1. Which of the following is true about eubacteria?
A) They are highly complex organisms.
B) They contain a nucleus.
C) They can be found in extreme environments.
D) They are all pathogenic.
2. Which of the following structures is NOT present in a bacterial cell?
A) Cell wall B) Cell membrane C) Nucleus D) Ribosomes
3. What is the shape of a bacterium that appears as a sphere or ball?
A) Cocci B) Bacilli C) Spirilla D) Cuboidal
4. Bacteria that require organic compounds for their energy and carbon sources are known as:
A) Autotrophs C) Heterotrophs
B) Photoautotrophs D) Chemoheterotrophs
5. How do bacteria reproduce asexually?
A) Through binary fission C) Through meiosis
B) Through mitosis D) Through gamete fusion
6. The process of conjugation in bacteria involves:
A) The transfer of genetic material through a pilus
B) The formation of endospores
C) The production of gametes
D) The fusion of two bacterial cells
7. Which of the following is an example of a bacterial disease caused by sexual reproduction?
A) Tuberculosis B) Salmonella C) Cholera D) Syphilis
8. What role does the pilus play in asexual reproduction in bacteria?
A) It aids in conjugation
B) It helps bacterial cells attach to surfaces
C) It allows for nutrient uptake
D) It is involved in binary fission
9. The process of binary fission in bacteria involves:
A) The formation of endospores
B) The fusion of two bacterial cells
C) The replication of DNA and subsequent division of the cell
D) The transfer of genetic material through a pilus
10. Which of the following statements about bacterial reproduction is true?
A) Bacteria reproduce only asexually
B) Bacteria reproduce only sexually
C) Bacteria can reproduce both sexually and asexually
D) Bacteria do not reproduce
11. Which of the following bacterial shapes has a spiral or corkscrew appearance?
A) Cocci B) Bacilli C) Spirilla D) Cuboidal
12. What is the purpose of endospore formation in bacteria?
A) To increase the surface area for nutrient absorption
B) To aid in bacterial locomotion
C) To protect the bacterial cell from harsh environmental conditions
D) To facilitate the fusion of gametes

13. How do photoautotrophic bacteria obtain energy?
A) By consuming organic compounds
B) By absorbing sunlight
C) By performing chemosynthesis
D) By undergoing endospore formation
14. Which type of reproduction in bacteria promotes genetic diversity?
A) Asexual reproduction C) Sexual reproduction
B) Conjugation D) Binary fission
15. Which of the following bacterial diseases is caused by a species that reproduces sexually?
A) Lyme disease C) Tetanus
B) Gonorrhea D) E. coli infection
16. How does bacterial sexual reproduction differ from sexual reproduction in eukaryotes?
A) Bacterial sexual reproduction involves the fusion of gametes, while sexual reproduction in eukaryotes involves the fusion of haploid cells.
B) Sexual reproduction in bacteria involves meiosis, while sexual reproduction in eukaryotes involves mitosis.
C) Bacterial sexual reproduction results in the formation of spores, while sexual reproduction in eukaryotes results in the formation of gametes.
D) Bacterial sexual reproduction does not occur, only asexual reproduction is observed in bacteria.
17. Which of the following statements about archaea is true?
A) They are eukaryotic microorganisms.
B) They can survive in extreme environments.
C) They are only found in soil habitats.
D) They are responsible for causing human diseases.
E) They are not considered a separate domain of life.
18. Which of the following is a beneficial aspect of archaea?
A) They can cause diseases in animals and plants.
B) They contribute to the breakdown of organic matter in sewage treatment plants.
C) They are known to produce harmful toxins.
D) They are responsible for the majority of food spoilage.
E) They are not involved in any beneficial processes.
19. Which physical factor has the greatest impact on microbial growth?
A) Temperature. B) pH. C) Oxygen availability. D) Moisture.
20. Archaea can tolerate extreme temperatures because they possess:
A) Chlorophyll pigments.
B) Cell walls made of peptidoglycan.
C) DNA sequences similar to bacteria.
D) Unique enzymes and lipids.
E) Flagella for motility.
21. Which of the following statements regarding extremophiles is correct?
A) Extremophiles are only found in hot environments.
B) Extremophiles cannot survive under normal environmental conditions.
C) Extremophiles have limited diversity and are only found in a few environments.
D) Extremophiles have adapted to survive in harsh conditions such as high salinity, acidity, or temperature.
E) Extremophiles are not present in any natural habitats.
22. The function of the pigment bacteriorhodopsin in archaea is to:

