METHODOLOGICAL GUIDANCE FOR INDEPENDENT WORK OF THE LEARNER

Discipline: Microbiology and Immunology

Code of Discipline: MI 2219

Name and cipher of the EP: «Medicine»

Amount of study hours/credits: 150 hours (5 credits)

Course and semester of study: 2, IV

Amount of independent work: 100 hours

Shymkent 2024 y.

Methodological guidelines for independent work of students were developed in accordance with the working curriculum of the discipline (syllabus) "Microbiology and Immunology" and discussed at a meeting of the department.

Protocol № 10 of " 05 " 06 2024 y.

Head of department
Doctor of medical sciences, prof. _____ Seitkhanova B.T.

№1

1. Topic: The concept of intercellular cooperation in immunogenesis.

2. Objective: To consider the immunocompetent cells of the human body.

3. Tasks:

1) Formulate the concept of "immunity", the main functions of immunity.

2) Types of immunity.

3) The human immune system as a diffuse organ.

4) Cells of the immune system.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 1 week

7. Literature: Application № 2

8. Control:

1. Cytocidal cells that destroy target cells

A) T-helpers
B) T-killers
C) T-effectors
D) T-suppressors
E) B-lymphocytes

2. Large granulosoderzhaschie lymphocytes, which have a cytotoxic effect against foreign cells

A) monocytes
B) leukocytes
C) natural killers
D) T-killers
E) platelets

3. Cells of mesoderm origin, absorbing and digesting microorganisms

A) phagocytes
B) red blood cells
C) platelets
D) T-suppressors
E) T-helpers

4. The humoral factor of nonspecific resistance of the organism

A) microphages
B) Properdin protein
C) T-killers
D) Hydrochloric acid of gastric juice
E) macrophages

5. The ratio of phagocytic parameters obtained with immune and non-immune serum is called the index

A) leukocyte
B) phagocytic
C) opsonic
D) opsonophagocytic
E) lymphocytic

№2

1. Topic: General characteristics of antigens. The role of immunoglobulin classes in immunity.

2. Objective: To consider classes of immunoglobulins in the immunity of newborns due to their accumulation in the mother and fetus. Consider the pathology of the immune system.

3. Tasks:

1. Give the definition of "antibody", their functions.
2. The chemical nature and structure of antibodies or immunoglobulins.
3. Classes of immunoglobulins, their main characteristics, differences and features.
4. Antiglobulin antibodies.
5. Anti-idiotype antibodies.
6. The role of immunoglobulins in the immunity of newborns.
7. Immunodeficiencies.
8. Autoimmune diseases.
9. Allergic diseases.
10. Immunoproliferative diseases.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 2 week

7. Literature: Application № 2

8. Control:

1. Immunoglobulins found in serum and in secrets on the surface of the mucous membranes belong to the classes

A) Ig G
B) Ig A
C) IgM
D) Ig D
E) Ig E

2. Common antigens that occur in different animal species

A) half-haptens
B) haptens

C) heteroantigens
D) propagens
E) alloantigens
3. Various antigens that occur within one species
A) proantigens
B) half-haptens
C) alloantigens
D) heteroantigens
E) haptens
4. The blood group in the ABO system and the resusantigen
A) alloantigens
B) half-haptens
C) proantigens
D) heteroantigens
E) haptens
5. Immunological reaction of a local nature, associated with prolonged exposure to haptens
A) Immunological tolerance
B) Immunological memory
C) secondary response
D) atopy
E) primary response

№3.

1. Topic: Applied Immunology. Molecular biological methods: NK hybridization, PCR, DNA sequencing.

2. Objective: To master the methods of serological diagnosis of infectious diseases.

3. Tasks:

1) Agglutination reaction.
2) The reaction of indirect, or passive, agglutination (RPA).
3) Precipitation reaction.
4) Immunodiffusion.
5) Immunoelectrophoresis (IEF).
6) Immunoblotting.
7) Coombs reaction (antiglobulin test).
8) Neutralization and flocculation reactions.
9) Hemagglutination inhibition reaction (RTHA).
10) complement binding reaction (CSC).

11) The reaction of immune lysis, hemolysis and immobilization.

12) Opsonophagocytic reaction.

13) Reactions proceeding with the participation of labeled antigens or antibodies.

14) The method of hybridization of nucleic acids.

15) Polymerase chain reaction.

