**Al-Farabi Kazakh National University**

**Faculty biology and biotechnology**

**Department of biotechnology**

**Program of the final exam in the discipline**

**SMVIV5207 - «Special methods for the isolation and study of viruses»**

**Specialty «7M05114-Virology**»

Course – 1

Semester – 1

Number of credits – 3

**Almaty 2021**

Educational-methodical complex of the discipline is made by

Abdimadiyeva A.E., PhD candidate of biomedical science

Considered and recommended at the meeting of the department biotechnology chair from «\_\_\_\_\_\_ » \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_\_\_year, protocol №\_\_\_\_\_\_

Head of department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Kystaubaeva A.S.

1. **Form of the exam**

**The form of the exam is writing form in Univer system.**

**The exam format is online.**

Required-30 minutes before the start, students must prepare for the exam in accordance with the requirements of the proctoring instructions (you must download the AERO program). The video camera should cover the entire student and the table with the keyboard. No one should be near the student. Only one window in the Univer System should be open on the monitor screen. Papers, books, and other text documents and electronic gadgets should not be placed near the table, including headphones in the student's ears. If the student is not able to technically ensure the conditions for passing the exam with proctoring, he must inform the adviser-curator in advance.

Proctoring technology (English" proctor " – to control the course of the exam). Proctors control the course of the exam so that examinees pass the tests honestly: they complete tasks independently and do not use additional materials. A specialist (face-to-face proctoring) and the AERO program, which monitors the subject's desktop, the number of faces in the frame, extraneous sounds or voices, and even eye movements (cyber proctoring), will monitor the online exam in real time using a webcam. There will also be a video recording of the exam, then you can view the exam and decide whether violations actually occurred. This review of the exam progress can also take place after the end of the exam. Exam results can be reviewed based on the results of proctoring. If a student violates the rules for passing the exam, the result will be canceled.

The duration of the exam

• in Univer system – 120 minutes for 3 questions, 1 attempt.

Exam schedule – the exam is held according to the schedule, which will be known in advance in the section exam schedule of the UNIVER system.

Number of exam questions - a total of 50 questions.

Univer system automatically carry out the response on originality, after Teacher examinate the response on ball. The teacher manually transfers the score to the certification sheet in the Univer System. Before saving, carefully checks that all students have been assigned points.

"Excellent" - The answers to the questions posed in the ticket are presented logically, consistently and do not require additional explanations. Reasonable conclusions are drawn. Deep knowledge of the discipline is demonstrated. Deep knowledge of the lecture material, basic textbook, and additional literature is demonstrated.

The student shows a comprehensive systematic and deep knowledge of the program material, demonstrates knowledge of modern educational and scientific literature, has a conceptual apparatus, demonstrates the ability to analyze and compare different approaches to solving the problems stated in the ticket.

"Good" - Answers to the questions are presented in a systematic and consistent manner. Knows the main characteristics of the disclosed categories within the framework recommended by textbooks and the provisions given in lectures. The norms of literary speech are observed. A solid knowledge of the program material is found, but some errors and inaccuracies are allowed in the response.

"Satisfactory" - demonstrates a superficial knowledge of the issue. There are difficulties with the knowledge of the program material, almost a minimum stock of knowledge from literary sources. There is no sequence of presentation of the material. The answer is unclear, the student does not know the basic terms and concepts. Partially, 30-50% of the answer to the question

"Unsatisfactory" should be stated - there are significant gaps in the knowledge of the main program material, does not know the basic terms and concepts.

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| Assessment on alphabetic system | the Digital equivalent of points | the contents of % | Assessment on traditional system |
| А | 4,0 | 95-100 | Excellent |
| А- | 3,67 | 90-94 |
| В+ | 3,33 | 85-89 | Good |
| В | 3,0 | 80-84 |
| В- | 2,67 | 75-79 |
| С+ | 2,33 | 70-74 | Satisfactory |
| С | 2,0 | 65-69 |
| С- | 1,67 | 60-64 |
| D+ | 1,33 | 55-59 |
| D- | 1,0 | 50-54 |
| F | 0 | 0-49 | Disappointing |
| I  (Incomplete) | - | - | "The discipline isn't complete"  (it isn't considered at GPA calculation) |
| P  (Pass) | **-** | **-** | "Is reckoned"  (it isn't considered at GPA calculation) |
| NP  (No Рass) | **-** | **-** | "It isn't reckoned"  (it isn't considered at GPA calculation) |
| W  (Withdrawal) | - | - | "Refusal of discipline"  (it isn't considered at GPA calculation) |
| AW  (Academic Withdrawal) |  |  | Removal from discipline for the academic reasons  (it isn't considered at GPA calculation) |
| AU  (Audit) | - | - | "The discipline is heard"  (it isn't considered at GPA calculation) |
| Att. |  | 30-60  50-100 | Attestate |
| No att. |  | 0-29  0-49 | No attestate |
| R (Retake) | - | - | Discipline retake |

**Examination team** (lectures, laboratory work, Personality work of students)

Architecture of viruses: basic components of viruses, virus genomes

Enveloped and non-enveloped viruses, Structural proteins

Types of nucleic acid DNA, RNA

Disease caused by viruses, Specific Viral Infections

General properties of human viruses

Cultivation and Diagnostic methods of Viruses: General methods for isolation, identification

Pathogenesis of viruses, mode of transmission

Types of infection, clinical features of infections, epidemiology.

Immune response to infections, treatment, prevention & control and laboratory diagnosis.

Direct methods of detection – light microscopy, electron microscopy and fluorescence microscopy.

Serological methods - haemagglutination; complement fixation;

Immunofluorescence methods, ELISA and Radioimmunoassays, Western Bloting

Infectivity assay for animal and bacterial viruses - plaque method, LD50, ID50, IED50

The laboratory diagnosis of viral infections

Virus isolation methods of the different types of viruses

Coronaviruses and SARS. Hepatitis viruses

Virus isolation methods of the different types of viruses

Retroviruses, Respiratory viruses. Retroviruses HIV, Respiratory viruses Influenza virus

Virus isolation methods of the different types of viruses

Herpesviruses. Herpesviruses: alphaherpesviruses: herpes simplex and varicella betaherpesviruses: cytomegalovirus gammaherpesviruses: Epstein-Barr virus