
- c. Calcium chloride
- d. Sodium benzoate
- e. Novocaine

283. When preparing dermatological ointments the following substance should be introduced by suspending:

- a. Xeroform
- b. Ephedrine hydrochloride
- c. Menthol
- d. Camphor
- e. Protargol (silver proteinate)

284. A pharmaceutical company produces Lugol's iodine solution. By type of solvent this solution belongs to the following group:

a. Chloroform solutions

**b. Glycerine solutions**

c. Water solutions

d. Oil solutions

e. Alcohol solutions

285. Cross-section of the leaf of a medicinal plant shows cystoliths and stinging hairs with a multicellular base and a large cell on the apex that ends in a widened tip that breaks off. What herbal raw material has such microscopic characteristics?

a. *Origanum vulgare*

b. *Mentha piperita*

c. *Atropa belladonna*

**d. *Urtica dioica***

e. *Capsella bursa-pastoris*

286. In its work, a pharmaceutical company combines ensuring its own profitability with meeting the needs of consumers and raising the standard of living in the society. What marketing management concept has the company chosen?

**a. Socio-ethical marketing**

b. Marketing

c. Intensification of commercial efforts

d. Product improvement

e. Production improvement

287. Medicinal substances are introduced into multiphase ointments depending on their properties. How to introduce novocaine (procaine) hydrochloride into a vaseline-lanolin base?

**a. First dissolve it in the minimum amount of water**

b. Comminute it with an alcohol or ether

c. Grind it with a part of the molten base

d. Comminute it with glycerin

e. Dissolve it in the molten base

288. The personal qualities of the head of a pharmaceutical company are attractive to the subordinates who want to emulate their boss in everything. What form of power of the manager is observed in this situation?

**a. Referent power**

b. Legitimate power

c. Power based on fear

d. -

e. Coercive power

289. An analytical pharmacist analyzes a chloramphenicol (levomycetin) substance and uses the specific absorption parameter value to calculate its quantitative content. What method was used for quantification in this case?

**a. Spectrophotometry**

b. Refractometry

c. Polarimetry

d. Polarography

e. Photocolorimetry

290. Paracetamol substance has been sent for analysis. Reaction with the solution of iron (III) chloride resulted in the blue-violet coloring. This indicates the presence of:

**a. Phenolic hydroxyl**

b. Alcoholic hydroxyl

c. Keto group

d. Aldehyde group

e. Ester group

291. A man came to a pharmacist and asked to recommend him a herbal tonic and adaptogen. What



herbal raw material has such a pharmacological effect?

- a. Silybum fruits
- b. Pumpkin seeds
- c. Flax seeds
- d. Fennel fruits

**e. Schisandra seeds**

292. How many mL of nitrofurazone (furacilin) is it necessary to measure out for preparation of 250 mL of nitrofurazone solution (1:5000)?

- a. 0.5
- b. 0.25
- c. 5.0

**d. 0.05**

e. 0.025

293. Oblong tablets are called:

**a. Caplets**

- b. Dragee
- c. Forte tablets
- d. Capsules
- e. Pellets

294. An analytical pharmacist detects a primary aromatic amino group in the structure of benzocaine (anesthesine). What compound would the pharmacist use for identification?

**a. Azo dye**

- b. Murexide
- c. Fluorescein
- d. Iodoform
- e. Indophenol

295. A pharmacist prepares a compound powder. What medicinal substance must be comminuted without adding an adjuvant liquid (alcohol or ether)?

- a. Camphor
- b. Streptocide (Sulfanilamide)
- c. Menthol
- d. Thymol

**e. Zinc oxide**

296. How long can vasoconstrictors for symptomatic treatment of rhinitis be used?

- a. 5 weeks
- b. 2 weeks

**c. 5-7 days**

- d. 3 weeks
- e. 1 month

297. Phytochemical workshop of a factory manufactures pancreatin. What is the source material for obtaining pancreatin?

**a. Pancreas of pigs or cattle**

- b. Lungs of cattle
- c. Gastric mucosa of pigs
- d. Heart of cattle
- e. Egg white

298. A pharmaceutical company studies the life cycle of a drug that is being introduced to the market. Name the stage, when sales volume grows slowly and large investments in organization of sales and manufacturing are necessary.

- a. Decline phase
- b. Maturity phase
- c. Saturation phase

d. Testing phase

**e. Market entry**

299. An analytical pharmacist analyzes a cefazolin sodium substance. What solution is used for identification of sodium ions?

**a. Potassium pyroantimonate solution**

b. Ammonium oxalate solution

c. Magnesium sulfate solution

d. Sodium nitrite solution

e. Barium chloride solution

300. What is the driving force of the diffusion process during the extraction of a herbal raw material?

a. Brownian motion of the particles

b. Presence of a film membrane

**c. Different concentration of the active substance in the raw material and extractant**

d. High polarity of the extractant

e. High temperature of the extractant

301. An analytical pharmacist uses cerimetry for quantification of nifedipine. What indicator is used in this method?

a. Methyl orange

b. Phenolphthalein

c. Tropeolin 00

**d. Ferroin**

e. Potassium chromate

302. Powders are a solid dosage form for internal or external use. What stage is NOT a part of powder production?

a. Packing

**b. Granulation**

c. Sifting

d. Mixing

e. Comminution

303. Commercial and financial activity of a pharmacy involves using returnable tare. Which of the following containers are returned to the supplier?

a. Paper boxes

**b. Metal cylinders**

c. Glass-stoppered bottles

d. Glassware

e. Packaging materials

304. Aqueous lanolin consists of:

a. 5 parts of anhydrous lanolin and 95 parts of water

b. 50 parts of anhydrous lanolin and 50 parts of water

c. 80 parts of anhydrous lanolin and 20 parts of water

d. 90 parts of anhydrous lanolin and 10 parts of water

**e. 70 parts of anhydrous lanolin and 30 parts of water**

305. A doctor has asked a dispensing chemist for consultation on free dispensation of medicines. What free drugs can the doctor prescribe to an epileptic patient for outpatient treatment?

a. Any drugs registered for distribution in Ukraine

**b. Only the drugs from the list of approved procurements for budget-financed healthcare facilities**

c. Only drugs produced domestically

d. Only imported drugs

e. Only vital drugs

306. Which of the plants listed below contain inulin?

a. *Salvia officinalis*, *Artemisia absinthium*

- b. *Rhamnus cathartica*, *Sorbus aucuparia*
- c. *Ledum palustre*, *Acorus calamus*
- d. *Inula helenium*, *Helianthus tuberosus***
- e. *Juniperus communis*, *Thymus serpyllum*

307. A dispensing chemist identifies metronidazole substance after reduction of the nitro group into an aromatic amino group. The dispensing chemist uses a reaction that produces the following:

- a. Azo dye**
- b. Azomethine dye
- c. Iron(III) hydroxamate
- d. Aurine dye
- e. Indophenol dye

308. *Brassica juncea* seeds are the raw material for the production of drugs with a distracting and warming effect. What class of bioactive substances causes such effect of the drugs?

- a. Alkaloids
- b. Thioglycosides**
- c. Polysaccharides
- d. Fatty oil
- e. Flavonoids

309. A pharmaceutical company produces liquid dosage forms. What principle is used in rotary pulsation apparatus to obtain an emulsion?

- a. Ultrasonic dispersion
- b. Maceration
- c. Mechanical dispersion**
- d. Coacervation
- e. Solubilization

310. A set of values, traditions, behavioral norms, and views inherent to an organisation characterizes its following feature:

- a. Success
- b. Profitability
- c. Capitalization level
- d. Self-development capability
- e. Culture**

311. How long must a pharmacy keep the documents that confirm the fact of sale of medicines and medical products?

- a. 5 years
- b. 1 year
- c. 10 years
- d. 3 months
- e. 3 years**

312. In the course of its development a pharmaceutical company forms its culture. Culture of a pharmaceutical company is typically based on:

- a. Relevant pharmaceutical practices
- b. Specifics of manufacturing process
- c. Values, traditions, and behavioral norms characteristic of company employees**
- d. Legislation in force
- e. License agreement

313. A pharmacist at the extemporaneous compounding department of a pharmacy has prepared 100 mL of an infusion of *Leonurus grass*. What amount of the herbal raw material and purified water is necessary to prepare this infusion, if water absorption coefficient is 2.0?

- a. 10.0 g and 120 mL**
- b. 20.0 g and 140 mL
- c. 5.0 g and 110 mL

- d. 10.0 g and 100 mL
- e. 0.25 g and 100 mL

314. According to the rules in force, workrooms should regularly undergo humid disinfection. How often should the floors be washed?

- a. No less than thrice in a week
- b. No less than twice in a month
- c. No less than twice in a week
- d. No less than once in a shift**
- e. No less than once in a week

315. A dispensing chemist uses iodometry (back titration) for quantitative determination of caffeine medicinal substance. What indicator is used in this case?

- a. Litmus paper
- b. Starch**
- c. Eriochrome black
- d. Phenolphthalein
- e. Phenol red

316. What oral hypoglycemic agent should be prescribed for a 47-year-old overweight patient with type 2 diabetes mellitus, if diet therapy is ineffective?

- a. Metformin**
- b. Meloxicam
- c. Metronidazole
- d. Metoclopramide
- e. Metoprolol

317. Genetically induced adverse reaction to a certain drug is caused by various enzyme defects. Name this reaction:

- a. Idiosyncrasy**
- b. Dysbiosis
- c. Steal syndrome
- d. Rebound effect
- e. Withdrawal syndrome

318. How often should a pharmacy make an inventory of its fixed assets?

- a. At least once in a quarter
- b. At least thrice a year
- c. Once a year**
- d. At least twice a year
- e. Once every three years

319. A 60-year-old patient, who had suffered a myocardial infarction, was prescribed acetylsalicylic acid as an antiaggregant. Specify the optimal daily dosage of acetylsalicylic acid for antiaggregatory effect:

- a. 100 mg**
- b. 500 mg
- c. 400 mg
- d. 300 mg
- e. 200 mg

320. Lately the Phytopharm pharmaceutical company has been forced to decrease its production volume and range of goods. Not only does the company head manager demonstrate no managerial abilities, but he also appears to be completely disinterested in the running of the business and executes no control over it. Determine the leadership type of the head manager in this case:

- a. Directive
- b. Authoritarian
- c. Autocratic
- d. Democratic

**e. Liberal**

321. A woman with diabetes mellitus has injected herself with 30 units of insulin. After that she developed weakness and came to the pharmacy to ask for help. In the pharmacy she lost her consciousness and developed convulsions. What should she be given immediately?

- a. Butamide (Tolbutamide)
- b. Insulin
- c. Metformin

**d. Glucose**

- e. Glibenclamid

322. What concept can be described as "...an area of exchange with its characteristic system of economic relations between goods manufacturers and consumers"?

- a. Agreement
- b. Marketing
- c. Management
- d. Sales

**e. Market**

323. A pharmaceutical company lowered its price for a certain drug due to strong competition and decreasing demand for this drug. What is the purpose of such price policy?

- a. To maximize profits
- b. -
- c. To create the image of high-quality medicine manufacturer

**d. To ensure business survival**

- e. To gain leadership due to high quality of manufactured medicines

324. Advertising is the most popular and widely used part of marketing communications system. What cannot be included into the advertisements for medicines?

- a. Full pharmacological name of the medicine and the name of its manufacturer
- b. General warnings about the usage of medicines and medical products
- c. Objective information about the medicines, presented in such a way that the advertising nature of the message is obvious to the consumers

**d. Claims that the effect of the medicines is guaranteed**

- e. Recommendation to always read the instructions for the medicines

325. What type of moisture remains after the herbal raw material is dried?

- a. Osmotic
- b. Free

**c. Residual**

- d. External
- e. Equilibrium

326. What packaging should the pharmacist use for a baby powder?

- a. Gelatin capsules
- b. Parchment
- c. Ordinary paper capsules

**d. Container with a lid that has holes in it**

- e. Wax paper

327. An analytical chemist conducts a thiochrome formation reaction to identify thiamine bromide. What reagent should be used in this case?

**a. Potassium ferrocyanide**

- b. Iron(II) sulfate
- c. Calcium chloride
- d. Potassium bromide
- e. Sodium hydroxide

328. Analysis of sales volume of a certain drug shows that the drug is being manufactured in large

batches and sales volume grows. However, the growth rate gradually slows down and the number of competitors increases. What stage of product life cycle is it?

a. Development

**b. Maturity**

c. Introduction

d. Decline

e. Growth

329. What adjuvants can increase the viscosity and melting temperature of an ointment base?

a. Sodium lauryl sulfate

b. Benzalkonium chloride

c. Propylene glycol, gelatin

**d. Paraffin, spermaceti**

e. Ethanol, purified water

330. A herbal mix contains Cortex Frangulae, Folia Urticae, and Herba Millefolii. Name the characteristic microscopic features that allow identification of Folia Urticae herbal raw material:

**a. Capitate, flask-shaped, and stinging hairs; cystoliths; vessels of the conducting bundle, veins, druses of calcium oxalate**

b. Simple capitate hairs

c. T-shaped hairs along the leaf margin

d. Many-armed, two-armed, and simple hairs

e. Bast fibers, tracheids, starch, vessels

331. What substance forms a film coating of tablets and can be dissolved only in intestinal juice?

**a. Acetylphthalylcellulose**

b. Diethylaminomethylcellulose

c. Benzylaminocellulose

d. Paraaminobenzoate of sugars

e. Sodium carboxymethyl cellulose

332. A herbal raw material (fruits) was sent for analysis. This material consists of glossy black drupes 8 mm in diameter with one large spherical light-brown seed that is very firm. Its chemical analysis showed the presence of condensed tannins. What plant is the source of this herbal raw material?

a. Rhamnus cathartica

b. Schisandra chinensis

c. Vaccinium myrtillus

d. Ribes nigrum

**e. Prunus padus**

333. A certain management style can be characterized by the following features: the authority is highly centralized; work duties of the employees are very structured; the ability of employees to make decisions is extremely limited; strict compliance with numerous rules and regulations is prioritized. Name this management style:

a. Direct

b. Collective

c. Liberal

d. Democratic

**e. Authoritarian**

334. What semi-synthetic antibiotic can be synthesized in the process of reaction between 6-aminopenicillanic acid and phenylaminoacetic acid chloranhydride?

a. Rifampicin

b. Cephalexin

c. Methacycline

d. Amikacin

**e. Ampicillin**

335. What technology should be chosen by a pharmacist to make a liquid dosage form, if it contains

calcium gluconate?

- a. Dissolve in alkaline medium
- b. Dissolve it in hot solvent or heat it up to full dissolution**
- c. Add equal amount of sodium chloride
- d. First grind it into powder when it is dry or with small amount of solvent added
- e. Dissolve in the water free of redox substances

336. The head manager of a pharmacy has determined the salary of a dispensing chemist for the work performed according to the labor norms. What type of payment is it?

- a. Reimbursement
- b. Incentive pay
- c. Pension benefit
- d. Additional salary
- e. Base salary**

337. In the process of pharmaceutical company entering an offshore market the traditions and customs, religion, system of values, and education level of the local population were analyzed. What factors of international marketing environment were researched?

- a. Economical
- b. Political
- c. Sociocultural**
- d. Technological
- e. Legal

338. In the process of industrial production, certain adjuvants are included in the soft dosage forms as pH regulators. Name these adjuvants:

- a. Citric acid, sodium phosphate salts**
- b. Glycerine, dimethyl sulfoxide
- c. Sodium lauryl sulfate, tween emulsifiers
- d. Benzalkonium chloride, benzyl alcohol
- e. Paraffin, spermaceti

339. Select a non-steroid estrogen from the list below:

- a. Adrenalin
- b. Retabolil (Nandrolone)
- c. Synoestrol (Hexestrol)**
- d. Progesterone
- e. Prednisolone

340. A patient came to a pharmacy to buy a herbal antidepressant containing condensed anthracene derivatives and flavonoids. What herbal raw material is used to make this drug?

- a. Urticae folia
- b. Uvae ursi folia
- c. Rhodiola roseae rhizomata et radices
- d. Filicis maris rhizomata
- e. Hyperici herba**

341. An 18-year-old girl was hospitalized with complaints of polyuria, dry skin, loss of weight, and general weakness. She was diagnosed with diabetes mellitus type I, first diagnosed. What drug should be taken first in the course of the therapy?

- a. Insulin**
- b. Glibenclamid
- c. Arphasetin
- d. Metformin
- e. Exenatide

342. The management of a pharmaceutical company uses F. Herzberg's two-factor theory of motivation. What is this theory based on?

- a. The need for protection

- b. The need for existence, connection, growth
- c. The need for safety

**d. Hygienic and motivational factors**

- e. The need for power, success, and affiliation

343. Various admixtures are possible in the process of harvesting, drying, and primary processing of herbal raw material. Organic admixtures include:

- a. Metallic objects
- b. Soil particles
- c. Glass fragments
- d. Sand

**e. Non-harvested parts of the same plant**

344. Licorice roots contain saponins. What reaction can prove their presence in the herbal raw material?

- a. Fehling's test
- b. Foaming reaction**
- c. Molisch's test
- d. Dragendorff's test
- e. Reaction with iron(III) chloride

345. The substances and their salts that are used in production and purification of narcotic and psychotropic substances should be accounted in the pharmacy as:

- a. Toxic substances
- b. Potent substances
- c. Narcotic substances
- d. Psychotropic substances

**e. Precursors**

346. A tincture of Fructus Capsici is used as a distracting agent and an irritant in cases of neuralgia, radiculitis, and myositis. What bioactive substance of Fructus Capsici has such an effect?

**a. Capsaicin**

- b. Ephedrine
- c. Inulin
- d. Schisandrin
- e. Colchicine

347. A certain substance is yellow, but does not leave a colored mark on the filter paper, mortar, and pestle. Powders with this substance are prepared according to the general rules. Name this substance:

- a. Riboflavin

**b. Sulfur**

- c. Brilliant green
- d. Furacilin (Nitrofurazone)
- e. Methylene blue

348. Various types of glass are used in production of parenteral drugs. What type of glass is used for photosensitive substances?

- a. Borosilicate neutral glass "УСП -1"
- b. Alkaline glass "АБ-1"
- c. Neutral glass "HC-2A"
- d. Neutral glass "HC-2"

**e. Light-resistant neutral glass "CHC-1"**

349. Which of the following diuretics **SHOULD NOT** be given to the patients with impaired hearing?

- a. Chlorthalidone
- b. Indapamide
- c. Furosemide**



- d. Spironolactone
- e. Clopamide

350. A 28-year-old woman came to a pharmacy complaining of constipation that developed after antacid treatment. What drug could be the cause of this symptom?

- a. Simethicone
- b. Aluminium-containing drugs**
- c. Magnesium-containing drugs
- d. Ranitidine
- e. Calcium carbonate

351. What type of marketing should be used if the demand for some medicines in the pharmaceutical market is negative?

- a. Incentive marketing
- b. Demarketing
- c. Conversion marketing**
- d. Remarketing
- e. Synchromarketing

352. Accounts receivable develop in the process of pharmaceutical company work. Specify where in the balance book they are recorded:

- a. Assets**
- b. Account
- c. Credit
- d. Liabilities
- e. Debit

353. Lipophilicity is very important for the bioavailability of a substance. Name the numerical parameter that characterizes lipophilicity.

- a. Coefficient of surface tension
- b. Coefficient of viscosity
- c. Stoichiometric coefficient
- d. Distribution coefficient**
- e. Correction factor

354. Storage of medical products in pharmacies is carried out in compliance with the law. What relative humidity is necessary for storage of rubber products to prevent their drying and deformation?

- a. At least 20%
- b. At least 40%
- c. At least 65%**
- d. At least 30%
- e. At least 50%

355. What is an effective way of preserving the stability of the medicinal substances that are thermolabile and have low stability?

- a. Lyophilization**
- b. Filtration
- c. Ultraviolet radiation
- d. Hydrolysis
- e. Boiling

356. A pharmacist prepares 100 ml of glucose solution. Specify the amount of Weibel's stabilizer necessary in this case:

- a. 15 ml
- b. 20 ml
- c. 2 ml
- d. 5 ml**
- e. 10 ml

357. The "Pharmastar" pharmaceutical company develops new dosage forms for its medicines. What type of product policy in marketing is it?

- a. Diversification
- b. Modernization
- c. Differentiation
- d. Reduction
- e. Product modification

358. Which of the pharmacy departments is responsible for checking the quantity and quality of received goods, their storage and dispensing to other departments?

- a. Department of finished dosage forms
- b. Department of over-the-counter drugs
- c. Compounding and production department
- d. Department of curative cosmetics
- e. Inventory department

359. During macroscopic analysis of rhizomes with roots, a pharmacist notes that rhizomes often have a cavity in their center. The color of the raw material is reddish-brown on the outside, while on section reddish-brown bark and orange-red wood are visible. The taste is sweet at first, but becomes slightly astringent and bitter later. What plant is the source of this herbal raw material?

- a. *Rubia tinctorum*
- b. *Thymus serpyllum*
- c. *Melissa officinalis*
- d. *Sambucus nigra*
- e. *Mentha piperita*

360. Different types of granulation are used in the tablet production. What is the most productive method of structural granulation?

- a. Wet granulation in vertical granulators
- b. Granulation in the fluidized bed
- c. Granulation in spray dryers
- d. Granulation using briquetting
- e. Granulation in the dragee pan

361. Name the official document on audit results, which is drawn under the standard procedure and contains conclusions about reporting credibility and integrity of financial statements of an organization:

- a. Cash flow statement
- b. Income statement
- c. Statement of changes in equity
- d. Balance sheet
- e. Auditor's conclusion

362. In the process of phytochemical examination of buckthorn bark, the reaction with alkaline solution resulted in red coloring, which indicates the presence of the following:

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

363. During the two years of working in his position, the pharmacist proved to be a responsible and efficient specialist. The pharmacy's head manager appointed him to the position of the head of the Extemporaneous Compounding Department. What is this type of personnel movement called?

- a. Employee turnover
- b. Spiral (horizontal) rotation
- c. Mixed rotation
- d. Helical (vertical) rotation

e. Recruitment

364. A 36-year-old woman with herpetic rash on her lips has come to a pharmacy. Recommend her a drug for topical treatment:

a. Acyclovir

b. Fluconazole

c. Metronidazole

d. Levofloxacin

e. Amikacin

365. Pharmacy assets can be divided into current and non-current. What should be classified as non-current assets when drawing up the balance sheet?

a. Herbal raw materials

b. Buildings

c. Monetary funds

d. Packaging

e. Goods

366. *Sanguisorba officinalis* herbal raw material contains tannins. What method must be used to determine their content according to the State Pharmacopoeia of Ukraine?

a. Nephelometry

b. Permanganatometry

c. Chromatography

d. Photoelectrocolorimetry

e. Spectrophotometry

367. The management of a pharmaceutical company takes into account the presence of informal groups within the organization. What is characteristic of informal groups?

a. Have a clear formal structure

b. Are formed for the implementation of the manufacturing process

c. -

d. Are formed upon the request of the head of the organization

e. Resist changes in the organization

368. For better coverage of various markets the Lubnyfarm company sells a portion of its production through its chain of pharmacies, another portion is being sold through distributors, and the third - through pharmacies of another owners. What marketing system of distribution is used by this company?

a. Multichannel

b. Administered

c. Horizontal

d. Corporate

e. Contractual

369. A 24-year-old patient after a thorough examination was diagnosed with type 1 diabetes mellitus for the first time. What antihyperglycemic agent should be prescribed in this case?

a. Metformin

b. Urea

c. Etacrynic acid

d. Insulin

e. Glibenclamide

370. The phytochemical workshop of a factory produces liquid extracts. What extractants are used in this manufacturing process?

a. Dichloroethane

b. Ammonia solution

c. Water

d. Chloroform

e. Aqueous-alcoholic solutions

371. Because of dissatisfaction with working conditions, a dispensing chemist has resigned of his own free will from the pharmacy and found a job as a medical representative of a pharmaceutical company. Such movement of the personnel corresponds with the following concept:

a. Staff turnover

b. Recruitment

c. Promotion

d. Staff rotation

e. -

372. After the start of a treatment, a tuberculosis patient has developed red coloration of urine, saliva, and lacrimal fluid. What drug could have caused such changes in this case?

a. Benzylpenicillin (Penicillin G) sodium salt

b. Rifampicin

c. Alcoholic iodine solution

d. Isoniazid

e. Ciprofloxacin

373. Incoming medicines inspection is performed by an authorized employee. What is NOT a part of the responsibilities of this person?

a. To check the pharmacy stock for low-quality or fake medicines

b. To draw up conclusions regarding inspection of incoming medicines

c. To keep a roster of incoming medicines

d. -

e. To draw up orders for medicines and medical products, to conclude sales contracts

374. During anti-Helicobacter quadrotherapy patient's feces colored black. What drug could have caused this effect?

a. Amoxicillin

b. Metronidazole

c. Clarithromycin

d. Bismuth subcitrate

e. Omeprazole

375. The management of a pharmaceutical company performs an internal audit to check the compliance with proper work practices. What management function is used by the company's management in this case?

a. Motivation

b. Planning

c. Regulation

d. Organization

e. Control

376. To identify cardiac glycosides there are usually three groups of color reactions being performed: for steroid nucleus, for lactonic ring, and for carbohydrate component. Specify the reaction for identification of butenolide ring:

a. Dragendorff's test

b. Reaction of sublimation

c. Mayer's test

d. Stahl's reaction

e. Legal's test

377. To increase the tone and specific rhythmic activity of the uterus, a certain ergot alkaloids-based herbal drug is used. Name this drug:

a. Atropine sulfate

b. Codeine phosphate

c. Morphine hydrochloride

d. Ergotamine hydrotartrate

e. Papaverine hydrochloride

378. What drug, due to beta-lactam ring in its structure, has positive reaction with hydroxylamine hydrochloride solution in the presence of sodium hydroxide with subsequent addition of iron (III) chloride solution?

- a. Amoxicillin trihydrate
- b. Metronidazole
- c. Papaverine hydrochloride
- d. Dibazol (Bendazol)
- e. Phenazone

379. At a pharmacy, the pharmacist makes vaginal suppositories. What is the permissible range of the average weight of such suppositories?