A) Absorb light for photosynthesis.
B) Protect the cell from harmful ultraviolet radiation.
C) Act as a receptor for nutrient uptake.
D) Regulate the cell's temperature.
E) None of the above.
23. Which physical factor is most influential on the growth of psychrophiles?
A) High temperature.
B) Low temperature.
C) Neutral pH.
D) High oxygen availability.
E) Low moisture content.
24. The impact of pH on microbial growth refers to:
A) The tolerance of microbes to different levels of acidity or alkalinity.
B) The impact of oxygen availability on microbial survival.
C) The effect of moisture content on microbial proliferation.
D) The adaptability of microbes to high or low temperatures.
E) The response of microbes to different light intensities.
25. How do archaea contribute to carbon cycling in the environment?
A) They release harmful greenhouse gases, contributing to global warming.
B) They produce organic compounds that can be used for human consumption.
C) They help decompose dead organic matter, releasing carbon dioxide back into the atmosphere.
D) They fix atmospheric carbon dioxide to produce oxygen through photosynthesis.
E) They have no involvement in carbon cycling.
26. Which of the following statements is true regarding the cultivation of archaea?
A) Archaea can be easily cultured in standard laboratory conditions.
B) We have successfully cultivated all known species of archaea.
C) Archaea can only be cultivated using specialized methods and growth media.
D) Archaea cannot be cultivated outside of extreme environments.
E) Cultivating archaea is not necessary for their study and understanding.
27. Which of the following characteristics are true for all fungi?
A) They produce spores for reproduction
B) They lack chlorophyll
C) They have cell walls made of chitin
D) They obtain nutrients through absorption
28. Which phylum of fungi is characterized by the presence of septate hyphae and includes the common bread molds?
A) Ascomycota C) Basidiomycota
B) Zygomycota D) Deuteromycota
29. How do fungi reproduce asexually?
A) By producing spores through meiosis
B) By forming gametes that fuse together
C) By budding or fragmentation
D) By undergoing mitosis in specialized cells
30. Which of the following statements is true about the classification of fungi?
A) Fungi are classified based on their habitat and nutritional mode
B) Fungi are classified based on their shape and size

C) Fungi are classified based on their reproductive structures and mode
D) Fungi are classified based on their genetic similarities and differences
31. What is the main difference between the sexual reproduction of Ascomycota and Basidiomycota?
A) Ascomycota produce ascospores and Basidiomycota produce basidiospores
B) Ascomycota reproduce sexually through fusion of hyphae and Basidiomycota through fusion of spores
C) Ascomycota have a dikaryotic stage and Basidiomycota have a diploid stage
D) Ascomycota produce asexual spores and Basidiomycota produce sexual spores
32. Which of the following fungi is not considered a pathogen of plants?
A) Fusarium oxysporumnb C) Ustilago maydis
B) Penicillium notatum D) Phytophthora infestans
33. What is the economic importance of Saccharomyces cerevisiae?
A) It is used in the production of bread, beer, and wine
B) It causes diseases in humans and livestock
C) It is used as a biocontrol agent for plant diseases
D) It is used to produce antibiotics
34. What role do mycorrhizal fungi play in plant nutrition?
A) They help plants fix nitrogen from the atmosphere
B) They help plants absorb water from the soil
C) They help plants convert sunlight into energy through photosynthesis
D) They help plants break down organic matter for nutrient uptake
35. How do fungi contribute to ecosystem functioning?
A) They help decompose organic matter and cycle nutrients
B) They compete with plants for resources, leading to biodiversity loss
C) They synthesize their own food through photosynthesis
D) They produce toxins that kill other organisms
36. What is the significance of certain fungi being classified as lichens?
A) Lichens are important indicators of air pollution
B) Lichens produce medicinal compounds used in pharmaceuticals
C) Lichens are the most diverse group of fungi
D) Lichens have the unique ability to photosynthesize
37. How do fungi obtain nutrients from their environment?
A) By engulfing food particles through phagocytosis
B) By secreting enzymes to break down organic matter outside their cells
C) By absorbing nutrients through their cell walls
D) By producing specialized structures to trap and feed on small organisms
38. Which of the following is NOT a common example of symbiotic interaction involving fungi?
A) Mycorrhizae
B) Lichens
C) Nitrogen fixation by Rhizobium bacteria
D) Ant-fungus mutualism
39. How do fungi contribute to biotechnology and medicine?
A) They are used to produce biofuels and renewable resources
B) They are used in the production of antibiotics and antifungal drugs
C) They are used as genetic tools in DNA sequencing and manipulation
D) They are used in the production of cleaning agents and industrial enzymes

