



## **THE PROGRAM OF THE ENTRANCE EXAM**

**For the group of the educational program:** Pharmacy based on higher education  
"Technology of pharmaceutical production"



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## 1. PURPOSE AND SCOPE OF APPLICATION

1.1 The program is intended for applicants in the field of "Healthcare" of the group of the educational program B085 Pharmacy on the basis of higher medical education

## 2. REGULATORY REFERENCES

- This program uses references to the following documents: The order of the Minister of Education and Science of the Republic of Kazakhstan "On approval of Standard rules for admission to educational organizations implementing educational programs of higher and postgraduate education" dated October 31, 2018 No. 600

## 3. MAIN PART

### 3.1 Purpose entrance exam

The entrance exams for the accelerated form of education are a procedure for selecting students for admission to the accelerated program of study at an educational institution. These exams are conducted to determine the knowledge, skills and abilities of applicants, as well as their preparation for an intensive and concise curriculum.

The questions of the entrance exams are designed taking into account the disciplines passed and the applicant's previous education level.

### 3.2 Contact information:

Astana, Beibtshilik street.49, Astana Medical University, School of Pharmacy. Tel.: 8(7172)539432, e-mail: [sadvakasova.a@amu.kz](mailto:sadvakasova.a@amu.kz).

### 3.3 Location of the entrance exam

Astana, Beibtshilik street.49, Astana Medical University

Admission to the audience for the entrance exam is carried out upon presentation of an identity document. At the same time, the entrance exam is conducted in classrooms (rooms) equipped with video and (or) audio recording.

### 3.4 The form of the entrance exam

50 test tasks with one correct answer. 60 minutes has given to answer.

The list of test tasks was approved at the meeting of the Academic Council of the Astana Medical University Protocol No. 5 dated May 29, 2023.

### 3.5 Schedule of submission of documents and terms of the entrance exam

Table 1.

Deadlines for receiving documents	Exam dates	Exam time	Acceptance of applications for appeal	Place of the exam
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01.07.2023 – 10.07.2023	7.08.2023- 9.08.2023	14.00-15.40	Until 13.00 h. the next day after the announcement of the results	49A Beibitshilik Street
25.07.2023 – 6.08.2023				

**List of documents:**

- 1) an application addressed to the Rector of the University in the prescribed form;
- 2) document of education (original);
- 3) identity document (required for identification);
- 4) 6 photo cards measuring 3 x 4 centimeters;
- 5) a medical certificate in the form 075/y in electronic format, approved by the order of the Acting Minister of Health of the Republic of Kazakhstan dated October 30, 2020 No. KR DSM-175/2020 "On approval of forms of accounting documentation in the field of healthcare" (registered in the Register of State Registration of Regulatory legal Acts under No. 21579)
- 6) Persons who have documents on technical and vocational, post-secondary education, who have confirmed their qualifications and have at least one year of work experience in the specialty, additionally submit one of the documents provided for in Article 35 of the Labor Code of the Republic of Kazakhstan.

**3.6 Examination material**

**1. Organization and economics of pharmacy with the basics of management and marketing**

1. The basic principles of the organization of medical and medicinal assistance to the population of the Republic of Kazakhstan.
2. Legislative and regulatory documents regulating the legal basis of drug policy in the Republic of Kazakhstan.
3. Pharmaceutical market and its state regulation.
4. Organization of the activities of the wholesale link of the pharmaceutical market.
5. Organization of the activity of the retail link of the pharmaceutical market.
6. Pharmacies, tasks, functions and departments.
7. Organizational structures of the pharmacy, equipment and equipment.
8. Licensing of pharmaceutical activities.
9. Sanitary and hygienic regime in the pharmacy organization.
10. Production activity of the pharmacy organization.
11. Organization of the pharmacy's work.
12. Organization of quality control of medicines.
13. Drug provision for inpatient patients.
14. The basic principles of determining the need and studying the demand for medicines.
15. Organization of the pharmacy warehouse.
16. The main issues of storage of medicines and medical devices.
17. Fundamentals of pharmacy economics management.



18. Features of pharmacy economics.
19. Forecasting of the main economic indicators of the pharmacy organization.
20. Fundamentals of accounting and reporting of pharmacy organizations.
21. Accounting of fixed assets, movement of goods and other tangible assets.
22. Accounting of cash and settlement transactions.
23. Inventory of inventory items in a pharmacy organization.
24. Fundamentals of management in pharmacy.
25. Fundamentals of marketing in pharmacy.

