LIST OF SITUATION TASKS FOR EXAM ON DISCIPLINE
"TECHNOLOGY OF MEDICINES"
Specialization "Pharmacy, industrial pharmacy"

1. EuPh distinguishes the following types of powders:
A. powders for cutaneous use
B. dusting powders
C. effervescent powders
D. coarse powders
E. powders for oral use

2. Which preparations are referred to the powders for external use:
A. ear powders
B. effervescent powders
C. oral powders
D. dusting powders
E. nasal powders

3. What devices are used for packing of powders?
A. vacuum dosing packing machines
B. piston dosaging machines
C. machines for tubes filling
D. screw dosing packing machines
E. hummer machines

4. What quality parameters are controlled for powders?
A. total ash
B. residual voltage
C. fineness
D. microbial purity
E. water content

5. There are distinguished the following types of powders in accordance with the fineness degree:
A. coarse
B. fine
C. thick
D. very fine
E. moderately fine

6. Granulation is used in tablet production. Indicate methods of wet granulation:
A. spray drying granulation
B. fluidized granulation
C. granulation in horizontal granulators
D. pan granulation
E. wet granulation in vertical granulators

7. Granulation is used in tablet production. Indicate methods of structural granulation:
A. fluidized granulation
B. granulation in horizontal granulators
C. wet granulation in vertical granulators
D. pan granulation
E. spray drying granulation

8. Indicate methods of granulation available in the industrial technology of drugs:
A. wet granulation
B. direct pressing
C. moulding
D. dry granulation
E. structural granulation

9. Granulation is used in order to:
A. prevent layering of multi-component tablet mass
B. prevent sticking of powders to puncheons
C. provide uniform supplying of powders into dies
D. improve solubility of API
E. improve the flowability of powders

10. According to EuPh granules are divided onto the following groups:
A. coated
B. modified-release
C. effervescent
D. uncoated
E. gastro-resistant

11. Indicate quality parameters that are controlled for dragee:
A. disintegration time
B. uniformity of mass
C. appearance
D. excipients content
E. assay of API(s)

12. Put in correct order technological stages of the production of granules:
A. packing and labeling
B. granulation
C. quality control
D. auxiliary stage
E. particle size distribution

13. Put in correct order the operations of dragee obtaing:
A. smoothing
B. subcoating
C. polishing
D. sealing
E. -

14. Put in correct order technological stages for streptocide tablets production:
A. quality control
B. granulation
C. compression
D. auxiliary stage
E. packing and labeling

15. Tablets are manufactured by direct compression method. Name necessary properties that substances should possess to be compressed without the addition of excipients:
A. good flowability
B. low adhesive ability to press-instrument of tablet machine
C. bulk weight must be higher than specific density
D. isodiametric form of crystals
E. good compressability

16. Put in correct order manufacturing stages for tablets with streptocide:
A. granulation
B. auxiliary stage
C. compression
D. quality control
E. packing and labeling

17. Choose types of tablets that must be dissolved in water before administration:
A. soluble tablets
B. dispersible tablets

C. tablets for use in the mouth
D. effervescent tablets
E. chewable tablets

18. Write classification of film coatings according to their solubility:
A.
B.
C.
D.
E. -

19. Choose substances used to form a water-soluble tablet film coating:
A. methylcellulose
B. methylphthalylcellulose
C. n-aminobenzoates
D. phthalate dextrin
E. carboxymethylcellulose

20. Choose substances used to form a gastric-soluble tablet film coating:
A. gelatin
B. spermaceti
C. n-aminobenzoates
D. phthalate dextrin
E. wax

21. Choose substances used to form a enteric-soluble tablet film coating:
A. gelatin
B. methylphthalylcellulose
C. n-aminobenzoates
D. phthalate dextrin
E. wax

22. Tablets are produced by compression with previous granulation. Specify methods of structural granulation:
A. pan granulation
B. granulation in horizontal granulators
C. spray drying granulation
D. fluidized-bed granulation
E. wet granulation in vertical granulators

23. Tablets are produced at pharmaceutical enterprise by different methods. Match the pairs:

Tablets	Production method
A. riboflavin	**1.** direct compression
B. ascorbic acid	**2.** direct compression with the addition of excipients
C. sodium chloride	
D. bromcamphor	**3.** molding
E. nitroglycerine	**4.** compression with previous granulation
F. streptocide	**5.** direct compression with previous directed crystallization
G. acetyl salicylic acid	