16) DNA sequencing method.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 3 week

7. Literature: Application № 2

8. Control:

1. Neutralization of antigens occurs in the reaction

A) RTGA

B) RSK

C) Koons

D) RIA

E) ELISA

2. Bonding of corpuscular antigens and their precipitation occurs in the reaction

A) Koons

B) neutralization

C) RSK

D) precipitation

E) immunofluorescence

3. Precipitation of an antigen in a dispersed, colloidal state occurs in the reaction

A) precipitation

B) agglutination

C) flocculation

D) immune lysis

E) complement fixation

4. The interaction of antiserum with an antigen solution occurs in the reaction

A) immunodiffusion

B) neutralization

C) immobilization

D) RSC

E) immunofluorescence

5. Antitoxic immunity against diphtheria or scarlet fever is determined by Schick or Dick reactions, which refer to reactions

A) agglutination
B) precipitation
C) immune lysis
D) RNGA
E) Neutralization

№4.

1. Topic: Causative agents of sexually transmitted diseases.

2. Objective: To master the microbiological diagnosis of sexually transmitted diseases (syphilis, gonorrhea, urogenital chlamydia), their biological properties.

3. Tasks:

1. Biological features of spirochaetes.
2. Morphology and cultural properties of the causative agent of syphilis.
3. Biochemical properties, antigenic structure, resistance and epidemiology of the causative agent of syphilis.
4. Pathogenesis, clinic and features of immunity in syphilis.
5. Microbiological diagnosis of syphilis.
6. Treatment and prevention of syphilis.
7. Morphological and cultural characteristics of gonococci.
8. Biochemical properties and antigenic structure of gonococci.
9.Resistance and epidemiology of gonococci.
10. Pathogenicity factors, pathogenesis, clinic and post-infectious immunity of gonorrhea.
11. Laboratory diagnostics of gonorrhea.
12. Specific prevention and treatment of gonorrhea and blenorrhea of newborns.
13. Features and MBD, treatment and prevention of urogenital chlamydia.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 4 week

7. Literature: Application № 2

8. Control:

1.The urologist received a patient N. 22 years old, with complaints of painful urination, purulent discharge from the genital tract. Ill for about 10 days, took penicillin for the last week. What disease can be suspected? What research methods can you suggest? In what case can microscopy give a reliable answer? What material is taken for research? Why is fast delivery of the material to the laboratory important? Why do we often have to use bacteriological research in recent years? What preventive measures are necessary skin and venereal dispensary addressed the patient. Objectively: rash on the body, genitals. The patient leads a disorderly lifestyle, has many sexual partners. Your

preliminary diagnosis. What material will you take for laboratory testing? Name the basic scheme of the study, taking into account the patient's lifestyle.

2. A 35-year-old patient came to the doctor with complaints of pain during urination, the formation of ulcers on the genitals. Ill for about three weeks. From anamnesis it is established: two months ago I was on a business trip, had sexual relations with unknown women. During the examination, it was found: on the head of the penis, an ulcer with sucrovichnye separable on a dense base. The inguinal lymph nodes are palpated. A preliminary clinical diagnosis was made: syphilis. No spirochete ulcers were detected by microscopy of the discharge. Is this enough to rule out a diagnosis of syphilis? In addition to the microscopic examination, the Wasserman reaction with the patient's serum was used, which gave a positive result. Justify the obtained laboratory data. What other signs are used in medical practice for laboratory diagnosis of syphilis? Justify the feasibility of a bacteriological method for syphilis. The results of the Wasserman reaction depending on the periods of the disease. CTP used to treat syphilis.

3. Microscopic examination of a smear from the vagina of patient A. revealed fungi of the genus Candida. Is it possible to make a final diagnosis based on this method? Justify the need for additional research.

4.A patient complained about the appearance of brown spots on the skin in a skin-venereal dispensary. Shortly before the treatment, the patient suffered from severe pneumonia, received gentamicin, penicillin and sulfonamides for treatment. Smear microscopy allowed us to make a preliminary diagnosis of "Dysbacteriosis, superficial candidiasis". Justify additional research methods to confirm the diagnosis. Justify the purpose of the CTP.

Tests:

1. Venereal disease of a person, expressed in a purulent lesion of the mucous membranes of the genitourinary system

A) trichomoniasis
B) syphilis
C) venereal granuloma
D) soft chancre
E) gonorrhea

2. Gram-negative cocci that enter the urogenital tract and have the appearance of coffee beans arranged in pairs, concave surfaces to each other are pathogens

A) gonorrhea
B) soft chancre
C) venereal granuloma
(D) Syphilis
E) Trichomoniasis

