List of questions to final controls.
Question for differentiated assessment (at the end of the 3rd year of study) List of theoretical questions for differentiated assessment:

1. The technology of medicinal forms as a scientific discipline, its tasks and directions of development. Definition of technological terms: medicinal product, medicinal substance, medicinal form, medicinal product.
2. Classification of dosage forms: dispersological (physico-chemical), by aggregate state, depending on the method of use and routes of administration.
3. The main directions of state regulation of the production of medicinal products. Normative documentation that regulates the quality, conditions of storage and dispensing of medicinal products.
4. The prescription, its structure and prescribing rules in accordance with the order of the Ministry of Health of Ukraine No. 360 dated 07/19/05
5. Metrological characteristics of scales: accuracy (correctness), sensitivity, stability, constancy of readings.
6. Rules for weighing loose, viscous and liquid substances on pharmacy manual and technical scales. Specify the minimum weight that can be weighed on manual one-gram scales of substances of lists A, B and the general list.
7. Definition of powders as a dosage form, their classification and requirements of the SPhU for them. Technological stages of preparation of complex powders and their characteristics.
8. Ways of prescribing powders. Preparation of complex powders, the composition of which includes medicinal substances that differ in density, bulk mass, and particle structure.
9. Rules for working with poisonous, potent and narcotic medicinal substances. Triturations, their purpose, storage and design. Technology of trituration on the example of 10.0 trituration of atropine sulfate (1:100); use of triturations in powders.
10. Preparation of complex powders with poisonous, narcotic, potent and other substances prescribed in various quantities. Rules for their registration before the holiday.
11. The degree of grinding of medicinal substances in powders depends on the medical application, in accordance with the requirements of the SPhU. Medicinal substances that are difficult to grind. Purpose of auxiliary liquids and their quantity in the grinding process.
12. Examples of colored and fragrant substances and their storage conditions according to the order of the Ministry of Health of Ukraine No. 44 dated 03.16.93. Features of the technology of powders with colored and fragrant substances.
13. Types of packaging material used in powder technology for substances with different physical and chemical properties. Evaluation of the quality of powders (particle size, homogeneity of mixing, dosing accuracy, etc.).
14. Characteristics of liquid dosage forms, their classification. Methods of prescribing and indicating the concentration of solutions; checking the doses of poisonous and potent medicinal substances in mixtures.
15. Rules for the preparation of concentrated solutions for the burette system according to the instructions for the order of the Ministry of Health of Ukraine No.

197 of 09/07/93.

16. The structure of the burette installation; rules of care and use of it. Quality control of concentrated solutions, correction of their concentrations; storage conditions.

17. Mixture technology, the composition of which includes dry medicinal substances in amounts of up to 3% and more in accordance with the requirements of the order of the Ministry of Health of Ukraine No. 197 of 09.07.93.

18. Definition of a standard dropper. Factors affecting dosing accuracy. Rules for using a dropper meter; calibration of a non-standard dropper.

19. Features of the technology of aqueous solutions of slowly and poorly soluble substances (ethacridine lactate, copper sulfate, furacilin, boric acid, etc.).

20. Nomenclature of standard pharmacopoeial liquids, methods of prescribing them in recipes and storage conditions. Preparation of solutions of ammonia and acetic acid. Provide the appropriate calculations.

21. Features of preparation of solutions of hydrochloric acid for internal and external use (give examples).

22. Preparation of solutions of hydrogen peroxide, formaldehyde, basic aluminum acetate, potassium acetate. Give the necessary calculations on specific examples.

23. Features of formalin dilution, Burov's liquid, perhydrol, potassium acetate liquid.

24. Features of the technology and calculations for the dilution of ethyl alcohol using the dilution formula and alcoholometric tables. Rules for the preparation of recipes in which ethyl alcohol is prescribed, and the preparation of alcohol solutions before release.

25. Characteristics of drops as a dosage form, their classification. Checking the doses of poisonous and potent medicinal substances in drops. Rules for preparing drops using concentrated solutions and by dissolving dry substances.

26. Preparation of solutions of easily oxidizing substances (silver nitrate, potassium permanganate, iodine). Specify the concentration of iodine in solutions and Lugol for internal and external use.

27. Characterization and classification of high molecular weight compounds (HMWCs). The influence of the structure of the HMWC molecule on the dissolution process of limited and unlimited swelling substances.

28. Application of the HMWCs in pharmacy. Preparation of solutions of unlimited swelling substances on the example of pepsin.

29. Features of the technology of solutions of limited swelling HMWCs: gelatin, starch, methycellulose.

30. Characteristics and features of colloidal solutions. Factors determining their stability. The essence of colloid protection. Name the preparations of protected colloids.