- a. 2.0-6.5 g
- b. 3.0-7.0 g
- c. 4.0-7.5 g
- d. 1.0-4.0 g
- e. 1.5-6.0 g

380. Employees of a pharmaceutical company have formed a group consisting of cycle sport fans. Such group is called:

- a. Manufacturing
- b. Informal
- c. Committee
- d. Formal
- e. Commercial

381. To decrease business risks, a pharmaceutical company decided to expand its activity and penetrate into new market (to open a fitness center). Name this process:

- a. Diversification
- b. Integration
- c. Intensification
- d. Conglomeration
- e. Modernization

382. A pregnant woman complains of elevated blood pressure up to 160/100. What hypotensive drug should she use in this case?

- a. Methyldopa
- b. Bisoprolol
- c. Enalapril
- d. Reserpine
- e. Losartan

383. A certain pharmaceutical company is focused on the manufacture of medicines, while the sales play only a secondary role. What is the company's main type of business activity in this case?

- a. Leasing
- b. Finances
- c. Consulting services
- d. Insurance
- e. Manufacture

384. The phytochemical workshop of a factory produces extraction preparations. For what purpose are concentrated extracts used?

- a. For preparation of dry extracts
- b. To be used as ready-made medicines
- c. For quick preparation of infusions and decoctions in pharmacy practice
- d. For preparation of tinctures
- e. For preparation of thick extracts

385. The quality control analytical laboratory analyzes a medicine with sodium benzoate. What reagent will form a pink-yellow precipitate with the medicine being analyzed?

- a. Sodium nitrate solution
- b. Iron(III) chloride solution**
- c. Magnesium sulfate solution
- d. Sodium bicarbonate solution
- e. Potassium permanganate solution

386. Prior to making a sodium chloride isotonic solution a pharmacist baked the powder in a dry heat box. What substances are removed by this operation?

- a. Pyrogenic substances**
- b. Redox substances
- c. Sulfates
- d. Chlorides
- e. Moisture

387. At the laboratory of a pharmaceutical company, a corticosteroid medicinal substance - hydrocortisone acetate - is being analyzed. What cycle in its molecule causes the appearance of an intense bright yellow coloring, when concentrated sulfuric acid is added?

- a. Pyridine cycle
- b. Steroid cycle**
- c. Naphthalene cycle
- d. Xanthine cycle
- e. Imidazole cycle

388. To stabilize the suspension a pharmacist has used potassium soap. What substance does this suspension contain?

- a. Sulfur**
- b. Menthol
- c. Camphor
- d. Basic bismuth nitrate
- e. Phenyl salicylate

389. The marketing department of a pharmaceutical company conducts a field research of the pharmaceutical market. What method of information collection belongs to the field research?

- a. Analysis of the periodical publications
- b. Analysis of the scientific publications
- c. Analysis of the company's statistical reports
- d. Analysis of the statistical reference books
- e. Customer survey**

390. A pharmaceutical company plans to launch the production of a new medicine. What stage of product development includes making the cost estimates for its manufacturing and sales and preliminary calculations of the price and planned profits?

- a. Commercial manufacturing
- b. Filtration of the ideas
- c. Economic analysis**
- d. Test marketing
- e. Generation of the ideas

391. To prepare decoctions with the volume of 1000-3000 ml, they should be infused in a boiling water bath for:

- a. 25 minutes
- b. 40 minutes**
- c. 45 minutes
- d. 30 minutes
- e. 15 minutes

392. Under the current legislation there is a certain list of controlled substances that require keeping of the special inventory log. Select the drug that belongs on this list:

- a. Solpadeine

- b. Analgin (Metamizole)
- c. Novocaine
- d. Digoxin

**e. Phenobarbital**

393. A 58-year-old patient with persistent bronchial asthma receives long-term inhalation therapy. Within a week, symptoms of candidiasis appeared in her oral cavity. What medicines could have caused this side effect?

**a. Inhaled glucocorticosteroids**

- b. Inhaled beta<sub>2</sub>-adrenergic agonists
- c. Herbal antiseptics
- d. Inhaled muscarinic antagonists
- e. Mucolytics

394. Glucose substance was received for analysis. When heated with copper tartrate reagent (Fehling reagent), it produced a red precipitate, which indicates that its structure contains:

a. Phenolic hydroxyl

**b. Aldehyde group**

- c. Alcoholic hydroxyl
- d. Ester group
- e. Amide group

395. Injection solutions are being produced in an ampoule workshop. Injection solution of ascorbic acid belongs to the following group of solutions:

a. Solutions of the substances that cannot be thermally sterilized

**b. Easily oxidized solutions**

- c. Solutions of the salts formed by weak bases and strong acids
- d. Solutions of the substances that need special purification
- e. Solutions of the salts formed by strong bases and weak acids

396. According to the State Pharmacopoeia of Ukraine regulations, valine amino acid should be identified by means of thin-layer chromatography. To develop a chromatogram, the following reagent should be used:

- a. Cyanogen bromide
- b. 2,4-Dinitrochlorobenzene
- c. 2,4-Dinitrophenylhydrazine

**d. Ninhydrin**

e. Concentrated ammonia

397. Pharmaceutical logistics is aimed at advertising, search for customers, entering into agreements, after-sales service, and transportation. What type of logistics is it?

- a. Procurement
- b. Manufacturing
- c. Human resources

**d. Sales**

e. Information

398. A patient, who has been taking warfarin for a long time, was recommended to take acetylsalicylic acid because of hyperthermic syndrome. What complication can be caused by such a combination of medicines?

**a. Hemorrhages**

- b. Dysbacteriosis
- c. Hyperkalemia
- d. Hypokalemia
- e. Thrombus formation

399. To treat iron-deficiency anemia the following drug is usually prescribed:

a. Furagin (Furazidinum)

**b. Ferroplex**

- c. Heparin
- d. Vicasol (Menadione)
- e. Corticosteroids

400. In the process of packing and transporting, herbal raw material often becomes partially comminuted or even powdered. Excessive comminution has negative effect on the herbal raw material appearance and its quality. What tool is used to separate these excessively comminuted particles from the rest of the herbal raw material?

- a. Filter
- b. Scalpel
- c. Sieve
- d. Tweezers
- e. Mortars

401. In what order must alcohol-containing solutions be added into aqueous solutions during the preparation of liquid dosage forms?

- a. In the order of decreasing alcohol concentration
- b. In the order of increasing volume of alcohol-containing solutions
- c. In any order
- d. In the order of increasing alcohol concentration
- e. First into the vial for dispensing

402. A "Sunrise" pharmacy chain has changed the placement of medical products on its shelves and in the shop windows, to study what effect would this merchandising tactics have on the sales amount. What method of marketing research was used by this pharmacy chain?

- a. -
- b. Panel
- c. Survey
- d. Observation
- e. Experiment

403. A pharmacy must be closed during inventory-taking. How long can this process take?

- a. No more than 3 days
- b. No more than 14 days
- c. No more than 7 days
- d. No more than 10 days
- e. No more than 6 days

404. Gastroduodenopathies are one of the most common complications of pharmacotherapy during treatment with nonsteroidal anti-inflammatory drugs. What statement correctly describes the cause of their development?

- a. Disturbed pain impulse conduction
- b. Inhibition of platelet adhesion and aggregation
- c. Inhibition of prostaglandin synthesis in the mucosa
- d. Inhibition of neutrophil aggregation
- e. Inhibition of lipid peroxidation

405. A pharmacist prepares a suspension with a hydrophobic substance. What stabilizer is necessary for this dispersion system?

- a. Boric acid
- b. Nipagin (Methylparaben)
- c. Sodium chloride
- d. Glucose
- e. Methyl cellulose

406. A patient is 20 years old. After she was stung by a bee the patient developed Quincke's disease; rash in the form of blisters and papulae appeared on her torso. First aid in this case should start with administering the following drug:

- a. Prednisolone



- b. Haemodes
- c. Penicillin
- d. Fresh frozen plasma
- e. Rheopolyglukin (Dextran)

407. What department of a pharmaceutical wholesaler analyzes the demand for medicines and implements measures to stimulate their sales?

- a. Automated accounting
- b. Marketing**
- c. Procurement
- d. Transport
- e. Storage

408. A man with arterial hypertension has blood pressure of 160/100 mm Hg and heart rate of 64/min. and presents with signs of fluid retention (pastose shins, dyspnea, etc.). What hypotensive agent is the drug of choice in case of edema syndrome?

- a. Enalapril
- b. Losartan
- c. Hydrochlorothiazide**
- d. Amlodipine
- e. Metoprolol

409. Digoxin is given to the patients with chronic heart failure. What medicinal plant that contains cardiac glycoside is a source of this medicinal substance?

- a. *Erysimum canescens*
- b. *Digitalis lanata***
- c. *Strophanthus kombe*
- d. *Convallaria majalis*
- e. *Adonis vernalis*

410. Pharmacy premises can be divided into service rooms and workrooms. Name the workroom for storage of medical products:

- a. Distillation room
- b. Washing room
- c. Shop floor
- d. Material storage room**
- e. Aseptic block

411. Which one of the listed drugs is a glycoside antibiotic?

- a. Tetracycline
- b. Erythromycin**
- c. Cephalixin
- d. Polymyxin
- e. Levomycetin (Chloramphenicol)

412. What medicine obtained from ergot is used in gynecology and has a hemostatic effect?

- a. Galantamine hydrobromide
- b. Vinblastine
- c. Vincaton
- d. Ergotamine hydrotartrate**
- e. Digitoxin

413. During drug identification, a sample of the substance was moistened with concentrated sulfuric acid and the bottom of the test tube was carefully heated. A white plaque appeared that coated the test tube walls from the inside. What substance can be detected using this reaction?

- a. Sodium benzoate**
- b. Theophylline monohydrate
- c. Nitrofurazone (Nitrofurazone)
- d. Morphine hydrochloride

e. Benzocaine

414. What is the medicine of choice for treatment of acute pyelonephritis in a woman, who is at the I trimester of her pregnancy?

a. Amoxicillin

b. Co-trimoxazole

c. Norfloxacin

d. Gentamicin

e. Ofloxacin

415. A marketing study found that the main group of consumers of venotonics are women aged 40 to 60 years. What principle is used for market segmentation in this case?

a. Geographical approach

b. Psychographic approach

c. Demographic approach

d. Behavioral approach

e. -

416. According to the current Ukrainian legislation all drugs are divided into two categories: prescription and nonprescription (over-the-counter). Which one of the listed drugs requires no prescription?

a. Ketamine, 5% infusion solution, 2 ml №10

b. Ascorbic acid, 500 mg №30

c. Phenobarbital, tablets, 100 mg №6

d. Clonidine, ampoules, 1 ml of 0,01% solution №10

e. Tramadol, capsules, 0,05 №10

417. A 24-year-old man suffers from exacerbation of chronic bronchitis. This condition is accompanied by production of a small amount of viscous sputum. What drug is indicated to facilitate the expectoration in this case?

a. Fenoterol

b. Budesonide

c. Ipratropium bromide

d. Acetylcysteine

e. Oxeladin

418. Name the list of effective and safe to use drugs and medical products for prevention, diagnosing, and treatment of the most common pathologies, based on their importance for healthcare in a specific country:

a. Drugs subject to strict accounting in a special inventory log

b. Precursors

c. Essential drugs

d. Substandard drugs

e. Over-the-counter drugs

419. After mineralization of bromocamphor with zinc dust, bromide-ions can be detected in the filtrate in the presence of  $\text{CHCl}_3$  by performing a reaction with:

a. Chloral hydrate

b. Acetyl chloride

c. Chloromethane

d. Sodium chloride

e. Chloramine

420. Profitability is an economic parameter that characterizes the effectiveness of the pharmacy's commercial, financial, and manufacturing activity. What parameters are used to determine the profitability of sales?

a. Turnover of goods cost price of products

b. Turnover of goods wages

c. Profit turnover of goods

- d. Cost price of products liquidity
- e. Liquidity solvency

421. An employee of an analytical and quality control laboratory performs a rapid analysis of morphine hydrochloride. In this case, the presence of phenolic hydroxyl can be confirmed by a reaction with a solution of:

- a.  $\text{FeCl}_3$
- b.  $\text{AgNO}_3$
- c. Concentrated  $\text{HNO}_3$
- d.  $\text{K}_3[\text{Fe}(\text{CN})_6]$
- e.  $\text{NH}_3$

422. Specialists of a pharmaceutical enterprise confirm the identity of *Cassia acutifolia* herbal raw material. During reaction with alkali it developed cherry-red coloring. What substances were identified?

- a. Tannins
- b. Alkaloids
- c. Anthraquinones
- d. Iridoids
- e. Glycosides

423. A pharmacy has received a formulation for the solution with a substance that moderately expands in the cold water. Name this substance:

- a. Protargol (Silver proteinate)
- b. Glucose
- c. Calcium chloride
- d. Sodium chloride
- e. Gelatin

424. Every pharmacy as a business has its income and expenditure operations. What business transaction will result in a summary increase of stocked goods?

- a. Goods receipt from the supplier
- b. Receipt of low-value wearing goods
- c. Money transfer from a bank to the cash desk
- d. Debt recovery from a person accountable
- e. Issuing money to be accounted for

425. A 43-year-old patient was delivered to an admission room with renal colic attack. What group of drugs would be the most effective during the attack?

- a. Antibiotics
- b. Cholagogues
- c. Antispasmodics
- d. Antacids
- e. Hepatoprotectors

426. What substance is most often used as a vehicle in triturations?

- a. Talcum
- b. Glucose
- c. Lactose
- d. Sucrose
- e. Starch

427. A pharmaceutical factory prepares syrups for taste-masking of medicines. What substance must be removed from such syrups to prevent jellification of the end product?

- a. Glucose
- b. Starch
- c. Sucrose
- d. Fructose
- e. Pectin

428. A regional pharmaceutical market has a large number of pharmaceutical companies, none of which is able to control the market prices. The companies offer interchangeable medicines. What type of market is it?

- a. Pure monopoly market
- b. Limited monopoly market
- c. -

**d. Market with pure (free) competition**

- e. Oligopolistic market

429. A man came to the ophthalmologist complaining of poor twilight vision. Having collected the patient's medical history, the doctor suspected that these signs could be caused by the lack of a certain vitamin. What vitamin is likely to be deficient in this case?

- a. Ergocalciferol
- b. Phylloquinone (Phytomenadione)
- c. Cholecalciferol

**d. Retinol**

- e. Tocopherol

430. What is the duration of the leave due to pregnancy and childbirth?

- a. 70 working days
- b. 56 calendar days
- c. 59 working days
- d. 90 calendar days

**e. 126 calendar days**

431. A doctor has prescribed a mixture containing several types of herbal raw material. Extracts of the following raw materials can be obtained in one infusion apparatus:

**a. Mint leaves, chamomile flowers**

- b. Mint leaves, buckthorn bark
- c. Mint leaves, Althaea roots
- d. Mint leaves, Arctostaphylos leaves
- e. Mint leaves, flax seeds

432. A patient, who has undergone treatment for community-acquired pneumonia, complains of hearing impairment. What antibacterial drug could result in such a side-effect?

- a. Clarithromycin
- b. Cefazolin
- c. Amoxicillin/clavulanate
- d. Ciprofloxacin

**e. Gentamicin**

433. Galenical preparations include:

- a. Spansules
- b. Capsules

**c. Tinctures**

- d. Granules
- e. Aerosols

434. A pharmacist has prepared a solid dosage form - a compound powder. What technological operation is NOT a part of preparation process in this case?

- a. Comminution
- b. Packing
- c. Mixing

**d. Dissolution**

- e. Dosing

435. A pharmaceutical company plans to introduce traditional herbal remedies to new markets. What marketing opportunity according to Ansoff Matrix was used by the company?

- a. Product development

- b. Consolidation
- c. Market development**
- d. Diversification
- e. Market penetration

436. Tyndallization is used at a pharmaceutical factory as one of sterilization methods for thermolabile substances. What is the essence of this method?

- a. Autoclaving at 119-121°C with pressure at 1,0-1,1 atm
- b. Sterilization with flowing steam at 100°C
- c. Sterilization with high-frequency and microwave frequency current
- d. Triple heating of solution to 40-60°C with 24-hour-long intervals in between for thermostating**
- e. Sterilization with dry heat at 180-200°C for a lengthy period of time

437. An accountable person has received a sum of money from the pharmacy cash desk to buy a calculator. What document records the cash flow in such a transaction?

- a. Receipt
- b. Cash expense order**
- c. Invoice
- d. Cash income order
- e. Remains unregistered documentarily

438. When pressed, tablets stick to the tablet press. Why such adhesion occurs?

- a. Heterogeneity of the granulated material
- b. Lamellar crystals in the tablet powder
- c. Excessive moisture of the tablet substance and high pressure**
- d. High specific density of the powders
- e. Inadequate flowability of the tablet substance

439. Thymus serpyllum grass is harvested in Ukraine. At what stage of plant growth is this herbal raw material harvested?

- a. After harvesting the fruits
- b. Before the formation of green fruits
- c. Before the flowering
- d. During the flowering stage**
- e. When the fruits are ripe

440. A pharmaceutical company produces a medicine under the brand name "Corglyconum". What herbal raw material is used in preparation of this drug?

- a. Dandelion roots
- b. Wormwood grass
- c. Lily-of-the-valley grass**
- d. Buckthorn bark
- e. Plantain foliage

441. A 45-year-old man has been taking long-acting nitrates twice a day for a year. Currently the decrease in effectiveness of the pharmacotherapy is being observed. What side-effect can be suspected in the first place?

- a. Impairment of coronary circulation
- b. Progressing ischemic heart disease
- c. Development of nitrate tolerance**
- d. Progressing coronary atherosclerosis
- e. Myocardial infarction

442. What is present in the structure of procaine hydrochloride, making its alkalimetric titration possible?

- a. Bound hydrochloric acid**
- b. Ester bond
- c. Residue of n-aminobenzoic acid
- d. Unsubstituted aromatic cycle

e. Diethylamino group

443. A pharmacist has prepared a suspension that contains basic bismuth nitrate. What method was used in the process of its preparation?

a. Physical condensation

**b. Dispersion with stirring**

c. Continental method

d. Chemical condensation

e. Solvent replacement method

444. A medicine has caused a side effect in the patient due to the patient's hereditary defect of the enzymatic system. This phenomenon is called:

a. Withdrawal syndrome

b. Drug dependence

c. Allergic response

d. Dysbiosis

**e. Idiosyncrasy**

445. A pharmacy manager has drawn up a work schedule for the next month. What type of management activity is aimed at making highly specific, detailed, short-term plans?

a. Business planning

b. Strategic planning

**c. Operational planning**

d. -

e. Financial planning

446. Manufacturer's marketing department detected negative demand for a certain goods. What would be the marketing task? What type of marketing should be applied?

**a. Demand making, conversion marketing**

b. Demand stimulation, promotional marketing

c. Demand leveling, synchromarketing

d. Demand decrease, demarketing

e. Demand increase, remarketing

447. A pharmaceutical factory produces Thiamazole (Merkazolil) that is a medicinal substance with an antithyroid effect. Select from the list one of the initial compounds in its synthesis.

a. Hydroxyquinoline

b. Acridine

c. Naphthoquinone

d. Furfural

**e. Methyl isothiocyanate**

448. Several cholesterol gallstones are detected in the gallbladder of a woman. Choose the drug to dissolve and excrete the stones:

a. Loperamide

b. Papaverine

c. Domperidone

d. Platyphyllin

**e. Ursodeoxycholic acid**

449. A pharmacy has received a prescription written on an F-3 form. The dispensing chemist, tasked with the incoming control of the prescription, noted that it was missing certain mandatory details. Such prescription forms must always have the following:

a. Medical facility stamp, signature of the head manager of the medical facility, seal of the medical facility

b. Signature of the head manager of the medical facility or signature of the deputy head manager for medical work

c. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility

d. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility, seal of the medical facility

e. Doctor's personal seal and signature

450. A woman at the third trimester of her pregnancy fell ill with pneumonia. A doctor prescribed her a fluoroquinolone. What negative effect can it have on the fetus?

a. Nephrotoxic

b. Hepatotoxic

c. Chondrotoxic

d. Neurotoxic

e. Hematotoxic

451. A pharmacy sells various medicines. What medicine is a subject to strict accounting in a special inventory log?

a. Hydrocortisone acetate

b. Retabolil (Nandrolone)

c. Tramadol, tablets

d. Gentamicin sulfate

e. Microfollin (Ethinylestradiol), tablets

452. What solution should be used by an expert at the laboratory of the pharmaceutical product certification center to identify the medicines that contain potassium ions?

a. Sodium cobaltinitrite

b. Sodium hydroxide

c. Magnesium sulfate

d. Barium chloride

e. Ammonium oxalate

453. Production of tablets requires stage-to-stage quality control. What devices are used to determine the particle size distribution (fraction) of granules?

a. Standard set of sieves

b. Various vibrosieves

c. Microscope

d. Laboratory identifiers

e. Friabilators

454. A pharmacy receives centralized deliveries of goods from the warehouse. Specify the document that is **NOT NECESSARY** for accounting of goods receipt by the pharmacy:

a. Goods report (Inventory change report)

b. Cash receipt order

c. Goods received record book by groups of goods

d. Goods received record book by item and supplier

e. Financial operating report of the pharmacy

455. A 28-year-old pregnant woman (8-9 weeks) after clinical examination and laboratory analysis was diagnosed with acute pyelonephritis. What empiric antibacterial therapy will be optimal in this case?

a. Chloramphenicol

b. Gentamicin

c. Amoxicillin

d. Tetracycline

e. Norfloxacin

456. The management plans to open a new pharmacy in one of the local villages. Such activity can be identified as:

a. Growth strategy

b. Vertical integration

c. Conglomerate diversification

d. Horizontal integration

e. Horizontal diversification

457. A dispensing chemist specifies the name of a herbal raw material, its mass, the area where it has been harvested, and the date of harvest. Name this procedure:

- a. Sorting of herbal raw material
- b. Packing of herbal raw material
- c. Harvesting of herbal raw material
- d. Standardization of herbal raw material

**e. Marking of herbal raw material**

458. A pharmacist at the pharmacy has received a promotion. What type of job rotation is it?

a. Horizontal

**b. Vertical**

- c. Mixed
- d. Combined
- e. -

459. A 6-year-old child developed pneumonia and was prescribed an antibiotic for its treatment. After the treatment the child's hearing deteriorated. What drug could have caused this complication?

**a. Gentamicin**

- b. Penicillin
- c. Ampicillin
- d. Ceftriaxone
- e. Azithromycin

460. A new medicine has appeared on the Ukrainian pharmaceutical market. It is characterized by low sales, low profits, and large marketing expenses for advertising. What stage of the product life cycle is it?

**a. Introduction**

- b. Growth
- c. Decline
- d. Maturity
- e. Saturation

461. A pharmacist-analyst of a control-analytical laboratory performs identification of a drug substance in accordance with the State Pharmacopoeia of Ukraine regulations. What result is observed during the test for benzoates with a solution of iron(III) chloride?

- a. The solution colors blue and becomes colorless after the addition of ammonia solution
- b. A black precipitate forms, which dissolves if a diluted sodium hydroxide solution is added
- c. An intense blue coloring appears

**d. A pale yellow ether-soluble precipitate forms**

- e. A white precipitate forms, which is insoluble in a diluted hydrochloric acid

462. Medicinal dyes should be stored in a special cabinet. Which of the listed medical products is a dye:

- a. Ethyl alcohol
- b. Hydrogen peroxide

**c. Brilliant green**

- d. Glucose
- e. Ascorbic acid

463. Xycaine quantitative content can be determined by means of argentometry (back titration). What indicator is required by this method?

- a. Potassium chromate
- b. Bromphenol blue

**c. Iron (III) ammonium sulphate**

- d. Starch
- e. Sodium eosinate



464. A pharmacy pays considerable attention to the technique of medicine placement in the glass cabinets and on the shelves to create favorable conditions for sales and attracting the attention of consumers. Name this set of measures:

- a. Lobbying
- b. Advertising
- c. Public relations
- d. Personal sale
- e. Merchandising**

465. A pharmaceutical company has launched a number of cold relief medicines in the form of syrups and lozenges for kids. What type of market segmentation was used by this company?

- a. Behavioral
- b. Geographical
- c. Psychographic
- d. Demographic**
- e. -

466. A pharmacist prepares fat-based suppositories by pouring. Specify the type of fatty vehicle in this case:

- a. Butyrol**
- b. Wax
- c. Vaseline (petroleum jelly)
- d. Spermaceti
- e. Cocoa butter

467. What fatty oil should be used to make an ointment with reparative properties?

- a. Oleum Jecoris
- b. Oleum Lini**
- c. Oleum Cacao
- d. Oleum Persicorum
- e. Oleum Cucurbitae

468. Medications Passit and Novopassit are used as tranquilizing, sedative and mild hypnotic agents. These medications are produced from the following grass:

- a. Lesser periwinkle
- b. Garden sage
- c. Three-lobed beggarticks
- d. Purple passionflower**
- e. Elecampane

469. In Ukraine the auditor position eligibility requires the candidate to be a Ukrainian citizen and have the qualification certificate for work as an auditor within the Ukraine's territory. The certificate is effective for:

- a. 3 years
- b. 5 years**
- c. 1 years
- d. 2 years
- e. Indefinitely

470. To check the identity of a herbal raw material, several drops of an alcoholic solution of alpha-naphthol and concentrated sulfuric acid were applied to the root section of *Cichorium intybus* L.. It resulted in pink-violet coloring that indicates the presence of the following in the herbal raw material:

- a. Essential oils
- b. Slime
- c. Pectin
- d. Inulin**
- e. Fatty oils

471. A 46-year-old man came to a dispensing chemist complaining of a dry cough. What antitussive drug can he be recommended?

- a. Acetylcysteine
- b. Sodium bicarbonate
- c. Bromhexine
- d. Tripsin

e. Oxeladin

472. In the process of price formation, a pharmaceutical company takes into account both internal and external factors. What factor is an external one?