3. Eukaryotic microorganisms

A) bacteria
B) mushrooms

C) viruses
(D) Phages
E) Plasmids
4. List the group of lower fungi
A) Ascomycetes
B) Basidiomycetes
C) Deuteromycetes
D) Oomycetes
E) Candida
5. The main host of the causative agent of toxoplasmosis
A) dogs
B) rodents
C) rabbits
D) birds
E) cats
6. Pathogen with a large number of cilia
A) Balantidia
B) toxoplasma
C) trypanosoma
D) Amoeba
E) Giardia
7. Mycoses, the first to appear in immunodeficiency states
A) favus
B) candidiasis
C) trichomoniasis
D) trichophytosis
E) Coccidiosis
8. A pear-shaped pathogen
A) Balantidia
B) amoeba
C) Trichomonas
(D) Leishmania
(E) Trypanosoma
9. The pathogen, one of the stages of which has the shape of a crescent
A) trypanosoma
B) amoeba
C) toxoplasma
(D) Leishmania
E) Trichomonas
10. A disease characterized by inflammation of the urethra and prostate
A) toxoplasmosis
B) amoebiasis

C) Leishmaniasis
D) trichomoniasis
E) Balantidiosis

11.. A disease whose causative agent is transmitted through the bite of the tsetse fly

A) toxoplasmosis
B) amoebiasis
C) Leishmaniasis
D) Balantidiosis
E) trypanosomiasis

№5

1. Topic: Biological features of Pseudomonas aeruginosa and Haemophilus influenzae.

2. Objective: To master the microbiological diagnosis of diseases caused by Pseudomonas aeruginosa and Haemophilus influenzae.

3. Tasks:

1) Biological properties of Pseudomonas aeruginosa.
2) Laboratory diagnosis of diseases caused by Pseudomonas aeruginosa.
3) Biological properties of Haemophilus influenzae.
4) Laboratory diagnosis of diseases caused by Haemophilus influenzae.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 5 week

7. Literature: Application № 2

8. Control:

1. What provokes / Causes of Pseudomonas aeruginosa infection?
2. Pathogenesis (what happens?) during Pseudomonas aeruginosa infection?
3. Treatment of Pseudomonas infection.
4. Types of hemophilic infection
5. Symptoms of hemophilic infection.

№6

1. Topic: MID-TERM №1

2. Objective: To assess the level of students' residual knowledge of the material covered.

3. Tasks:

1. The concept of “immunity”, types of immunity, main functions of immunity.

2. The human immune system as a diffuse organ. Immune system cells
3. Define the concept of "antibody" and their functions.
4. Classes of immunoglobulins, their main characteristics, differences and features.
5. Agglutination reaction. Indirect or passive agglutination reaction (IPA).
6. Precipitation reaction. Immunodiffusion.
7. Immunoelectrophoresis (IEF). Immunoblotting.
8. Coombs reaction (antiglobulin test).
9. Neutralization and flocculation reactions.
10. Hemagglutination inhibition reaction (HAI). Complement fixation reaction (CFR).
11. Reaction of immune lysis, hemolysis and immobilization.
12. Reactions involving labeled antigens or antibodies.
13. Nucleic acid hybridization method.
14. Polymerase chain reaction.
15. DNA sequencing method.
16. Morphology, cultural properties, pathogenesis of staphylococci.
17. Microbiological diagnosis, prevention and treatment of staphylococcal infection.
18. Morphology, cultural properties, pathogenesis of streptococci.
19. Microbiological diagnosis, prevention and treatment of streptococcal infection.
20. Morphology, cultural properties, pathogenesis of the causative agent of syphilis.
21. Morphology, cultural properties, pathogenesis of the causative agent of gonorrhea.
22. Morphology, cultural properties, pathogenesis of the causative agent of urogenital chlamydia.
23. Microbiological diagnosis, prevention and treatment of sexually transmitted diseases (syphilis, gonorrhea, urogenital chlamydia).
24. Morphology, cultural properties and pathogenesis of gas gangrene.
25. Morphology, cultural properties and pathogenesis of tetanus.
26. Morphology, cultural properties and pathogenesis of botulism.
27. Microbiological diagnosis of clostridia (inoculation on Kitta-Tarotsi medium). specific prevention.
28. Morphology, cultural properties, pathogenesis of Salmonella.
29. Morphology, cultural properties, pathogenesis of Escherichia.
30. Morphology, cultural properties, pathogenesis of Shigella.
31. Microbiological diagnosis, prevention and treatment of Escherichia, Shigella, Salmonella.
32. Morphology, cultural properties, pathogenesis of Vibrio cholerae.
33. Microbiological diagnosis, prevention and treatment of campylobacter and vibrio cholera.