24. Tablets are produced by compression with the addition of excipients. Match the pairs:

Excipients	Function in the preparation
A. fillers	**1.** to obtain necessary weight of tablet
B. disintegrants	**2.** to promote cohesiveness
C. glidants	**3.** to prolong action
D. binders	**4.** to improve flowability
E. prolonging agents	**5.** to induce breakup of tablet

25. Different excipients are used in tablet production. Specify the amount of excipients indicated by EuPh:

Ingredient	Permitted amount
A. magnesium stearate	**1.** 1 %
B. talc	**2.** 10 %
C. tween-80	**3.** 15 %
D. aerosyl	**4.** 3 %
E. stearic acid	**5.** 20 %

26. One of the quality parameters of tablets is dissolution. What devices are used to perform this test?
A. beam compass
B. basket apparatus
C. friabilator
D. paddle apparatus
E. flow-through apparatus

27. Capsules are produced at pharmaceutical enterprise. Specify classification of capsules according to EuPh:
A.
B.
C.
D.
E.

28. Hard capsules may be filled with liquid and solid material. Specify hard capsules that are filled with microcapsules:
A. tubatins
B. medules
C. softgels
D. spansules
E. retard tablets

29. Capsules are produced at pharmaceutical enterprise. Specify classic production methods of capsules:
A. dipping
B. polymerization
C. dropping
D. pressing
E. moulding

30. Microcapsules are produced at pharmaceutical enterprise. Indicate parameters of microcapsules quality:
A. disintegration
B. appearance
C. bulk weight
D. fractional composition
E. microbiological purity

31. Microcapsules are produced at pharmaceutical enterprise. Indicate production methods:
A. physical
B. physical-chemical
C. chemical
D. gravitational
E. acoustic

32. Microcapsules are produced at pharmaceutical enterprise. Choose physical methods of microcapsules production:
A. pan coating
B. phase separation
C. spray drying

D. interfacial polymerization
E. complex coacervation

33. Microcapsules are produced at pharmaceutical enterprise. Choose chemical methods of microcapsules production:
A. pan coating
B. interfacial polycondensation
C. spray drying
D. interfacial polymerization
E. complex coacervation

34. Microcapsules are produced at pharmaceutical enterprise. Choose physical-chemical methods of microcapsules production:
A. pan coating
B. phase separation
C. spray drying
D. interfacial polymerization
E. complex coacervation

35. What quality parameters are controlled for microcapsules?
A. fractional composition
B. assay of APIs
C. bulk weight
D. friability
E. mechanical strength

36. Name substances that are used as plasticizers for capsules production:
A. glycerin
B. starch
C. talc
D. propylene glycol
E. sorbitol

37. Different equipment is used in the production of solutions. Indicate equipment for mechanical mixing of liquids:
A. blade mixers
B. liquid whistles
C. anchor mixers
D. pulsators
E. turbine mixers

38. Indicate aqueous solutions that are obtained by method of chemical interaction:
A. Burow's solution
B. lead venigar
C. lime water
D. ammonia solution
E. hydrochloric acid solution

39. Indicate aqueous solutions that are obtained by method of chemical interaction:
A. aluminum subacetate solution
B. lead subacetate solution
C. sodium hydroxide solution
D. calcium hydroxide solution
E. hydrochloric acid solution

40. Indicate production methods of solutions:
A. dilution of liquids
B. mixing of liquids
C. chemical method
D. dissolution method

E. gravitational method

41. Solutions are produced at pharmaceutical enterprise. Indicate apparatus for mechanical mixing of liquids:
A. paddle mixers
B. liquid whistle
C. anchor mixer
D. rotory-pulsed apparatus
E. pulsator

42. What dosage forms are referred to the liquid preparations for cutaneous application:
A. oral drops
B. shampoos
C. creams
D. cutaneous foams
E. solutions

43. Indicate liquid dosage forms that can be both for oral use and cutaneous application:
A. suspensions
B. shampoos
C. emulsions
D. cutaneous foams
E. solutions

44. Match the pairs

Solution	Use
A. Burow's solution	**1.** for preparing Lead application
B. Lead vinegar	**2.** an astringent and antibacterial preparation
C. Lead application	**3.** an application for treatment of bruises
D. Fowler's solution	**4.** for treatment of dyspepsia and as antacid
E. Lime water	**5.** for treatment of anaemia, chronic leukemia