- a. The stage of the product life cycle
- b. Manufacturing costs
- c. Marketing goals of the company

d. State regulation of price formation

- e. Marketing strategy of the company

473. What substance is a component of the powders enclosed in gelatin capsules?

- a. Streptocide (Sulfanilamide)
- b. Glucose
- c. Dimedrol (Diphenhydramine)

d. Ethacridine lactate

- e. Magnesium oxide

474. The total turnover of goods at a pharmacy consists of retail and wholesale turnover. What belongs to the wholesale turnover?

a. Dispensing extemporaneous medicines manufactured by a pharmacy according to the inpatient prescriptions

- b. Dispensing over-the-counter medicines to the people
- c. Dispensing medicines according to outpatient prescriptions
- d. Dispensing prescription medicines to the people
- e. Dispensing medical products to outpatients

475. Representatives of two pharmaceutical companies - partners from Ukraine and China - for some time had communication problems due to the use of words and verbal symbols with different meanings. What caused the deformation of the communication process and hindered the exchange of information in this case?

- a. Lack of understanding of the information's importance
- b. Nonverbal barriers
- c. Psychological distance

d. Semantic barriers

- e. Poor feedback

476. The solubility of high-molecular compounds depends on their nature. Specify a high-molecular compound that can swell up indefinitely:

- a. Gelatin
- b. Starch
- c. Pectin

d. Pepsin

- e. Methylcellulose

477. A 6-year-old girl has been suffering from bronchial asthma for 3 years. To stop the attacks, the pediatrician prescribed her a short-acting beta<sub>2</sub>-adrenomimetic. What medicine was prescribed by the doctor in this case?

- a. Ipratropium bromide

b. Salbutamol

- c. Fluticasone
- d. Tiotropium bromide
- e. Budesonide

478. A pharmaceutical company develops the manufacture of new products. What part of the production procedures contains the description of the end product and lists its physical and chemical properties?

- a. Characteristics of the auxiliary raw stock and materials
- b. Characteristics of the end product**
- c. Information materials
- d. Description of the manufacturing process
- e. Characteristics of the raw stock, materials, and intermediate products

479. The marketing department of a pharmaceutical factory determined that the demand for the echinacea syrup for kids greatly fluctuates in response to the smallest changes in its price. What type of demand is it?

- a. Inelastic demand
- b. Unitary demand
- c. Elastic demand**
- d. Perfectly inelastic demand
- e. Universal demand

480. What amount of toxic substance and vehicle is contained in 10.0 of trituration (1:10)?

- a. 1.0 and 9.0**
- b. 0.05 and 9.95
- c. 0.01 and 9.99
- d. 0.1 and 9.9
- e. 0.5 and 9.5

481. To ensure the quality of medicines the pharmacy devotes much attention to quality control. The following document is the quality assurance of a drug:

- a. Registration certificate
- b. Sanitary-epidemiological certificate
- c. Quality certificate**
- d. Certificate of compliance with hygiene regulations
- e. Sanitary passport

482. A pharmacy makes medicines according to individual prescriptions. How often must the pharmacy staff change their working clothes?

- a. At least twice a month
- b. At least once a week
- c. At least twice a week**
- d. At least once per shift
- e. At least once a month

483. A 68-year-old man has been prescribed a hypolipidemic agent as a part of his combination therapy for ischemic heart disease. Name this drug:

- a. Nitroglycerine
- b. Hydrochlorothiazide
- c. Nifedipine
- d. Lisinopril
- e. Atorvastatin**

484. Functional group analysis is widely used to identify organic medicines. What medicine contains phenolic hydroxyl in its structure?

- a. Papaverine hydrochloride
- b. Epinephrine tartrate**
- c. Phenazepam
- d. Promedol (Trimeperidine)
- e. Sulfanilamide

485. A pharmacy has received a formulation for eye drops with protargol (silver proteinate). What substance will be used to make the eye drops isotonic?

a. No isotonation is needed

- b. Boric acid
- c. Sodium sulfate
- d. Sodium nitrate
- e. Sodium chloride

486. A pharmacy needs to prepare a furacilin (nitrofural) solution (1:5000). What are the specifics of furacilin dissolution?

- a. In the purified water, filtered in advance
- b. In the purified water, after grinding it down
- c. In the boiling water in the presence of sodium chloride
- d. In the cold purified water
- e. In the minimal amount of ethanol

487. A pharmacist prepares suppositories by pouring. Name the coefficient for substitution of fatty vehicle with glycerinated gelatin vehicle:

- a. 1.11
- b. 1.20
- c. 1.21
- d. 1.25
- e. 1.31

488. Herbal raw material quality depends on the period when it was harvested. Subterranean organs - roots, rhizomes, subterranean tubers - should be harvested:

- a. In early spring or autumn
- b. At the end of the bloom
- c. Before the bloom
- d. During the period of vegetation
- e. During the bloom

489. A 25-year-old man is diagnosed with acute pyelonephritis of moderate severity. What drugs should be prescribed for etiotropic therapy?

- a. Antiarrhythmic drugs
- b. Nonsteroidal antiinflammatory drugs
- c. Glucocorticoids
- d. Antimicrobial agents
- e. Anticholinesterase drugs

490. Analysis of work environment of a pharmaceutical company has detected there the following organizational features: dynamism, flexibility of management structure, self-checking, and democratic communication. What type of adaptive organization structure is it?

- a. Organic
- b. -
- c. Informal
- d. Combined
- e. Mechanistic

491. A certain type of herbal raw material is being collected in spring during sap flow. Specify this material:

- a. Buds
- b. Roots
- c. Flowers
- d. Bark
- e. Infructescences

492. A pharmaceutical company produces various types of tablets. Specify the structure of matrix tablets:

- a. A dispersion of medicinal substances in polyethylene
- b. A reticular matrix that contains the medicinal substance

- c. Tablets with a dragee coating
- d. Tablets covered in a film coating
- e. Tablets covered in a fat-soluble coating

493. A pharmaceutical company produces mint tincture. Technological process of making this tincture requires it to be made:

- a. With 70% alcohol in 1:15 proportion
- b. With 70% alcohol in 1:5 proportion
- c. With 48% alcohol in 1:2 proportion
- d. With 90% alcohol in 1:20 proportion**
- e. With 70% alcohol in 1:10 proportion

494. A pharmaceutical company makes medical products, special nutrient supplements, and medical cosmetics. What type of business activity is it?

- a. Commercial activity
- b. Financial and credit activity
- c. -
- d. Manufacturing activity**
- e. Financial activity

495. A pharmacist at the analytical quality control laboratory uses acidimetry in a non-aqueous medium to study a verapamil hydrochloride substance. What solution would the pharmacist use as a titrant in this study?

- a. Potassium bromate solution
- b. Sodium nitrite solution
- c. Zinc sulfate solution
- d. Sodium edetate solution
- e. Perchloric acid solution**

496. What effect will anthracene derivatives have, if -OH- groups are located in both benzene rings of anthraquinone?

- a. Sedative
- b. Laxative**
- c. Diuretic
- d. Choleric
- e. Litholytic

497. Identification of organic medicinal substances requires the analysis of their functional groups. To identify medicinal substances that are benzoates, an analytical chemist should use:

- a. Potassium hydroxide solution
- b. Sodium acetate solution
- c. Sodium bicarbonate solution
- d. Ammonium chloride solution
- e. Iron(III) chloride solution**

498. Who gives permission to distribute medical products between the structural divisions of a pharmacy, after these products have successfully passed the on-receipt inspection?

- a. Accountant
- b. Pharmacist on duty
- c. Authorized person**
- d. Lawyer
- e. Supplier representative

499. A dispensing chemist makes a research into the pharmaceutical market. For this purpose he uses scientific publications and statistical data. What type of marketing research is it?

- a. Panel research
- b. Theoretical research**
- c. Survey
- d. Field research

e. Observation

500. A manager of a wholesale pharmaceutical company is responsible for relaying various tasks to the employees and supervises the fulfillment of assigned tasks. What management level corresponds with these duties?

a. Technical

b. Middle-level

c. Administrative

d. Institutional

e. Top-level

501. A patient suffering from bronchial asthma was diagnosed with essential hypertension. What antihypertensive drug is contraindicated for this patient?

a. Hypothiazid (Hydrochlorothiazide)

b. Verapamil

c. Propranolol

d. Amlodipine

e. Captopril

502. There are several formal and informal groups among the pharmaceutical company's employees. What feature is characteristic of formal groups?

a. They form as a result of interest, sympathy

b. They resist changes in the organization

c. They are created to implement the production process

d. They form spontaneously

e. The group leader receives authority from the group

503. What method is used to prepare a suspension with basic bismuth nitrate?

a. Solvent substitution

b. Physical condensation

c. Continental method

d. Chemical condensation

e. Dispersion with turbidization

504. The preparations of Silybum marianum, "Silibor" and "Carsil", have hepatoprotective action. What parts of Silybum marianum are the herbal raw material from which these medicines are being made?

a. Grass

b. Flowers

c. Seeds

d. Roots

e. Leaves

505. The pharmacological activity of medicines largely depends on their chemical structure. Which of the following drugs is a pyrazole derivative?

a. Metamizole sodium

b. Metronidazole

c. Bendazol

d. Piracetam

e. Thiamazole

506. During quantitative determination of Vicasol (Menadione) by means of cerimetry, the following indicator is used:

a. Methyl red

b. Ferroin

c. Methyl orange

d. Naphtholbenzein

e. Crystal violet

507. What morphological feature is diagnostic for the *Matricaria chamomilla* herbal raw material?

- a. Curved hemispherical receptacle with membranous bracts
- b. Conical, glabrous, and hollow receptacle**
- c. Solid spherical receptacle
- d. Solid hemispherical receptacle
- e. Spherical receptacle with membranous bracts

508. A doctor prescribed amoxicillin to a patient to treat bronchitis. What mucolytic is synergistic with this antibiotic?

- a. Codeine
- b. Glaucine
- c. Euphylline (Theophylline)
- d. Dextromethorphan
- e. Ambroxol**

509. A pharmaceutical company provides its employees with free lunches. What needs does it try to satisfy according to Maslow's theory of motivation?

- a. Physiological**
- b. Esteem
- c. Social (involvement in the events)
- d. Safety and protection
- e. Self-actualisation

510. A drug quality control laboratory performs certification of antibiotics. What antibiotic has alpha-amino acid residue that can be determined using the ninhydrin reaction?

- a. Oxacillin
- b. Lincomycin
- c. Chloramphenicol
- d. Ampicillin**
- e. Cefazolin

511. A pharmaceutical company plans to sell its products in another country together with a foreign company. What type of company's entry to the foreign market is it?

- a. Direct investments
- b. Import
- c. Joint venture**
- d. Tender
- e. Franchising

512. Presence of nitrate radical in metronidazole structure can be confirmed by reduction of nitrate radical to amino group with production of:

- a. Murexide
- b. Thiochrome
- c. Indophenol
- d. Iodoform
- e. Azo dye**

513. At the phytochemical workshop, percolation method is used to produce *Crataegus* tincture. What percolation rate is necessary for this purpose?

- a. 1/20 of the percolator's volume per hour
- b. 1/30 of the percolator's volume per 30 minutes
- c. 1/24 or 1/48 part of the percolator's working volume per hour**
- d. 1/40 of the percolator's volume per hour
- e. 1/10 of the percolator's volume per 20 minutes

514. What tablet coating protects stomach from harmful influence of active ingredients?

- a. -
- b. Intestinally absorbed**
- c. Fat-soluble

- d. Water-soluble
- e. Gastrically absorbed

515. According to Decree №360 issued by the Ministry of Health of Ukraine, there is a list of medicines that cannot be prescribed to outpatients. Select one such drug from the list below:

- a. Atropine sulfate
- b. Tramadol
- c. Zopiklon
- d. Tetracaine
- e. Nitrous oxide**

516. Arctostaphylos leaves have uroseptic effect. The following is an allowable admixture to this herbal raw material:

- a. Herba Bursae pastoris
- b. Folia Vitis idaeae**
- c. Folia Cotini coggygiae
- d. Folia Urticae
- e. Folia Digitalis lanata

517. What variable of the internal environment of the "Provisor" pharmacy can be described as the ways of transformation of component materials (medicinal agents "an gross") into end product (various dosage forms)?

- a. Tasks
- b. Structure
- c. Human resources
- d. Technologies**
- e. Mission

518. After lifting a load, a man developed sharp lumbar pain that intensifies during movements and radiates into the left leg. The patient was diagnosed with lumbosacral radiculopathy. What drug can be recommended in this case?

- a. Atropine sulfate
- b. Cyanocobalamin
- c. Enterosgel
- d. Diclofenac sodium**
- e. Drotaverine hydrochloride

519. When activated charcoal is included into the combined therapy, the sorption of other medicines:

- a. Accelerates
- b. Increases
- c. Decreases**
- d. Activates
- e. Remains unchanged

520. At the laboratory of pharmacopoeial analysis, glutamic acid is being identified using the method of thin-layer chromatography. What reagent is used to develop a chromatogram?

- a. Pyridine
- b. Cyanogen bromide
- c. Diphenylamine
- d. Ninhydrin**
- e. Aniline

521. Tell the patient, what side effect is associated with systemic glucocorticosteroid therapy.

- a. Hypotension
- b. Hypoglycemia
- c. Jaundice
- d. Osteoporosis**
- e. Constipation



522. The tablet workshop at a pharmaceutical factory manufactures tablets adding adjuvants into the tablet mass. What substances belong to taste correctors?

- a. Purified water, starch glue, sugar syrup, gelatin, carboxymethylcellulose solution
- b. Methylcellulose, polyvinylpyrrolidone, acetylphthalylcellulose
- c. Starch, glucose, kaolinite, magnesium oxide, sodium bicarbonate
- d. Stearic acid, calcium and magnesium stearate, starch, talcum
- e. Sugar, glucose, essential oils, menthol, fruit juice concentrates, indigo carmine, iron oxide, mannitol**

523. The head manager of a pharmacy, together with the heads of its departments, decided to expand the selection of products on sale at this pharmacy by expanding the range of products for diabetic nutrition. What type of managerial decision is it?

- a. Collegial**
- b. Personal
- c. Individual
- d. Received from a higher-level organization
- e. -

524. Clonidine hydrochloride is a salt of an organic base. What method is used for the quantification of this medicinal substance?

- a. Nitritometry
- b. Iodometry
- c. Alkalimetry**
- d. Complexonometry
- e. Bromatometry

525. Schedule of sanitation actions in pharmacies is regulated by the relevant regulatory acts. Cleaning day at a pharmacy must be scheduled at least once:

- a. In 5 days
- b. In a month**
- c. In 10 days
- d. In 3 days
- e. In a week

526. What group of antibacterial agents is used as first-line drugs in treatment of uncomplicated community-acquired pneumonia in young people?

- a. Aminoglycosides
- b. Tetracyclines
- c. Semisynthetic penicillins**
- d. Nitrofurans
- e. Oxyquinolines

527. A pharmacist has prepared a compound ointment. What is the correct sequence of its preparation?

- a. Solution - emulsion - suspension
- b. Emulsion - suspension - solution
- c. Solution - suspension - emulsion
- d. Emulsion - solution - suspension
- e. Suspension - solution - emulsion**

528. According to the State Pharmacopoeia of Ukraine quantitative content of salicylic acid is to be determined by means of:

- a. Argentometry
- b. Acidimetry
- c. Complexometric titration
- d. Alkalimetry**
- e. Nitritometric titration

529. A pharmacist has prepared a medicine by dissolving the active substances in the water that was

acidified with hydrochloric acid solution (1:10). Such preparation technology is characteristic of:

- a. Osarsol
- b. Copper sulfate
- c. Tannin
- d. Pepsin**
- e. Collargol (Colloidal silver)

530. Pharmaceutical corporations pay great attention to the formation of a certain set of values, traditions, and behavioral norms for all their employees. What is formed as a result of this type of corporate organizational work?

- a. Organization profitability
- b. Organization culture**
- c. Staff leasing
- d. Business expansion
- e. Product diversification

531. Local anesthetic benzocaine can be identified using the reaction of iron(III) hydroxamate formation. What functional group makes it possible to conduct this reaction?

- a. Carboxylic group
- b. Ketone group
- c. Esther group**
- d. Aldehyde group
- e. Sulfamide group

532. What is the name of the settlement document printed by the registrar of settlement operations, when making settlements for the goods sold or services provided?

- a. Invoice
- b. Settlement receipt
- c. Cash register fiscal receipt**
- d. Sales receipt
- e. Receipt

533. A 65-year-old patient diagnosed with ischemic heart disease was prescribed acetylsalicylic acid as an antiplatelet agent. What daily dose of this drug will have an antiplatelet effect?

- a. 200 mg
- b. 300 mg
- c. 100 mg**
- d. 500 mg
- e. 400 mg

534. What antibacterial agent is a part of the eradication therapy for H. pylori during the treatment of peptic ulcer disease of the stomach?

- a. Biseptol (Co-trimoxazole)
- b. Clarithromycin**
- c. Ceftriaxone
- d. Gentamicin
- e. Meropenem

535. The head manager of a pharmacy uses influence methods that concern property and financial interests of the employees. What management methods are used by the head manager?

- a. Economic**
- b. Social and psychological
- c. Administrative
- d. Social and political
- e. Technological

536. A 44-year-old man was diagnosed with chronic hyperacid gastritis. What pharmacological group of drugs would be the most advisable in this case?

- a. Beta-blockers

- b. Alpha-blockers
- c. Inhibitors of protein-degrading enzymes
- d. Proton pump inhibitors**
- e. Glucocorticosteroids

537. A substance was received for analysis. The substance is a round seed 1-1,8 mm in diameter, yellow with bluish tint. When mashed with water, emits characteristic irritant odor; is sharp and acrid to taste. The raw material can be identified as:

- a. Flax seeds
- b. Mustard seeds**
- c. Nigella seeds
- d. Plantago psyllium seeds
- e. Fenugreek seeds

538. Product sales manager of a pharmaceutical company was tasked with sales program inspection and given 10 days to complete this task. The manager completed this task within 5 days and expects to be rewarded with a bonus. What theory of achievement motivation is based on expectation of a certain event?

- a. Maslow's hierarchy of needs
- b. McGregor's Theory X and Theory Y
- c. Herzberg's two-factor theory
- d. Vroom's expectancy theory**
- e. McClelland's theory of needs

539. The cholagogue derived from Rosa canina fruit is used in treatment of liver and gallbladder diseases. Name this drug:

- a. Cholosas**
- b. Phytolyt
- c. Chophytol
- d. Altan
- e. Allochol

540. A patient with heart failure has developed an electrolyte imbalance against the background of diuretic treatment with furosemide. What imbalance has the patient developed?

- a. Hyperkalemia
- b. Hybernatriemia
- c. Hypermagnesemia
- d. Hypocalcemia
- e. Hypokalemia**

541. The mother of a child came to a pharmacy to buy an anti-inflammatory medicine that can relieve the muscle pain in her 10-year-old son. What medicine would you recommend her?

- a. Naproxen
- b. Acetylsalicylic acid
- c. Diclofenac
- d. Ibuprofen**
- e. Nimesulide

542. How should the rectal ointments be applied?

- a. Applied to the external genitalia
- b. Apply to the nasal mucosa
- c. Apply to the affected area of the anus**
- d. Apply to the conjunctival mucosa
- e. Apply to the skin

543. Local anesthetics can fall into different chemical classes. Benzocaine is a drug that belongs to:

- a. Aromatic sulfo acid amides
- b. Aromatic amino-aldehydes
- c. Aromatic amino acid amides

d. Aromatic amino acid esters

e. Aromatic ketones

544. Strategic planning of pharmaceutical companies consists of several consecutive stages. What stage is the final one?

a. Environment assessment and analysis

b. Analysis of organisation's internal strength and weaknesses

c. Strategy assessment

d. Setting goals and tasks

e. Choice of strategy

545. A 25-year-old woman is in the third trimester of her pregnancy. During her regular examination, US detected a malformation in the fetus. Medical history of the patient shows that she was taking large doses of diazepam without prescription during her pregnancy. What type of side effect has occurred in this case?

a. Carcinogenic

b. Teratogenic

c. Embryotoxic

d. Fetotoxic

e. Mutagenic

546. What hypotensive drug is an agent of choice for the patients suffering from arterial hypertension with concomitant type I diabetes mellitus?

a. Lisinopril

b. Labetalol

c. Atenolol

d. Hydrochlorothiazide

e. Carvedilol

547. A pharmacy has submitted its financial report for the first quarter of 2021. It contains the following information: turnover - 92 000 UAH, cost price of the goods sold - 60 000 UAH. Therefore, the price markup for this period amounts to:

a. 2 000 UAH

b. 32 000 UAH

c. 90 000 UAH

d. 60 000 UAH

e. 62 000 UAH

548. The extraction process consists of several stages. What is the final stage of the extraction process?

a. Mass transfer

b. Washing the herbal raw material with an extractant

c. Maceration

d. Dissolution

e. Extraction of primary juice

549. A 43-year-old patient with a severe form of rheumatoid arthritis has been administered a certain drug for background therapy. Specify this drug:

a. Nimesulide

b. Prednisolone

c. Methotrexate

d. Methylprednisolone

e. Diclofenac sodium

550. Urethral suppositories are being made for a patient. What parameters should be specified by the doctor in the formulation for the pharmacist to be able to calculate the necessary amount of the vehicle correctly?

a. Diameter and quantity of the suppositories

b. Length and quantity of the suppositories

- c. Quantity and vehicle of the suppositories
- d. Diameter and vehicle of the suppositories

**e. Diameter, length, and quantity of the suppositories**

551. A pharmacist has made a topical solution with lipophilic vehicle. Specify the substance that produces such a type of solution:

- a. Novocaine hydrochloride
- b. Menthol**
- c. Dermatol (bismuth subgallate)
- d. Sulfur
- e. Starch

552. What nonsteroidal anti-inflammatory drug is the most hematotoxic and can cause agranulocytosis?

- a. Nimesulide
- b. Metamizole sodium**
- c. Acetylsalicylic acid
- d. Indomethacin
- e. Ibuprofen

553. A 53-year-old patient diagnosed with arterial hypertension is undergoing inpatient treatment. After the examinations, the urologist diagnosed the patient with a prostate adenoma. What can be the drug of choice in this case?

- a. Verapamil
- b. Bisoprolol
- c. Enalapril
- d. Doxazosin**
- e. Propranolol

554. What medicines should be listed at the beginning of an extemporaneous drug formulation according to the regulations?

- a. Solutions
- b. Narcotic substances**
- c. Medicines included in the Essential Medicines List
- d. Substances that are hard to comminute
- e. All medicines are written in a random order

555. A pharmaceutical company lacks the manufacturing power to satisfy the demand for certain medicines. The company increased the price of these medicines and stopped advertising them. What type of marketing is it?

- a. Remarketing
- b. Synchromarketing
- c. Conversion marketing
- d. Demarketing**
- e. Stimulation marketing

556. What drug is used to treat hyperthyroidism?

- a. Metformin
- b. Prednisolone
- c. Insulin
- d. Oxytocin
- e. Mercazolil (Thiamazole)**

557. For targeted delivery of medicinal substances, a special dosage form is used. It is formed by a double lipid layer with the cavities, within which the formation sphere is located. What is the name of this dosage form?

- a. Liposome**
- b. Matrix tablet
- c. Infusion therapeutic system

- d. Transdermal therapeutic system
- e. OROS tablet

558. *Berberis vulgaris* herbal raw material is a source of medicinal substances with cholagogic and hemostatic effect. What parts of this plant are harvested as a herbal raw material?

- a. Roots and fruits
- b. Leaves and fruits

c. Roots and leaves

- d. Leaves and flowers
- e. Leaves and seeds

559. *Origanum vulgare* herbal raw material is harvested during the flowering. How is it harvested?

a. The grass is cut with a knife or sickle at a distance of 20-30 cm from the ground

- b. The whole plant with a root is pulled out from the soil
- c. Only the tips of the inflorescences are cut
- d. The whole plant is dug up
- e. The leaves are plucked with the stem

560. A 35-year-old patient with tachycardia has been administered propranolol. Which of the following reactions may be caused by the use of beta-blockers?

- a. Drug dependence
- b. Cumulation
- c. Blood pressure rise
- d. Constipations

e. Bronchospasm

561. Pharmaceutical analysis of glutamic acid requires the determination of nitrogen after mineralization with concentrated sulfuric acid. Ammonia that forms during the test is pumped away into the receiving flask. What solution should the receiving flask contain during this test?

a. Titrated hydrochloric acid solution

- b. Freshly prepared tannin solution
- c. Saturated sodium chloride solution
- d. Iodized potassium iodide solution
- e. Titrated sodium edetate solution

562. A pharmacy has been licensed for wholesale distribution of medicinal products. What sales operation belongs to a wholesale distribution?

a. Sale to other organizations for commercial use

- b. Sale of extemporal dosage forms
- c. Sale of over-the-counter drugs
- d. Sale of drugs to chronically ill patients
- e. Sale of ready-to-use drugs

563. What adjuvants improve the wettability and water permeability of the components during the tablet production?

- a. Antifriction materials
- b. Solvents
- c. Film formers
- d. Thickeners

e. Leaveners

564. What economic parameter characterizes the effectiveness of the pharmacy's commercial, financial, and manufacturing activity?

- a. Inventory turnover
- b. Circulation of goods
- c. Work productivity
- d. Stock of goods

e. Profitability

565. What should be the disintegration time for effervescent tablets according to the requirements of the State Pharmacopoeia of Ukraine?

- a. 5 minutes
- b. 3 minutes
- c. 30 minutes
- d. 60 minutes
- e. 15 minutes

566. When preparing compound powders, a pharmacist used the "three-layer" method. Which one of the listed substances is a dye?

- a. Protargol
- b. Ethacridine lactate
- c. Camphor
- d. Sulfur
- e. Streptocide (Sulfanilamide)

567. The head manager of a pharmacy has decided to apply various management methods as a means of influencing separate employees and the staff as a whole. What management methods can be classified as psychosocial?

- a. The process of salary calculation for the sales department employees
- b. The process of distribution of duties between the technical level managers
- c. -
- d. Plan for improvement of the working conditions at the pharmaceutical facility
- e. Material stimuli that include salary rates, extra pay, increments, bonuses, etc.