34. General characteristics and microbiological methods for diagnosing meningococcal infection.

35. Morphology, cultural properties, pathogenesis of Mycobacterium tuberculosis.

36. Microbiological diagnosis, prevention and treatment of tuberculosis.

37. Morphology, cultural properties, pathogenesis of the causative agent of whooping cough.

38. Microbiological diagnosis, prevention and treatment of whooping cough pathogens.

39. Morphology, cultural properties, pathogenesis of the causative agent of diphtheria.

40. Microbiological diagnosis, prevention and treatment of diphtheria pathogens.

41. Biological properties, laboratory diagnostics of Pseudomonas aeruginosa.

42. Biological properties, laboratory diagnostics of Haemophilus influenzae.

4. Form of execution: Assessment of midterm control (oral answer on ticket questions)

5. Criteria for implementation: Application № 1

6. Terms of delivery: 6 week

7. Literature: Application № 2

№7

1. Topic: West Nile fever, Zoonotic cutaneous leishmaniasis.

2. Objective: To master modern clinical and epidemic aspects of WNV, zoonotic cutaneous leishmaniasis.

3. Tasks:

1. Etiology of West Nile fever.
2. West Nile Clinic.
3. Diagnosis of West Nile fever.
4. Treatment of West Nile fever.
5. Preventive measures for West Nile fever.
6. Characteristics of the causative agent of zoonotic cutaneous leishmaniasis
7. Symptoms of leishmaniasis
8. Diagnosis of leishmaniasis
9. Treatment of leishmaniasis
10. Forecast and prevention of leishmaniasis

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 7 week

7. Literature: Application № 2

8. Control:

Task:

Patient R., aged 42, lives in Moscow for a year, before that he lived in Tajikistan. He was admitted to the hospital by ambulance, with suspicion of sepsis. Complaints of weakness, sweating, chills. He fell ill 4 months ago, when chilling, fatigue, subfebrile temperature gradually appeared, which reached 39ºC, appetite worsened, the patient lost a lot of weight. Repeatedly consulted a doctor - a blood disease was suspected, but the diagnosis was not confirmed. On examination, the state of moderate severity. Pale. The earthy-gray color of the skin attracts attention. Cachexia. In the lungs - no pathology. Heart sounds are muffled, the rhythm is correct. Pulse 84 beats / min. BP 100/60 mmHg Coated tongue. On the tonsils, in the region of the palatine arches, there are erosions and ulcers, covered with a dirty gray coating. The abdomen is drawn in, painful. The liver is enlarged by 20 cm, dense, the spleen protrudes from the hypochondrium by 5.0 cm, dense. There are no dysuric phenomena. From the side of the central nervous system, there is no pathology.

Blood test: Hb-96g / l, erythritis - 3.2 * 1012 / l, thrombosis - 156 thousand, leukocytes - 3.4 * 109 / l, e.-0, p / i - 1%, s / i -28%, lymph-59%, mon-12%, ESR-54 mm/hour.

1. Put and justify a preliminary diagnosis.
2. Conduct a differential diagnosis.
3. Make an examination plan.

№8.

1. Topic: Mycoses and pathogenic protozoa.

2. Objective: To master the microbiological diagnosis of mycoses and protozoal infections.

3. Tasks:

1) Biological features and laboratory diagnosis of keratomycosis.
2) Biological features and laboratory diagnosis of trichomycosis.
3) Biological features and laboratory diagnosis of candidiasis.
4) Biological features and laboratory diagnosis of sporotrichosis.
5) Biological features and laboratory diagnosis of histoplasmosis.
6) Biological features and laboratory diagnosis of leishmaniasis.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 8 week

7. Literature: Application № 2

8. Control:

1. Biological features and laboratory diagnosis of candidiasis.
2. Biological features and laboratory diagnostics of sporotrichosis.

3. Biological features and laboratory diagnosis of balantidiasis.
4. Biological features and laboratory diagnosis of giardiasis.

№9

1. Topic: Herpesviruses (alpha, beta, gamma-herpesviruses).
2. Objective: To master the laboratory diagnosis of neuroviral infections.
3. Tasks:
1. General characteristics of herpesviruses, their classification and taxonomy.
2. Pathogenesis, clinic and immunity of diseases caused by herpes viruses.
3. Morphological and antigenic features of herpes viruses.
4. Laboratory diagnostics, treatment and prevention of herpes viruses.
5. Treatment and prevention of herpes viruses.
4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.
5. Criteria for implementation: Application № 1
6. Terms of delivery: 9 week
7. Literature: Application № 2
8. Control:
1. DNA containing viruses:
1) retroviruses
2) rhabdoviruses
3) herpesviruses
4) orthomyxoviruses
5) paramyxoviruses
2. Herpesviruses cause diseases, indicate the wrong answer:
1) Chickenpox
2) Shingles
3) Berkit's lymphoma
4) Infectious mononucleosis
5) Aplastic crisis in children

№10

1. Topic: Pathogens of neuroviral infections.
2. Objective: To study the virological and serological diagnosis of neuroviruses (rabies, tick-borne encephalitis, cytomegaly, herpes).
3.Tasks:
1. General characteristics, epidemiology, clinical picture and laboratory diagnosis of tick-borne encephalitis

2. General characteristics, epidemiology, clinical picture and laboratory diagnosis of cytomegaly.

3. General characteristics of the herpesvirus family and their subfamilies.

4. Properties and epidemiology of herpes simplex viruses.

5. Pathogenesis, clinical picture and immunity of diseases caused by various types of herpes simplex virus.

6. Laboratory diagnosis, treatment and prevention of diseases caused by herpes simplex viruses.

7. Taxonomy, morphology and cultivation of the rabies virus.

8. Antigenic structure and resistance of the rabies virus.

9.Epidemiology of the rabies virus.