31. Determination of suspensions as a dosage form and as a dispersed system. Cases of formation of suspensions. Factors affecting the stability of suspensions. Assessment of the quality of suspensions and preparation of them before release in accordance with the requirements of the SPhU.
32. Dispersion method of obtaining suspensions from hydrophilic substances. Use of Deryagin's rule.
33. Preparation of suspensions from medicinal substances with sharply and mildly pronounced hydrophobic properties. Stabilizers, their quantitative selection. Technology of sulfur suspensions.
34. Condensation method of preparation of suspensions. Opalescent and cloudy mixtures, conditions of their formation. Features of the technology of mixtures with ammonia-anise drops, extracts of different consistencies.
35. Definition of emulsions as a dosage form and dispersion system. Classification of emulsions, requirements for them. Emulsifiers, their concise characteristics.
36. Types of oil emulsions and methods of their determination. Stages of emulsion technology. Calculations of oil, emulsifier, water. Determination of the readiness of the primary emulsion.
37. Introduction of medicinal substances with different physical and chemical properties into oil emulsions. Evaluation of the quality of emulsions, their storage and preparation before release.
38. Characteristics of infusions and decoctions as dispersed systems and dosage form; demands placed on them. Technology of decoctions from raw materials containing tannins, anthraglycosides, saponins.
39. The value of the ratio of the amount of medicinal plant raw materials and extractant, water absorption coefficient, temperature, duration of infusion and cooling when preparing infusions and decoctions.
40. Differences in the technology and rules of administration of medicinal substances in infusions and decoctions from medicinal raw materials and standardized extracts-concentrates. Ways of improving the technology of water hoods. The importance of enzymes and microflora in the technology of infusions and decoctions.
41. Characterization of liniments as a medicinal form and their classification depending on the nature of the applied base, medical purpose and physicochemical properties of the ingredients. Assessment of the quality of liniments and their preparation before release.
42. Features of the technology of homogeneous and heterogeneous liniments. Preparation of suspension, emulsion and combined liniments (give examples).
43. Characteristics of ointments as a dosage form and dispersion systems. Features of preparation of dermatological ointments with resorcinol, zinc sulfate, salicylic acid. The effect of bases on the bioavailability of medicinal substances from ointments.

44. Classification of ointments according to medical purpose, place of application, consistency and physicochemical properties of medicinal substances. Pastes, their classification; peculiarities of preparation of dermatological pastes.
45. Homogeneous ointments and their characteristics. The main technological stages of preparation and the rules for introducing medicinal substances into homogeneous ointments.
46. Suspension (trituration) ointments; their classification and technology depending on the percentage of medicinal substances. Official prescriptions for suspension ointments.
47. Emulsion ointments; their characteristics and technology. Preparation of ointments with protargol, kolargol, tannin, dry and thick extracts.
48. Ointments of the combined type, their technology. Give examples. Preparation of ointments using intra-pharmacy preparations (concentrates and semi-finished products). Evaluation of the quality of ointments and their registration before release, according to the SPhU.
49. Characteristics of suppositories as a dosage form and dispersion systems; their classification depending on the purpose. Suppository bases, their classification. Characteristics of hydrophilic bases.
50. Requirements of SPhU for suppositories, meaning of their geometric shape. Prescribing suppositories and checking doses of poisonous and potent medicinal substances in them. Composition and preparation of gelatin-glycerin base for suppositories. Introduction of soluble and insoluble medicinal substances into water-soluble bases.
51. Stages of the technological process of suppositories by the pumping method. The introduction into the composition of suppository masses of medicinal substances soluble in water and other indifferent liquids depending on the prescribed amount.
52. Stages of the technological process of preparation of suppositories by pouring method. What are the direct and inverse coefficients of substitution of medicinal substances and in what cases are they used?
53. Definition of dosage forms for injections and the requirements of the SPhU publication for them. Ways of introducing injection solutions. List the stages of the technological process of preparation of solutions for injections and give a brief description of them.
54. Asepsis, its significance for ensuring sterility and pyrogenicity of solutions for injections. Creation of aseptic conditions in the pharmacy in accordance with the order of the Ministry of Health of Ukraine No. 275 dated 15.05.06. The concept of pyrogenic substances and checking the pyrogenicity of drugs for injections in accordance with the requirements of the SPhU.
55. The concept of stabilization of solutions for injections. Mechanism of stabilization of solutions of salts of weak bases and strong acids, salts of weak acids and strong bases (on specific examples).
56. Value of isotonicity of injection solutions. Methods of calculating the isotonic concentration of medicinal substances. Give examples of calculations based on Raoult's law (cryoscopic method) and using the isotonic equivalent of sodium chloride.