40. What is the role of fungi in the decomposition of organic matter?
A) They convert organic matter into inorganic compounds, releasing carbon dioxide into the atmosphere
B) They break down complex organic molecules into simpler forms for nutrient cycling
C) They produce enzymes to break down organic matter, which is then absorbed by other organisms
D) They prevent the decomposition of organic matter, leading to the accumulation of carbon in the environment
41. Which of the following is NOT a characteristic of protozoa?
A) Unicellular organisms C) Eukaryotic cells
B) Ability to form colonies D) Lack of cell wall
42. Which protozoan causes the disease malaria?
A) Entamoeba histolytica C) Trichomonas vaginalis
B) Plasmodium falciparum D) Giardia lamblia
43. What is the primary mode of transmission for most protozoan infections?
A) Airborne transmission
B) Direct contact with infected individuals
C) Consumption of contaminated food or water
D) Vector-borne transmission by insects
44. Which of the following is a common symptom of giardiasis?
A) Severe diarrhea C) Intense itching and skin rash
B) Bloody urine D) Abdominal pain and bloating
45. Which protozoan causes African sleeping sickness?
A) Trypanosoma cruzi C) Leishmania donovani
B) Trypanosoma brucei D) Toxoplasma gondii
46. What is the most effective way to prevent protozoan infections?
A) Get vaccinated
B) Practice good hygiene, including hand washing
C) Avoid traveling to tropical regions
D) Use insect repellent when outdoors
47. Which of the following is NOT a common disease caused by protozoa?
A) Chagas disease C) Toxoplasmosis
B) Lyme disease D) Cryptosporidiosis
48. What is the primary habitat of protozoa?
A) Soil and water C) Human blood
B) Animal fur and feathers D) Airborne particles
49. Which protozoan can be transmitted through sexual contact?
A) Plasmodium vivax C) Trichomonas vaginalis
B) Trypanosoma cruzi D) Cryptosporidium parvum
50. Which protozoan is responsible for causing amoebic dysentery?
A) Giardia lamblia C) Entamoeba histolytica
B) Balantidium coli D) Naegleria fowleri
51. Which statement best describes a virus?
A) A living microscopic organism
B) A non-living particle composed of genetic material and a protein coat
C) A small bacteria that causes disease
D) A type of fungi that infects plants
52. What is the genetic material found in viruses?