568. Identification of potassium iodide requires performing an oxidation reaction in acid medium, which produces free iodine that colors chloroform layer. What reagent is used for such a reaction?

- a. Ammonium oxalate
- b. Barium chloride
- c. Sodium nitrite
- d. Sodium carbonate
- e. Silver nitrate

569. For 2 weeks, a pharmacy network has been holding a lottery among its visitors who have purchased over 200 UAH worth of medicines. What set of marketing activities does the pharmacy network use in this case?

- a. Sales promotion
- b. Lobbying
- c. Advertising
- d. Public relations
- e. Personal selling

570. A 54-year-old hypertonic patient undergoing pharmacotherapy developed bronchial spasm. His physician considers it to be a therapy-induced complication caused by the drug that belongs to the following group:

- a. Diuretics
- b. beta-adrenergic blockers
- c. Ganglionic blockers
- d. alpha-adrenergic blockers
- e. Calcium antagonists

571. Name the list of pharmacy's property that indicates the actual balance and value of pharmacy's stocks as determined in the process of stock-taking:

- a. Commodity report
- b. Cash flow register
- c. Register of requisitions
- d. Accounts ledger
- e. Inventory

572. A 42-year-old man with community-acquired pneumonia was prescribed a long-term antibiotic treatment. What drugs should be prescribed to this patient to prevent development of dysbiosis?

- a. Antispasmodics
- b. Antitussive drugs
- c. Expectorants
- d. Probiotics**
- e. Mucolytic agents

573. The dispensing chemist of a pharmacy has prepared 5 formulations. Which one of them requires total chemical control?

- a. Streptocide (sulfanilamide) ointment
- b. Riboflavin-containing powders
- c. Baby powder
- d. Kvater's mixture
- e. Atropine sulfate eyedrops**

574. A pharmacy prepares extemporaneous drugs. Who sets the retail prices and labor charges for these pharmacy-made medicines?

- a. Pharmacy**
- b. Regional state administration
- c. Local council
- d. Inspectorate for medicine quality control
- e. The Ministry of Health

575. A sum of properties that make the medicines capable of meeting the needs of the consumers, when used as intended, is called:

- a. Trade dress
- b. Marking
- c. Pharmacological action
- d. Appearance
- e. Quality**

576. What modern method is used to fill ampoules with injectable solutions?

- a. Syringe filling**
- b. Ultrasonic filling
- c. Chamber filling
- d. Vortex filling
- e. Vacuum filling

577. A pharmacy has received a prescription for the preparation of a solution. What substance requires the presence of sodium chloride and a hot solvent during the dissolution?

- a. Sodium iodide
- b. Urotropin
- c. Sodium bromide
- d. Streptocide (Sulfanilamide)
- e. Furacilin (Nitrofurazone)**

578. Core tablets that are to be made into dragees must not have a flat shape. Why such requirement is necessary?

- a. They are not durable enough
- b. To improve their appearance
- c. To speed up the process of applying the coating
- d. To avoid prolonged contact with overlaying suspension
- e. To prevent them from adhesion to each other**

579. Highly convincing approach to informing the population about the company and its products, commercial promotion of high use value of the goods and proper conduct of business by the company, actions intended to prompt purchase of goods by both active and potential customers are all characteristic of:



- a. Marketing
- b. Trademark
- c. Communications
- d. Advertisement**
- e. Supply

580. A man with arterial hypertension was taking a beta blocker (bisoprolol) for a long time. When his condition improved, he suddenly stopped taking this drug and it resulted in an acute increase of his blood pressure. What complication of the therapy is it?

- a. Withdrawal syndrome**
- b. Reduced sensitivity
- c. Dysbacteriosis
- d. Bronchospasm
- e. Bradycardia

581. The reaction of glucose identification produces red precipitate with the following reagent:

- a. Thiocyanogen bromide
- b. Sodium nitroprusside solution
- c. Alkaline potassium tetraiodomercurate solution
- d. Ammoniacal silver nitrate solution
- e. Copper-tartrate**

582. A woman with chronic bronchitis was prescribed azithromycin. After a time, she developed complaints of abdominal pain and distension, diarrhea, nausea, and vomiting. What side effect is observed in this patient?

- a. Chondrotoxicity
- b. Photosensitization
- c. Dysbiosis**
- d. Allergic response
- e. Nephrotoxicity

583. A pharmaceutical factory produces tablets of sodium chloride. What is the method of their production?

- a. Wet granulation prior to compression
- b. Direct compression without additional substances**
- c. Direct compression with the addition of excipients
- d. Dry granulation prior to compression
- e. Moulding

584. An analytical pharmacist uses a reaction with a sodium hydroxide solution during boiling to identify a nicotinamide substance. What gaseous product is released as a result of this reaction?

- a. Hydrogen sulfide
- b. Sulfur(VI) oxide
- c. Carbon(IV) oxide
- d. Ammonia**
- e. Formaldehyde

585. Vinblastine and Vincristine demonstrate antitumor activity. Name the herbal raw material used in production of these medicines:

- a. Folia Berberidis
- b. Rhizomata Nupharis lutei
- c. Herba Selaginis
- d. Folia Catharanthi rosei**
- e. Herba Vincae minoris

586. How should the tablets of pancreatin enzyme preparation be taken?

- a. 1 hour before a meal
- b. Regardless of food intake
- c. During eating**

- d. 2 hours before a meal
- e. 1 hour after a meal

587. Hierarchic structure of the Agapetus pharmacy management foresees that authority is being passed on directly from the pharmacy manager to the employees. Specify this type of authority:

- a. Line**
- b. Divisional
- c. Matrix
- d. Line and staff
- e. Functional

588. When dispensing an antacid and ofloxacin in tablets, the dispensing chemist warned the customer that these drugs should be taken separately with 2-hour interval in between. Simultaneous taking of both drugs:

- a. Increases ofloxacin absorption
- b. Increases antacid effectiveness
- c. Increases risk of dysbiosis
- d. Decreases antacid effectiveness
- e. Decreases ofloxacin absorption**

589. What reagent is used to identify sodium sulfate?

- a. Cobalt chloride
- b. Barium chloride**
- c. Silver nitrate
- d. Iron(III) chloride
- e. Calcium chloride

590. A pharmacy visitor asked the pharmacist to recommend her an anthelmintic drug that would be effective against Ascaris roundworms. Select one such drug from the list.

- a. Ribavirin
- b. Calcitonin
- c. Pyrazinamide
- d. Riboflavin
- e. Piperazine**

591. During identification of a herbal raw material, an analytical chemist prepared water-based extractions and shook the test tube, which resulted in the formation of a large amount of stable foam. What bioactive substances are present in the material?

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

592. During H. pylori eradication quadrotherapy, a 25-year-old man developed black feces. What medicine provoked such a side effect in this case?

- a. Amoxicillin
- b. Omeprazole
- c. Tetracycline
- d. Metronidazole
- e. Bismuth subcitrate**

593. Atropa belladonna grass extract is a component of compound antispasmodic drugs. Select such drug from the list:

- a. Herbogastrine
- b. Solutan
- c. Olimetinum
- d. Bellasthesin**
- e. Urolesan

594. What quality parameter must be additionally controlled during the industrial production of suspension eye drops?

- a. Quantitative determination
- b. Particle size**
- c. Transparency
- d. Sterility
- e. Color

595. *Althaea officinalis* roots require special conditions for infusion. What special technique must be used for infusion of this herbal raw material?

- a. The presence of hydrochloric acid
- b. The presence of sodium bicarbonate
- c. Cold infusion**
- d. Immediate filtration
- e. The presence of ascorbic acid

596. What corticosteroid medicinal substance has two fluorine atoms in its chemical structure?

- a. Dexamethasone
- b. Hydrocortisone acetate
- c. Prednisolone
- d. Fluocinolone acetonide**
- e. Triamcinolone acetonide

597. To identify a drug, an analytical chemist used the reaction of azo dye formation. What drug was being analyzed in this case?

- a. Pilocarpine hydrochloride
- b. Morphine hydrochloride
- c. Papaverine hydrochloride
- d. Clonidine hydrochloride
- e. Procaine hydrochloride**

598. To determine the quantity of wild-growing medicinal plants, it is necessary to know their area of vegetation and yield per unit area. Yield of *Thymus serpyllum* grass can be determined by the following method:

- a. Visually
- b. Projective cover method**
- c. Permanent quadrat method
- d. Geodesically
- e. Model sample method

599. A pharmacy customer complains of constricting retrosternal pain that irradiates into the left arm; he fears that he may die. The pain appeared suddenly after physical exertion. Name the first aid medicine in this case:

- a. Metacycline
- b. Nitroglycerine**
- c. Naphthyzin (Naphazoline)
- d. Panangin
- e. Riboxin (Inosine)

600. Microscopy of transverse section of a bark sample shows a wide dark red cork layer, lamellar collenchyma, druses, bast fibers with a crystal sheath, and medullary rays. What herbal raw material is it?

- a. Buckthorn bark**
- b. Ash bark
- c. Willow bark
- d. Oak bark
- e. Birch bark

601. Name the ready-to-use dosage form that is a gelatin capsule, filled with microcapsules that have

an oil shell:

- a. Pearl
- b. OROS tablet
- c. Spansule**
- d. Microcapsule
- e. Tubatine

602. To improve structural and mechanical properties of capsule shells, to ensure their proper elasticity and reduce their brittleness, the following substances are introduced into the gelatin mass:

- a. Pigments
- b. Plasticizers**
- c. Stabilizers
- d. Thickeners
- e. Preservatives

603. The process of rectification is used to make ethyl alcohol. This process is based on the following principle:

- a. Distillation with inert gases
- b. Deep vacuum distillation
- c. Technology of obtaining liquid extracts
- d. Rinsing of exhausted raw material with 3-5 times the amount of ethanol
- e. Separation of the mixture consisting of mutually-associating liquids with different boiling temperature into separate fractions**

604. A certain medicinal plant belongs to the Papaveraceae family. It produces a characteristic yellow milky sap and has choleric, antiseptic, and diuretic properties. The main active substance contained in this plant is alkaloid chelidonium. Name this plant:

- a. Chelidonium majus**
- b. Atropa belladonna
- c. Papaver somniferum
- d. Berberis vulgaris
- e. Hyoscyamus niger

605. A pharmacist has remained working long after the working day was officially over. How is this work period called?

- a. Overtime**
- b. Regular hours
- c. Extended time
- d. Nightshift
- e. Dayshift

606. A group of independent intermediaries operates on a regional market. They sell medicines on their own behalf and at their own cost. Such intermediaries are called:

- a. Brokers
- b. Dealers**
- c. Commission agents
- d. Consignees
- e. Agents

607. What indicator is used in iodometry for quantitative determination of caffeine in caffeine and sodium benzoate?

- a. Bromthymol blue
- b. Potassium chromate
- c. Eriochrome black
- d. Starch**
- e. Methyl orange

608. What minimum amount of a toxic substance can be weighed on one-gram hand scales?

- a. 0.03 g

- b. 0.1 g
- c. 0.02 g
- d. 0.05 g**
- e. 0.04 g

609. The pharmaceutical company directs all the efforts to the restoration of the range of endangered medicinal plants listed in the Red Book of Ukraine. What type of responsibility does the firm take on?

- a. Personal
- b. Legal
- c. Social**
- d. Criminal
- e. Administrative

610. A pharmacist has prepared suppositories with novocaine (procaine) hydrochloride using a rolling technique. The novocaine hydrochloride content is less than 5%. How is this substance introduced into the base in this case?

- a. Dissolution in the minimal amount of castor oil
- b. Dissolution in the minimal amount of alcohol-water-glycerin mixture
- c. Dissolution in the melted base
- d. Dissolution in ethyl alcohol
- e. Dissolution in the minimal amount of water**

611. Bilitrast is an X-ray contrast substance. What reagent can confirm the presence of phenolic hydroxyl in its molecule?

- a. Iodine dissolved in potassium iodide
- b. Silver nitrate solution
- c. Alcoholic iodine solution
- d. Hydrochloric acid solution
- e. Iron(III) chloride solution**

612. A pharmacist has prepared a collargol solution. Name the type of disperse system in this case:

- a. Emulsion
- b. Suspension
- c. Colloid solution**
- d. True solution
- e. Aerosol

613. Hypericum perforatum grass contains hypericin. What is the pharmacological effect of this substance?

- a. Antidepressant**
- b. Anticonvulsant
- c. Antiasthmatic
- d. Analgesic
- e. Expectorant

614. A pharmaceutical company produces suppositories made from thermolabile medicinal substances. What method is used in their production?

- a. Dispersion
- b. Rolling
- c. Pouring
- d. Pressing**
- e. Steeping

615. Choose the solvent necessary to prepare concentrated solution of sodium bicarbonate in a pharmacy:

- a. Chloroform
- b. Ethanol
- c. Peach-kernel oil
- d. Vaseline

e. Purified water

616. According to the State Pharmacopoeia of Ukraine, chemical identification of *Atropa belladonna* grass must be carried out using thin-layer chromatography. What substance is identified on a chromatographic plate after treatment with a reagent?

- a. Arbutin
- b. Gallic acid
- c. Vinblastine

d. Hyoscyamine

e. Rutin

617. In the course of the pharmacotherapy for exacerbation of chronic bronchitis, the patient developed dyspeptic disorders, photodermatitis, and disturbed hepatic function. Which of the prescribed drugs could have caused these signs?

- a. Codeine phosphate
- b. Acetylcysteine
- c. Ascorbic acid

d. Doxycycline

e. Ambroxol

618. Pectin is a heteropolysaccharide. What is its pharmacological effect?

- a. Litholytic
- b. Cardiotonic
- c. Expectorant

d. Detoxicant

e. Astringent

619. An analytical pharmacist conducts a quantitative analysis of sodium benzoate and uses a hydrochloric acid solution as a titrant. What method of quantification is being used in this case?

a. Complexometry

b. Acidimetry

- c. Nitritometry
- d. Bromatometry
- e. Iodometry

620. Dried *Vaccinium* berries can be used as an astringent. The astringent properties of this herbal raw material are caused by the presence of certain substances. Name these substances.

- a. Iridoids
- b. Flavonoids
- c. Alkaloids
- d. Polysaccharides

e. Tannins

621. What substance can be synthesized as a result of the condensation of 5-nitrofurfural with semicarbazide?

- a. Phthalazole (Phthalylsulfathiazole)
- b. Norfloxacin
- c. Nitroxoline

d. Nitrofural (Nitrofurazone)

e. Metronidazole

622. A 35-year-old patient has been prescribed a potassium-sparing diuretic. Select one such drug from the list:

- a. Diltiazem
- b. Furosemide
- c. Bisoprolol

d. Triamterene

e. Prazosin

623. What final document is used for the preparation of the report on the discrepancies revealed in the course of inventory at the pharmacy?

- a. Commercial report
- b. Invoice
- c. Inventory item description
- d. Checklist

**e. Act on the inventory results**

624. Inorganic medicines are identified by their cations and anions. What should be used by an analytical chemist for identification of medicinal substances that contain potassium?

- a. Nitric acid solution
- b. Benzoic acid solution
- c. Hydrochloric acid solution

**d. Tartaric acid solution**

- e. Acetic acid solution

625. A patient with arterial hypertension has been taking a beta-blocker (bisoprolol) for a long time. After his condition improved, he suddenly stopped taking this drug, which caused a sharp increase in the blood pressure. What complication of the therapy has occurred in this case?

- a. Bradycardia
- b. Bronchospasm

**c. Withdrawal syndrome**

- d. Reduced sensitivity
- e. Dysbacteriosis

626. What is the purpose of bulking agents in production of tablets?

- a. To improve adhesion of particles to each other

**b. To obtain tablets of a certain mass**

- c. To improve granulate flowability
- d. To improve tablet breakup
- e. To improve the taste

627. All the values, traditions, behavioral norms, and views that are characteristic of the employees of a pharmaceutical company together form its:

- a. Etiquette
- b. Diversification
- c. Integration

**d. Culture**

- e. -

628. A pharmacy visitor periodically feels constricting pain behind the sternum. Explain to this visitor, what contraindication exists for taking nitroglycerin.

- a. Peptic ulcer disease

**b. Angle-closure glaucoma**

- c. Pulmonary fibrosis
- d. Kidney failure
- e. Heart failure

629. According to the requirements of the State Pharmacopoeia of Ukraine, thin-layer chromatography is a mandatory method of identification of herbal raw materials. What zones must be detected on a chromatographic plate during the analysis of Digitalis purpurea herbal raw material?

- a. Convallatoxin
- b. Atropine and hyoscyamine
- c. Lanatosides A and B
- d. K-Strophanthin

**e. Purpurea glycosides A and B**

630. A pharmaceutical company can use different types of marketing, depending on the demand for the medicinal products that it produces. What type of demand makes it advisable to implement

demarketing?

- a. Satisfied
- b. Negative
- c. Excessive**
- d. Declining
- e. Absent

631. What stabilizer is used to stabilize ascorbic acid solutions for injections?

- a. 0.1 M hydrochloric acid solution
- b. 0.1 M sodium hydroxide solution
- c. Weibel stabilizer
- d. Sodium thiosulfate
- e. Sodium bicarbonate with sodium sulfite**

632. In the process of isoniazid identification a pharmacy analyst thoroughly boiled the substance with 2,4-dinitrochlorobenzene. The substance turned yellow. After adding alkaline solution the substance turned first violet and then brownish-red. As the result of this reaction the following aldehyde derivative is produced:

- a. Glyoxylic
- b. Gluconic
- c. Glutaconic**
- d. Glutamic
- e. Hexanic

633. A 12-year-old girl has been diagnosed with acute pyelonephritis. What antibacterial agent has an age limit for its prescription to a patient?

- a. Benzylpenicillin sodium salt
- b. Levofloxacin**
- c. Cefuroxime
- d. Amoxicillin
- e. Clarithromycin

634. Erythromycin belongs to the following type of antibiotics based on its chemical structure:

- a. Polyene antibiotics
- b. Polypeptides
- c. Aromatic antibiotics
- d. beta-lactams
- e. Macrolides**

635. How long should a retail business that deals in medicines keep the quality certificates issued by drug manufacturers?

- a. 1 year
- b. 5 years
- c. 2 years
- d. 6 months
- e. 3 years**

636. An analytical laboratory has received a procaine hydrochloride substance for analysis. According to the State Pharmacopoeia of Ukraine limit content of heavy metals should be determined with the following reagent:

- a. Thioacetamide**
- b. Sulfomolybdenum
- c. Methoxyphenylacetic acid
- d. Aminomethyl alizarin acetic acid
- e. Hypophosphite

637. When preparing a solution, the pharmacist used an additional technique - grinding in a mortar with water. What substance typically requires this technique?

- a. Furacilin (Nitrofuril)



**b. Copper sulfate**

- c. Calcium gluconate
- d. Boric acid
- e. Silver nitrate

638. A pharmaceutical factory produces various types of tablets. What is the purpose of Solublettae tablets?

- a. Implantation
- b. Preparation of solutions for injections
- c. Rectal administration
- d. Preparation of solutions for various pharmaceutical purposes**
- e. Sublingual administration

639. Cash can be withdrawn from the organisation's funds on the basis of a withdrawal receipt. What transaction requires a withdrawal receipt?

- a. Return of unused accountable funds
- b. Coverage of the shortages revealed during the stock-taking
- c. Receipt of the proceeds from sales
- d. Payment for the goods purchased for the household needs**
- e. Receipt of the funds for salary payment

640. To identify ethanol an analytical chemist needs to conduct a:

- a. Iodoform test**
- b. Murexide test
- c. Thalleioquin test
- d. Hydroxamate test
- e. Ninhydrin test

641. Simultaneous application of doxycycline hydrochloride and oral contraceptive causes:

- a. Increase of oral contraceptives effectiveness
- b. -
- c. Reduction of oral contraceptives effectiveness**
- d. Reduction of the antibacterial effect of doxycycline
- e. Increase of the antibacterial effect of doxycycline

642. One of the substances listed below is textbfNOT a vitamin:

- a. Calcium gluconate**
- b. Nicotinic acid
- c. Calcium pangamate
- d. Ergocalciferol
- e. Calcium pantothenate

643. A pharmacy must keep the following receipts for 3 years, not counting the present one:

- a. Narcotic substances in their pure form at the full price
- b. Medicines provided for free or at a discount due to social benefit programs**
- c. Clophelin (clonidine) tablets at the full price
- d. Psychotropic drugs at the full price
- e. Anabolic steroids at the full price

644. The amount of temporary disability benefits to be paid is calculated taking into account the insured record of service of an employee. What percentage of temporary disability benefits will be paid to an employee with a disability certificate and more than 8-year-long insured record of service?

- a. 90% of salary
- b. 75% of salary
- c. 50% of salary
- d. 60% of salary
- e. 100% of salary**

645. Name the type of suppositories that are made from aqueous suspensions and undergo deep

freezing.

a. Lyophilized

b. Dyed

c. Porous

d. Hollow

e. Multi-layered

646. According to the State Pharmacopoeia of Ukraine, to identify glucose solution for injections, its optical rotation angle should be measured. What chemophysical method is used in such cases?

a. Nuclear magnetic resonance spectroscopy

b. Infrared spectroscopy

c. Polarimetry

d. Refractometry

e. Thin-layer chromatography

647. Aesculus hippocastanum seeds as a herbal raw material can be standardized by their quantitative content of aescin that belongs to the following group of bioactive substances:

a. Tannins

b. Flavonoids

c. Anthracene derivatives

d. Saponins

e. Coumarins

648. Complex drug product Urolesan is a litholytic, antispasmodic, and diuretic agent. It contains ethanolic extract of:

a. -

b. Rhododendron tomentosum

c. Origanum vulgare

d. Matricaria chamomilla

e. Thymus serpyllum

649. Menthol has anesthetic and antiseptic effect. What plant is the source of menthol?

a. Folia Menthae piperitae

b. Folia Absinthii

c. Folia Eucalypti

d. Folia Uvae ursi

e. Folia Salviae

650. The marketing team of a pharmaceutical company has calculated the coefficient of elasticity of the demand for medical products, which is equal to 1. What type of elasticity of the demand is it?

a. Inelastic

b. Perfectly elastic

c. Unitary

d. Perfectly inelastic

e. Elastic

651. Various groups of propellants are used in production of aerosols. What group does carbon dioxide CO<sub>2</sub> belong to?

a. Liquefied gases

b. Rarefied gases

c. Compressed gases

d. Non-volatile gases

e. Volatile gases

652. Reye syndrome (encephalopathy, fatty degeneration of liver) develops as a side effect in children suffering from fever of viral origin when they take the following medicine:

a. Celecoxib

b. Ibuprofen

c. Acetylsalicylic acid

- d. Metamizole sodium
- e. Paracetamol

653. A pharmacy has received a receipt for preparation of a dermatological ointment with a non-specified vehicle. What vehicle should be used in this case?

- a. Soap-glycerine base
- b. Vaseline and lanolin
- c. Lanolin
- d. Vaseline**
- e. Gelatin-glycerine gel

654. A pharmacist has prepared a medicine, using the following formulation: Magnesii oxydi Natrii hydrocarbonatis ana 0.2 M. f. pulv. D. t. d. №12 S. Take one powder thrice a day. endtabular What is the optimal preparation technique in this case?

- a. Comminute a part of magnesium oxide, add sodium bicarbonate, add the remaining magnesium oxide, mix the ingredients
- b. Comminute sodium bicarbonate, add magnesium oxide, mix the ingredients**
- c. Comminute magnesium oxide, add sodium bicarbonate, mix the ingredients
- d. Comminute sodium bicarbonate with alcohol, add magnesium oxide, mix the ingredients
- e. Comminute magnesium oxide with alcohol, add sodium bicarbonate, mix the ingredients

655. Infusion of Althaea roots is being prepared for a patient. What pattern of infusion should be chosen in this case?

- a. 30 minutes at room temperature**
- b. 60 minutes at room temperature
- c. 30 minutes of water bath infusion and immediate filtering without cooling
- d. 15 minutes of water bath infusion and 45 minutes of cooling at room temperature
- e. 30 minutes of water bath infusion and 10 minutes of cooling at room temperature

656. A dispensing chemist with calculated length of service of 7 years has fallen ill. What percent of the sum stated in her sick list would she receive?

- a. 100%
- b. 60%
- c. 80%**
- d. 70%
- e. 50%

657. Natural penicillins are unstable at high temperatures and quickly break down in alkaline and acidic environments. What cycle causes such chemical properties of natural penicillins?

- a. Quinoline
- b. beta-lactam**
- c. Furan
- d. Phenothiazine
- e. Pyridine

658. Pharmacies use cash registers during the sales of medicines. Name the document for the accounting of Z-reports:

- a. Prescription logbook
- b. Transactions ledger**
- c. Customers ledger
- d. Receipt book
- e. Cash book

659. A pharmaceutical company produces deep-acting ointments. What is the mechanism of action of the active substances contained in resorptive ointments?

- a. Protect the skin from external factors
- b. Absorbed by the outer layers of the skin
- c. Protect the skin from microbial infection
- d. Prevent drying and contamination of the epidermis

e. Reach the systemic circulation and enhance the effect of drugs

660. Under the current legislation, full or partial exemption of persons and legal entities from tax payment is called:

- a. Tax rate
- b. Tax

c. Tax concession

- d. Tax system
- e. Subject to taxation

661. Acyclovir is a drug with the nucleoside structure, effective against herpes virus. What reaction of its transformation in the body is associated with its antiviral effect?

- a. Reduction
- b. Oxidation

c. Phosphorylation

- d. Hydrolysis
- e. Hydroxylation

662. A dispensing chemist has a total insured work record of 10 years. It means that the dispensing chemist can expect the following amount of temporary disability benefits:

- a. 70% of the average salary
- b. 80% of the average salary
- c. 60% of the average salary

d. 100% of the average salary

- e. 50% of the average salary

663. The phytochemical department of a pharmaceutical manufacture produces maximally purified extracts. In the process, specific methods are used for the extract purification. Which description corresponds with the dialysis method?

