**List of questions for the state exam on pharmacy technology of medicines 2023-2024 for 5th year students of the Pharmaceutical faculty full-time higher education**

1. Pharmacy technology of medicines: purpose, objectives, history of development, current state and prospects of development. Basic terms and concepts.

2. The main directions of state rationing of pharmacy manufacturing of medicines. Norming the composition of drug prescriptions, standard and non-standard prescriptions.

3. Standardization of the quality of medicines, pharmaceutical substances, excipients. Standardization of conditions and process of manufacturing of medicines in the pharmacy.

4. Characterization of pharmaceutical substances and excipients used in the pharmacy manufacture of medicines.

5. Classification of dosage forms of pharmacy manufacture by aggregate state, routes of administration into the body, methods of administration, dispersological classification.

6. Dosing methods used in the manufacture of medicines in pharmacies. Means of measurement. Metrological control.

7. Dispensing by mass in a pharmacy setting. Factors affecting the accuracy of mass dosing.

8. Scales used in pharmacies for dosing pharmaceutical substances. Metrological characteristics of scales.

9. Volume batching. Factors affecting the accuracy of volume dispensing. Rules of dispensing liquids with high and low density. Characteristics of measuring pharmacy utensils and rules of working with them.

10. Droplet dosing. Factors affecting the accuracy of drop dispensing. Standard and non-standard droplet meters. Calibration of a non-standard droplet meter.

11. Packaging means used in the pharmacy manufacture of medicines, their characteristics. Requirements for containers and closures.

12. Pharmacy utensils used in the pharmacy manufacture of drugs, requirements for them.

13. Modes of sterilization of extemporaneous drugs. Characteristics of steam and dry-fire methods of sterilization. Control of sterilization.

14. Characteristics of powders as a dosage form and disperse system, classification of powders. Dosing and filling, quality control, packaging and preparation for sale, storage of powders in pharmacies.

15. Technological scheme of manufacturing simple and complex powders in pharmacies. Importance of grinding and mixing stages.

16. Pharmacy technology for making powders from ingredients prescribed in equal and dramatically different amounts.

17. Technology of pharmacy manufacture of powders with coloring substances.

18. Technology of pharmacy manufacture of powders with lightweight, with difficult to grind substances.

19. Technology of pharmacy manufacture of powders from finished dosage forms. Improvement of the technology of manufacturing powders.

20. Characteristics of liquid dosage forms of pharmacy manufacturing, their classification. Methods of dosing solvents.

21. Characteristics of dispersion media used in the technology of pharmacy manufacturing of liquid dosage forms, their classification.

22. Requirements of regulatory legal acts to the quality of purified water. Conditions of receipt, storage and use of purified water in pharmacies.

23. Methods of designating the concentration of solutions of pharmaceutical substances and excipients in physician's prescriptions.

24. Characteristics of aqueous solutions. Technological scheme of aqueous solutions manufacturing in pharmacies.

25. Solubility of pharmaceutical substances. Designation of solubility of substances in accordance with the State Pharmacopoeia of the Republic of Belarus. Technological methods that accelerate and increase the solubility of substances in the pharmacy preparation of solutions.

26. Mass-volume method of manufacturing. Determination of the total volume of liquid dosage form, its change during dissolution of pharmaceutical substances. Volume increase coefficient, maximum concentration (Cmax, %).

27. Technology for pharmacy manufacturing of solutions from slowly soluble pharmaceutical substances; using complexation; from pharmaceutical substances with oxidizing properties.

28. Characteristics of concentrated solutions for burette units, conditions and technology of their pharmacy manufacture. Strengthening and dilution of concentrated solutions.

29. Characterization of mixtures. Pharmacy manufacture of mixtures using concentrated solutions. Technology of manufacturing mixtures using flavored waters.

30. Characteristics of drops for internal and external (except eye) use, their classification. Verification of doses of pharmaceutical substances of list "A", with the established highest single and highest daily doses in drops. Technology of pharmacy production of drops.

31. Characteristics of standard pharmacopoeial solutions, their classification. Technology of pharmacy manufacture of standard pharmacopoeial solutions of group I and II.

32. Technology of pharmacy production of standard pharmacopoeial solutions, which have two names under which they can be prescribed in a doctor's prescription. Quality control, packaging and registration for sale, storage of standard pharmacopoeial solutions in pharmacies.

33. Classification and properties of high molecular weight compounds (HMC) used in pharmacy, their characterization. Technology of pharmacy manufacture of solutions of HMCs, unrestricted and restricted swelling in water. Cases of incompatibility in Navy solutions and ways to overcome them.

34. Properties of colloidal solutions. Colloidal defense. The phenomenon of coagulation. Factors affecting coagulation. Incidents of incompatibility in pharmacy-made colloidal solutions.

35. Technology of colloidal solutions of pharmacy production. Quality control, packaging and registration for sale, storage of colloidal solutions in pharmacies.

36. Characteristics of suspensions, requirements for them. Characteristics of pharmaceutical substances and excipients used in the technology of pharmacy manufacturing of suspensions. The need for stabilization of suspensions.

37. Methods of making suspensions in a pharmacy setting. Stages of the dispersion method of suspension production.

38. Technology for pharmacy manufacture of suspensions from hydrophilic substances.

39. Technology for pharmacy manufacture of suspensions from hydrophobic substances.

40. Condensation method of suspension manufacturing. Quality control, packaging and registration for sale, storage of suspensions in pharmacies. Prospects for the development of suspensions as a dosage form.