A) DNA only B) RNA only C) Both DNA and RNA D) None
53. Which is NOT a characteristic of viruses?
A) Ability to reproduce on their own C) Lack of cellular structure
B) Dependence on a host cell D) Ability to mutate and evolve
54. What is the general structure of a virus particle?
A) DNA surrounded by a lipid membrane
B) RNA surrounded by a protein coat
C) RNA surrounded by a lipid membrane
D) DNA surrounded by a protein coat
55. Which is an example of a viral disease in humans?
A) Influenza B) Tuberculosis C) Lyme disease D) Malaria
56. Which type of viral symmetry is characterized by a rod-shaped structure?
A) Cubic symmetry C) Helical symmetry
B) Icosahedral symmetry D) Complex symmetry
57. How are viruses classified?
A) Based on their mode of transmission
B) Based on their genetic material
C) Based on their size
D) Based on their shape
58. Which type of virus infects bacteria?
A) Adenovirus B) Retrovirus C) Bacteriophage D) Coronavirus
59. Which statement best describes a retrovirus?
A) A virus that infects the reproductive system
B) A virus with double-stranded DNA
C) A virus with single-stranded DNA
D) A virus that uses reverse transcription to replicate
60. Which of the following is the correct taxonomic hierarchy for classifying viruses?
A) Kingdom, Phylum, Class, Order, Family, Genus, Species
B) Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species
C) Phylum, Class, Order, Family, Genus, Species
D) Genus, Species, Family, Order, Class, Phylum, Kingdom
61. How do vaccines help protect against viral infections?
A) They directly kill the virus particles
B) They stimulate the immune system to produce antibodies against the virus
C) They prevent the virus from entering the body
D) They block the replication of viral genetic material
62. Which is NOT a DNA virus?
A) Herpes virus C) Hepatitis B virus
B) Influenza virus D) Adenovirus
63. What is the importance of viral classification?
A) It helps in understanding the evolutionary relationships between different viruses
B) It helps in determining the appropriate treatment for viral infections
C) It allows for the development of effective vaccines against specific viruses
D) All of the above
64. Which statement is true regarding viral symmetry?

A) All viruses exhibit icosahedral symmetry
B) Helical symmetry is only seen in RNA viruses
C) Complex symmetry is the most common type of viral symmetry
D) Different viruses can exhibit different types of symmetry
65. Which of the following is NOT a common mode of viral transmission?
A) Direct contact with infected individuals
B) Inhalation of airborne virus particles
C) Consumption of contaminated food or water
D) Mutation of non-viral cells into virus particles
66) Which of the following best describes the normal microbionta?
A) Pathogenic bacteria present in the body
B) Harmful viruses that cause diseases
C) Beneficial microorganisms that reside in the body
D) Parasitic organisms that feed off the body
67) Which of the following is NOT a function of the normal microbionta?
A) Breaking down food particles in the gut
B) Producing vitamins essential for human health
C) Stimulating the immune system to fight off infections
D) Causing various infectious diseases
68) Which of the following body parts is NOT commonly colonized by normal microbionta?
A) Skin B) Mouth C) Lungs D) Gut
69) Imbalances in the normal microbionta can lead to:
A) Increased risk of allergies
B) Improved immune response
C) Enhanced digestive capabilities
D) Decreased risk of infections
70) Which of the following factors can influence the composition of the normal microbionta?
A) Diet and lifestyle choices
B) Genetic predisposition
C) Exposure to environmental factors
D) All of the above
71. Which of the following is not a mode of disease transmission?
A) Airborne
B) Vector-borne
C) Transmission through direct contact
D) Transmission through contaminated food or water
72. Which of the following is the most effective way to prevent the transmission of airborne diseases?
A) Hand hygiene C) Wearing a mask
B) Vaccination D) Quarantine
73. What is the primary vector for malaria transmission?
A) Mosquitoes B) Ticks C) Flies D) Fleas
74. Which of the following is not a sexually transmitted infection (STI)?
A) Herpes B) Gonorrhea C) Varicella zoster D) Syphilis
75. Which of the following is the best method to prevent the transmission of HIV?
A) Abstinence from sexual activity