45. Syrups are produced at pharmaceutical enterprise. Indicate medicated syrups:
A. rosehip syrup
B. sugar syrup
C. orange syrup
D. althaea syrup
E. pertussin

46. Indicate production methods of aromatic waters:
A. dissolution method
B. separation method
C. distillation method
D. dilution method
E. -

47. Indicate quality parameter that are controlled for semi-solid preparations for cutaneous application:
A. pH value
B. identification
C. microbiological purity
D. sterility
E. assay

48. Semi-solid preparations are produced at pharmaceutical enterprise. Indicate homogeneous ointments:
A. menthol ointment
B. streptocide ointment
C. sulfur ointment
D. anesthesin ointment
E. ointment with starch

49. Ointment with boric acid is produced at pharmaceutical enterprise. What devices are used for ointment homogenization?
A. roller ointment rubbing machines
B. stone millers
C. disc ointment rubbing machines
D. desintegrators
E. RPA

50. Semi-solid preparations are produced at pharmaceutical enterprise. Choose ointments that are heterogeneous:
A. sulfur ointment
B. streptocide ointment
C. anesthesin ointment
D. camphor ointment
E. zinc oxide ointment

51. According to EuPh there are distinguished the following types of gels:
A. three dimensional gels
B. oleogels
C. vaginal gels
D. emulsion gels
E. hydrogels

52. Semi-solid preparations are produced at pharmaceutical enterprise. Choose ointments-solutions:
A. sulfur ointment
B. camphor ointment
C. streptocide ointment
D. anesthesin ointment
E. zinc oxide ointment

53. According to EuPh there are distinguished the following types of creams:
A. hydrophilic creams
B. absorption creams
C. rectal creams
D. lipophilic creams
E. stereo creams

54. Various excipients are used for semi-solid preparations. Choose excipients intended for increasing melting point and viscosity of semi-solid preparations:
A. isopropanol
B. carbomers
C. paraffin
D. myramistin
E. waxes

55. According to EuPh there are distinguished the following types of ointments:
A. water-emulsifying ointments
B. hydrophobic ointments
C. vanish ointments
D. hydrophilic ointments
E. fatty ointments

56. Among the given ointments find the components that form fusion ointment:
A. non-aqueous lanolin
B. white beeswax
C. starch
D. paraffin
E. camphor

57. Specify equipment that is used for packaging semi-solid preparations:
A. disintegrators and dismembrators
B. electrocaldrons and rotary pulsating apparatus
C. tube-filling screw feeder
D. piston dosing devices
E. vapor-heated pans

58. Specify requirements that glass must meet to be used for ampoule production:
A. low-melting point and chemical stability
B. mechanical and thermal resistance
C. colorlessness and transparency
D. absence of pyrogens
E. sterility

59. Specify quality parameters for evaluation the glass containers:
A. thermal shock resistance
B. mechanical stability
C. chemical stability
D. low-melting point
E. transparency

60. Indicate methods for internal washing of ampoules:
A. vacuum
B. shower
C. ultrasonic
D. vibratory
E. syringe

61. Quality control of ampoules includes the determination of glass chemical resistance. Choose methods for determination of this parameter:
A. by means of pH-meter
B. autoclaving with the following titrating by HCl solution
C. use of different indicators
D. polarization-optical method
E. acting on glass with Na_2CO_3 and $NaHCO_3$ solutions

62. What methods of water purification are commonly used for removing the inorganic compounds?
A. sterilization
B. softening
C. distillation
D. reverse osmosis
E. deionization

63. Designate filters that are operating under the vacuum:
A. membrane filter
B. filter “Vladipore”
C. filter - fungus
D. nutsche filter
E. filter “KhNIKhFI”

64. Injections with thermolabile substances are produced at pharmaceutical enterprise. Specify filters for sterile filtration:
A. filters “Vladipore”
B. filters “KhNIKhFI
C. drouk filters
D. nutsche filters
E. filters “Millipore”

65. Injections are produced at pharmaceutical enterprise. If substance of sort "for injection" is absent, this ingredient must be purified form impurities. Match the pairs:

Substance	Impurities
A. Magnesium sulfate	**1.** pyrogens and colouring matters
B. Calcium chloride	**2.** manganese and iron salts
C. Calcium gluconate	**3.** calcium sulfate and iron ions
D. Glucose	**4.** calcium oxalate

