



**Катедра по технология на лекарствата
и биофармация**

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**SYLLABUS FOR THE STATE EXAM
IN PHARMACEUTICAL TECHNOLOGY AND BIOPHARMACY,
ACADEMIC YEAR 2026/2027**

1. Pharmaceutical powders. Classification of powders. Incompatibility and instability. Preparation technology. Control and biopharmaceutical evaluation.
2. Pharmaceutical granules. General characteristics and composition. Preparation technology. Physical properties of granules. Control tests.
3. Tablets. General characteristics and classification. Excipients for tablets.
4. Methods for compression of tablets. Influence of the pharmaceutical factors on the biopharmaceutical characteristics of tablets.
5. Coated tablets. Sugar and film coating. Technology and composition of the coating. Excipients. Control and biopharmaceutical evaluation.
6. Capsules – general characteristics. Hard and soft capsules. Technology, composition and control indicators.
7. Technological and biopharmaceutical evaluation of solid dosage forms – uncoated and coated tablets, hard and soft capsules.
8. Solutions for oral administration. Molecular solutions, colloidal solutions, solutions of high molecular weight compounds, syrups. Methods for enhancing drug solubility.
9. Liquid dosage forms – emulsions. Physical stability of emulsions. Types of emulsifiers. Preparation, control and biopharmaceutical evaluation.
10. Liquid dosage forms – suspensions. Physical stability of suspensions. Preparation, control and biopharmaceutical evaluation.
11. Semi-solid dosage forms for dermal application. Classification. Excipients (bases) for semi-solid dosage forms. Percutaneous absorption.
12. Semi-solid dosage forms (ointments, creams, gels, pastes) – preparation technology. Control and biopharmaceutical evaluation.
13. Rectal dosage forms – classification and rectal absorption. Rectal suppositories – characteristics, bases, preparation technology. Control and biopharmaceutical aspects.
14. Vaginal dosage forms – classification. Vaginal pessaries – characteristics, bases, preparation technology. Control and biopharmaceutical aspects.
15. Classification of parenteral dosage forms. Routes of parenteral administration. Packaging of parenteral dosage forms – types and requirements.
16. Requirements for parenteral dosage forms. Sterility. Sterilisation methods.

17. Injectable dosage forms – solutions, emulsions, suspensions, powders. Requirements, excipients, preparation technology and control.
18. Infusion dosage forms – classification and requirements. Tonicity and osmolarity. Solutions and concentrates for haemodialysis.
19. Dosage forms for ocular administration – classification, characteristics and requirements. Corneal absorption. Composition, preparation technology and control of ophthalmic dosage forms.
20. Phytoproducts – classification. Theory of extraction process. Aqueous extracts – classification, preparation methods.
21. Tinctures and extracts. Methods for preparation, standardization and control.
22. Modified-release dosage forms. Prerequisites for their development – therapeutic and biopharmaceutical. Technological approaches for extension the drug release.
23. Modified-release dosage forms. Reservoir (membrane) and monolithic (matrix) physical systems. Bioerosion-regulated systems.
24. Modified-release dosage forms. Osmotically controlled systems. Hydrostatically controlled systems. Chemically regulated systems.
25. Microparticles – microcapsules and microspheres. Characteristics. Methods of preparation.
26. Nanosized dosage forms. General characteristics. Liposomes – composition, preparation methods and biopharmaceutical evaluation.
27. Stability and stabilization. Types of stability. Factors affecting instability processes and technological approaches for stabilization.
28. Evaluation of the stability of drug substances and dosage forms. Shelf life of pharmaceutical products. Tests for stability and shelf-life prediction.
29. Biopharmaceutical control. Pharmaceutical availability. Bioavailability. Pharmacopoeial dissolution tests – apparatus, characteristics.
30. Biopharmaceutical control. Criteria for evaluation of dissolution test results. Similarity factor. Pharmaceutically, biologically and therapeutically equivalent products.

Prepared by: /S/

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