- a. The process of electrolyte action
- b. The process of gas absorption

c. The characteristic of biopolymer molecules that does not allow them to pass through semi-permeable membranes

- d. The process of extraction from one liquid using another liquid
- e. The process of heating the extract

664. What medicines cannot be advertised in pharmacies and their structural units?

- a. Over-the-counter medicines
- b. Cosmetics
- c. Disinfectants
- d. Dietary supplements

e. Prescription medicines

665. When obtaining individual substances, the choice of an extractant is determined mainly by its:

- a. Pharmacological inertness
- b. Anti-hydrolysis effect
- c. Cost

d. Selectivity toward active substances

- e. Thermostability

666. There are certain legal requirements to the format of a prescription. Physicians that have a private practice must state the following in the upper left corner of a prescription form:

- a. Medical facility seal
- b. License number

c. Own address, license number and its date of issue

- d. Surname and initials of the doctor
- e. Own address

667. A manufacturer plans to sell its new medicine directly to the consumers through its own network

of pharmacies. What type of distribution channel is it?

- a. One-level distribution channel
- b. Two-level distribution channel
- c. Three-level distribution channel
- d. Four-level distribution channel
- e. Direct distribution channel (zero channel)**

668. The addition of preservatives and stabilizers is prohibited, when making the following dosage forms:

- a. Ophthalmic dosage forms
- b. Suspensions
- c. Infusions
- d. Emulsions
- e. Dosage forms for newborns**

669. Calcium gluconate is being tested for presence of admixtures of saccharose and reducing sugars with copper-tartrate reagent. If these admixtures are present the substance colors:

- a. Green
- b. Red**
- c. White
- d. Turquoise
- e. Blue

670. A patient with chronic heart failure, who has been taking cardiac glycosides, developed signs of glycoside intoxication. What antidote would be advisable in this case?

- a. Methionine
- b. Protamine
- c. Vicasol (Menadione)
- d. Unithiol (DMPS)**
- e. Naloxone

671. During identification these active substances form precipitates in gelatin and alkaloid solutions and produce precipitates with heavy metal salts. These active substances are:

- a. Carbohydrates
- b. Iridoids
- c. Glycosides
- d. Lipids
- e. Tannins**

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

673. When should aromatic water be added into a mixture, if it functions as a dispersing medium?

- a. After solid medicinal substances are dissolved
- b. Last, because of its essential oil content
- c. First**
- d. After concentrated solutions
- e. Before ethanol-containing liquids are added

674. The duty of a cash desk operator is to perform cash receipt and withdrawal transactions on the grounds of the relevant cash orders. Select from the list below a receipt transaction.

- a. Withdrawing sales proceeds for the transfer to the current account
- b. Receipt of funds for advance salary payments**
- c. Issuing a cash sum to be accounted for

- d. Payment for the goods purchased for the business needs
- e. Salary payments

675. What preservative did the pharmacist use to ensure the stability of eye drops?

- a. Boric acid
- b. Methyl cellulose
- c. Hydrochloric acid
- d. Polyvinyl alcohol
- e. Sodium chloride

676. What pharmacotherapeutic characteristic of a medicine allows its classification as over-the-counter drug?

- a. Medicine contains substances that require additional research into their activity and side-effects
- b. Medicine is available only for in-patient treatment
- c. Medicine can cause no direct or indirect harm to the patient's health
- d. Medicine has entered the pharmaceutical market only recently and actual experience with its practical application is limited
- e. Medicine is available only by prescription

677. According to the State Pharmacopoeia of Ukraine, the herbal raw material used in production of plantaglucide should be tested by means of thin-layer chromatography. The resulting chromatogram will have a weak blue zone, which will indicate the presence of:

- a. Acteoside
- b. Atropine
- c. Aucubin
- d. Acorone
- e. Azulene

678. A patient is prescribed a 3% alcohol solution of boric acid. What concentration of ethanol should be taken to prepare this solution according to the normative documents?

- a. 90%
- b. 60%
- c. 70%
- d. 95%
- e. 40%

679. Paracetamol reaction with hydrochloric acid, followed by addition of potassium dichromate, produces the following:

- a. Schiff base
- b. Indophenol dye
- c. Aurin dye
- d. Triphenylmethane dye
- e. Azo dye

680. What mixing method is carried out by repeatedly pumping the liquid through the apparatus, using a pump or nozzles?

- a. Acoustic
- b. Circulation
- c. Ultrasonic
- d. Mechanical
- e. Pneumatic

681. According to the State Pharmacopoeia of Ukraine, phthalylsulfathiazole is quantitatively determined by means of alkalimetry in non-aqueous medium. The following substance is used as a solvent in this case:

- a. Anhydrous acetic acid
- b. Chloroform
- c. Ethyl alcohol
- d. Benzene

e. Dimethyl formamide

682. An analytical pharmacist quantifies the ascorbic acid substance using the iodometric method. What indicator must be used in the process?

a. Bromophenol blue

b. Starch

c. Methyl orange

d. Phenolphthalein

e. Murexide

683. A pharmacy has received a batch of herbal raw material - caraway fruits. What medicinal plant is cultivated for harvesting of this herbal raw material?

a. *Foeniculum vulgare*

b. *Anisum vulgare*

c. *Carum carvi*

d. *Anethum graveolens*

e. *Coriandrum sativum*

684. Infuser apparatus is used by a pharmacy to prepare:

a. Infusion solutions

b. Suspensions

c. Ointments

d. Infusions and decoctions

e. Emulsions

685. An analytical chemist analyses the substance of racemic menthol according to the State Pharmacopoeia of Ukraine. To identify the drug and determine its purity he uses optical rotation that should occur within the interval:

a. From  $+10^{\circ}$  to  $+13^{\circ}$

b. From  $+50^{\circ}$  to  $+56^{\circ}$

c. From  $-102^{\circ}$  to  $-105^{\circ}$

d. From  $+0,2^{\circ}$  to  $-0,2^{\circ}$

e. From  $-48^{\circ}$  to  $-51^{\circ}$

686. What type of loan does the pharmacy receive in the form of goods, and returns mainly in monetary form?

a. Commercial loan

b. State loan

c. Term loan

d. Prolonged loan

e. Bank loan

687. Infusions of herbal raw material rich in essential oils should be:

a. Filtered without wringing of the solid residue

b. Prepared in a tightly closed vessel

c. Acidated with hydrochloric acid

d. Infused cold

e. Immediately filtered

688. At a pharmacy, during the visual inspection, an authorized person has doubts about the quality of medicines. What measures should be taken in this case?

a. Withdraw the medicines and send them back to the supplier

b. Withdraw the medicines and send them back to the manufacturing factory

c. Withdraw the medicines and send them to the quality assurance department of the manufacturing company

d. Withdraw the medicines and send them for disposal

e. Withdraw the medicines and send them for laboratory testing

689. A pharmacy warehouse has received a shipment of drugs. During quality control by an

authorized person, there were some drugs of questionable quality detected. What measures should be taken by the authorized person in this case?

- a. Samples of questionable drugs should be sent to the local inspectorate department; the rest of the drug shipment should be quarantined with marking "Do not sell until further notice"
- b. Return the shipment to the manufacturer
- c. Draw up a Quality Assessment Report with the defects listed and allow sale of the drug shipment
- d. Allow sale of the drug shipment
- e. Dispose of the shipment that contains questionable drugs

690. An analytical chemist can quantitatively determine the thiamine bromide content in powders by means of:

- a. Bromometry
- b. Nitritometric titration
- c. Alkalimetry
- d. Permanganatometry
- e. Complexometric titration

691. To identify a substance, an analytical chemist performs a reaction with the cyanogen bromide reagent and aniline. What substance is being analyzed in this case?

- a. Citric acid
- b. Nicotinic acid
- c. Benzoic acid
- d. Salicylic acid
- e. Ascorbic acid

692. What structure is authorized to issue permits for individual or collective provision of audit services in Ukraine?

- a. The State Service of Ukraine for Drug Control
- b. The Audit Chamber of Ukraine
- c. The Control and Revision Office
- d. The State Regulatory Service of Ukraine
- e. The State Service of Ukraine for Medicines

693. Name the document where the actual hours worked by the pharmacy employees are recorded:

- a. Material aid log book
- b. Payroll
- c. Work schedule
- d. Employee time sheet
- e. Medical certificate

694. Polemonium caeruleum rhizomes with roots are a source material for making expectorants. What group of substances causes this effect?

- a. Flavonoids
- b. Anthraquinones
- c. Saponins
- d. Tannins
- e. Vitamins

695. Money received for the goods sold are being transferred to the pharmacy from its outlet. What document must be drawn up by a cashier for the receipt of this monetary sum?

- a. Cash withdrawal order
- b. Cash receipt order
- c. Cashier's check
- d. Payment order
- e. Bank statement

696. The pharmacy received the goods from the supplier. In the process of acceptance by the authorized person, a discrepancy in the number of medicines was discovered. What document does the authorized person need to issue?



- a. Contract of sale
- b. Register of medicinal products received by the subject of economic activity
- c. Logbook of receipt of goods by group
- d. Product report
- e. Act on established discrepancy in quantity and quality**

697. A patient with ischemic heart disease and chronic circulatory failure had been taking for a long time one of the drugs listed below. He developed hypokalemia, which resulted in cardiac rhythm disturbance and muscle weakness. What drug can lead to this complication as a side effect?

- a. Furosemide**
- b. Spironolactone
- c. Nifedipine
- d. Propranolol
- e. Lisinopril

698. Benzocaine is a substance with local anesthetic activity. According to its chemical structure, it is a derivative of:

- a. n-Aminobenzene sulfonic acid
- b. n-Chlorobenzoic acid
- c. n-Aminobenzoic acid**
- d. n-Aminosalicylic acid
- e. n-Aminophthalic acid

699. The main method of quantitative determination of corticosteroids is:

- a. Acidimetry
- b. Potentiometry
- c. Argentometry
- d. Cerimetry
- e. Spectrophotometry**

700. What medicinal agents must be manufactured in aseptic conditions followed by thermal sterilization with high-pressure saturated steam?

- a. Injection solutions with thermolabile substances
- b. Liquid ingestible antibiotics
- c. Injection solutions with thermostable substances**
- d. Concentrated solutions for burette systems
- e. 2% collargol solution for infants

701. The cashier of a pharmacy must record all receipt and withdrawal cash transactions in the relevant documents. What document must be drawn up for issuing cash sums to be accounted for?

- a. Receipt for issuing money
- b. Disbursement cash order**
- c. Cashier's check
- d. Expense invoice
- e. Profit invoice

702. A pharmacy customer complains of constricting, sometimes burning pain behind the sternum, with irradiation to the neck and left arm. The pain lasts for 5-10 minutes. What drug should be given to this customer for emergency aid?

- a. Digoxin
- b. Nitroglycerine**
- c. Bisoprolol
- d. Isosorbide dinitrate
- e. Nifedipine

703. What herbal raw material contains alkaloid glaucine that has a strong antitussive effect?

- a. Chelidonium grass
- b. Glaucium flavum grass**
- c. Macleaya grass

- d. Vinca minor grass
- e. Belladonna grass

704. There are different grades and types of glass based on their quality, quantitative composition, and properties. What type of glass belongs to the first-grade?

- a. MTB (colorless glass for medical containers)
- b. USP-1**
- c. NS-2 A (neutral glass 2A)
- d. AB-1 (non-boric glass)
- e. NS-2 (neutral glass 2)

705. A 50-year-old woman complains of headache, dizziness, visual snow, and nausea. The skin of her face is hyperemic. Objectively, her heart rate is 85/min., her blood pressure is 210/120 mm Hg. What is the provisional diagnosis in this case?

- a. Myocardial infarction
- b. Meningococcal infection
- c. Hemorrhagic stroke
- d. Hypertensive crisis**
- e. Angina pectoris attack

706. A prescription does not specify the shape of rectal suppositories. What shape would be optimal in such case and therefore should be used by the pharmacist?

- a. Sphere
- b. Cylinder
- c. Ovoid
- d. Pessary
- e. Torpedo**

707. The analytical laboratory received calcium chloride. What volumetric solution should be used for quantitative determination of this medicinal substance?

- a. Sodium hydroxide
- b. Potassium bromate
- c. Potassium permanganate
- d. Hydrochloric acid
- e. Sodium edetate**

708. Taxes can be divided into direct and indirect. Select an indirect tax from the list:

- a. Real estate tax
- b. Rent
- c. Corporate income tax
- d. Value added tax**
- e. Individual income tax

709. Anthocyanidins are euflavonoid compounds that color plant tissues in shades that vary from pink to black-purple. What characteristic feature of anthocyanidins is used in their analysis?

- a. Amorphous state
- b. Solubility in fats
- c. Alcohol precipitation
- d. Ability to change color depending on the pH of the medium**
- e. Ability to sublime

710. The Income Statement of a pharmacy for the first quarter of 20XX contains the following entries: goods turnover - 45 000 UAH, production cost of products sold - 30 000 UAH, turnover costs - 10 000 UAH. Determine the income:

- a. 30 000 UAH
- b. 15 000 UAH
- c. 35 000 UAH
- d. 40 000 UAH
- e. 5 000 UAH**

711. To reduce business risks, a pharmaceutical company expands its business by entering new areas and industries that are unrelated to the drug manufacturing. Name this process.

- a. Diversification
- b. Conglomeration
- c. Modernization
- d. Intensification
- e. Integration

712. To retain full control over its trade operations on the regional market, the "Fitoprom" pharmaceutical company conducts its marketing policy without any intermediate parties. Name the marketing practice that excludes the middleman:

- a. Indirect
- b. Combined
- c. Mediated
- d. Mixed
- e. Direct

713. Specify a potent herbal raw material, infusion from which is made in 1:400 ratio:

- a. Valerian roots and rhizomes
- b. Sage leaves
- c. Althaea roots
- d. Motherwort grass
- e. Foxglove leaves

714. What tincture is industrially manufactured at the ratio of 1:2?

- a. Mentha
- b. Leonurus
- c. Atropa belladonna
- d. Hypericum
- e. Styphnolobium japonicum

715. What antibiotic has beta-lactam cycle in its structure?

- a. Streptomycin sulfate
- b. Benzylpenicillin potassium salt
- c. Chloramphenicol
- d. Lincomycin hydrochloride
- e. Doxycycline hyclate

716. Microcapsules are made by coating solid particles of the substance being encapsulated with a shell consisting of metallic silver, zinc, etc. Name this method of making microcapsules:

- a. Slurrying of the nuclei
- b. Pelleting
- c. Polymerization
- d. Coacervation
- e. Galvanization

717. Who is responsible for the patient's condition in case of self-treatment?

- a. Head manager of the retail pharmacy
- b. Pharmacist
- c. Physician
- d. Patient
- e. Drug manufacturer

718. According to the State Pharmacopoeia of Ukraine, an analytical chemist can determine sulfate admixtures in sodium tetraborate by the effect of white opalescence that results from its reaction with the following solution:

- a. Silver nitrate
- b. Ammonium oxalate
- c. Magnesium sulfate

d. Sodium sulfide

**e. Barium chloride**

719. Various types of dryers can be used for granule dehumidification. Specify the type of "СП-30" dryer:

a. Silica gel dryer

b. Forced air dryer

c. Freeze dryer

d. Infrared dryer

**e. Fluidized bed dryer**

720. Tween-80 is being introduced into an emulsion system. What is the role of Tween-80 in emulsions?

**a. Emulsifier**

b. Antioxidant

c. Solvent

d. Preservative

e. Taste correction agent

721. *Passiflora incarnata* grass contains a complex of indole alkaloids. What pharmacological group do *Passiflora* preparations belong to?

a. Wound healing agents

b. Diuretics

**c. Sedatives**

d. Antibacterial agents

e. Laxatives

722. A pharmaceutical warehouse received a herbal raw material that consists of "cones" with loose scales that are attached to a firm twig with or without fruits. Its collective fruits are pale green, fragrant, and bitter. Name the plant from which this herbal raw material was harvested:

a. *Alnus incana*

b. *Olea europeaea*

c. *Juniperus communis*

**d. *Humulus lupulus***

e. *Rubus idaeus*

723. A decoction of *Bidens* grass has an anti-allergic effect and is often used in pediatrics. What species of this plant is pharmacopoeial?

a. *Bidens radiata*

**b. *Bidens tripartita***

c. *Bidens cernua*

d. *Bidens frondosa*

e. *Bidens aurea*

724. Name the drug of choice for treatment of arterial hypertension during pregnancy:

**a. Alpha-methyldopa**

b. Sodium nitroprusside

c. Furosemide

d. Captopril

e. Propranolol

725. A marketing consultancy was comparing various drugs containing salbutamol. It was using such parameters as the cost of a treatment course, width of a distribution channel, frequency of medications, etc. The consultancy was determining the:

**a. Competitiveness of the drugs**

b. Quality of the drugs

c. Market stability

d. Novelty of the drugs

e. Life cycle stage of the drugs

726. Specify the isotonic concentration of a sodium chloride solution:

- a. 1.8%
- b. 0.9%**
- c. 10.0%
- d. 5.0%
- e. 1.0%

727. What five-membered heterocycle is the basis of the structural formula of antiprotozoal and antibacterial drug metronidazole?

- a. Furan
- b. Pyrrole
- c. Thiazole
- d. Pyrazole
- e. Imidazole**

728. During the transportation of alkaloid drugs, the markings on their packaging were damaged. Qualitative group reactions for alkaloids revealed that the Vitali-Morin test was positive. Therefore, the analyzed drug belongs to the following group of derivatives:

- a. Isoquinoline derivatives
- b. Quinuclidine derivatives
- c. Indole derivatives
- d. Purine derivatives
- e. Tropane derivatives**

729. During identification of a medicinal substance, a chloroform layer colors yellow-orange after addition of a solution of chloramine and hydrochloric acid. Name this substance:

- a. Sodium fluoride
- b. Potassium fluoride
- c. Sodium bromide**
- d. Potassium iodide
- e. Sodium chloride

730. The duration of a maternity leave for pregnancy and childbirth is calculated in total. What is the total number of calendar days allocated for a maternity leave?

- a. 50 days
- b. 100 days
- c. 115 days
- d. 70 days
- e. 126 days**

731. Number of mediators that pharmaceutical goods pass on their way from manufacturer to consumer is called:

- a. Length of distribution channel**
- b. -
- c. Volume of distribution channel
- d. Width of distribution channel
- e. Level of distribution channel

732. Hydrogen sulfide is being produced in the process of dry pyrolysis of a certain sulfanilamide drug. Name this drug:

- a. Sulfadimezinum (Sulfadimine)
- b. Sulfacil sodium
- c. Streptocide
- d. Norsulfazole**
- e. Soluble streptocide

733. Name the optimal vehicle for soluble vaginal suppositories:

- a. Polyethylene oxide**
- b. Cocoa butter

- c. Hard fat
- d. Glycerine
- e. Fat

734. A pharmaceutical factory produces antimicrobial agent nitrofurazone (Nitrofural, Furacilin). What initial substance is used in its synthesis?

- a. Resorcinol
- b. Benzaldehyde
- c. Aniline
- d. Hydroxyquinoline
- e. Furfural**

735. Among various types of tablet external layers there are enterosoluble coatings. Where in the body are they dissolved?

- a. Oral cavity
- b. Esophagus
- c. Stomach
- d. Intestine**
- e. Rectum

736. A doctor prescribed the drug simvastatin to the patient to correct hyperlipidemia. Why should the selected daily dose be taken once in the evening?

- a. Catabolism rate of low-density lipoproteins increases
- b. Risk of myopathy decreases
- c. Receptor sensitivity to low-density lipoproteins increases
- d. Cholesterol biosynthesis occurs mainly at night**
- e. Absorption of the drug increases at night

737. A herbal raw material was sent for analysis. The material consists of cylindrical pieces of roots of varying length, covered with a brown, longitudinally wrinkled bark. When peeled, the raw material externally varies in color from light yellow to brownish yellow and is light yellow and very fibrous on section. Its smell is faint. Its taste is sweet and slightly irritating. What herbal raw material is being analyzed in this case?

- a. Aralia mandshurica roots
- b. Panax ginseng roots
- c. Taraxacum roots
- d. Glycyrrhiza roots**
- e. Berberis roots

738. A pharmacist makes powders by grinding one of the formulation components with ethyl alcohol. This technology is typically applied when working with the following substance:

- a. Zinc oxide
- b. Starch
- c. Bolus alba
- d. Streptocid**
- e. Talcum

739. If vehicle is not specified, an eye ointment should be prepared with the following sterile vehicle:

- a. 10 parts of anhydrous lanolin - 90 parts of vaseline For Eye Ointments**
- b. Vaseline For Eye Ointments
- c. Lanolin: vaseline - 1:1
- d. 40 parts of anhydrous lanolin - 60 parts of vaseline For Eye Ointments
- e. 30 parts of lanolin - 70 parts of vaseline

740. A pharmacist prepares an infusion in proportion 1:400. Specify the herbal raw material used in this infusion:

- a. Camomile grass
- b. Oak bark
- c. Thermopsis grass**

- d. Motherwort grass
- e. Althaea roots

741. Doctor's prescription fulfills several functions. What function indicates that the doctor bears responsibility for correct prescription of medicines to the patient?

- a. Economic
- b. Legal**
- c. Technological
- d. Social
- e. Informational

742. Menthol medicinal substance can be chemically classified as a:

- a. Glycoside
- b. Polypeptide
- c. Bicyclic terpene
- d. Monocyclic terpene**
- e. Acyclic terpene

743. A folic acid molecule has a heterocyclic system, consisting of two condensed heterocycles - pyrimidine and pyrazine. Name this system:

- a. Isoalloxazine
- b. Purine
- c. Phenothiazine
- d. Pteridine**
- e. Corrin

744. Throughout the year, three employees voluntarily resigned from a pharmaceutical company. What type of employee movement is it?

- a. Recruiting
- b. Vertical job rotation
- c. Staff turnover**
- d. Horizontal job rotation
- e. -

745. Centaurium erythraea grass increases appetite and is a component of herbal teas for stomach. What active substance causes this effect of the herbal raw material?

- a. Alkaloids
- b. Flavonoids
- c. Iridoids**
- d. Saponins
- e. Simple phenols

746. According to the State Pharmacopoeia of Ukraine monograph, alkalimetry should be used for the quantitative determination of the nicotinic acid. What is used as an indicator in this case?

- a. Methylene blue
- b. Potassium chromate
- c. Calconcarbonic acid
- d. Sodium eosinate
- e. Phenolphthalein**

747. A pharmacist prepares an oil emulsion with menthol. How should menthol be introduced in this case?

- a. Menthol should be comminuted with the emulsifier
- b. Menthol should be comminuted in a mortar with ethanol
- c. Menthol should be dissolved in the purified water
- d. Menthol should be dissolved in oil**
- e. Menthol should be introduced as a suspension into the prepared emulsion

748. What property of the tablet mass determines the most how fast a matrix hole of the tablet press

machine is filled?

- a. Bulk density
- b. Humidity
- c. Relative density
- d. Fluidity (flowability)**
- e. Porosity

749. Difference between the retail price of products sold and the margin determines:

- a. Production cost**
- b. Markup
- c. Breakeven
- d. Income
- e. Margin

750. A pharmacist has prepared a Leonurus tincture with sodium bromide. How was sodium bromide introduced into the preparation in this case?

- a. Sodium bromide was mixed in a separate vessel with a part of the extract, than this mixture was added into the prepared tincture
- b. Dry substance was dissolved in the filtered extract in a stand**
- c. Concentrated solution was added into the prepared extract
- d. Sodium bromide was dissolved in the tincture in a vial for dispensing
- e. Dry substance was dissolved in the infusion apparatus

751. What medicinal substance has benzimidazole in its structure?

- a. Dibazol (Bendazol)**
- b. Nitrofuril (Furacilin)
- c. Diphenhydramine hydrochloride (Dimedrol)
- d. Mercazolil (Thiamazole)
- e. Metamizole sodium salt (Analgin)

752. Alkaloids are used in medical practice for treatment of various diseases. Based on its chemical composition, the following substance can be classified as a quinolizidine alkaloid:

- a. Codeine phosphate
- b. Pachycarpine hydroiodide**
- c. Quinine sulfate
- d. Caffeine monohydrate
- e. Scopolamine hydrobromide

753. What is the rational method of introducing magnesium oxide into an oil emulsion?

- a. Dissolution in oil
- b. Comminution with the water intended for the dilution of the primary emulsion
- c. Dissolution in water to prepare the primary emulsion
- d. Introduction as a suspension into the prepared emulsion**
- e. Dissolution in the prepared emulsion

754. A certain herbal raw material is used to make Flamin cholagogue. Name this material:

- a. Crataegi flores
- b. Tanacetii flores
- c. Meliloti herba
- d. Violae herba
- e. Helichrysi arenarii flores**

755. A pharmacist has prepared an eyedrops vehicle. What method of sterilization should be chosen in this case?

- a. Dry heat**
- b. Flowing steam
- c. Pasteurization
- d. Membrane filtration
- e. Ultraviolet irradiation



756. The introduction of fluorine atoms into a glucocorticosteroid molecule results in a significant increase of the anti-inflammatory effect. What drug is a fluorine-derivative glucocorticoid?

a. Betamethasone dipropionate

b. Prednisolone

c. Hydrocortisone acetate

d. Prednisone

e. Cortisone acetate

757. A 53-year-old woman suffers from ischemic heart disease and angina pectoris. What drug can be used to stop angina pectoris attacks?

a. Acetylsalicylic acid

b. Dipyridamol

c. Propranolol

d. Nitroglycerine

e. Drotaverine hydrochloride

758. Which of the following antibiotics can be identified by means of maltol test?

a. Lincomycin hydrochloride

b. Kanamycin monosulfate

c. Doxycycline hydrochloride

d. Streptomycin sulfate

e. Amoxicillin

759. When pressing tablets, punches of a tableting machine stick to the tablet surface. What technological error is most likely in this case?

a. Insufficient amount of leaveners

b. Insufficient amount of adhesives

c. Insufficient amount of diluents

d. Insufficient amount of lubricants

e. Insufficient amount of dyes

760. When selling iron preparations that are to be taken orally, a dispensing chemist should warn the patients that these drugs cannot be taken with milk or dairy products, because it leads to:

a. Accelerated absorption of iron preparations

b. Increased activity of iron preparations

c. Prolonged action of iron preparations

d. Accelerated clearance of iron preparations

e. Formation of chelate complexes that cannot be assimilated into the body

761. A pharmacist prepares rectal suppositories in the pharmacy. Name the acceptable range, within which the average weight of such suppositories may vary:

a. 1.0-4.0

b. 2.0-5.0

c. 4.0-7.0

d. 5.0-8.0

e. 3.0-6.0

762. Mixture is a liquid dosage form for internal use. It is obtained by mixing two or more solid or liquid dosage forms in a solvent. If a mixture contains tinctures, they should be added:

a. After poisonous and narcotic substances are dissolved (before concentrates)

b. Last in the order of increasing ethanol concentration

c. Last in the order of decreasing ethanol concentration

d. First

e. In the same order in which they are listed in the formulation

763. A pharmacy prepares an aqueous extract of thermopsis grass. What components should be used to prepare this aqueous extract?

a. Thermopsis grass, hydrochloric acid solution 1:10, purified water

b. Thermopsis grass, sodium chloride, purified water

- c. Thermopsis grass, sodium bicarbonate, purified water
- d. Thermopsis grass, purified water
- e. Thermopsis tincture, purified water

764. What document is used during transactions with consumers, confirming the fact of sale or return of goods and the fact of receiving a payment or making a refund?