## 2. Medicinal Chemistry

1. The discipline of pharmaceutical chemistry, the main tasks.
2. Choice of methodology, group and private tests, requirements for identification of drugs.
3. Quantitative determination of medicines according to the GF RK.
4. Determination of the quantitative content of the drug by polarimetry, refractometry and spectrometry.
5. Preparation of reference solutions.
6. Analysis of the quality of distilled water for injection and purified water.
7. The difference between inorganic drugs and organic drugs by functional groups.
8. Methods of testing medicinal substances.
9. Fundamentals of laboratory techniques of pharmaceutical analysis.
10. Group VII of the periodic system of elements. Connection of halogens.
11. VI group of the periodic system of elements. A compound of oxygen, sulfur.
12. V and III groups of the periodic system of elements. A compound of nitrogen, boron.
13. II of the periodic system of elements. A compound of magnesium, calcium, barium, zinc.
14. Group VIII of the periodic system of elements. Iron compound.
15. General characteristics of organic medicinal substances.
16. Halogen derivatives of acyclic hydrocarbons. Alcohols. Aldehydes.
17. Fatty carboxylic acids and their derivatives.
18. Esters are simple and complex.
19. Carbonic acid amides. Derivatives of barbituric acid.
20. Phenols. Aromatic acids and their derivatives.
21. Aromatic amino acids, amino alcohols and their derivatives.
22. Sulfanilic acid amides.
23. Alkaloids.
24. Vitamins
25. Antibiotics

## 3. Pharmacognosy

1. The discipline of pharmacognosy, the main tasks, importance in medicine and pharmacy.



2. The raw material base of medicinal plant raw materials.
3. Fundamentals of the process of procurement of medicinal plant raw materials.
4. Pests of medicinal plant raw materials.
5. Medicinal plants are sources of biologically active substances.
6. Medicinal plants and raw materials acting on the nervous system.
7. Medicinal plants and raw materials used in cardiovascular diseases.
8. Medicinal plants and raw materials acting on urinary excretion.
9. Medicinal plants and raw materials used for digestive diseases.
10. Medicinal plants and raw materials acting on the blood system.
11. Medicinal raw materials of animal origin.
12. Methods for determining stocks of medicinal plant raw materials.
13. Legislative bases of plant ecology.
14. General concepts of plant ecology.
15. Medicinal plants in folk medicine.
16. Fundamentals of modern phytotherapy.
17. Methods of analysis of medicinal plants and medicinal plant raw materials.
18. Medicinal plants containing fats.
19. Medicinal plants containing vitamins.
20. Medicinal plants containing essential oils.
21. Medicinal plants containing cardiac glycosides.
22. Medicinal plants containing polysaccharides.
23. Medicinal plants containing tannins.
24. Medicinal plants containing alkaloids.
25. General requirements for medicinal plant raw materials.

#### **4. Industrial Drug technology**

1. Definition of drug technology as a scientific and educational discipline. Tasks of drug technology. The main directions of their solution. The current state and prospects of development.
2. Rationing of the quality of dosage forms, substances. The concept of the quality of medicinal substances and dosage forms.
3. Nomenclature and classification of excipients. Stabilizers of dosage forms as physico-chemical systems. Preservatives, prolongators, solubilizers, corrigents, etc. Brief description, application.
4. Powders as a dosage form. Definition. Characteristic. Requirements for powders. Classification of powders. Stages of powder technology. Evaluation of powder quality. Keeping.
5. Fees as a dosage form. Definition. Classification according to the method of application, appointment and dosage. General and private collection technology.
6. Solutions as a dosage form. Classification of solutions. Modern nomenclature of solutions and prospects for its expansion in pharmacy and industrial conditions.



7. Technology of solutions. Assessment of the quality of solutions. Keeping.
8. Infusions and decoctions. The value of extraction dosage forms. Characteristics of water extracts and classification.
9. Tinctures. Classification. Obtaining tinctures. The nomenclature of tinctures. Cleaning of tinctures. Standardization of tinctures. Keeping.
10. Special cases of preparation of water extracts: infusion of marshmallow root, water extracts from raw materials containing alkaloids, glycosides, tannins, saponins, etc.
11. Stages of the technology of infusions and decoctions. Devices. Uniform apparatuses. Introduction to infusions and decoctions of medicinal substances.
12. Preparation of water extracts from extracts specially prepared for this purpose. Assessment of the quality of water extracts. Package. Keeping.
13. Pills. Characteristic. Classification of tablets.
14. Medical capsules and microcapsules. Characteristic. Types of medical capsules.
15. Suspensions as dosage forms. Classification of suspensions. Keeping.
16. Emulsions as dosage forms. Classification of emulsions. Keeping.
17. Ointments and pastes. Features of the technology of dermatological, rectal and vaginal ointments.
18. Suppositories as a dosage form. Definition. Characteristic. Classification of suppositories. The requirements imposed on them.
19. The basics for suppositories, the requirements for them. Classification of bases for suppositories.
20. Dosage forms for injection. Requirements for dosage forms for injection.
21. Eye dosage forms. Definition. Drops, ointments, medicinal films. Characteristic. Requirements for ocular dosage forms.
22. Features of the technology of eye dosage forms.
23. Veterinary drugs. Definition. Classification. Rules for storage and standardization of raw materials.
24. Homeopathic medicines. Definition of homeopathy. Methods of preparation of homeopathic dosage forms.
25. Basic principles and stages of development and implementation of medicines.

### **3.7. Entrance exam results**

Positive rating for passing: at least 50 points (at least 50 correct answers). Duration – 100 minutes