10. Pathogenesis, clinical picture and immunity of rabies.

11. Laboratory diagnosis of rabies.

12.Specific prevention and treatment of rabies.

4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.

5. Criteria for implementation: Application № 1

6. Terms of delivery: 11 week

7. Literature: Application № 2

8. Control:

Tasks

1. A 5-year-old boy was admitted to the infectious diseases hospital with complaints of a rash spreading from top to bottom and fever. From the anamnesis: he attends a kindergarten where a patient with measles was identified. Justify the laboratory diagnostics of the study, taking into account epidemiological data and the clinic. Your tactics for carrying out treatment and preventive measures.

2. A group of children with similar clinical signs were admitted to the infectious diseases department, characterized by a papular rash all over the body, temperature, some had symptoms of conjunctivitis, pharyngitis, rhinitis before the appearance of the rash. When examined in an immunofluorescence reaction with a set of various labeled sera, a positive result was obtained - the presence of measles antigen in the affected cells. Justify the results of the laboratory tests obtained. Your clinical and laboratory diagnosis. Justify your tactics for carrying out treatment and preventive measures in this case.

3. When examining a stillborn child from a woman who suffered an infectious disease of unknown etiology during pregnancy, it was established through serological studies that the presence of IgM antibodies to the rubella virus was present in both the

mother and the deceased fetus. Justify your laboratory and retrospective diagnosis of the mother and the dead fetus.

4. A state of emergency has been declared in one of the regions of the republic, where an outbreak of rabies has been noted among dogs, cats, camels and other animals. You urgently need to provide the treatment and prophylactic network with appropriate biological drugs. What medications should be provided first? Justify the use of rabies vaccine (planned, for epidemiological indications, etc.) based on the mechanism of human infection with rabies. It is necessary to take into account complications when using rabies vaccine, and what drugs should be provided to treat them?

Tests:

1. A virus transmitted through the saliva of sick animals or through their bite

A) HIV
B) rabies virus
C) ECHO
D) Coxsackie
E) herpes virus

2. A family of viruses with a diploid genome

A) orthomyxoviruses
B) hepadnoviruses
C) rhabdoviruses
D) herpes viruses
E) retroviruses

3. A virus that is cultivated in the brain tissue of white mice, Syrian hamsters, rabbits, rats, guinea pigs

A) ECHO
B) Coxsackie
C) adenovirus
D) HIV
E) rabies

4. A virus with unique antigenic variability, which is 100-1000 times greater than the variability of the influenza virus, is the causative agent

A) rabies
B) herpes
C) polio
D) AIDS
E) hepatitis

5. The genome of the herpes virus is presented

A) double-stranded linear DNA
B) circular DNA
C) single-stranded (+)RNA
D) single-stranded (-)RNA
E) double-stranded RNA

№11

1. Topic: HIV (AIDS). Oncogenic viruses.
2.Objective: To master the virological and serological diagnosis of HIV.
3.Tasks:
1. A brief history of the discovery of HIV.
2. The structure of the HIV virion.
3. Cultivation, resistance and pathogenicity factors of HIV.
4. Epidemiology, pathogenesis and clinic of AIDS.
5. Laboratory diagnostics, treatment and prevention of AIDS.
6. General characteristics, epidemiology, laboratory diagnostics of oncoviruses.
4. Form of implementation / evaluation: Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.
5. Criteria for implementation: Application № 1
6. Terms of delivery: 11 week
7. Literature: Application № 2
8. Control:
Tests:
1. The drug that is most effective in the treatment of HIV infection
A) Acyclovir
B) Interferon
C) Immunoglobulin
D) Azidothymidine
E) Remantadine
2. The number of genes in HIV
A) 5
B) 9
C) 11
D) 13
E) 15
3. A virus with a unique antigenic variability, which is 100-1000 times greater than the variability of the influenza virus, is the causative agent ... .
A. AIDS
B. Rabies

C. Herpes virus
D. Polio
E. Hepatitis

4. Special prophylaxis ... is difficult due to the rapid variability of the antigenic structure.
A. AIDS
B. Hepatitis
C. Herpes virus
D. Polio
E. rabies