- a. Request for a cash transfer
- b. Cash book
- c. Accompanying statement to the bag with cash
- d. Fiscal cash receipt for the goods/services**
- e. Transactions ledger

765. A doctor has written the following prescription for the preparation of a dosage form: Unguenti Benzylpenicillini-natrii 10.0 Misce. Da. Signa: Apply under the eyelid 3 times a day end tabular. What base should be used to make this ointment?

- a. A mixture of paraffin and sunflower oil (3:7)
- b. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (7:3)
- c. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (6:4)**
- d. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (5:5)
- e. 10.0 of vaseline (petroleum jelly) "for eye ointments"

766. A compound powder is being made of ingredients taken in relatively equal measure. What ingredients should be comminuted first?

- a. Microcrystalline
- b. Macrocrystalline**
- c. Colored
- d. Volatile
- e. Coloring

767. What activity of a pharmaceutical company includes improvement of employees' working and living conditions, healthcare and medical insurance and other means of social development?

- a. Social responsibility**
- b. Industrial activity
- c. Charity
- d. Commercial activity
- e. Financial activity

768. The essential oil of which plant contains chamazulene, which is formed during steam distillation from matricin?

- a. Chamomila recutita**
- b. Melissa officinalis
- c. Valeriana officinalis
- d. Inula helenium
- e. Arnica montana

769. Chamomile flowers are a popular medicinal substance in scientific medicine. What plant is the source of this herbal raw material?

- a. Chamomilla recutita**
- b. Leucanthemum vulgare
- c. Anthemis arvensis
- d. Anthemis cotula
- e. Tripleurospermum inodorum

770. What document must be prepared by a pharmacy's cashier for the cash collection?

- a. Cashier's check
- b. Cash book
- c. Payment order
- d. Cash deposit slip
- e. Accompanying statement**

771. To prepare an ointment, a pharmacist has additionally used paraffin. What is the role of paraffin in the technology?

- a. Emulsifier
- b. Preservative
- c. Vehicle
- d. Densifier**
- e. Dispersing agent for powders

772. A pharmacy has bought a refrigerator. What document should be filled in for such purchase?

- a. Information should be entered into the goods report
- b. A deposit order should be filled in
- c. An inventory list needs to be drawn up
- d. No accounting documentation needs to be kept
- e. It should be assigned an inventory number and registered in the inventory cards**

773. Senna (cassia) foliage contains anthracene derivatives. Their presence can be confirmed by qualitative reaction with:

- a. Fehling's reagent
- b. Iron (II) sulfate
- c. Molisch's reagent
- d. Iron ammonium alum
- e. Alkali**

774. A pharmaceutical factory uses dragee machines to apply multiple layers of active substances and adjuvants to sugar granules. The end product of this process is the following dosage form:

- a. Granules
- b. Microcapsules
- c. Dragee**
- d. Spansules with polymer coating
- e. Dragee tablets

775. A pharmaceutical analyst identifies the substance of potassium acetate. What reagent confirms the presence of potassium cation in the substance?

- a. Potassium permanganate
- b. Zinc oxide
- c. Sodium hydroxide
- d. Tartaric acid**
- e. Iron (III) chloride

776. For treatment of enteric infection a 36-year-old woman was prescribed a nitrofurantoin derivative that is poorly absorbed in the intestine and takes its effect along the intestinal tract. Name this drug:

- a. Furadonin (Nitrofurantoin)
- b. Furacilin (Nitrofural)
- c. Nitroxoline
- d. Nalidixic acid
- e. Nifuroxazide**

777. A pharmacist has made an injection solution that contains a salt produced by reaction of a strong base with a weak acid. Specify the necessary stabilizer:

- a. Hydrochloric acid
- b. Sodium sulfate
- c. Ascorbic acid
- d. Sodium hydrochloride**
- e. Cysteine

778. In his line of work a dispensing chemist tries to satisfy a number of contradictory requirements, which has resulted in emotional overload, stress, and self-doubt. What type of conflict has arisen in this case?

- a. Intergroup

- b. Interorganizational
- c. -
- d. Individual vs. group

**e. Intrapersonal**

779. As the result of reduction of alcoholic solutions of 5-nitrofur derivatives by means of their reaction with zinc in the presence of diluted hydrochloric acid, the following occurs:

- a. Ammonia production
- b. Solution decoloration**
- c. Color change from yellow to black
- d. Precipitation
- e. Precipitation and gassing

780. The <<Violet>> pharmacy chain operates in the pharmaceutical market for over 20 years. In difficult market environment, the company's management actively uses elements of crisis management, diversification, and attraction of investments. What component of the successful activity of the pharmaceutical organization does the company provide?

- a. Survival**
- b. Effectiveness
- c. Practical implementation of management decisions
- d. Efficiency
- e. Productivity

781. The following substance is used as an extractant in production of liquid extracts:

- a. Chloroform
- b. Dichloroethane
- c. Acetone
- d. Ethanol**
- e. Glycerine

782. A patient has been diagnosed with essential hypertension and prescribed an adequate treatment with antihypertensive drugs. However, two months later the patient began to notice a slight cough. What drug can cause this side effect?

- a. Furosemide
- b. Amlodipine
- c. -
- d. Captopril**
- e. Hypothiazide (Hydrochlorothiazide)

783. A pharmaceutical company produces soft dosage forms. What indicator should be measured additionally for the soft dosage forms that are intended for application on heavily damaged skin?

- a. pH
- b. Identification
- c. Microbiological purity
- d. Sterility**
- e. Quantitative determination

784. A pharmacy has received a batch of drugs according to the invoice. Who is authorized to conduct intake quality control when the goods arrive to the pharmacy?

- a. Pharmacist
- b. Tax officer
- c. Head manager
- d. Employee appointed to this task by the head manager**
- e. Officer of a local division of the state inspectorate for drug quality control

785. Bioactive substances of this plant have secretolytic, antispasmodic, antifatulent, and slight diuretic effect. Its essential oil is used in making of gripe water. What plant is it?

- a. Calendula officinalis
- b. Crataegus sanguinea

c. Tanacetum vulgare

**d. Foeniculum vulgare**

e. Betula pendula

786. All business transactions at a pharmacy must be documented. What type of cash operation must be recorded with a receipt cash order?

a. Transfer of the revenue to the bank account

b. Advance salary payments

**c. Revenue of the pharmacy**

d. Salary payments

e. Issuing cash sums to be accounted for

787. Proper harvesting of Frangula alnus herbal raw material greatly influences the quality and quantity of its active substances. Therefore the optimal time for buckthorn bark harvesting is the period of:

a. Flowering

b. Dormancy

c. Defoliation

d. Fruiting

**e. Sap flow**

788. What is the minimum amount of boric acid that can be weighed on the BP-1 hand scales?

a. 0.05 g

b. 0.03 g

**c. 0.02 g**

d. 0.04 g

e. 0.01 g

789. A 65-year-old man with community-acquired pneumonia was prescribed antibiotic agent amikacin. It should be kept in mind, that amikacin has the following side-effect:

a. Increased blood pressure

**b. Ototoxicity**

c. Red coloring of urine

d. Decreased blood pressure

e. Vomiting

790. The head manager of a pharmacy calls the manager of a pharmaceutical wholesaler to clarify the terms of supply. What type of communication is it?

a. Internal

b. Interlevel

c. Horizontal

**d. External**

e. Vertical

791. The chief manager of a pharmacy designs its organizational structure and job descriptions for its employees. These arrangements belong to the following management method:

a. Psychosocial

b. Economic

c. Simulation

**d. Organizational**

e. Legal

792. Weibel's liquid is necessary to stabilize the solution of a certain substance. Name this substance:

a. Magnesium sulfate

b. Potassium chloride

c. Novocaine

**d. Glucose**

e. Sodium chloride

793. A 70-year-old patient with stenocardia claims that the pharmacy had sold him a drug that relieved an attack of stenocardia but instead caused an acute bursting headache. What antihypertensive drug is this side-effect typical of?

- a. Amlodipine
- b. Nitrosorbid**
- c. Nifedipine
- d. Trimetazidine
- e. Metoprolol

794. An analytical chemist investigates a 3% hydrogen solution. What reagent is recommended by the State Pharmacopoeia of Ukraine for identification of this substance?

- a. Potassium chromate**
- b. Calcium chloride
- c. Sodium chloride
- d. Magnesium sulfate
- e. Zinc oxide

795. Accounts are classified based on the type of accounting of assets or the sources of their formation. What is accounted in passive accounts?

- a. Authorized capital**
- b. Monetary funds
- c. Accounts receivable
- d. Goods
- e. Fixed assets

796. A pharmaceutical manufacturer forms marketing teams responsible for a particular product or a group of products (medicines). What model of marketing organization does the company use in this case?

- a. Product-based marketing**
- b. Regional marketing
- c. Combined marketing (matrix model)
- d. Functional marketing
- e. Segment marketing

797. A private pharmacy has received a supply of a drug with 2,3-dihydro-2-methyl-1,4-naphthoquinone-2-sulfonate sodium as an active ingredient. Name this drug:

- a. Ergocalciferol
- b. Rutin
- c. Riboflavin
- d. Vicasol (Menadione)**
- e. Cocarboxylase hydrochloride

798. In the process of industrial production of rectal suppositories, certain substances insoluble both in water and suppository vehicle are introduced into this dosage form. Specify the optimal way to introduce these substances:

- a. Melt all of fatty vehicle and dissolve the substances there
- b. Introduce the substances as a suspension**
- c. Melt a part of fatty vehicle and dissolve the substances there
- d. Dissolve the substances in the water heated to 45°C
- e. Introduce the substances as an emulsion

799. What method is recommended by the State Pharmacopoeia of Ukraine for quantitative determination of potassium chloride substance that is used in treatment of hypokalemia?

- a. Bromatometry
- b. Iodometry
- c. Argentometry**
- d. Polarimetry

e. Cerimetry

800. Benzoic acid is known to have antiseptic properties. To identify this acid the following should be used:

a.  $\text{FeCl}_3$

b.  $\text{KMnO}_4$

c.  $[\text{NH}_4]_2\text{C}_2\text{O}_4$

d.  $\text{K}_2\text{CrO}_4$

e.  $\text{K}_2[\text{HgI}_4]$

801. A pharmacy prepares 10% sodium chloride injection solution. What sterilization would be optimal in this case?

a. Gas sterilization

b. Sterile filtration through membrane

c. Dry-heat sterilization

d. Autoclave chamber with high-pressure saturated steam

e. Irradiation sterilization

802. A patient suffers from avitaminosis C) The physician has prescribed a course of phytotherapy. What herbal raw material is rich in this vitamin?

a. Cortex Quercus

b. Rhizoma Tormentillae

c. Fructus Sorbi

d. Folium Menthae piperitae

e. Cortex Viburni opuli

803. Helichrysum arenarium herbal raw material has anti-inflammatory and choleretic effect. What parts of this plant are harvested?

a. Fruits

b. Roots

c. Flowers

d. Rhizomes

e. Grass

804. "Immunal" immunostimulant is often prescribed against chronic upper respiratory tract infections. What herbal raw material is used in its production?

a. Radices Rhei

b. Radices Ginseng

c. Radices Araliae elata

d. Rhizomata et radices Eleuterococci

e. Herba Echinaceae purpurea

805. A dispensing chemist-technologist has accepted a prescription for eye drops with adrenaline hydrochloride. What characteristic of adrenaline hydrochloride must be taken into account, when preparing the eye drops?

a. Low solubility in water

b. Volatility

c. Poor solubility in water

d. Thermolability

e. Thermal stability

806. What stabilizer must the pharmacist add, when preparing an atropine sulfate solution for injections?

a. Sodium metabisulfite

b. Hydrochloric acid

c. Sodium bicarbonate

d. Ascorbic acid

e. Sodium hydroxide

807. A pharmaceutical factory produces ointments. Name the stage of the manufacturing process that allows to obtain a uniform ointment:

- a. Mixing components with the vehicle
- b. Dispersion
- c. Ointment concentrate production
- d. Vehicle production

**e. Homogenization**

808. A pharmaceutical company produces aromatic waters. Peppermint water should be prepared in the following proportion:

- a. 1:10
- b. 1:1
- c. 1:1000**
- d. 1:2000
- e. 1:4000

809. Standardization of a certain herbal raw material is done by calculating its alkaloid content in terms of hyoscyamine. Name this herbal raw material:

- a. Radices Berberidis
- b. Folia Belladonnae**
- c. Fructus Capsici
- d. Herba Chelidonii
- e. Herba Thermopsidis lanceolatae

810. An alkaloid drug has the chemical name of 1,3,7-Trimethyl-3,7-dihydro-1H-purine-2,6-dione. Name this substance:

- a. Ampicillin
- b. Phenazone
- c. Chloramphenicol
- d. Caffeine**
- e. Norfloxacin

811. A lactone test was conducted to verify the authenticity of Melilotus grass. What group of compounds can be detected using this test?

- a. Cardiac glycosides
- b. Lignans
- c. Anthracene derivatives
- d. Saponins

**e. Coumarins**

812. The method of preparing suspensions depends on the properties of the component substances. What substances have hydrophobic properties?

- a. Zinc oxide, talcum
- b. Bolus alba (kaolin), bentonite
- c. Boric acid, calcium carbonate
- d. Sodium bicarbonate, sodium sulfate

**e. Camphor, menthol**

813. An analytical quality control laboratory performs analysis of an ascorbic acid substance. What device must be used to determine its specific optical rotation?

- a. Viscometer
- b. Spectrophotometer
- c. Refractometer
- d. Hydrometer

**e. Polarimeter**

814. A patient needs the pharmacy to prepare him a camphor ointment. What concentration of camphor should be in the ointment according to the regulatory documents?

- a. 15%



- b. 5%
- c. 1%
- d. 10%**
- e. 20%

815. What is the shortest goods distribution channel for medical products?

- a. Zero-level**
- b. Two-level
- c. Three-level
- d. Four-level
- e. One-level

816. What type of tax is the Individual Income Tax?

- a. Local, direct
- b. Special
- c. Nationwide, indirect
- d. Nationwide, direct**
- e. Local, indirect

817. A pharmacist needs to prepare eyedrops with pilocarpine hydrochloride. Specify the optimal isotonic agent in this case:

- a. Sodium nitrite
- b. Glucose
- c. Boric acid
- d. Sodium chloride**
- e. Sodium sulfate

818. What amount of the standard pharmacopoeial fluid of aluminum acetate must be taken to prepare 100 mL of 10% Burov's solution?

- a. 10 mL**
- b. 7.5 mL
- c. 6.25 mL
- d. 12.5 mL
- e. 3 mL

819. What imidazole derivative affects anaerobic microorganisms and protozoa and is effective against mixed infections?

- a. Dibazol (Bendazol)
- b. Caffeine
- c. Camphor
- d. Asparcam (Potassium aspartate and magnesium aspartate)
- e. Metronidazole**

820. Working hours for the pharmacy workers are reduced. What is the length of the work week for the pharmacist-analyst?

- a. 30 hours
- b. 24 hours
- c. 36 hours**
- d. 45 hours
- e. 32 hours

821. An analytical chemist determines potassium ions admixture in a medicinal substance with sodium tetraphenylborate according to the State Pharmacopoeia of Ukraine. What analytical effect would confirm the presence of this admixture?

- a. Blue coloring
- b. Brown coloring
- c. Yellow coloring
- d. Pink coloring
- e. White opalescence**

822. Rectal suppositories, each containing 0.1 g of euphyllin (aminophylline), are being hand-rolled for the patient. What amount of vehicle should be taken for one suppository, if its mass is unspecified in the formulation?

- a. 2.9 g
- b. 3.9 g
- c. 1.4 g
- d. 1.9 g
- e. 2.4 g

823. The drug sanguiritrin contains a combination of alkaloid bisulfates - sanguinarine and chelerythrine - that have an antimicrobial effect against Gram-positive bacteria and exhibit an antitrichomonal effect. What plant is the source of these alkaloids?

- a. *Glaucium flavum*
- b. *Chelidonium majus*
- c. *Passiflora incarnata*
- d. *Macleaya cordata*
- e. *Vinca minor*

824. "Balance" accounting form consists of two parts - assets and liabilities. Select from the list only the liabilities.

- a. Retained earnings, intangible assets
- b. Accounts receivable, prepaid expenses
- c. Bank loan, accounts payable
- d. Authorized capital, fixed assets
- e. Fixed assets, accounts receivable

825. The "Bon-pharn" pharmaceutical company due to its constant financial support of international sports competitions became well-known in Ukraine and the neighbouring countries. What type of activity is described in this case?

- a. Direct marketing
- b. Product promotion
- c. Publicity
- d. Sponsorship
- e. Lobbying

826. What method is used to sterilize the eye drops containing benzylpenicillin sodium salt?

- a. Hot air
- b. Not subject to sterilization
- c. Steam under pressure
- d. Flowing steam
- e. Ultraviolet radiation

827. A powder containing a substance with specific weight has been prepared in a pharmacy. Name this substance:

- a. Talcum
- b. Sugar
- c. Sodium bicarbonate
- d. Bolus alba
- e. Basic bismuth nitrate

828. There are several indirect taxes in the Ukrainian taxation system. What indirect tax is paid by the consumer as a surcharge to the value of goods?

- a. Single tax
- b. Excise tax
- c. Income tax
- d. Commercial patent
- e. Individual income tax

829. A patient, who has been taking acetylsalicylic acid, developed hemorrhages of mucous

membranes. This phenomenon is associated with:

- a. Inhibition of the prothrombin synthesis
- b. Disorder of protein binding
- c. Increased absorption in the gastrointestinal tract
- d. Changed volume of distribution
- e. Decreased absorption in the gastrointestinal tract

830. Specify the optimal method for industrial production of suppositories:

- a. Lyophilization
- b. Stamping
- c. Hand-rolling
- d. Pressing
- e. Pouring into moulds

831. Achillea grass is harvested during a certain stage of plant growth. Name this stage:

- a. During the budding
- b. During the fruiting
- c. During the shoot growth
- d. Before the flowering
- e. During mass flowering

832. A pharmaceutical company produces belladonna tincture. In the process of standardization, excessive content of active substances was detected. How can this situation be remedied?

- a. Precipitate excessive active substances
- b. This kind of deviation is not important
- c. Dilute the tincture with extractant to normal concentration
- d. Filter the tincture through adsorbent
- e. The tincture is a non-recoverable reject material

833. What medicine would be the best choice for a pregnant woman with signs of acute respiratory viral disease, who needs to lower her body temperature?

- a. Indomethacin
- b. Acetylsalicylic acid
- c. Nimesulide
- d. Diclofenac sodium
- e. Paracetamol

834. The chemical name of 2,2-(diphenylmethoxy)-N,N-dimethyl-ethanamine hydrochloride corresponds with the following medicinal substance:

- a. Diphenhydramine hydrochloride
- b. Ethylmorphine hydrochloride
- c. Ciprofloxacin hydrochloride
- d. Lidocaine hydrochloride
- e. Papaverine hydrochloride

835. Pharmacy workers can receive an extra pay, if they combine several professions or positions, take upon themselves the duties of a temporarily absent employee, or have to manage an increased workload. In this case, the maximum possible bonus constitutes the following percentage of the employee's salary:

- a. 50%
- b. 30%
- c. 40%
- d. 20%
- e. 10%

836. The doctor has discontinued captopril for a 58-year-old patient diagnosed with arterial hypertension, because the patient has developed a complication. What side effect is the most likely cause for the discontinuation of this drug?

- a. Tinnitus

b. Vomiting

**c. Cough**

d. Nausea

e. Abdominal pain

837. In the process of inpatient treatment of bronchial asthma, the patient was prescribed Euphylline (Theophylline) intravenously. What side effect of this drug must be managed first?

a. Hepatotoxicity

b. Hematotoxicity

c. Chondrotoxicity

d. Nephrotoxicity

**e. Cardiotoxicity**

838. What substances are used as leaveners in <<effervescent>> tablets?

**a. Mixtures of sodium bicarbonate with tartaric or citric acid**

b. Agar agar, alginic acid

c. Aerosil (fumed silica), polysorbate 80

d. Starch, alginic acid

e. Sodium bicarbonate, agar agar

839. To reduce business risks, the director of a pharmaceutical company has decided to withdraw a part of the profits and invest money into the restaurant business. Name the phenomenon, when the effort and capital are divided and invested into different types of business, the results of which are not directly related.

a. Bankruptcy

**b. Diversification**

c. Insurance

d. Liquidation

e. Indexation

840. What adjuvants are added to a tablet mass to promote its breakup?

a. Fillers

b. Thickeners

**c. Disintegrants**

d. Lubricants

e. Antioxidants

841. A 60-year-old patient diagnosed with ischemic heart disease developed bradycardia of 50 min. What drug will be contraindicated in this case?

**a. Propranolol**

b. Nifedipine

c. Nitroglycerin

d. Heparin

e. Nitrosorbide (Isosorbide dinitrate)

842. General sedimentation reagents are used to identify alkaloids in an extract obtained from herbal raw materials. Select from the list one such reagent.

a. Froehde reagent

b. Marquis reagent

c. Vitali-Morin reagent

d. Erdman reagent

**e. Dragendorff reagent**

843. What parameter characterizes the ratio of the height of the powder in the matrix to the height of the obtained tablet?

a. Flowability

b. Porosity

**c. Compaction (compression) coefficient**

d. Bulk volume

e. Compression value

844. The head managers of the pharmacy's over-the-counter department and ready-to-use drugs department exchange information on the demand for medicines. What type of communication is it?

a. Horizontal

b. Vertical ascending

c. External

d. Vertical descending

e. Interlevel

845. An analytical chemist identifies diphenhydramine hydrochloride (Dimedrol). What reagent produces a bright yellow coloring when reacting with this substance?

a. Anhydrous acetic acid

b. Diluted phosphoric acid

c. Diluted hydrochloric acid

d. Perchloric acid 0.1 M

e. Concentrated sulfuric acid

846. An analytical quality control laboratory analyzes a resorcinol substance. What method is used for its quantitative determination?

a. Complexometric titration

b. Mercurimetry

c. Nitritometry

d. Bromometry

e. Argentometry

847. What is the function of anhydrous lanolin in the suppository mass used for suppositories prepared via hand rolling?

a. Preservative

b. Solubilizer

c. Emollient

d. Solvent

e. Plasticizer

848. According to the State Pharmacopoeia of Ukraine, cerimetry should be used to determine the quantitative content of paracetamol. What solution is used as a titrant in this case?

a. Potassium permanganate

b. Iodine monochloride

c. Cerium sulfate

d. Silver nitrate

e. Hydrochloric acid

849. Chromatographic methods are used in pharmaceutical analysis. What type of chromatography is based on reversible chemisorption of the ions of the analyte solution by the ionogenic groups of the sorbent?

a. Thin layer chromatography

b. Adsorption chromatography

c. Gas chromatography

d. Ion-exchange chromatography

e. Paper chromatography

850. Most types of herbal raw materials are stored dry. However, for juice production the factories receive fresh herbal material. Name one such plant that is processed fresh:

a. *Althaea officinalis*

b. *Plantago major*

c. *Rosa canina*

d. *Capsella bursa-pastoris*

e. *Urtica dioica*

851. When making ampoules, certain admixtures are introduced into the glass to change its properties. Why is boron oxide added into the glass?

- a. To increase its thermal resistance
- b. To change its color
- c. To increase its mechanical strength
- d. To lower its melting temperature
- e. To improve its chemical resistance**

852. A pharmacist prepares cocoa butter-based round vaginal suppositories with less than 5% of citric acid. Specify the most rational approach to introduction of the active ingredient into the vehicle:

- a. Dissolve in molten cocoa butter
- b. Dissolve in minimal quantity of purified water**
- c. Dissolve in vaseline oil
- d. Dissolve in alcohol
- e. Dissolve in Dimexid (Dimethylsulfoxide)

853. Soft gelatin capsules with an elongated neck are called:

- a. Rectal capsules
- b. Microcapsules
- c. Medules
- d. Tubatines**
- e. Spansules

854. In production of phytodrugs, the extractant that remains in the herbal raw material is removed and used again in manufacturing. Name this process:

- a. Rectification
- b. Extraction
- c. Sublimation
- d. Lyophilization
- e. Recuperation**

855. One of the substances listed below changes its appearance when stored in a brightly lit place and not tightly sealed against air (assumes pink coloring). Name this substance:

- a. Resorcin**
- b. Sodium benzoate
- c. Boric acid
- d. Barium sulfate
- e. Sodium chloride

856. A woman with open tuberculosis is undergoing in-patient treatment in the tuberculosis clinic. What drug was prescribed by her physician for etiotropic treatment?