B) Vaccination
C) Using condoms consistently and correctly
D) Taking antiretroviral medications
76. Which of the following is a common prevention strategy for waterborne diseases?
A) Using water filters C) Hand hygiene
B) Quarantine D) Insecticide spraying
77. Which of the following is an example of indirect contact transmission?
A) Touching an infected person's skin
B) Drinking contaminated water
C) Breathing in droplets from a sneeze
D) Getting bitten by a mosquito
78. Which of the following is not a recommended practice for preventing the spread of foodborne diseases?
A) Thoroughly washing fruits and vegetables
B) Cooking meats to the appropriate temperature
C) Sharing utensils with infected individuals
D) Avoiding cross-contamination in the kitchen
79. What is the primary mode of transmission for the Ebola virus?
A) Airborne transmission C) Direct contact with bodily fluids
B) Vector-borne transmission D) Waterborne transmission
80. Which of the following diseases can be prevented through routine childhood vaccinations?
A) Tuberculosis B) Measles C) Malaria D) Lyme disease
81. Which microorganism is responsible for the fermentation process used to produce alcoholic beverages?
A) Saccharomyces cerevisiae C) Escherichia coli
B) Mycobacterium tuberculosis D) Streptococcus pneumoniae
82. Which microorganism is used in the production of antibiotics?
A) Staphylococcus aureus C) Pasteurella multocida
B) Penicillium chrysogenum D) Neisseria gonorrhoeae
83. What is the primary role of nitrogen-fixing bacteria?
A) Decomposition of organic matter
B) Production of oxygen
C) Conversion of nitrogen gas into usable forms for plants
D) Disease-causing agents
84. Which microorganism is responsible for causing malaria?
A) Plasmodium falciparum C) Candida albicans
B) Pseudomonas aeruginosa D) Salmonella typhi
85. Which microorganism is used in the production of yogurt?
A) Lactobacillus acidophilus C) Bacillus anthracis
B) Clostridium botulinum D) Mycobacterium leprae
86. What is the role of microorganisms in wastewater treatment?
A) Absorption of excess nutrients
B) Generation of electricity
C) Production of toxic compounds
D) Breakdown of organic matter
87. Which microorganism is responsible for causing tuberculosis?
A) Streptococcus pyogenes C) Vibrio cholerae

B) Mycobacterium tuberculosis D) Escherichia coli

88. What is the primary function of yeast in bread production?

A) Leavening agent C) Flavor enhancer

B) Preservative D) Colorant

89. Which microorganism is responsible for the production of vinegar?

A) Acetobacter aceti C) Listeria monocytogenes

B) Haemophilus influenzae D) Clostridium difficile

90. What is the role of microorganisms in the production of biofuels?

A) Combustion catalysts C) Energy storage

B) Photosynthesis D) Conversion of biomass into fuel

91. Which microorganism is used in the production of cheese?

A) Pseudomonas aeruginosa C) Streptococcus mutans

B) Lactobacillus bulgaricus D) Yersinia pestis

92. What is the primary role of microorganisms in soil fertility?

A) Nitrogen fixation C) Carbon sequestration

B) Soil erosion prevention D) Generation of topsoil

93. Which microorganism is responsible for causing dental decay?

A) Candida albicans C) Streptococcus pneumoniae

B) Streptococcus mutans D) Neisseria meningitidis

94. What is the primary function of microorganisms in bioremediation?

A) Generation of toxic waste

B) Destruction of pollutants

C) Production of greenhouse gases

D) Spread of infectious diseases

95. Which microorganism is responsible for causing botulism?

A) Staphylococcus aureus C) Salmonella typhi

B) Clostridium botulinum D) Bacillus cereus

96. Which of the following methods is most effective in controlling microorganisms on inanimate surfaces?

A) Antibiotic therapy C) Handwashing with soap and water

B) UV radiation D) Boiling water

97. What is the primary mode of action of chemical disinfectants?

A) Damage to cell membranes

B) Inhibition of protein synthesis

C) Prevention of DNA replication

D) Disruption of metabolic pathways

98. Which of the following microorganisms is the most resistant to physical and chemical control methods?

A) Gram-positive bacteria C) Gram-negative bacteria

B) Fungi D) Spore-forming bacteria

99. What is the recommended temperature and time combination for autoclaving to effectively sterilize instruments?

A) 100°C for 10 minutes C) 120°C for 30 minutes

B) 140°C for 60 minutes D) 160°C for 90 minutes

100. Which of the following methods is most suitable for sterilizing heat-sensitive materials?

A) Autoclaving C) Dry heat sterilization

B) Filtration D) Ethylene oxide gas sterilization