5. Have a lymphotropy to T-helper cells, has an antigenic similarity to the receptors of these cells ...
A. HIV
B.adenoviruses
C. herpes viruses
D. rabies viruses
E. hepatitis viruses

6. Virus that causes an anthroponous infection transmitted by sexual, parenteral, intrauterine routes:
A. HIV
B. poliovirus
C. herpes virus
D. adenovirus
E. rabies virus

7. AIDS can lead to....
A. HIV
B. adenovirus
C. herpes virus
D. poliovirus
E. rabies virus

№ 12

1. Topic: MID-TERM №2

2. Objective: To check and evaluate the level of residual knowledge of students.

3. Tasks:

1. Morphology of the plague pathogen, sowing properties.
2. Pathogenesis, microbiological diagnosis, prevention of plague.
3. Morphology, cultural properties of the anthrax pathogen.
4. Pathogenesis, microbiological diagnostics, prevention of anthrax.
5. Morphology of the causative agent of brucellosis, cultural properties.
6. Pathogenesis, microbiological diagnosis, prevention of brucellosis.

7. Etiology, pathogenesis, microbiological diagnosis, prevention of West Nile fever.

8. Characteristics, pathogenesis, microbiological diagnosis, prevention of the causative agent of zoonotic cutaneous leishmaniasis.

9. Biological features and laboratory diagnosis of keratomycosis.

10. Biological features and laboratory diagnosis of trichomycosis.

11. Biological features and laboratory diagnosis of histoplasmosis.

12. Biological features and laboratory diagnosis of leishmaniasis.

13. Biological features and laboratory diagnosis of balantidiasis.

14. Biological features and laboratory diagnosis of giardiasis.

15. Biological features and laboratory diagnosis of reversible typhus

16. Biological features and laboratory diagnosis of epidemic typhus.

17. Biological features and laboratory diagnostics of Q fever.

18. General characteristics of the Federal State Educational Standard, Laboratory diagnostics.

19. General characteristics, Laboratory diagnostics, prevention of coronavirus infection.

20. Structure and antigenic properties of adenoviruses, Laboratory diagnostics.

21. Pathogenesis, clinical picture, prevention and treatment of adenovirus infection.

22. Morphology and chemical composition of the influenza virus, resistance to the external environment and epidemiology.

23. Pathogenesis, clinical picture and laboratory diagnosis of influenza.

24. Morphological and antigenic features of hepatitis A, Laboratory diagnostics.

25. Pathogenesis, clinical picture, epidemiology and immunity of hepatitis B.

26. Laboratory diagnosis of hepatitis B.

27. Morphological and biological features, Laboratory diagnosis of hepatitis D.

28. General characteristics, clinical epidemiology and laboratory diagnosis of hepatitis C.

29. General characteristics of enteroviruses, their classification and taxonomy.

30. Morphological and antigenic features of poliovirus, Laboratory diagnostics.

31. Features of epidemiology, pathogenesis and clinical picture of polio.

32. Advantages and disadvantages of vaccines used to prevent polio. Treatment of polio.

33. General characteristics, epidemiology, clinical picture and laboratory diagnosis of rotavirus infection,

34. General characteristics of the human immunodeficiency virus.

35. Pathogenesis, clinic, Laboratory diagnosis of HIV infection.

36. General characteristics of oncogenic viruses.

37. Morphology of measles virus, properties of culture.

38. Pathogenesis, microbiological diagnosis and prevention of measles virus.

39. Morphology of the rubella virus, properties of the culture.

40. Pathogenesis, microbiological diagnosis and prevention of rubella virus.
41. Pathogenesis, microbiological diagnosis, prevention of varicella zoster virus.
42. Morphology of mumps, sowing properties.
43. Pathogenesis, microbiological diagnosis, prevention of mumps.
44. General characteristics of herpes viruses, their classification and taxonomy.
45. Pathogenesis, microbiological diagnosis and prevention of diseases caused by herpes viruses.
46. Morphology of tick-borne encephalitis, cultural properties.
47. Pathogenesis, microbiological diagnosis, prevention of tick-borne encephalitis.
48. General characteristics, clinic, Laboratory diagnosis of cytomegalovirus infection.
49. Morphology of rabies, properties of culture.
50. Pathogenesis, microbiological diagnosis, prevention of rabies.

