**1.**Sulfonamides are widely used as bacteriostatic agents. The mechanism of antimicrobial action of sulfonamides is based on their structural similarity to:

**A.** Para-aminobenzoic acid

**B.** Glutamic acid

**C.** Folic acid

**D.** Nucleic acid

**E.** Antibiotics

**2.** Bacteriological inspection of disinfection quality at a pharmacy revealed a microorganism in an utility room (in the sink). The microorganism has the following properties: mobile nonspore-forming gram-negative bacteria that form capsular substance, grow well on ordinary nutrient media, secrete the blue-green pigment. This microorganism is most likely to be of the following genus:

**A.** *Pseudomonas*

**B.** *Proteus*

**C.** *Clostridium*

**D.** *Shigella*

**E.** *Vibrio*

**3.** Microbiological analysis of medicinal raw materials revealed capsular bacteria. What stain method was used to detect the capsules?

**A.** Gin’s

**B.** Ziehl-Neelsen’s

**C.** Neisser’s

**D.** Gram’s

**E.** Ozheshko’s

**4.** Before a surgical operation, a surgeon treated his hands with an alcohol containing solution. Which group of drugs does this solution relate to?

**A.** Antiseptics

**B.** Disinfectants

**C.** Sterilizing solutions

**D.** Detergents

**E.** Surface-active substances

**5.** Bacteria eventually become resistant to antibacterial agents. Resistance of gram-positive bacteria to penicillin antibiotics is caused by:

**A.** Beta-lactamase production

**B.** Permeability of the cell wall

**C.** Active synthesis of peptidoglycan

**D.** Active transport of antibiotic

**E.** Protein synthesis

**6.** A patient with tuberculosis has been prescribed some anti-TB preparations. Which of the following chemotherapeutic drugs has an effect on the tuberculosis pathogen?

**A.** Ftivazide

**B.** Furacilinum

**C.** Methisazonum

**D.** Sulfadimezinum

**E.** Phthalylsulfathiazole

**7.** What synthetic drug of the hydrazide group is typically prescribed for pulmonary tuberculosis?

**A.** Isoniazid

**B.** Rifampicin

**C.** Acyclovir

**D.** Metronidazole

**E.** Doxycycline hydrochloride

**8.** A 42-year-old female has foamypurulent vaginal discharges. The smear stained by Romanovsky-Giemsa’s method has been found to include flagellated bacteria. What is the most likely microorganism that has been found by the doctor?

**A.** *Trihomonas vaginalis*

**B.** *Leishmania donovani*

**C.** *Trypanosoma gambiense*

**D.** *Trihomonas hominis*

**E.** *Lamblia intestinalis*

**9.** Sulfanilamides inhibit the growth and development of bacteria. The mechanism of their action is based on the impairment of the following acid synthesis:

**A.** Folic

**B.** Lipoic

**C.** Nicotinic

**D.** Pantothenic

**E.** Pangamic

**10.** There are areas where humans or animals are exposed to the constant risk of contracting certain types of bacteria. What feature of these bacteria is responsible for their long viability in the soil?

**A.** Spore formation

**B.** Capsule formation

**C.** Ability to multiply in the plant remains

**D.** Thick cell wall

**E.** Plasmids

**11.** Quite often, the soil may contain a number of pathogenic microorganisms. The causative agents of the following disease may stay viable in the soil for a long time:

**A.** Anthrax

**B.** Diphtheria

**C.** Viral hepatitis

**D.** Pertussis

**E.** Dysentery

**12.** A sample of a finished dosage form was found to be contaminated with some microorganisms exhibiting the following properties: greenish fluorescent colonies of gram-negative nonsporeforming bacilli that grew on the medium for the detection of pyocyanin. The bacilli release the bluegreen pigment into the medium. What microorganisms contaminated the finished dosage form?