66. Solutions for injections that require stabilization are produced at pharmaceutical enterprise. Match the pairs:

Injection	Stabilizing agent
A. Novocain solution	**1.** 0,1 M hydrochloric acid solution
B. Novocainamide solution	**2.** 0,1 M sodium hydroxide solution
C. Ascorbic acid solution	**3.** sodium metabisulfite
D. Caffeine and sodium benzoate solution	**4.** sodium hydrocarbonate + sodium sulfite unhydrous
E. Glucose solution	**5.** 0,1 M hydrochloric acid solution + NaCl
F. Atropine sulfate solution	
G. Scopolamine hydrobromide	

67. Novocaine injection is produced at pharmaceutical factory. What filters can be used for its filtration?
A. nutsche filters
B. filters "KhNiKhFI"
C. filters "Millipore"
D. drouk filters
E. filters "Vladipore"

68. Indicate solutions that are stabilized with 0.1 M sodium hydroxide:
A. ascorbic acid
B. caffeine and sodium benzoate
C. sodium thiosulfate
D. novocainamide
E. novocaine

69. Choose solutions that are stabilized with 0.1 M hydrochloric acid:
A. atropine sulfate
B. caffeine and sodium benzoate
C. sodium thiosulfate
D. novocainamide
E. novocaine

70. Choose technological operations that prevent from oxidation of easily oxidized substances:
A. regulation of pH
B. separate production of powder for injections and solvent
C. usage of coloured containers
D. addition of stabilizing agents
E. filling ampoules in the inert gas medium

71. Ampoules are submerged into coloured methylene blue solution for leaker testing. Which solutions are these ampoules filled with?
A. 5 % Glucose injection
B. 10 % Novocain injection
C. 20 % Camphor injection
D. 10 % Caffeine and sodium benzoate injection
E. 10 % Gelatin injection

72. Ampoules are submerged into the soap water for leaker testing. What preparations are the ampoules filled with?
A. 20 % Camphor injection
B. 5 % Glucose injection
C. 1 % testosterone oil injection
D. 10 % Caffeine and sodium benzoate
E. 24 % Euphylline injection

73. Quality of eye drops is controlled on the following parameters:
A. sterility
B. isotonicity
C. pH value
D. clarity
E. identity

74. Write classification of eye preparations according to EuPh:
A. -
B. -
C. -
D. -
E. -

75. Plant oils used for manufacturing injections are controlled on the following parameters:
A. saponification value
B. odour
C. acidic number
D. iodine value
E. transparency

76. In order to provide sterility during storage the preservative agents are added into the composition of eye drops. Among listed below ingredients choose the ones that are used as preservatives:
A. benzalkonium chloride
B. pilocarpine hydrochloride
C. nipagin
D. sorbic acid
E. methyl cellulose

77. Put in correct order the technological stages in the manufacturing of eye drops:
A. preparing of solution
B. sterilization
C. auxiliary stage
D. quality control
E. packing and labeling

78. Tinctures are produced at phytochemical workshop. Choose methods for purification of tinctures:
A. salting-out
B. settling at temperature 8-10 °C
C. filtration
D. adsorption
E. electrodialysis

79. Tinctures are produced at phytochemical workshop. Match the pairs:

Tincture	Raw material, production ratio
A. Magnolia-vine (Schisandra) tincture	**1.** herbs, 1:10
B. Hawthorn (Crataegus) tincture	**2.** fruits, 1:10
C. Valerian tincture	**3.** leaves, 1:10
D. Belladonna tincture	**4.** roots and rootstocks, 1:5
E. Lily of the valley (Convallaria) tincture	**5.** seeds, 1:5

80. Tinctures are produced at phytochemical workshop. Match the pairs:

Tincture	Production ratio, extraction solvent
A. Lily of the valley (Convallaria) tincture	**1.** 1:5, 40 % ethanol
B. Hypericum tincture	**2.** 1:5, 70 % ethanol
C. Valerian tincture	**3.** 1:10, 40 % ethanol
D. Belladonna tincture	**4.** 1:10, 70 % ethanol
E. Peppermint tincture	**5.** 1:20, 90 % ethanol
F. Motherwort tincture	