4. Form of execution: Assessment of midterm control (oral answer on ticket questions)

5. Criteria for implementation: Application № 1

6. Terms of delivery: 12 week

7. Literature: Application № 2

Application № 1

GRADING CRITERIA FOR LEARNERS' INDEPENDENT WORK UNDER THE GUIDANCE OF A TEACHER

Topic presentation

Form control	Grade	Criteria for evaluation
Topic presentation	**Excellent** A + (4,0; 95-100%) A-(3,76; 90-94%)	The presentation was made independently, on time, with a volume of at least 25 slides. At least 7 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates deep knowledge on the topic. Does not make mistakes when answering questions during the discussion.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The presentation was made independently, on time, with a volume of at least 23 slides. At least 6 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates good knowledge on the topic. Makes minor mistakes when answering questions that he corrects.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%))	The presentation was made independently, on time, with a volume of at least 20 slides. At least 5 literary sources were used. The slides are not meaningful. When defending, the author makes fundamental mistakes when answering questions.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The presentation was not delivered on time, the volume is less than 5-10 slides. Less than 5 literary sources were used. The slides are not meaningful. When defending, the author makes gross mistakes when answering questions. Does not focus on own material.

Preparation of written creative work (essay)

Form control	Grade	Criteria for evaluation
Preparation of written creative work (essay)	**Excellent** A + (4,0; 95-100%) A- (3,76; 90-94%)	The content of the work is fully consistent with the topic; the topic is covered in depth and reasoned. Slender in composition, logical and consistent presentation of thoughts. The problem of the essay is clearly formulated. There are no actual errors. The conclusion contains conclusions that logically follow from the content of the main part.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The theme is sufficiently fully and convincingly revealed with minor deviations from it. The thesis corresponding to the topic of the essay is clearly formulated. In the main part, it is logical, connected, but the thesis put forward is not fully proved, there are single factual inaccuracies.

	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%))	A correct, but one-sided or insufficiently complete answer to the topic is given. Deviations from it or individual errors in the presentation of the factual material were made. The material is presented quite logically, but there are some violations of the sequence of expression of thoughts. Conclusions do not fully correspond to the content of the main part
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	the topic is completely unrevealed, which indicates superficial knowledge. It is characterized by a random arrangement of the material, the lack of communication between the parts. Differs in the presence of gross speech errors.

Preparation of situational tasks

Form control	Grade	Criteria for evaluation
Preparation of situational tasks	**Excellent** A + (4,0; 95-100%) A- (3,76; 90-94%)	The learner showed original thinking, showed a deep knowledge of the material, interdisciplinary connections were used in the preparation of the situational task. Used scientific terminology. Identified the main symptoms of the disease, microbiological laboratory data are correct.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The learner, when compiling the task, made unprincipled inaccuracies, corrected by the student himself during the analysis of the task. Used scientific terminology. Identified the main symptoms of the disease, microbiological laboratory data are correct.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%))	The learner, when compiling a situational task, made inaccuracies and unprincipled mistakes, used scientific terminology. Experienced great difficulties in organizing the material. I was able to identify the main symptoms of the disease, microbiological laboratory data are indicated with slight inaccuracies.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The learner made a situational task, made fundamental mistakes and inaccuracies. When compiling the task, he could not identify the main symptoms of the disease, and also indicated incorrect microbiological laboratory data.

Analysis of scientific articles

Form control	Grade	Criteria for evaluation
Analysis of scientific articles	**Excellent** A + (4,0; 95-100%) A- (3,76; 90-94%)	The work was done neatly and delivered on time, written independently on at least 5 pages of printed text. Thoughts on the problem are presented in the form of brief theses, giving arguments. In the text of the work references to the authors are indicated everywhere. When protecting the text does not read, but tells. Confidently and accurately answers all questions asked. For work, I used articles no more than 5 years old and with a high Impact factor.

	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The work was done neatly and delivered on time, written independently on at least 4 pages of printed text. Thoughts on the problem are presented in the form of brief theses, but without giving arguments. In the text of the work references to the authors are indicated everywhere. When protecting the text does not read, but tells. When answering questions, he makes minor mistakes. For work, I used articles no more than 5 years old and with a high Impact factor.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%))	The work was done neatly and delivered on time, written independently on at least 3 pages of printed text. Thoughts on the problem are presented scattered, without giving arguments. In the text of the work references to the authors are not indicated everywhere. When protected, the text reads. Uncertainty answers questions, makes fundamental mistakes. For work, I used articles more than 5 years old and with an average Impact Factor.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The work is written on less than 3 printed sheets. Thoughts are scattered. There are no references to the authors in the text of the work. There are no arguments. When protected, the text reads. When answering questions, he makes gross mistakes, does not orient himself in the material. For work, I used articles more than 5 years old and with a low Impact factor.

MIDTERM CONTROL

Midterm is carried out in the form of an oral answer to the questions of the ticket. Each ticket consists of 3 theoretical questions. In total, 90-100 points are given as a maximum.