**A.** *Pseudomonas aeruginosa*

**B.** *Enterobacteriaceae*

**C.** *Staphylococcus aureus*

**D.** *Staphylococcus epidermidis*

**E.** *Staphylococcus saprophyticus*

**13.** Vaccines are the artificial or natural preparations produced from bacteria, viruses and other microorganisms, their chemical components and waste products. They are used for the active immunization of humans and animals for the prevention and treatment of infectious diseases. The attenuated vaccines consist of:

**A.** Viable microbes

**B.** Dead microbes

**C.** Anatoxin

**D.** Dead microbes and toxoid

**E.** Immunoglobulins

**14.** What method of sterilization should be used during the manufacturing liquid dosage forms containing proteins?

**A.** Filtering

**B.** Boiling

**C.** Gas sterilization

**D.** Autoclaving

**E.** Pasteurization

**15.** Many diseases of medicinal plants are caused by bacteria of the Pseudomonas genus. Select the bacteria relating to this genus:

**A.** Blue pus bacillus

**B.** Colon bacillus

**C.** Proteus

**D.** Mycoplasma

**E.** Micrococci

**16.** Microbiological studies of air in the pharmacy room revealed the presence of pathogenic staphylococci. Select the medium in which you can detect the lecithinase activity of the isolated microorganism:

**A.** Yolk-salt agar

**B.** Blood agar

**C.** Bismuth sulfite agar

**D.** Sugar agar

**E.** Meat-extract agar

**17.** Therapeutic preparations for topical use (transdermal, vaginal, etc.) do not require sterility. However, the total permissible number of microbial cells and fungi in 1 g (ml) of a drug should not exceed:

**A.** 100

**B.** 10

**C.** 500

**D.** 1000

**E.** 10 0000

**18.** P. Ehrlich is considered to be the founder of modern chemotherapy. What chemotherapy drug was developed by this scientist?

**A.** Salvarsan

**B.** Solusurminum

**C.** Calomel

**D.** Novarsenolum

**E.** Osarsolum

**19.** For cultivation of Brucella, pure cultures should be incubated in *CO*2 enriched atmosphere. What type of breathing is typical for Brucella?

**A.** Capnophilic

**B.** Facultative anaerobic

**C.** Obligate anaerobic

**D.** Obligate aerobic

**E.** Any

**20.** Some success in reducing malaria transmission was achieved through the mass destruction of transmitting mosquitoes and their larvae. The measures aimed at the destruction of insects are called:

**A.** Disinfestation

**B.** Disinfection

**C.** Deratization

**D.** Sterilization

**E.** Decontamination

**21.** After a contact with a person having an infectious diseases, the disease pathogens entered the patient’s body and started to multiply, but the symptoms of the disease were not yet observable. What period of the disease is this typical for?

**A.** Latent

**B.** Prodromal

**C.** Manifest illness stage

**D.** Clinical outcome

**E.** Relapse

**22.** Allantoic fluid of a chicken embryo contaminated with nasopharyngeal flush of a patient was found to contain a virus. What diagnostic agents should be used to identify it?

**A.** Standard antiviral sera

**B.** Viral diagnosticums

**C.** Serum preparations

**D.** Diagnosticums produced of standard virus strains

**E.** Polyvalent immune diagnostic sera

**23.** A 40-year-old female farmworker has been diagnosed with brucellosis and administered causal chemotherapy. What group of drugs will be used for this purpose?

**A.** Antibiotic

**B.** Donor immunoglobulin

**C.** Inactivated therapeutic vaccine

**D.** Polyvalent bacteriophage

**E.** Antitoxic serum

**24.** A laboratory received a food product that had been taken from the focus of food poisoning and presumably contained botulinum toxin. To identify the type of toxin, the neutralization reaction must be performed on white mice. What biological product is used in this reaction?

**A.** Antitoxic serum

**B.** Normal serum

**C.** Antibacterial serum

**D.** Diagnosticum

**E.** Allergen

25. During studying a medicinal herbal mixture, a culture in form of black fluffy film grew on the nutrient medium. Examination of specimen smears revealed nonseptate mycelium threads with globular thickenings at the tips. Name these microorganisms:

**A.** Mucor

**B.** Black molds fungus

**C.** Candida

**D.** Aspergill

**E.** Ray fungi

26. Bacteriological examination for bacteria carrying of drugstore workers revealed that one of the pharmacists had bacteria of genus Staphylococcus. What morphological pecularities of microbal cell arrangement are typical for this genus?

