SYLLABUS
for state exam preparation
„Pharmaceutical technology and biopharmaceutics“

1. Powders. Basic technological procedures for preparation of powders. Methods and apparatus.
2. Physico-mechanical properties of powdes. Properties related to individual particles and bulk powder volume.
3. Granules. Characteristics. Reasons for granulation. Composition of granules. Binders.
4. Granules.Mechanism of granule formation. Methods and apparatus for granulation. Control. .
5. Tablets. Classification. Basic characteristics of tablets. Technological and biopharmaceutical control tests.
6. Tablets. Methods of prepartion. Technological schems and steps in tablet prepatration.
7. Tablets. Groups of excipients in tablet praparation – fillers, binders, glidants and their function. .
8. Tablets. Groups of excipients in tablet preparation – desintegrants, lubricants, corrigents and their function. Mechanism of desintegration. Technological and biopharmaceutical problems associated with lubricants.
9. Coating of tablets. Reasons for tablet coating. Sugar coating – characteristics and technological procedure. Apparatus for sugar coating.
10. Film coating. Composition of coating solution/suspension. Types of polymers based on their functionality. Mechanism of film formation.
11. Capsules. Hard capsules. Capsule preparaton and characteristics of empty capsules. Methos of capsule filling of different dosage forms. Capsule filling apparatus. Control.
12. Capsules. Soft gelatin capsules. Characteristics. Types and composition of capsule filling materials in soft gelatin capsules. Preparation and control.
13. Parenteral dosage forms – characteristics and classification. Methods of sterilization. Sterile room – organisation of work process.
14. Injections. Characteristics. Preparation. Requiremetns and methods for their achivment. Control tests.
15. Infusions. Classification. Characteristics. Preparation. Requiremetns and methods for their achivment. Control tests.
16. Eye preparations. Classification. Characteristics. Preparation. Requiremetns and methods for their achivment. Control
17. Phytopreparations. Characteristics. Classification. Herbal drug standartization. Methods for extraction.
18. Tinctures and extracts. Preparation, standartization and control.
19. Liquid dosage forms. Characteristics. Classification. Degree and rate of solubility. Factors influencing the rate of solubility. Molecular solutions. Technological scheme of preparation. Control.

20. Methods for increase aqueous solubility of drugs.
21. Liquid dosage frorms – emulsions. Characteristics and classification. Emulsifing agents. Preparation and control.
22. Liquid dosage forms – suspensions. Characteristics and classification. Suspending agents. Preparation and control.
23. Biopharmaceutical aspects of oral route of administration. Peroral absorbtion – physiological and pharmaceutical factors.
24. Semisolid dosage forms for cutaneous application. Charateristics and classification. Percutaneuos absorbtion - physiological and pharmaceutical factors.
25. Semisolid dosage forms – ointments, creams, gels and pastes. Characteristics. Classification. Preparation and control.
26. Rectal dosage forms. Characteristics. Classification. Biopharmaceutical aspects of rectal route of administration.
27. Rectal dosage forms – suppositories. Preparation and control.
28. Vaginal dosage forms. Characteristics. Classification. Biopharmaceutical aspects of vaginal route of administration. Pessaries. Preparation and control.
29. Modified release dosage forms. Therapeutic and biopharmaceutical requirements for preparation of modified release dosage forms. Methods for sustained drug release.
30. Reservoir (membrane) physical systems. Characteristics. Classification. Preparation. Factors influencing degee and rate of drug release
31. Monolitic (matrix) physical systems with dissolved/suspended drug. Porous matrices.Characteristcs. Polymers. Preparation. Factors influencing degee and rate of drug release. .
32. Biodegradable and hydrogel systems. Characteristcs. Polymers. Preparation. Factors influencing degee and rate of drug release.
33. Microcapsules and microspheres. Characteristcs. Preparation. Factors influencing drug release. Control.
34. Targeted dosage forms – liposomes and nanoparticles. Characteristics. Preparation. Methods for drug targeting.
35. Aerosols. Administration. Components of aerosol products. Preparation and control.
36. Aerosols. Types of aerosol systems and mechanism of action.
37. Stability of drug dosage forms. Types of stability and methods of stabilization. Methods for stability testing.
38. Biopharmacy. Pharmaceutical availability and factors determining it. Pharmaceutical similarity.
39. Pharmacopoeial methods (tests) for *in vitro* control of drug dissolution – characteristics and specific condtions. Biopharmaceutical classification system.

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