**MATERIALS FOR THE ENTRANCE EXAMS TO THE DOCTORAL PROGRAM ACCORDING TO THE EDUCATIONAL PROGRAM 8D05102-BIOTECHNOLOGY**

**FOR THE ACADEMIC YEAR 2023-2024**

Field of education:

**8D05 Natural sciences, mathematics and statistics**

Code and classification of training areas:

**8D051 Biological and related sciences**

Group of educational programs:

**D050 Biological and related sciences**

**Ticket questions**

***Questions for the second block -***

***50 - for the SSP of natural-technical direction***

###001

Methods for determining the composition and activity of soil microorganisms

###002

Microbiological method of plant protection

###003

Microbiological analysis of air media - sedimentation method

###004

Microbiological analysis of water and soil media - by dissolving method

###005

Preparation of nutrient media for cultivation and inoculation of microscopic fungi

###006

Microscopy of lactic acid bacteria

###007

Determination of the qualitative composition of bacteria

###008

Microscopy of oil-acid bacteria

###009

Products of microbial bioconversion

###010

The isolation of pure cultures of bacteria

###011

Risk assessment of genetically engineered activities

###012

Methods to ensure that foreign microflora does not enter the production process

###013

Preparation of plant raw materials for bioconversion

###014

Genomic fingerprinting

###015

Amplification of DNA fragments by polymerase chain reaction (PCR)

###016

Creating genomic libraries

###017

Dideoxynucleotide DNA sequencing method

###018

Phosphoramidite method of DNA synthesis

###019

Biological methods of plant raw material conversion

###020

Wastewater treatment systems for biotechnological productions

###021

Assessment of the sanitary and microbiological state of the environment of biotechnological production facilities

###022

Preserving the gene pool of plants by biotechnology methods

###023

Accelerated clonal micropropagation of plants

###024

Plant protection against viral diseases

###025

Stages of the technology of obtaining secondary substances of plant origin

###026

Obtaining virus-free planting material

###027

Protoplast isolation

###028

Composition of nutrient media for plant cultivation

###029

In vitro preservation of plant gene pool. Cryopreservation

###030

Methods of transferring genes into plants

###031

Protoplast fusion

###032

Cultivation of protoplasts

###033

Method for determination of specific protein content in biotechnological production emissions

###034

Control of biosafety of GMOs

###035

Morphological characteristics and sowing qualities of seeds

###036

Biological methods of wastewater treatment

###037

Procedure for assessing the risk of GM food raw materials and food products

###038

Breeding in crop production

###039

Extracorporeal fertilization in animal husbandry: significance, prospects and peculiarities

###040

Seed formation, filling and ripening

###041

Methods of decontamination of air and production surfaces

###042

Physical methods of plant raw material conversion

###043

Microbial bioconversion technology

###044

Food safety study of genetically engineered organisms

###045

Determination of the pathogenicity of the strain

###046

Characteristics of eukaryotic DNA transposons: structure, movement mechanism, representatives

###047

Classification of "biological factors" of biotechnological productions

###048

Overcoming seed dormancy

###049

Hormonal regulation in crop production

###050

Use of tissue culture in seed production