A.They are arranged in form of bunch of grapes

**B.** They are arranged in form of a chain

**C.** They are arranged isolatedly

**D.** They are arranged in pairs

**E.** They are arranged in tetrads

27. A 13 year old child complains about poor appetite, pain in the right subcostal area. Microscopical examination of duodenal contents revealed big pyriform cells with two nuclei. What microorganism was revealed?

A.Lamblia

**B.** Trichomonad

**C.** Amoeba

**D.** Trypanosoma

**E.** Toxoplasma

28. Analysis of sputum obtained from a patient with suspected pneumonia revealed gram-positive diplococci. They were slightly elongated, with the pointed opposite ends. What microorganisms were revealed in the sputum?

A.Streptococcus pneumoniae

**B.** Staphylococcus aureus

**C.** Klebsiella pneumoniae

**D.** Neisseria meningitidis

**E.** Streptococcus pyogenes

29. From a patient with the symptoms of acute meningitis the spinal fluid was taken. Its smears contained gram-negative diplococci within the leukocytes and outside them. Which microorganism is the most likely cause of the disease?

A.Neisseria meningitidis

**B.** Haemophilus influenzae

**C.** Streptococcus pneumoniae

**D.** Candida albicans

**E.** Escherichia coli

30. Aetiological factors for the infectious diseases are often microorganisms with various ultrastructure. Which of the following microorganism groups relates to the eucariots?

A.Protozoa

**B.** Viruses

**C.** Viroids

**D.** Prions

**E.** Scotobacteria

31. Study of the antibioticogram of the pure salmonella culture revealed multiple antibiotic resistance. What factor might have caused this effect?

A.R-plasmids

**B.** Chromosomal mutations

**C.** F-plasmids

**D.** Temperate phages

**E.** Transposons

32. Bacteria may contain not only chromosomal but also nonchromosomal hereditary elements called plasmids. Presence of plasmid genes can show itself by:

A.Multiple drug resistance

**B.** Stain resistance

**C.** Physical factor resistance

**D.** Sporogenesis ability

**E.** Mobility

33. Aetiological factors for the infectious diseases are often microorganisms with various ultrastructure. Which of the following microorganism groups relates to the eucariots?

A.Protozoa

**B.** Viruses

**C.** Viroids

**D.** Prions

**E.** Scotobacteria

34. Infectious agents of various ultrastructures can be etiological agents of infectious diseases. Which of the groups named below HAS NO cellular structure, protein synthesizing, enzyme and energy systems?

A.Viruses

**B.** Fungi

**C.** Bacteria

**D.** Protozoa

**E.** Rickettsia

35. Presence of pathogenic microorganisms in the air can be detected by presence of sanitary representative bacteria. Choose bacteria that are indicators of direct epidemiological danger:

A.Hemolytic streptococci

**B.** Sarcina

**C.** Molds

**D.** Yeast fungi

**E.** Micrococci

36. During sanitary and bacteriological examination of air in a drugstore it was revealed that the air had high concentration of sanitary meaningful microorganisms. What microorganisms are these?

A.Staphylococcus aureus and hemolytic streptococcus

**B.** Diphtheritic and tuberculous bacilli

**C.** Colibacilli and blue pus bacilli

**D.** Epidermal staphylococcus and Sarcina

**E.** Enterococci and Citrobacter

37. Sanitary-biologic examination of air in a drugstore revealed a sanitary indicative microorganism. Name it:

A. Staphylococcus aureus

**B.** Colon bacillus

**C.** Fecal enterococcus

**D.** Alpha-haemolytic streptococcus

**E.** Citrobacter

38. Sanitary microbiological analysis of the indoor air of a pharmacy carried out in summer revealed presence of Streptococcus haemolyticus and Streptococcus viridians at the rate of 40 microorganisms per 1 m3. Specify the microbiological characteristic of the air:

A.Contaminated

**B.** Within the permissible limits

**C.** Almost pure

**D.** Pure

**E.** These microorganisms are not the determinants of the air quality

40. Soil microflora often includes the representatives of pathogenic microorganisms. Specify the diseases, whose causative agents may say viable in the soil for a long time:

A.Tetanus and gas anaerobic infection

**B.** Tuberculosis and mycobacterioses

**C.** Colibacillosis and cholera

**D.** Leptospirosis and plague

**E.** Typhoid fever and dysentery

41. The following have been detected in hand lavage of the kindergarten chef: colibacilli, ray fungi, staphylococci, bacilli, mold fungi. What microbes are evidential of fecal contamination of hands?