57. Characteristics of dosage forms used in ophthalmology (drops, lotions, washes, emulsions, suspensions, ointments, powders). Requirements for ophthalmic dosage forms; their justification and implementation.

58. Features of the technology of eye drops depending on the solubility of the ingredients included in their composition and calculations of the isotonicity of the drops.

59. Characteristics of bases used for the preparation of eye ointments and requirements for them. Evaluation of the quality of ophthalmic dosage forms, registration before release, storage rules in accordance with requirements.

60. Requirements of SPhU for dosage forms with antibiotics. Conditions for their preparation. Peculiarities of introduction of antibiotics to dosage forms.

A list of practical skills, the acquisition of which is monitored during differentiated assessment :

1. Read recipes in Latin, analyze their components and evaluate the correctness of the prescription.
2. Identify physical, chemical and pharmacological incompatibilities. To resolve the issue of the possibility of preparation and dispensing of medicinal products, taking into account the compatibility of the components of the prescription.
3. Work with tare scales and manual scales when weighing medicinal substances of different aggregate state.
4. To carry out preparatory and basic technological operations when packaging medicinal substances (tare, weigh, measure).
5. Choose taro packaging material when dosing loose, thick and viscous substances and liquids.
6. Calibrate a non-standard dropper and dose liquids by drops.
7. Calculate the number of prescription components, the total volume or mass of the medicinal product.
8. Choose the best option of the technology and, in accordance with it, prepare a medicinal product with continuous quality assessment.
9. Carry out basic technological operations of preparation of simple and complex powders with medicinal substances, prescribed in equal and different quantities, differing in the structure of particles, size and shape of crystals, aggregate state, bulk mass (weighing, grinding, mixing, dosing).
10. Assess the quality of prepared powders and write a passport of written control.
11. Check the doses of poisonous and potent substances and the rate of one-time release of narcotic and similar substances in powder form.
12. Carry out basic technological operations of preparation of triturations and complex powders with poisonous and potent medicinal substances prescribed in small quantities (weighing, grinding, mixing, dosing).
13. Carry out the main technological operations of preparing complex powders with colored, fragrant and difficult-to-grind medicinal substances (weighing, grinding, mixing, dosing).
14. Carry out basic technological operations for the preparation of powders with extracts (dry, thick, solutions of thick extracts) and semi-finished products (weighing, grinding, mixing, dosing).
15. Use the State Pharmacopoeia, other regulatory documentation and reference literature to find the necessary information on the preparation of concentrated solutions.
16. Assess the correctness of prescriptions, check doses of poisonous and potent medicinal substances in liquid medicinal forms.
17. Use the State Pharmacopoeia, other regulatory documentation and reference literature to find the necessary information on the preparation of liquid dosage forms using concentrated solutions.
18. Carry out basic technological operations for the preparation of liquid medicinal preparations using concentrated solutions and dissolution of medicinal substances (weighing, measuring, dissolving, filtering).
19. Calculate the amount of water, medicinal and auxiliary substances for the

preparation of solutions and drops.
20. Use the State Pharmacopoeia, other regulatory documentation and reference literature to find the necessary information on preparing solutions with standard pharmacopoeial liquids.
21. Calculate the amount of water and pharmacopoeial liquids depending on the way they are prescribed.
22. Calculate the amount of alcohol and water for preparing alcohol of a given concentration, using the dilution formula and alcoholometric tables.
23. Carry out the calculation of medicinal and auxiliary substances for the preparation of the dosage form.
24. Carry out basic technological operations for the preparation of infusions and decoctions with the help of extracts-concentrates and aqueous extracts from raw materials containing mucus (grind, sift, weigh, extract, filter, dissolve).
25. Use the State Pharmacopoeia, other regulatory documentation and reference literature to find the necessary information on preparation of liniments and ointments.
26. Calculate the percentage content of medicinal substances soluble in the base, which are included in the prescription of the ointment and the amount of auxiliary substances for the preparation of the medicinal preparation.
27. Carry out basic technological operations for the preparation of suppositories by the pumping method (weighing, grinding, dissolving, melting, pouring into molds, cooling, removing from the mold).
28. Carry out basic technological operations for the preparation of suppositories by the pouring method.
29. Carry out basic technological operations related to the preparation of injection solutions (weighing, dissolving, filtering, controlling the absence of mechanical impurities, hermetically sealing, preparing for sterilization, sterilizing).
30. Calculate the isotonic concentration of medicinal substances using the isotonic equivalent of sodium chloride.