81. Tinctures are produced at the phytochemical workshop. Match the pairs:

Tincture	Raw material and extraction solvent
A. Pagoda-tree (Sophora) tincture	**1.** herbs, 48 % ethanol
B. Lily of the valley (Convallaria) tincture	**2.** roots, 70 % ethanol
	3. herbs, 90 % ethanol
C. Ginseng tincture	**4.** herbs, 70 % ethanol
D. Peppermint tincture	**5.** seeds, 95 % ethanol
E. Magnolia-vine (Schisandra) tincture	

82. Specify main production methods of tinctures:
A. maceration
B. counter-flow extraction
C. remaceration
D. percolation
E. dissolution of extracts

83. Tinctures are produced at phytochemical workshop. What quality indexes are tinctures standardized on?
A. humidity
B. dry residue
C. ethanol content
D. relative density
E. concentration of active ingredients

84. Indicate production methods of liquid extracts:
A. dissolution
B. percolation
C. imbibition
D. repercolation
E. ultrasound extraction

85. Liquid extracts are produced at phytochemical workshop. Choose methods for purification of liquid extracts:
A. settling at temperature 8-10 °C
B. adsorption
C. salting-out
D. filtration
E. electrodialysis

86. Liquid extracts are produced at pharmaceutical enterprise. Indicate methods for determination of ethanol content in these preparations:
A. boiling temperature
B. distillation method
C. using picnometer
D. rectification
E. by density

87. Liquid extracts are manufactured at pharmaceutical enterprise. Indicate quality parameters the are controlled for these preparations:
A. sterility
B. ethanol content
C. dry residue
D. assay of active ingredients
E. microbiological purity

88. Indicate methods that can be used for soft extracts production:
A. fractional maceration
B. circulation method
C. dissolution of plant raw material
D. dissolution of dry extracts
E. counter flow extraction

89. Indicate methods that can be used for soft extract purification:
A. addition of adsorbents
B. change of extraction solvent
C. settling
D. boiling
E. filtration

90. Soft extracts are produced at pharmaceutical enterprise. Designate apparatus for thickening extracts:
A. sublimation dryers
B. drum vacuum dryers
C. rotary direct-flow apparatus
D. circulating vacuum evaporators
E. froth evaporators

91. Indicate quality parameters that are controlled for soft extracts:
A. ethanol content
B. assay
C. heavy metals
D. methanol and propan-2-ol
E. dry residue

92. Specify parameters for quality control of soft extracts:
A. water content
B. heavy metals impurities
C. microbiological purity
D. ethanol content
E. active ingredients content

93. If drug product is prepared with higher concentration of APIs, it should be normalized. Match the pairs:

Drug product	Diluent
A. Belladonna dry extract	**1.** 70 % ethanol
B. Valerian tincture	**2.** sunflower oil
C. Belladonna tincture	**3.** 40 % ethanol
D. Belladonna soft extract	**4.** lactose
E. Male shield-fern (Dryopteris filix-mas) soft extract	**5.** starch syrup

94. Indicate quality parameter to control dry extracts:
A. active ingredients content
B. microbiological purity
C. ethanol content
D. water content
E. heavy metals impurities

95. Extraction preparations are produced at phytochemical enterprise. Match the pairs:

Quality parameter of preparation	Method for determination
A. assay of APIs	**1.** chemical or biological methods
B. microbiological purity	**2.** by picnometer
C. ethanol content	**3.** gas chromatography
D. propan-2-ol content	**4.** distillation method
E. relative density	**5.** bacteriological method

96. Different extractive preparations are produced at phytochemical enterprise. Choose the neogalenic preparations:
A. Adonisyd
B. Raunatin
C. Flamin
D. Lantozyd
E. Bisacodyl

97. New galenic preparations are produced at phytochemical enterprise. Choose purification methods that can be used for new galenic preparations:
A. denaturation
B. settling
C. dialysis
D. change of solvent
E. filtration

98. Biogenic stimulators are produced at pharmaceutical factory. What types of biostimulators are distinguished according to the source of origin?
A. biological
B. animal
C. ultrasound
D. vegetable
E. biomineral

99. Biogenic stimulators are produced at the pharmaceutical factory. What conditions should be created to induce forming of the biostimulative substances?
A. high air temperature (37-40°C)
B. increased air humidity
C. low air temperature (2-6°C)
D. dark place
E. decreased air humidity

100. Fresh plant preparations are manufactured at pharmaceutical enterprise. Specify apparatus for reducing the raw material:
A. whirligig-machines
B. dismembrator
C. ball mills
D. disintegrators
E. rollers