A.Colibacilli

**B.** Ray fungi

**C.** Staphylococci

**D.** Bacilli

**E.** Mold fungi

42. Which of the following sterilization methods ensures total death of microorganisms and their spores during onetime thermal processing of an object?

A. Autoclaving

**B.** Boiling

**C.** Tyndallization

**D.** Pasteurization

43. What method ensures reliable sterilization of biological fluids (sera, solutions, enzymes, vitamines etc.) that can’t stand high temperatures?

A.Tyndallization

**B.** Dry-heat sterilization

**C.** Flowing steam

**D.** Moist steam under pressure

**E.** Flaming

44. A pharmacy produced a batch of vials with glucose diluent for injections. What is the best way for their sterilization?

A.Autoclave sterilization by flowing steam (fractional method)

**B.** Autoclave sterilization under 2 atmosphere pressure

**C.** Dry-heat sterilization

**D.** X-ray exposure

**E.** UV exposure

45. Production of a number of drugs requires sterile isotonic solution. Choose the optimal method of its sterilization:

A.Steam under pressure sterilization

**B.** Dry heat sterilization

**C.** Boiling

**D.** Direct flame sterilization

**E.** Pasteurization

46. A patient with provisional diagnosis "acute gastroenteritis" was admitted to infectious department. Inoculation of feces on bismuth-sulfite agar resulted in growth of black colonies with metallic lustre. What microorganisms might they be?

A.Salmonella

**B.** Shigella

**C.** Escherichia

**D.** Yersinia

**E.** Brucella

47. Nutrients are transported to a bacterial cell by different mechanisms. One of them is facilitated diffusion that is realized by special membrane carrier proteins. What are they called?

A.Permeases

**B.** Lyases

**C.** Oxidoreductases

**D.** Isomerases

48. During bacteriological analysis of solutions prepared in a pharmacy some red colonies with metallic glitter have grown on Endo agar. What microbes were revealed?

A.Escherichia

**B.** Shigella

**C.** Staphylococci

**D.** Streptococci

**E.** Salmonella

49. A patient has a necrotizing phlegmon of his lower extremity. A doctor suspects a gas gangrene. Microscopy reveals gram-positive bacilli. In order to confirm the diagnosis further bacteriological tests should include inoculation of the material into the following nutrient medium:

A.Kitt-Tarozzi medium

**B.** Endo agar

**C.** Levine agar

**D.** Meat-peptone agar

**E.** Milk-salt agar

50. A plantation of medicinal plants was affected by a disease that caused yellow spots and necrosis areas on the leaves. Juice of affected plants remains infectious after passing through bacterial filter, but after its inoculation of nutrient media growth of causative agent is not registered. What group of phytopathogenic microorganisms does the causative agent of this disease belong to?

A.Viruses

**B.** Fungi

**C.** Actinomycetes

**D.** Bacteria

**E.** Mycoplasmas

51. Plant pathogenic microorganisms relate to various groups. Which of them causes diseases of medicinal plants most often?

A.Fungi

**B.** Viruses

**C.** Bacteria

**D.** Actinomycetes

**E.** Micoplasma

52. From a medicinal herb a certain phytopathogenic microorganism was secured. In the nutrient medium it forms "fried egg" colonies. What is the most likely agent?

A.Mycoplasma

**B.** Yeast fungi

**C.** Actinomycetes

**D.** Nocardia

**E.** Pseudomonades

53. Examination of procured medicinal herbs grown in a warm climate revealed their affection in form of yellowing, overgrowth of lateral shoots, dwarfism, delayed fruiting. Which organisms can cause such changes?

A.Mycoplasma

**B.** Viruses

**C.** Bacteria

**D.** Fungi

**E.** Protozoa

54. Antibiotics are classified by sources of production. Name an antibiotic of bacterial origin:

A.Gramicidin

**B.** Penicillin

**C.** Tetracycline

**D.** Lysozyme

**E.** Gentamycin

55. A patient was prescribed with an antitumoral antibiotic that inhibits synthesis of nucleic acids in the cells. What of the following antibiotics has such a mechanism of action?