- a. Acyclovir
- b. Doxycycline hydrochloride
- c. Benzylpenicillin (Penicillin G)
- d. Metronidazole
- e. Isoniazid**

857. When analyzing the activity of the pharmacy, the pharmacy's head manager performed the following calculations: the manager subtracted the cost price of the sold goods from the proceeds from the sales of goods at retail prices. What indicator was calculated by the pharmacy's head manager?

- a. Profit
- b. Commodity circulation
- c. Profitability
- d. Expenses
- e. Markups**

858. The analyst determines quantitative content of sodium benzoate by means of acidimetry in non-aqueous medium according to the State Pharmacopoeia of Ukraine. What reagent is used as a

solvent in this case?

- a. Anhydrous acetic acid
- b. Dimethyl formamide
- c. Concentrated sulfuric acid
- d. Pyridine
- e. Sulfanilic acid

859. A pharmaceutical company that has been producing nasal drops begins to produce the same drug in a spray dosage form. What marketing approach does this company choose in its relationship with customers?

- a. Product improvement
- b. Manufacture improvement
- c. Intensification of commercial effort
- d. Sales improvement
- e. Socioethical marketing

860. A factory that manufactures vitamin preparations has received a batch of herbal raw material. It consists of round wrinkled orange-red fruits that taste sweet-sour and slightly tart. The fruits are up to 3 cm long, 1.5 cm in diameter, and are filled with hard small angular yellow nutlets. The nutlets and the inner surface of the fruits are covered with long and extremely coarse bristly down. This herbal raw material can be identified as:

- a. Fructus Hippophaes
- b. Fructus Ribis nigri
- c. Fructus Sorbi
- d. Fructus Viburni
- e. Fructus Rosae

861. A patient, who has been taking an expectorant, has developed complaints of hypersalivation, rhinitis, and itching skin rashes (signs of iodism). What medicine can cause these side effects?

- a. Infusion of Thermopsis grass
- b. Ammonium chloride
- c. Ambroxol syrup
- d. Mucaltin
- e. Potassium iodide

862. What medicine is used for the symptomatic treatment of meteorism?

- a. Papaverine
- b. Drotaverine
- c. Platyphyllin
- d. Almagel (Algeldrate + magnesium hydroxide)
- e. Simethicone

863. Tussilago farfara leaves are a component of drugs that exhibit coating, expectorant, and softening effect. What class of bioactive substances determines such pharmacological characteristics of this raw material?

- a. Saponins
- b. Phenolic glycosides
- c. Essential oils
- d. Vitamins
- e. Polysaccharides

864. Because of a power outage, the cash register in a pharmacy has stopped working. What should be used to perform transactions, while the cash register remains inoperable?

- a. Transactions log book
- b. Payroll records
- c. Cash deposit and cash withdrawal receipts
- d. Payment orders
- e. Invoices

865. What group of antibiotics should be prescribed to treat chlamydial infection?

- a. Cephalosprins
- b. Aminoglycosides
- c. Macrolides**
- d. Penicillins
- e. Carbapenems

866. One of the numerical parameters of herbal raw material quality is the amount of extractive substances that can be measured using:

- a. Chromatography
- b. Biological standardization
- c. Titrimetry
- d. Spectrophotometry
- e. Gravimetry**

867. Buckthorn bark and its derivative drugs are used as laxatives in medicine. According to the State Pharmacopoeia of Ukraine during chromatographic identification of buckthorn bark it is necessary to detect:

- a. Lanatosides
- b. Glucofrangulins**
- c. Panaxosides
- d. Ginkgosides
- e. Purpurea glycosides

868. Pharmacies can prepare medicines based on individual formulations. What makes up the retail price of such medicines?

- a. Cost of labor and price markup
- b. Cost of the ingredients that make up this dosage form
- c. Cost of ingredients and package
- d. Cost of ingredients
- e. Cost of ingredients, package, and labor**

869. A pharmaceutical company produces galenic preparations. These preparations contain:

- a. Preservatives
- b. Taste-correcting agents
- c. Only one active substance
- d. A sum of active substances**
- e. Smell-correcting agents

870. A doctor has prescribed pessaries of unspecified mass. What mass should be chosen when pessaries are being prepared in a pharmacy?

- a. 4,0**
- b. 1,5
- c. 0,5
- d. 3,0
- e. 6,0

871. A pharmacist needs to make a 5% sodium bicarbonate solution for injections. What is the optimum temperature for sodium bicarbonate dissolution that allows avoiding its forceful stirring?

- a. 15-20<sup>°</sup>C**
- b. 45-55<sup>°</sup>C
- c. 80-100<sup>°</sup>C
- d. 25-35<sup>°</sup>C
- e. 30-45<sup>°</sup>C

872. Pyridoxine hydrochloride and cyanocobalamin are not recommended to be administered in the same syringe due to their chemical incompatibility. What type of chemical reaction occurs between these compounds?

- a. Oxidation



- b. Neutralization
- c. Reduction
- d. Complexation**
- e. Hydrolysis

873. "Novo-Passit" preparation is used as a sedative. It is manufactured from the following herbal raw material:

- a. Viburnum bark
- b. Passiflora grass**
- c. Taraxacum roots
- d. Acorus calamus rhizomes
- e. Populus nigra buds

874. A process dealing with drawing the documents, their processing, circulation and storage is called records management. If all documents circulate through one organization center, - the Office Desk, - then such system of records management is called:

- a. Referent
- b. Mixed
- c. Centralized**
- d. Specialized
- e. Decentralized

875. A 10-year-old child was prescribed an antibiotic to treat pneumonia, after which the mother noticed deterioration of the child's hearing. What group of antibiotics could have caused such a complication?

- a. Macrolides
- b. Aminoglycosides**
- c. Fluoroquinolones
- d. Penicillins
- e. Cephalosporins

876. What prescription form is used to prescribe psychotropic drugs in their pure form or in a mixture with indifferent substances for the dispensation free of charge or at a discount?

- a. Two prescription forms f-1 and f-3**
- b. Prescription form f-1
- c. Two copies of prescription form f-1
- d. Two copies of prescription form f-3
- e. Prescription form f-3

877. Valerian roots and rhizomes are processed in the phytochemistry workshop to produce tinctures and thick extracts that are the components of combined sedatives. Name the group of bioactive compounds that includes valerian valepotriates, - valtrate, acevaltrate, and dihydrovaltrate:

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

878. Pharmacological properties and bioavailability of drugs is determined by their chemical structure. What medicinal substance contains simultaneously a carboxyl group and an ester group?

- a. Salicylic acid
- b. Acetylsalicylic acid**
- c. Benzoic acid
- d. Phenyl salicylate
- e. Sodium benzoate

879. A drug that is subject to reimbursement has been dispensed at a pharmacy based on an electronic prescription. How long such a prescription must be stored in the information and telecommunications system?

- a. 3 months
- b. 5 years
- c. 3 years**
- d. 6 months
- e. 2 years

880. An analytical pharmacist of the quality control department analyzes the phenol substance. What method of quantification is used for this purpose?

- a. Permanganatometry
- b. Mercurimetry
- c. Bromatometry**
- d. Complexonometry
- e. Argentometry

881. Considering thermolability of most animal-derived injection preparations, they are sterilized by means of:

- a. In autoclave chamber with high-pressure saturated steam
- b. Addition of buffer solutions
- c. Ultrasound
- d. High frequency current
- e. Filtration through membrane**

882. The Dobropharma pharmacy manager makes plans for standard stock of various groups of goods, based on their purpose. Convenience goods belong to the following group:

- a. Prior delivery
- b. Single delivery
- c. Current demand**
- d. Seasonal accumulation
- e. Specific demand

883. Merchandising is a complex of communication techniques that aim to increase the sales in the pharmacies. The main goal of merchandising is:

- a. Quick sales of the whole range of goods on offer in the pharmacies and an overall increase of sales**
- b. Price-cutting for unpopular medicines
- c. Decrease of the competition between the drug analogues
- d. Expanding the range of pharmaceutical goods
- e. -

884. The head manager of Pharmacy №5 that belongs to the <<Hippocrates>> company was transferred to be the head manager of Pharmacy №1 within the same network. What type of human resources movement is it?

- a. Employee turnover
- b. Mixed rotation
- c. Diagonal rotation
- d. Vertical rotation
- e. Horizontal rotation**

885. What medicine is simultaneously a mucolytic and an antidote against a paracetamol overdose?

- a. Bromhexine
- b. Carbocysteine
- c. Ambroxol
- d. Acetylcysteine**
- e. Trypsin

886. Optical rotation angle of substances is determined under the temperature of  $20^{\circ}\text{C}$ , in 1-decimeter-thick layer, with wavelength of sodium spectrum D-lines ( $\lambda = 589,3 \text{ nm}$ ), and is calculated with reference to a solution containing 1 g of the substance per ml. It is called:

- a. Specific optical rotation**
- b. Distribution coefficient

- c. Refractive index
- d. Optical density
- e. Relative density

887. Bank is a financial mediator in pharmacy's payments. Payment of taxes withheld from the employees' salary into the budget requires the following document:

- a. Payment order**
- b. Cash order
- c. Cash register receipt
- d. Check payable in account
- e. Accounting form

888. On the initiative and with support of the manufacturing company, free samples of adhesive bandages were handed out to the visitors at a pharmacy. What element of the marketing communications complex is it?

- a. Lobbying
- b. Advertising
- c. Personal selling
- d. Sales promotion, sampling**
- e. Public relations

889. What drug facilitates dissolution of cholesterol stones in the gallbladder?

- a. Ademethionine
- b. Magnesium sulfate
- c. Cynara dry extract
- d. Silybum dry extract
- e. Ursodeoxycholic acid**

890. A pharmacy has received a prescription for colloid solution. Name this solution:

- a. Collargol solution**
- b. Sodium chloride solution
- c. 5% glucose solution
- d. Burow's solution
- e. Nonaqueous solution

891. What fatty oil can be used as a substitute for olive oil, when making injectable solutions?

- a. Oleum Lini
- b. Oleum Cucurbitae
- c. Oleum Maydis
- d. Oleum Amygdalarum**
- e. Oleum Ricini

892. Chloride of lime is identified by calcium cations after boiling with acetic acid in order to eliminate active chlorine. What reagent is used?

- a. Magnesium sulfate
- b. Ammonium oxalate**
- c. Potassium chloride
- d. Sodium nitrite
- e. Ammonium molybdate

893. A 36-year-old patient developed acute pyelonephritis. What antibacterial agents has a nephrotoxic effect?

- a. Gentamicin**
- b. Erythromycin
- c. Penicillin
- d. Ampicillin
- e. Tetracycline

894. Iridoids can be divided into four main groups. What is the common name for the iridoids

obtained from the Valerianaceae family plants?

- a. Secoiridoids
- b. Cyclopentane iridoids
- c. Common iridoids
- d. Valepotriates**
- e. Complex iridoid alkaloids

895. A pharmaceutical company produces animal-derived biostimulants. Solcoseryl preparation is obtained from the following raw material:

- a. Velvet antlers
- b. Bovine blood**
- c. Bovine spleen
- d. Bovine trachea
- e. Human blood

896. A pharmacist prepares a chamomile flowers infusion. Specify the proportion of raw material to infusion:

- a. 1:20
- b. 1:10**
- c. 1:400
- d. 1:50
- e. 1:30

897. A medical facility purchases antitumor drugs directly from a domestic manufacturer. What is the level of the sales channel used in this case?

- a. Two-level channel
- b. Four-level channel
- c. One-level channel
- d. Zero-level channel**
- e. Three-level channel

898. Powder moisture content affects its:

- a. Particle size
- b. Solubility
- c. Homogeneity
- d. Particle shape
- e. Flowability**

899. What technological method is used to prepare powders with dyes?

- a. Mixing in descending order, from larger to smaller volume
- b. Preliminary sifting
- c. Mixing in ascending order, from smaller to larger volume
- d. The principle of <<three layers>>**
- e. The dye is added last, after the mixture is prepared

900. An analytical chemist studies an iodine substance. What volumetric solution is recommended by the State Pharmacopoeia of Ukraine for its quantitative determination?

- a. Hydrochloric acid
- b. Sodium edetate
- c. Sodium thiosulfate**
- d. Sodium hydroxide
- e. Potassium bromate

901. A certain primary document can be described as follows: "It is a document printed by a cash register, when it makes calculations regarding the goods sold". Specify this document:

- a. Cash cheque
- b. Accounting form
- c. Fiscal receipt for the goods sold (or services rendered)**
- d. Payment order

e. Cash withdrawal receipt

902. A pharmacist approached the chief manager of the pharmacy with a proposition to introduce an additional service for their customers - blood pressure measurement. What type of communication is it?

a. Vertical ascending

b. Intra-level

c. Horizontal

d. External

e. Vertical descending

903. 50 ml of injection solution has been made in a pharmacy. Specify the process of solution sterilization:

a. 120°C - 8 minutes

b. 140°C - 12 minutes

c. 110°C - 15 minutes

d. 160°C - 15 minutes

e. 180°C - 30 minutes

904. When studying the demand for influenza vaccines, it was found that a pharmacy is insufficiently supplied with these vaccines. What type of demand is it?

a. Satisfied

b. Negative

c. Irrational

d. Hidden

e. Unsatisfied

905. Where on the shop floor of a pharmacy should various nutritional supplements and health food be placed?

a. By their application

b. On separate shelves and in separate shopwindows

c. By their Anatomical Therapeutic Chemical Classification

d. Alongside medicines

e. By their pharmacotherapy group

906. A herbal raw material that contains alkaloids is being identified using a freshly prepared tannin solution. What precipitate forms as a result of this reaction?

a. Yellow

b. Green

c. White and amorphous

d. Creamy

e. Red-brown

907. When solution of a medicinal agent is being heated with sodium hydroxide, it produces an acrid smell; red litmus paper soaked in water becomes blue. What ion is being identified in the course of this procedure?

a. Ammonium ion

b. Carbonate ion

c. Nitrate ion

d. Arsenite ion

e. Acetate ion

908. What means of demand stimulation can be applied by pharmacy management among its employees?

a. Bonuses

b. -

c. Layout of medical products in shop-windows and on shelves

d. Coupons

e. In-store advertising

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

- a. Ergotamine
- b. Glauicine hydrochloride
- c. Vinblastine
- d. Securinine nitrate

e. Novopassit

910. A pharmacist has prepared an aqueous extract using the cold infusion method. What herbal raw material was it?

- a. Thermopsis grass
- b. Mint leaves

c. Marshmallow roots

- d. Arctostaphylos leaves
- e. Buckthorn bark

911. A technological controller uses Marquis reagent to identify the substance of acetylsalicylic acid after acid hydrolysis. Positive effect of the reaction would be indicated by the following coloring:

- a. Violet
- b. Green
- c. Blue
- d. Yellow

e. Pink

912. Natural persons registered as small business entities with simplified taxation scheme are subject to limitation of the annual amount of sales proceeds. Specify the proceeds limit:

- a. 750 000 UAH
- b. 100 000 UAH
- c. 5 000 000 UAH

d. 500 000 UAH

- e. 3 000 000 UAH

913. Chemical analysis of Helichrysum flowers shows positive results of the cyanidin test. This reaction indicates the presence of the following class of compounds:

- a. Coumarins
- b. Alkaloids
- c. Saponins
- d. Polysaccharides

e. Flavonoids

914. Presence of phenolic hydroxyl in the structure of pyridoxine hydrochloride can be confirmed by application of the following solution:

- a. Sodium sulfate
- b. Potassium permanganate
- c. Sodium nitrite

d. Iron (III) chloride

- e. Silver nitrate

915. The quantification of acetylsalicylic acid using the method of direct alkalimetry is recommended to be carried out at the temperature no higher than 20°C to prevent a certain process from occurring. What process is it?

- a. Reduction of the medicinal substance
- b. Oxidation of the medicinal substance
- c. Decarboxylation of the medicinal substance
- d. Precipitation of the formed salt

e. Hydrolysis of the ester group

916. A 63-year-old woman suffering from diabetic nephropathy with functional disturbance of the kidneys needs etiotropic treatment for focal pneumonia. What drug is CONTRAINDICATED in this

case?

- a. Synthetic penicillins
- b. Combined penicillins
- c. Macrolides
- d. Natural penicillins
- e. Aminoglycosides**

917. A 60-year-old man has come to a pharmacy with complaints of impaired twilight vision, dry sclera, cracked and peeling skin. The dispensing chemist suspected hypovitaminosis and recommended the customer to take the following drug after consultation with the physician:

- a. Retinol acetate**
- b. Ascorbic acid
- c. Tocopherol acetate
- d. Vicasol (Menadione)
- e. Ergocalciferol

918. What department of a wholesale firm is tasked with search for and analysis of potential suppliers' commercial offers, as well as concluding supply contracts and supervision of contract fulfillment?

- a. Supply department**
- b. Stores development
- c. Marketing department
- d. Finance department
- e. Shipping department

919. The director of a pharmaceutical company is engaged in strategic planning. What is the final stage of this process?

- a. Strategy evaluation**
- b. Implementation of the strategic plan
- c. Choosing a strategy
- d. Formulation of the mission
- e. Evaluation and analysis of the external environment

920. How are pharmacies classified in Ukraine based on their commercial and manufacturing functions?

- a. Compounding and retail pharmacies**
- b. State, community-owned, and private pharmacies
- c. Retail and hospital pharmacies
- d. Self-financing pharmacies and pharmacies financed from the state budget
- e. Pharmacies with centralized and decentralized accounting

921. Codeine is used as a cough-depressant. What herbal raw material contains this alkaloid?

- a. Pods of opium poppy**
- b. Grass of plume poppy
- c. Celandine grass
- d. Tea leaves
- e. Grass of common periwinkle

922. The documents of a pharmaceutical company are being received and sent in a centralized manner; the documents are stored, drawn-up, registered, and assembled into cases both in the Office Desk of the company and the company's divisions. Specify this type of records management system:

- a. -
- b. Referent
- c. Mixed**
- d. Centralized
- e. Decentralized

923. The medicines that contain anthracene derivatives are used as laxatives. What medicinal plant contains this group of bioactive substances?

- a. *Calendula officinalis*
- b. *Salvia officinalis*
- c. ***Frangula alnus***
- d. *Eucalyptus globulus*
- e. *Bidens tripartita*

924. During the microscopy of a herbal raw material, the pharmacist noted its main diagnostic features: calcium oxalate druses in the mesophyll of the leaf and along the veins, simple unicellular hairs, covering stellate hairs with 4-8 thick-walled, porous and often lignified rays at their base, idioblast cells with slime. What herbal raw material can be characterized by the listed diagnostic features?

- a. *Digitalis purpurea folium*
- b. ***Althaea officinalis herba***
- c. *Gnaphalium uliginosum herba*
- d. *Hyoscyamus niger folium*
- e. *Urtica dioica folium*

925. Direct argentometric titration using the Mohr method can be used for quantification of sulfathiazole (norsulfazole). What indicator is used in such analysis?

- a. **Potassium chromate**
- b. Starch
- c. Methylene blue
- d. Bromophenol blue
- e. Tropeolin 00

926. The manager of a pharmacy chain has drawn up a document, in which he asks a pharmaceutical factory to provide him with the information about the assortment of ointments manufactured by this factory. What document was drawn up by the manager?

- a. **Request**
- b. Statement
- c. Offer
- d. Complaint
- e. Contract

927. 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. **T-shaped hairs along the leaf edge**
- d. Branched, simple and ciliated hairs
- e. Simple and capitate hairs

928. The material accountability of an employee is determined by the written agreement. When does the agreement of employee's material accountability need to be concluded anew?

- a. Change of the janitor
- b. Replacement of over 30% of the initial personnel
- c. **Change of the head manager or replacement of over 50% of the initial personnel**
- d. Change of the dispensing chemist
- e. Change of the chief accountant

929. What parameter is measured using a drum friability tester during tablet quality control?

- a. **Abrasion resistance**
- b. Dissolution
- c. Uniformity of dosage
- d. Disintegration
- e. Impurities

930. When dispensing an iron supplement to be taken orally, the pharmacist must warn the patient



that this preparation should not be taken with milk or dairy products. What might happen otherwise, if the patient is not warned?

- a. Prolongation of the effect of iron preparations
- b. Formation of poorly soluble chelate complexes**
- c. Faster absorption of the drug
- d. Increased activity of the drug
- e. Accelerated elimination of the drug

931. During limit test for aluminium admixture, the State Pharmacopoeia of Ukraine recommends to use the following solution as the basic reagent:

- a. Thioglycolic acid
- b. Hydroxyquinoline**
- c. Sodium tetraphenylborate
- d. Sodium hypophosphite
- e. Barium chloride

932. A doctor has given the patient a prescription for tramadol. What prescription form must be used in this case?

- a. 2 copies of F-1 form
- b. F-1 and F-3 forms
- c. 2 copies of F-3 form
- d. F-1 form
- e. F-3 form**

933. Vitali-Morin's reaction is used to identify tropane alkaloids in herbal raw material. Name the alkaloid that can be detected by means of this specific reaction:

- a. Papaverine
- b. Scopolamine**
- c. Morphine
- d. Platyphyllin
- e. Codeine

934. A pharmaceutical company has opened several new regional offices and now searches for medical representatives. What stage of recruiting process is usually a final one?

- a. Submission of a resume
- b. Filling in a questionnaire
- c. Preliminary interview
- d. Targeted selection interview**
- e. Telephone interview

935. A pharmaceutical company has divided its customers into groups based on their gender, age, and size of their families. What approach to market segmentation is the basis of this customer division?

- a. Socioeconomic
- b. Demographic**
- c. Psychographic
- d. Geographic
- e. Behavioral

936. Gum is a polysaccharide substance that contains calcium and magnesium salts of uronic acids and neutral monosaccharides. By solubility arabin, bassorin, and cerasin derivatives can be distinguished. What gum is insoluble in cold water?

- a. Tragacanth
- b. Cherry**
- c. Apricot
- d. Plum
- e. Acacia

937. A patient was prescribed an oral antibiotic for treatment and an antacid to remove heartburn

symptoms. If the drugs are taken simultaneously their interaction can result in the following:

- a. Inhibition of hepatic microsomal enzymes
- b. Relative overdosage
- c. Antibiotic malabsorption**
- d. Mutual potentiation
- e. Acceleration of metabolism and excretion

938. A pharmaceutical wholesaler has suffered commercial losses because of unpaid debts of a pharmacy network. What type of commercial losses is it?

- a. Special
- b. Material
- c. -
- d. Financial**
- e. Labor

939. The price of a medicine depends on many factors. Which of the listed below is an internal factor of price formation for a pharmaceutical manufacturer?

- a. Customer preferences
- b. Middleman markup
- c. Manufacturing costs**
- d. Demand for the product
- e. Pricing policy of the competitors

940. Microscopy of herbal raw material reveals the following diagnostic characters in the microslide: pseudostratified cork, large parenchyma cells, filled with inulin, clearly visible cambium layer, large vessels, schizogenous cavities with essential oil. These features confirm the authenticity of the following herbal raw material:

- a. Radices Taraxaci
- b. Radices Ononidis
- c. Rhizomata et radices Inulae**
- d. Rhizomata et radices Rubiae
- e. Radices Althaeae

941. A pharmaceutical warehouse has received a batch of herbal raw material - hawthorn flowers. Merchandise analysis revealed in one of the sacks significant amount of bird-cherry flowers besides the hawthorn. What quality assessment of the herbal raw material should be performed?

- a. Mineral admixtures
- b. Acceptable admixtures**
- c. Extractive values
- d. Ash values (Total ash)
- e. Moisture content

942. A pharmacist prepares 180 ml of adonis grass infusion. How much herbal raw material should be taken to prepare this infusion?

- a. 6.0**
- b. 15.0
- c. 18.0
- d. 10.0
- e. 2.0

943. A herbal raw material was sent for analysis: rounded cordate leaves with incised margins that are irregularly, coarsely, and finely toothed; the upper leaf surface is naked, while its lower surface is covered in white down. Leaf petioles are thin, with a groove on the upper part, often downy. Leaf blade length is usually 8-15 cm, a petiole is approximately 5 cm long. The upper leaf surface is green, while the lower leaf surface is whitish-gray. No odor. The taste is slightly bitter with a slimy texture. What herbal raw material is it?

- a. Folia Urticae
- b. Folia Uvae-ursi

- c. Folia Menthae
- d. Folia Eucalypti
- e. Folia Farfarae**

944. During quantitative determination of ascorbic acid by means of iodometry the following should be used as an indicator:

- a. Phenolphthalein
- b. Murexide
- c. Diphenylcarbazone
- d. Starch**
- e. Bromphenol blue

945. 1,8-cineole is a bactericidal component of essential oil. Specify the medicinal herb that is grown in Ukraine and contains 1,8-cineole in its essential oil:

- a. Juniperus communis
- b. Origanum vulgare
- c. Salvia officinalis**
- d. Eucalyptus globulus
- e. Inula helenium

946. According to the State Pharmacopoeia of Ukraine, an analytical chemist should use acidimetry in non-aqueous medium to determine quantitative content of the following purine alkaloid:

- a. Caffeine**
- b. Theophylline ethylenediamine
- c. Caffeine and sodium benzoate
- d. Theobromine
- e. Theophylline

947. Preparations of Panax roots have tonic and adaptogenic properties and improve mental and physical working ability. If there is no Panax tincture in the pharmacy, it can be substituted with preparations of:

- a. Calami radices
- b. Taraxaci radices
- c. Tormentillae radices
- d. Glycyrrhizae radices
- e. Araliae mandshuricae radices**

948. Which one of the listed solutions for injections must be stabilized with a 0.1 mol-eq/L solution of hydrochloric acid?

- a. Ascorbic acid
- b. Caffeine and sodium benzoate
- c. Sodium thiosulfate
- d. Novocaine (Procaine)**
- e. Sodium bicarbonate

949. An analytical pharmacist performs the express analysis of anti-inflammatory eye drops containing potassium iodide. What method is used for quantification of the active substance?

- a. Alkalimetry
- b. Argentometry**
- c. Acidimetry
- d. Complexonometry
- e. Nitritometry

950. A pharmaceutical wholesaler constantly monitors expiration dates of medicines and their storage and transportation conditions. What type of control is exercised in this case?