41. Characteristics of emulsions, their classification. Characteristics of emulsifiers used in the technology of pharmacy production of oil emulsions, their classification. Factors affecting the stability of emulsions.

42. Technology of pharmacy production of oil emulsions. Features of introduction of pharmaceutical substances in the composition of emulsions.

43. Characteristics of non-aqueous solutions, their classification. Quality control, packaging and registration for sale, storage of non-aqueous solutions in pharmacies.

44. Volatile solvents used in pharmacy technology, their characteristics, methods of dosing.

45. Non-volatile solvents used in pharmacy technology, their characterization, dosing methods.

46. Technology of pharmacy production of solutions on glycerin, oils, other non-volatile solvents. Factors accelerating the production of solutions on non-volatile solvents.

47. Technology for pharmacy manufacturing of volatile solvent solutions.

48. Characteristics of aqueous extracts from medicinal plant materials (MPM). Equipment used in the manufacture of aqueous extracts. Quality control, packaging and registration for sale, storage of liquid dosage forms containing aqueous extracts from medicinal plants in pharmacies.

49. Technology of pharmacy manufacture of aqueous extracts from medicinal plant raw materials containing alkaloids, cardiac glycosides, essential oils.

50. Technology of pharmacy manufacture of aqueous extracts from medicinal plant raw materials containing saponins, tannins, anthraglycosides, phenolglycosides.

51. Technology of pharmacy manufacture of aqueous extracts from medicinal plant raw materials containing mucilage.

52. Features of the introduction of pharmaceutical substances in aqueous extracts from medicinal plant raw materials. Pharmacy production of infusions and decoctions from liquid and dry extracts (concentrates).

53. Characteristics of liniments, their classification. Technology of pharmacy manufacture of homogeneous liniments.

54. Technology of pharmacy manufacture of suspension, emulsion and combined liniments.

55. Characteristics of ointments as a dosage form and as a dispersed system, their classification. Characteristics of ointment bases used in pharmacies.

56. Technological scheme for the manufacture of ointments in pharmacies. Rules of introduction of pharmaceutical substances into ointments.

57. Technology of pharmacy production of different types of ointments: ointment-alloy, ointment-solution.

58. Technology of pharmacy production of different types of ointments: ointment-emulsion, ointment-suspension.

59. Technology of pharmacy production of different types of ointments: combined ointment. Quality control, packaging and registration for sale, storage of ointments in pharmacies.

60. Characteristics of pastes, their classification, application, technology of pharmacy production.

61. Methods of obtaining suppositories in the pharmacy. Characteristics of suppository bases, their classification. Features of the introduction of pharmaceutical substances into suppository bases.

62. Pharmacy manufacture of suppositories by rolling out method.

63. Pharmacy manufacture of suppositories by pour-on method.

64. Establishment of aseptic conditions in the pharmacy.

65. Justification of the need to manufacture in aseptic conditions dosage forms for injections and infusions, for application to wounds and burns, for newborns and children of the first year of life, eye dosage forms, with antibiotics. Ensuring sterility of injection and infusion dosage forms in the pharmacy.

66. Equipment and conditions for obtaining, collection and storage of water for injection in the pharmacy. Characteristics of pharmaceutical substances and auxiliary substances for the manufacture of sterile solutions. Requirements for them.

67. Stability of injectable solutions. Stabilization of glucose and other solutions in pharmacies.

68. Characteristics of isotonic solutions, technology of their pharmacy manufacture. Calculation of isotonic concentrations.

69. Characteristics of infusion solutions, classification. Provision of isohydricity, isoionicity, isoviscosity of solutions for infusion application in the pharmacy.

70. Technology of pharmacy manufacture of infusion solutions - regulators of water-salt metabolism and acid-base balance.

71. Characterization of pharmacy-made eye drops and solutions. Calculation of isotonicity of eye drops. Stability of eye drops.

72. Technology of pharmacy production of eye drops from solid pharmaceutical substances and concentrated solutions. Quality control, packaging and registration for sale, storage of eye drops in the pharmacy.

73. Characteristics of eye ointments. Bases for eye ointments. Features of the technology of pharmacy manufacture of eye ointments.

74. Characteristics of dosage forms for newborns and children of the first year of life, ways of their introduction into the body. Requirements for dosage forms for newborns and children of the first year of life, their justification, taking into account the anatomical and physiological features of the child's body.

75. Features of compositions and technology of pharmacy manufacture of solid, soft and liquid dosage forms for newborns and children of the first year of life.

76. Characteristics of dosage forms with antibiotics. Features of the technology of pharmacy manufacturing of dosage forms with antibiotics depending on the stability of antibiotics and the type of dosage form.

77. Characteristics of intra-pharmacy preparation, its classification and nomenclature. Features of the technology of manufacturing intra-pharmacy billet.

78. Difficult cases and cases of incompatible combinations in compound powders, liniments, ointments, suppositories.

79. Characterization of physical and physicochemical incompatibilities in pharmacy manufactured dosage forms.

80. Characterization of incompatibilities caused by chemical phenomena in pharmacy dosage forms. Ways to overcome incompatibilities in dosage forms

Head chair of pharmaceutical technologies

with course of FAT and SR

doctor of pharmaceutical sciences, professor Khishova O.M.