A.Actinomycin

**B.** Tetracycline

**C.** Nystatin

**D.** Lincomycin

**E.** Erythromycin

56. Antibiotics can be classified according to various principles. According to the action mechanism cephalosporin’s relate to the following group:

A.Inhibitors of cell wall synthesis

**B.** Inhibitors of protein synthesis

**C.** Inhibitors of respiratory processes

**D.** Inhibitors of oxidative phosphorilation

**E.** Inhibitors of cytoplasmic membrane synthesis

57. A female patient has been treated with antibiotics for a long time. Thereafter examination of smears form vaginal secretion revealed oval cells with well defined nucleus, some cells gemmate. What preparations can help to confirm the diagnosis "candidosis"?

A.Antifungal

**B.** Antibacterial

**C.** Antichlamydial

**D.** Antiviral

**E.** Antiprotozoal

58. Epidemic of influenza was announced in a town. Which drug can be recommended for the nonspecific prophylaxis of influenza?

A.Leukocytic interferon

**B.** Anti-influenza vaccine

**C.** Antibiotics

**D.** Anti-influenza immunoglobulin

**E.** Anti-influenza serum

59. A patient was administered an antibiotic of animal origin for the corneal ulcer treatment. What is it called?

A.Lysozyme

**B.** Chlorophyllipt

**C.** Nystatin

**D.** Imanin

**E.** Gramicidin

60. Before a surgical operation, a surgeon treated his hands with an alcohol containing solution. Which group of drugs does this solution relate to?

A.Antiseptics

**B.** Disinfectants

**C.** Sterilizing solutions

**D.** Detergents

**E.** Surface-active substances

61. Some success in reducing malaria transmission was achieved through the mass destruction of transmitting mosquitoes and their larvae. The measures aimed at the destruction of insects are called:

A.Disinfestation

**B.** Disinfection

**C.** Deratization

**D.** Sterilization

**E.** Decontamination

62. In order to keep vitality and stability of eubiotics microorganisms in frozen state are dried under conditions of high vacuum. What method is it?

A.Lyophilization

**B.** Pasteurization

**C.** Tyndallization

**D.** Inactivation

**E.** Hybridization

63. It is known that a peroral drug contains over 1 billion of living microbal cells per 1 millilitre. Nonetheless the drug was accepted as applicable. What drug group does it relate to?

A.Eubiotics

**B.** Antibiotics

**C.** Vitamins

**D.** Sulfanilamides

**E.** Immunostimulants

64. Sulfonamides are widely used as bacteriostatic agents. The mechanism of antimicrobial action of sulfonamides is based on their structural similarity to:

A.Para-aminobenzoic acid

**B.** Glutamic acid

**C.** Folic acid

**D.** Nucleic acid

**E.** Antibiotics

65. The causative agent of botulism causes severe food poisoning. Specify the most characteristic morphological feature of botulism causative agent:

A.Gram-positive bacillus with subterminal spore

**B.** Thick gram-positive non-spore-forming bacillus

**C.** Gram-positive bacillus with terminal spore

**D.** Thin mobile bacillus with central spore

**E.** Thick gram-positive bacillus without spores and flagella

66. Quite often, the soil may contain a number of pathogenic microorganisms. The causative agents of the following disease may exist in the soil for a long time:

A.Anthrax

**B.** Diphtheria

**C.** Viral hepatitis

**D.** Pertussis

**E.** Dysentery

67. Pathogenic microorganisms are characterized by presence of aggression enzymes that determine their virulence. Select an aggression enzyme:

A.Hyaluronidase

**B.** Carbohydrase

**C.** Transferase

**D.** Oxidase

**E.** Lyase

68. Bacteriological inspection of disinfection quality at a pharmacy revealed a microorganism in an utility room (in the sink). The microorganism has the following properties: mobile nonspore-forming gram-negative bacteria that form capsular substance, grow well on ordinary nutrient media, secrete the blue-green pigment. This microorganism is most likely to be of the following genus:

A.Pseudomonas

**B.** Proteus

**C.** Clostridium

**D.** Shigella

**E.** Vibrio

69. Microbiological analysis of medicinal raw materials revealed capsular bacteria. What stain method was used to detect the capsules?