Form control	**Grade**	**Criteria for evaluation**
Assessment of boundary control (oral answer to ticket questions)	**Excellent** A + (4,0; 95-100%) A- (3,76; 90-94%)	1) the content of the ticket material is disclosed in full; 2) the material is presented correctly, in a certain logical sequence, terminology is accurately used; 3) the ability to illustrate theoretical positions with concrete examples, to apply them in a new situation is shown; 4) the answer is independent, without leading questions; 5) one or two inaccuracies were made when covering minor issues, which are corrected after comments or leading questions.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The answer mostly satisfies the requirements for an “excellent” rating, but at the same time has one of the drawbacks: 1) there are small gaps in the presentation that do not distort the essence of the content of the answer; 2) one or two shortcomings were made when covering the main content of the answer, corrected after the examiner's remark; 1) 3) an error was made or more than two shortcomings in the coverage of secondary issues, which are corrected after the examiner's remark.

	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%))	1) the content of the material is incompletely or inconsistently disclosed, but a general understanding of the issue and skills sufficient for further assimilation of the material are demonstrated; 2) there were difficulties or mistakes were made in the definition of concepts, the use of terminology, corrected after several leading questions; 3) with incomplete knowledge of the theoretical material, insufficient formation of competencies, skills and abilities was revealed, the student cannot apply the theory in a new situation
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	1) the main content of the educational material is not disclosed; 2) ignorance or misunderstanding of the most or most important part of the educational material is revealed; 3) errors were made in the definition of concepts, when using terminology, which were not corrected after several leading questions. 4) the answer to the question is completely absent. 5) refusal to answer.

CRITERIA FOR EVALUATING THE QUALITY OF THE TRAINEE'S ANSWER TO THE TICKET AT THE MIDTERM CONTROL

The ticket consists of 3 questions. Questions 1 and 2 have a maximum of 30 points, and Question 3 has a maximum of 40 points. The maximum total is 100 points.

Criteria for evaluating student responses	**Number of points for each question**		
	1 question	**2 question**	**3 question**
The learner did not answer the question	0	0	0
The learner did not show even a superficial knowledge of the essence of the question posed, giving an answer in relation to any term and general concept due to the examiner's leading question	7	7	10
The learner, answering the question of the ticket, is poorly oriented in the compulsory literature, makes gross mistakes in covering fundamental, key issues.	15	15	20
When answering, the student needs additional questions, makes mistakes in the interpretation of individual, non-key points.	20	20	25
The learner correctly answers the question posed within the framework of the compulsory literature, minor single inaccuracies are possible.	25	25	30
The learner answers the question correctly, fully, uses additional literature.	30	30	40
TOTAL max for each question:	**30**	**30**	**40**
TOTAL max per ticket:	**100**		

Application № 2

Recommended literature

Basic literature

1. Murray P. R., Rosenthal K. S., Pfaller M. A.Medical Microbiology. - Mosby, 2015
2. W. Levinson McGraw-Hill. Review of Medical Microbiology and Immunology, 2014

Additional literature

1. Saparbekova A.A. Microbiology and virology : educ. manual. - Second Edition. - Almaty : ЭСПИ, 2023. - 188 с
2. Gladwin Mark T. Clinical microbiology made ridiculously simple / Mark T. Gladwin, William Trattler, Scott C. Mahan . - 7th ed. - Miami :MedMaster, Ins, 2016. - 413 p.
3. Usmle Step 1. Immunology and microbiology : Lecturer notes / Alley Tiffany L. [et. al.]. - New York, 2019. - 511 p. - (Kaplan Medical)

Electronic textbooks

1. B. T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. CAUSATIVE AGENTS OF ACUTE RESPIRATORY VIRAL INFECTIOUS DISEASES (influenza virus, adenovirus, coronavirus) (I part) http://lib.ukma.kz/wp-content/uploads/2022/10/Illustrated-teach.-material-eng-2.pdf

2. B.T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. Pathogens of children's viral infections (measles, rubella, chickenpox and mumps virus) (Part II) http://lib.ukma.kz/wp-content/uploads/2022/10/illustrated-textbook.pdf

3. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar Lecture compolex on the subject "Microbiology and immunology " (General Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-General-Microbiology-2022.pdf

4. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar LECTURE COMPLEX ON THE SUBJECT "MICROBIOLOGY AND IMMUNOLOGY"(Private Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-Private-Microbiology-2022.pdf

Electronic base

№	Name	Link
1	Electronic library SKMA	http://lib.ukma.kz/repository
2	Republican interuniversity electronic library	https://online.zakon.kz/Medicine
3	«Aknurpress» Digital library	https://www.aknurpress.kz/
4	«Epigraph» Electronic library	http://www.elib.kz/
5	Epigraph - portal of multimedia textbooks	https://mbook.kz/ru/index/
6	ABS IPR SMART	https://www.iprbookshop.ru/auth
7	"Law" base of normative legal acts	https://zan.kz/ru
8	Cochrane Library	https://www.cochranelibrary.com/