- a. Ongoing**
- b. Preliminary
- c. Financial
- d. Final

e. Social

951. Adhesive bandages have an effect on the skin, subcutaneous tissue, and in some cases on the entire body. What bandage is manufactured with the saponification reaction occurring in the process?

a. Callus treatment bandage

**b. Simple lead bandage**

c. Bactericidal adhesive bandage

d. Pepper plaster bandage

e. Adhesive bandage

952. Specify the fluid used to coat the forms for pouring of the suppositories with hydrophilic vehicles:

**a. Vaseline (petroleum jelly)**

b. Dimethylsulfoxide

c. Glycerine-water solution

d. Glycerine

e. Purified water

953. What pricing policy is used by the management of a pharmacy, if during the price formation for pharmaceutical products the main focus is the prices offered by the nearest pharmacies, rather than pharmacy's own expenses or demand for the products?

a. Demand-based pricing

b. Cost-based pricing

c. Tender pricing

d. Breakeven pricing

**e. Competition-based pricing**

954. Pharmaceutical factory received a batch of Althaea roots. What reagent should be used in histochemical test for slime production in the course of qualitative analysis?

a. 1% phloroglucinol solution

**b. Alcoholic solution of methylene blue**

c. 1% ammonium iron(III) sulfate solution

d. Sudan III solution

e. Dragendorff reagent

955. A pharmaceutical company produces sterile aqueous solutions for eye rinsing and moisturizing, as well as for impregnation of the materials that are applied to the eyes topically. Name these solutions:

a. Eye drops

b. Eye inserts

c. Eye ointments

**d. Eye lotions**

e. Eye sprays

956. The "Medpharm" wholesale pharmaceutical firm employs a system that encourages its managers to achieve better results in sales by assigning them points for surpassing their sale goals. The points then become converted into material remuneration. This way the company management carries out the following management function:

a. Delegation

**b. Motivation**

c. Organization

d. Planning

e. Control

957. At the end of each month a pharmacy accountant draws up a balance. What indicator characterizes liabilities of a pharmaceutical company?

a. Work-in-process inventory

b. Accounts receivable

**c. Equity capital**

d. Circulating assets

e. Reserves and expenses

958. A pharmacy needs to prepare a 1% alcohol solution of methylene blue. What concentration of alcohol must be used for this purpose?

- a. 60%
- b. 90%
- c. 40%
- d. 96%
- e. 70%

959. Information on the pharmacy's actual stock of narcotic drugs, psychotropic substances, and precursors must be checked against the balance records made in the relevant logbook. How often must it be done?

- a. Annually
- b. Quarterly
- c. Daily
- d. Monthly
- e. -

960. A pharmaceutical factory produces medicinal syrups. What substances ensure microbial stability of this dosage form?

- a. Preservatives
- b. Thickeners
- c. Solubilizers
- d. Pectic materials
- e. Emulsifiers

961. A 46-year-old pharmacy customer suffers from chronic bronchitis and needs a medicine to facilitate expectoration of thick viscous sputum. What drug is indicated in this case?

- a. Codeine phosphate
- b. Butamirate
- c. Oxeladin
- d. Ambroxol
- e. Salbutamol

962. The thyme grass is used for the production of herbal medical products for the treatment of respiratory tract infections. Under the State Pharmacopoeia of Ukraine the herbal raw material is subject to chromatographic identification by means of thin layer chromatography. What substances are detected on the chromatographic plate after its treatment with due reagent?

- a. Thymol and carvacrol
- b. Arbutin and methyl arbutin
- c. Quercetin and rutin
- d. Apigenin and luteolin
- e. Atropine and hyoscyamine

963. What adjuvants are used in manufacturing of tablets to change their taste?

- a. Antioxidants
- b. Corrigents
- c. Leavening agents
- d. Fillers
- e. Thickeners

964. To work properly, a pharmacy needs sufficient staff. What job position belongs to the auxiliary staff of a pharmacy?

- a. Accountant
- b. Head of a department
- c. -
- d. Packer
- e. Pharmacist

965. A dispensing chemist has dispensed to a pharmacy visitor one package of metformin tablets according to the family doctor's electronic prescription. This purchase is to be reimbursed. How long must a pharmacy keep such prescriptions?

- a. Return the prescription to the pharmacy visitor
- b. One month after the current one
- c. Two months after the current one
- d. Five years after the current one
- e. Three years after the current one**

966. The marketing team of a pharmaceutical company has performed a comparative analysis of internal environment and external conditions. They have analyzed strengths and weaknesses, opportunities and threats. The marketing team has performed:

- a. PEST analysis
- b. -
- c. SWOT analysis**
- d. ABC analysis
- e. VEN analysis

967. Bromatometry allows quantitative analysis of the following drug:

- a. Glutamic acid
- b. Sodium salicylate**
- c. Potassium acetate
- d. Benzoic acid
- e. beta-Alanine

968. What group of drugs can be characterized by a side effect, where the color perception of surrounding objects is distorted, making everything yellow-green tinted?

- a. Antibiotics
- b. Inhaled glucocorticoids
- c. Cardiac glycosides**
- d. Mucolytics
- e. Nonsteroidal anti-inflammatory drugs

969. A control laboratory needs to analyze streptomycin powder for injections. To identify it according to the State Pharmacopoeia of Ukraine sodium hydroxide is added into the dissolved powder, the resulting substance is heated, and then iron (III) chloride solution is added, which results in violet coloring of the substance. This test is known as:

- a. Ninhydrin test
- b. Biuret test
- c. Thiochrome test
- d. Maltol test**
- e. Vitali-Morin reaction

970. A patient developed dry cough while undergoing pharmacotherapy for arterial hypertension. What group of drugs can be characterized by this side effect?

- a. Calcium antagonists
- b. Antacids
- c. Tranquilizers
- d. Antipsychotics
- e. ACE inhibitors**

971. What herbal raw material is used as an industrial source of tannins?

- a. Cotinus coggygria leaves**
- b. Rose hips
- c. Solidago canadensis grass
- d. Nettle leaves
- e. Persicaria hydropiper grass

972. What should be used by an analytical chemist in the pharmacopoeial analysis of medicinal

substances that contain iron(III)?

- a. Sodium nitrite solution
- b. Potassium permanganate solution
- c. Ammonium chloride solution
- d. Ammonia solution
- e. Potassium thiocyanate solution**

973. Hyoscyamine and scopolamine are typically contained in the plants of the following family:

- a. Fabaceae
- b. Papaveraceae
- c. Apocynaceae
- d. Asteraceae
- e. Solanaceae**

974. What reagent should be used by a dispensing chemist-analyst in a reaction for pyridine ring identification?

- a. Cyanogen bromide reagent**
- b. Cobalt nitrate solution
- c. Chromotropic acid disodium salt
- d. Hydrochloric acid
- e. Silver nitrate solution

975. Hydrogen peroxide solution can be bought in different concentrations in a pharmacy. What concentration should be offered to a patient, if the patient's receipt does not specify hydrogen peroxide concentration?

- a. 10%
- b. 3%**
- c. 2%
- d. 20%
- e. 30%

976. What lubricants are used in tablet manufacturing?

- a. Water, ethanol
- b. Starch paste
- c. Calcium stearate, stearic acid**
- d. Tween 80, Aerosil
- e. Solutions of high-molecular compounds

977. What document must be added to the foreign-made medical products?

- a. Written Control Passport
- b. Technical regulations for the drug
- c. Drug Quality Standard
- d. Conclusion on the quality of the drug imported into Ukraine**
- e. Extract from the State Register of Medicines

978. An analytical chemist performs the qualitative assessment of mercury (II) chloride. What method is recommended by the State Pharmacopoeia of Ukraine for quantitative assessment in this case?

- a. Bromometry
- b. Complexometric titration**
- c. Nitritometric titration
- d. Acidimetry
- e. Alkalimetry

979. A marketer of a pharmaceutical enterprise uses primary and secondary marketing information for market analysis. What information is considered to be primary?

- a. Published in statistical reference books
- b. Collected for the first time for a specific purpose**
- c. Published in the company's annual report
- d. Published in mass media

e. Obtained from publications in scientific magazines

980. A pharmacist needs to add a stabilizer to prepare an atropine sulfate solution for injections. What stabilizer would the pharmacist choose for this purpose?

- a. Sodium bicarbonate
- b. Hydrochloric acid**
- c. Ascorbic acid
- d. Sodium hydroxide
- e. Sodium metabisulfite

981. A pharmaceutical wholesaler sells ointment bases (vaseline, lanolin, etc.) in bulk ("an gross") to the pharmacies that make extemporaneous compounds. What sales method (type of distribution) is typical for selling these goods?

- a. Integrated method
- b. Mass sales method
- c. Intensive method
- d. -
- e. Selective method**

982. A refractometer is used to identify and test the glycerine substance. What parameter is measured using this device?

- a. Melting point
- b. Optical density
- c. Dynamic viscosity
- d. Angle of rotation
- e. Refractive index**

983. Buckthorn bark is used as a laxative. This herbal raw material colors red if an alkaline solution is added, which indicates the presence of the following substances:

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

984. When an extractant is filtered through a herbal raw material to obtain an extract of the substances soluble in this extractant, this process is called:

- a. Maceration
- b. Remaceration
- c. Steeping
- d. Turbo extraction
- e. Percolation**

985. Publicly-owned Isotope factory is the only manufacturer of radiopharmaceuticals in Ukraine. What type of distribution is characteristic of radioactive drugs?

- a. Selective
- b. Bulk
- c. Sample
- d. Exclusive**
- e. Intensive

986. Motivation is one of the management functions. A motive can be described as:

- a. Psychological characteristics of people that help them acquire certain types of knowledge
- b. -
- c. Something that is important for a person
- d. A conscious incentive to act in a certain way**
- e. A certain discomfort, a feeling that something is lacking

987. A pharmacy provides certain categories of ill persons with medicines free of charge or at a



reduced price. What conditions allow free of charge supply of out-patients with necessary medicines?

- a. Headache
- b. Muscle pain
- c. Cold
- d. Cuts and abrasions
- e. Diabetes mellitus**

988. During visual inspection of a product, the authorized person developed doubts about the quality of the received medicines. What should the authorized person do, to initiate the laboratory testing of the medicine quality?

- a. Send the medicines back to the manufacturer
- b. Send the medicines to the nearest compounding pharmacy that employs a dispensing chemist
- c. Send the medicines back to the supplier
- d. Send the medicines to a local laboratory of the State Drugs and Medications Control Service**
- e. Send the medicines to the Ministry of Health of Ukraine

989. A patient, who for the last three weeks was taking a laxative - a decoction of Frangula bark, has noticed a significant decrease in its clinical effect. What is the name of this phenomenon?

- a. Tolerance**
- b. Withdrawal syndrome
- c. Cumulation
- d. Idiosyncrasy
- e. Sensitization

990. A patient with arterial hypertension has developed a dry cough in the course of his treatment. The doctor suspects a side effect caused by one of the medicines the patient was taking. This medicine most likely belongs to the following group:

- a. Diuretics
- b. Ganglionic blockers
- c. Calcium channel blockers
- d. Imidazoline receptor blockers
- e. Angiotensin-converting-enzyme inhibitors**

991. A pharmacy has received a prescription for the preparation of powders. What substance must be added after sterilizing the powder?

- a. Streptomycin sulfate**
- b. Osarsolum
- c. Ephedrine hydrochloride
- d. Magnesium oxide
- e. Streptocide (Sulfanilamide)

992. A pharmacy opens a bank account to store funds and conduct ongoing business transactions. What kind of account should be opened?

- a. Deposit
- b. Investment
- c. Letter of credit
- d. Provisional
- e. Current**

993. For what substance its dosing is based on the mass, when preparing liquid dosage forms?

- a. Leonurus tincture
- b. 30% hydrogen peroxide (Perhydrol)**
- c. 1% citral alcohol solution
- d. Elixir pectoralis
- e. Ammonia spirit-anise spirit drops

994. Nicotinamide is a pyridine derivative, which can be identified by its positive reaction with:

- a. Copper-tartrate solution
- b. Cyanogen bromide reagent**

- c. Thioacetamide reagent
- d. Thioglycolic acid solution
- e. Grade reagent

995. A dispensing chemist performs quantitative determination of nifedipine substance, using the method of cerimetry. What indicator should be used in this method, according to the State Pharmacopoeia of Ukraine?

- a. Methyl orange
- b. Bromphenol blue
- c. Phenolphthalein
- d. Potassium chromate
- e. Ferroin**

996. A medicinal plant contains hydroxycoumarins and is used in production of venotonic agents. Name the herbal raw material harvested from this plant:

- a. Fructus Pastinacae sativae
- b. Herba Meliloti
- c. Fructus Dauci carotae
- d. Semina Hippocastani**
- e. Fructus Ammi majoris

997. Within the last year the "East-Pharmacy" pharmaceutical wholesaler has lost 10% of its employees, who resigned and were hired by the competitor company "East-Optima". Individual transfer of the "East-Pharmacy" employees to the "East-Optima" company can be characterized as:

- a. Job rotation
- b. Personnel certification
- c. Staff motivation
- d. Staff turnover**
- e. Staff dynamics

998. The following herbal raw material is a source of tannin in pharmaceutical manufacture:

- a. Rhizomata et radix Sanguisorbae
- b. Fructus Viburni
- c. Rhizomata Bistortae
- d. Folium Cotini coggygriae**
- e. Rhizomata Bergeniae

999. A pharmacist prepared a 5% glucose solution and added 5 mL of Weibel's stabilizer. What is the volume of the prepared solution?

- a. 1000 mL
- b. 100 mL**
- c. 50 mL
- d. 300 mL
- e. 500 mL

1000. In the process of drug identification, an analytical chemist of the State Inspection for Quality Control of Medicines performs ninhydrin test. What drug is being identified?

- a. Resorcin
- b. Tyrosine**
- c. Retinol acetate
- d. Sulfamethoxazole
- e. Nitrofuraz

1001. What quality indicator is subject to additional control during the production of eye drops in the form of suspensions?

- a. Purification methods
- b. Moisture content
- c. Dry residue
- d. Acid value and peroxide value

**e. Particle size**

1002. What can be observed when aluminum-magnesium antacids and iron preparation are used simultaneously?

- a. Increased effectiveness of antacids
- b. Reduced effectiveness of iron preparations**
- c. Increased blood pressure
- d. Increased risk of hepatotoxicity
- e. Decreased blood pressure

1003. Medicinal substance had been received for chemical analysis. Biuret test was performed for identification. Name this substance:

- a. Diphenhydramine
- b. Iodoform
- c. Dipyron (Metamizole)
- d. Benzoic acid
- e. Bromisoval**

1004. What group of ointment bases vaseline (petroleum jelly) belongs to?

- a. Adsorption bases
- b. Silicone bases
- c. Hydrophilic bases
- d. Hydrophobic bases**
- e. Diphylic (amphiphilic) emulsion bases

1005. A pharmacy supplies the surgical ward of a hospital. What document enables the dispensing chemist to supply the goods:

- a. Report on the movement of packaging
- b. Purchase order**
- c. Receipt log book
- d. Consolidated register
- e. Product revaluation notice

1006. Vitamin K is known to take part in formation of prothrombin and to facilitate blood coagulation. What herbal raw material accumulates significant amounts of vitamin K and has a hemostatic effect?

- a. Folia Fragariae
- b. Semina Hippocastani
- c. Fructus Hippophaes
- d. Folia Menthae piperitae
- e. Folia Urticae**

1007. The owner of a pharmacy network unilaterally decides to register its trade mark, based on his feeling that he makes the right choice. What type of managerial decision is it?

- a. Rational
- b. Collegial
- c. Adaptive
- d. Intuitive**
- e. Collective

1008. A pharmacist has prepared a liquid mixture. What component was added last into the vial?

- a. 20% sodium bromide solution
- b. Potassium bromide
- c. Purified water
- d. Tincture of valerian**
- e. Simple syrup

1009. Spectrophotometric analysis of anthracene derivatives contained in buckthorn bark is based on the following reaction:

- a. Sublimation

- b. Oxidation of anthracene derivatives
- c. Salt precipitation
- d. Anthraquinone reduction

**e. Production of phenolates with alkali-ammonia solution**

1010. An analytical chemist conducts quantitative determination of ibuprofen (substance) by means of direct alkalimetry. The following solution will be an indicator in this case:

- a. Ammonium iron (III) sulfate
- b. Potassium chromate
- c. Phenolphthalein**
- d. Mordant black
- e. Tropaeolin OO

1011. Limit cash balance is the maximum amount of monetary funds that can remain in the cash desk of an organization at the end of a workday. This limit is established by the following authorities:

- a. Local authorities
- b. Chief physician
- c. -
- d. Tax Inspectorate

**e. Pharmacy management**

1012. Based on the medical certificate, a patient can receive financial assistance due to temporary disability. Financial assistance for temporary disability **CANNOT** be provided:

- a. In case of intentional self-harm**
- b. -
- c. If sick leave is taken for child care
- d. If only sanatorium-and-spa treatment is required
- e. In case of disease (trauma)

1013. According to the State Pharmacopoeia of Ukraine, an analytical chemist determines quantitative content of potassium acetate by means of acidimetry in non-aqueous medium. Name the volumetric solution in this case:

- a. Potassium bromate
- b. Sodium hydroxide
- c. Iodine

**d. Perchloric acid**

e. Sodium nitrite

1014. A dispensing chemist-analyst identifies phenol, using a phenolic hydroxyl reaction. What reagent is necessary for this reaction?

**a. Iron(III) chloride**

- b. Sulfuric acid
- c. Sodium sulfate
- d. Calcium chloride
- e. Potassium chloride

1015. Alkalimetry is used to determine the quantitative content of diphenhydramine hydrochloride antihistamine. What solution is used as a titrant in this analysis?

- a. Sodium thiosulfate solution
- b. Potassium permanganate solution
- c. Potassium bromate solution
- d. Hydrochloric acid solution

**e. Sodium hydroxide solution**

1016. A pharmacist prepares a mixture that according to the prescription must contain ammonia spirit-anise spirit drops. What type of a disperse system will form as a result?

- a. Emulsion
- b. Opalescent mixture**
- c. Colloidal solution

- d. True solution
- e. High-molecular compound solution

1017. The main active substances of Rhizomata et radices Eleutherococci are eleutherosides of various chemical nature. What class of bioactive substances includes syringoresinol and its derivatives that determine the tonic and adaptogenic properties of this herbal raw material?

- a. Xanthoness
- b. Coumarins
- c. Flavonoids
- d. Iridoids

**e. Lignans**

1018. A patient, who is undergoing treatment for ischemic heart disease, after physical exertion felt an acute pain in the cardiac area. What drug can be prescribed in this case for quick relief of the pain syndrome?

- a. Enalapril
- b. Captopril

**c. Nitroglycerine**

- d. Prazosin
- e. Corglycon (convallatoxin)

1019. Motherwort grass is a component of hypotensive and sedative drugs. This herbal raw material should be harvested taking into account its renewal rate. Therefore it can be harvested:

- a. Once every 10 years
- b. Once every 3 years
- c. Every year
- d. Once every 2 years

**e. Once every 5 years**

1020. An important indicator of business activity is profitability of a business. Specify the indicators that can be used to measure the profitability:

**a. Profit/turnover**

- b. Turnover/production cost
- c. Turnover/income
- d. Liquidity/solvency
- e. Income/turnover

1021. What nonsteroidal anti-inflammatory drug is indicated for treatment of the patient's rheumatoid arthritis, if this patient has a history of peptic ulcer disease of the stomach?

- a. Diclofenac sodium
- b. Indomethacin
- c. Acetylsalicylic acid
- d. Ibuprofen

**e. Celecoxib**

1022. Pharmacy employees receive their salary payments twice a month. What should the cashier do, if a pay day coincides with a holiday?

a. To pay the salaries on the holiday

**b. To pay the salaries one day earlier**

- c. To pay the salaries after the holiday
- d. There are no regulations regarding payment of salaries in this case
- e. To pay the salaries 10 days earlier

1023. Veratrum water is used as an antiparasitic agent and is very toxic, which is why it can be used only externally. What class of bioactive substances causes this effect?

- a. Fatty oils
- b. Cardiac glycosides
- c. Thioglycosides

**d. Alkaloids**

e. Steroidal saponins

1024. An infusion and a liquid extract used as cardiotonics are obtained from *Crataegus oxyacantha* flowers and fruits. What active substance that is a component of this herbal raw material can be determined using spectrophotometry?

- a. Lipids
- b. Atropine
- c. Cytisine
- d. Flavonoids**
- e. Papaverine

1025. As a result of heparin overdose, a patient developed bleeding. What medicine must be used as an antidote in this case?

- a. Unithiol (Dimercaptopropansulfonate sodium)
- b. Thiosulfate
- c. Methionine
- d. Naloxone
- e. Protamine sulfate**

1026. Indometacine is a nonsteroidal antiinflammatory drug. A condensed heterocyclic system is contained within the structure of this drug. What cycles compose the system?

- a. Benzene and thiazole
- b. Pyrrole and benzene**
- c. Benzene and pyridine
- d. Two 4-oxycoumarin residues
- e. Pyrimidine and imidazole

1027. *Folia Eucalypti* is used as an antiseptic, anti-inflammatory, analgesic, and bactericidal agent. What group of bioactive substances is measured for the quality control of *Folia Eucalypti*?

- a. Polysaccharides
- b. Flavonoids
- c. Essential oils**
- d. Alkaloids
- e. Cardiac glycosides

1028. Testing of a calcium lactate pentahydrate substance requires a reaction with a solution of thioglycolic acid in the presence of citric acid and an ammonia solution. What impurity can be detected using this reaction?

- a. Ammonium salts
- b. Potassium
- c. Sulfates
- d. Chlorides
- e. Iron**

1029. A man came to a pharmacy asking for a litholytic and diuretic drug <<Marelin>>. If there is no such drug in the pharmacy, powdered roots and rhizomes of a certain plant can be recommended as a substitute. Name this plant:

- a. *Dryopteris filix-mas*
- b. *Rhodiola rosea*
- c. *Valeriana officinalis*
- d. *Rubia tinctorum***
- e. *Sanguisorba officinalis*

1030. A herbal raw material that contains coumarin and chromone derivatives is a source of drugs with thrombolytic, photosensitizing, and antispasmodic action. Which compound in this group has a proven photosensitizing effect?

- a. Free coumarin
- b. Pyranocoumarin visnadin
- c. Furocoumarin psoralen**

- d. Furanochromon kelin
- e. Hydroxycoumarin esculin

1031. On the occasion of the Pharmaceutical Worker Day in Ukraine, the best employees at a pharmacy were awarded the Letters of Commendation. What type of management methods was used in this case?

- a. Economic
- b. -
- c. Socio-psychological**
- d. Administrative
- e. Technological

1032. Pharmacy as a healthcare facility fulfills three main functions. Its manufacturing function includes:

- a. Storage of medical products
- b. Health education of the population
- c. Preparation of individual formulations**
- d. Providing access to pharmaceutical information
- e. Pharmaceutical care

1033. The doctor prescribed a patient 100 ml of thermopsis grass infusion. How much of the dry concentrate of thermopsis grass (1:1) should the pharmacist measure out for this patient?

- a. 0.3 g
- b. 0.2 g
- c. 0.25 g**
- d. 0.5 g
- e. 0.1 g

1034. A pharmaceutical warehouse has received a batch of herbal raw material - a bark of Quercus robur. What active substances should be measured in this material, according to the State Pharmacopoeia of Ukraine?

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

1035. A pharmacist has prepared an injection solution of ascorbic acid. What substance is necessary for solution stabilization in this case?

- a. Sodium chloride
- b. Sodium sulfite**
- c. Sodium citrate
- d. Sodium acetate
- e. Sodium bromide

1036. Select from the list a medical substance that is an indole derivative:

- a. Diazepam
- b. Indometacin**
- c. Dibazol (Bendazol)
- d. Glaucine hydrochloride
- e. Isoniazid

1037. According to the State Pharmacopoeia of Ukraine, the tablets taken internally can be classified into several different types. The pulsatile release tablets can be classified as:

- a. Soluble tablets
- b. Modified-release tablets**
- c. Dispersible tablets
- d. Chewable tablets
- e. Effervescent tablets

1038. Standard herbal material of lily-of-the-valley is obtained by drying it at a temperature of 50-60°C to prevent the following possible biochemical process:

- a. Oxidation of resins
- b. Volatilization of essential oils
- c. Oxidation of phenolic compounds
- d. Oxidation of terpenoids
- e. Enzymatic hydrolysis of cardiac glycosides**

1039. Eucalyptus essential oil is used as an antiseptic. What excretory structures of a leaf accumulate this substance?

- a. Glandular hairs
- b. Glandular <<spots>>
- c. Essential oil cavities**
- d. Essential oil glandules
- e. Secretory cells

1040. What pharmaceutical factor can affect therapeutic activity of active substances?

- a. Adjuvants**
- b. Material expenses of the manufacture
- c. Compliance with GMP regulations
- d. WHO directives
- e. Drug dosing equipment

1041. An accountant conducts necessary calculations for remuneration of labor. Name the type of remuneration that is due for labor carried out according to the work standards and is paid within the amount determined by basic or piece wages for factory workers and salaries for office workers:

- a. Basic pay**
- b. Financial aid
- c. One-off payment
- d. Increment
- e. Bonus

1042. During pharmaceutical analysis of a medicinal substance, its reaction with antipyrine (phenazone) was conducted in the presence of dilute hydrochloric acid. What compounds are present there, as indicated by the green coloring that appeared in the process of the analysis?

- a. Iodides
- b. Fluorides
- c. Nitrites**
- d. Bromides
- e. Sulfates

1043. A pregnant woman with signs of acute rhinitis came to a pharmacy. What drug for symptomatic treatment of rhinitis will be the safest in this case?

- a. Beclomethasone preparations
- b. Salt solutions based on iso- and hypotonic sodium chloride solutions**
- c. Essential oil-based preparations
- d. Cromoglicic acid preparations
- e. Xylometazoline preparations

1044. Audit of the macroenvironment of a pharmaceutical company has revealed a change in the number, density, and age structure of the population. What factors of the macroenvironment were studied?

- a. Socio-demographic**
- b. Technological
- c. Environmental and ecological
- d. Economic
- e. Political