A.Gin’s

**B.** Ziehl-Neelsen’s

**C.** Neisser’s

**D.** Gram’s

**E.** Ozheshko’s

70. In accordance with the requirements of the pharmacopoeia, the non-sterile medicinal preparations may include microorganisms. What micro-organisms MUST NOT be present in them?

A.Enterobacteria

**B.** Ascomycetes

**C.** Micrococci

**D.** Mold fungi

**E.** Sarcinae

71. A patient presents with fever, chill and cough. From his sputum the ovoid Gram-negative bipolar-stained bacilli with a delicate capsule were isolated. What is the most likely diagnosis?

A.Plague

**B.** Tuberculosis

**C.** Leptospirosis

**D.** Brucellosis

**E.** Toxoplasmosis

72. Bacterioscopic examination of chancre material revealed some mobile, long, convoluted microorganisms with 8- 12 regular coils. These features are typical for:

A.Treponema

**B.** Borrellia

**C.** Leptospira

**D.** Vibrios

**E.** Campylobacter

73. Before a surgical operation, a surgeon treated his hands with an alcohol containing solution. Which group of drugs does this solution relate to?

A.Antiseptics

**B.** Disinfectants

**C.** Sterilizing solutions

**D.** Detergents

**E.** Surface-active substances

74. In order to establish the possible contamination of a medication with fungi, a nutrient medium was inoculated, which resulted in growth of large cream-like colonies. What nutrient medium was used in this case?

A.Sabouraud

**B.** Lowenstein-Jensen

**C.** Roux

**D.** Loeffler

**E.** Finn-2

75. Dysbiosis can be treated with drugs that contain living representatives of normal microflora as well as their metabolic products. Select the microorganisms that are used for the production of such drugs:

A.Bifidus bacteria

**B.** Staphylococcus aureus

**C.** Proteus

**D.** Providencia

**E.** Yersinia

76. Medicinal plants infected by microorganisms cannot be used in the pharmaceutical industry. Invasive properties of phytopathogenic microorganisms are due to the following enzymes:

A.Hydrolytic

**B.** Isomerase

**C.** Transferase

**D.** Oxidoreductase

**E.** Lyase

77. The medicinal plants growing on a plantations were found to have mosaic patterns on leaves. What microorganisms caused this affection?

A.Phytopathogenic viruses

**B.** Phytopathogenic bacteria

**C.** Phytopathogenic fungi

**D.** Protozoa

**E.** Rickettsiae

78. Bacteria eventually become resistant to antibacterial agents. Resistance of gram-positive bacteria to penicillin antibiotics is caused by:

A.Beta-lactamase production

**B.** Permeability of the cell wall

**C.** Active synthesis of peptidoglycan

**D.** Active transport of antibiotic

**E.** Protein synthesis

79. A laboratory received a sample of water used in drug production for sanitary and virological analysis. What group of viruses will indicate faecal contamination of water and thus the need for its additional purification?

A.Picornaviridae

**B.** Herpesviridae

**C.** Orthomyxoviridae

**D.** Retroviridae

**E.** Flaviviridae

80. A patient with tuberculosis has been prescribed some anti-TB preparations. Which of the following chemotherapeutic drugs has an effect on the tuberculosis pathogen?

A.Ftivazide

**B.** Furacilinum

**C.** Methisazonum

**D.** Sulfadimezinum

**E.** Phthalylsulfathiazole

81. The causative agents of intestinal infections can grow at refrigerator temperatures, which may cause infection in people. What type of temperature optimum do these microorganisms relate to?

A.Psychrophilic

**B.** Mesophilic

**C.** Thermophilic

**D.** Anthropophilic

**E.** Necrophilic

82. A patient was taken to a hospital with acute food poisoning caused by homemade canned mushrooms. The product analysis revealed some microorganisms that develop only in the absence of oxygen. What microorganisms caused the poisoning?

A.Obligate anaerobes

**B.** Facultative anaerobes

**C.** Microaerophiles

**D.** Obligate aerobes

**E.** Capnophiles

83. Seroprophylaxis and serotherapy of infectious diseases involves using immune sera. What type of immunity is thus acquired?

A. Passively acquired artificial immunity

**B.** Actively acquired artificial immunity

**C.** Actively acquired natural immunity

**D.** Passively acquired natural immunity