Visualizing Microbiology 2nd edition Anderson Test Bank

SKU: 9781119592679-TEST-BANK

Package Title: Test Bank
Course Title: Test Bank Questions, Anderson 2e
Chapter Number: 01 Microbial World

Question type: Multiple-Selection

1) Which of the following is a reason that Microbiology is a unique part of the study of life? (Select all that apply)

a) Microorganisms are too small to be seen with the naked eye.
b) Microorganisms are our planet's dominant life form.
c) Microorganisms live in and on other macroorganisms like humans.
d) Microorganisms occupy most ecological niches on Earth.

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

2) In order of increasing complexity, the 3 major groups of microorganisms are _____.

a) noncellular microbes, prokaryotic microbes and eukaryotic microbes
b) protozoans, viruses and bacteria
c) prions, viruses and bacteria
d) eukaryotic microbes, prokaryotic microbes and viruses

Answer: a

Difficulty: Medium

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Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
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Question type: Multiple-Choice

3) Which of the following statements BEST describes the major difference between the noncellular infectious particles?

a) Viruses have either DNA or RNA, viroids have only RNA, and prions have neither DNA or RNA
b) Viruses have both DNA and RNA, viroids have only RNA and prions have proteins
c) Viruses have either DNA or RNA, Viroids have only DNA and prions have proteins and RNA
d) Viruses have both DNA and RNA, viroids have only RNA and prions have only DNA

Answer: a

Difficulty: Hard
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Selection

4) The majority of prokaryotic microbes have _____. (Select all that apply)

a) internal structures that lack membranes
b) a plasma cell membrane
c) a nucleus
d) a protein coat

Answer 1: a
Answer 2: b

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

5) Plasmids are _____. (Select all that apply)

a) large loops of DNA containing the genes essential for life
b) the structural units of the plasma membrane
c) small circles of DNA containing accessory genes
d) essential for bacterial survival

Answer: c

Difficulty: Easy
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

6) What is the correct order of decreasing size of these organisms?

a) Rabies virus, *Streptococcus pneumoniae* bacterium, *Trypanosoma brucei* protozoan
b) *Streptococcus pneumoniae* bacterium, Rabies virus, *Trypanosoma brucei* protozoan
c) *Streptococcus pneumoniae* bacterium, *Trypanosoma brucei* protozoan, Rabies virus
d) *Trypanosoma brucei* protozoan, *Streptococcus pneumoniae* bacterium, Rabies virus

Answer: d

Difficulty: Easy
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

7) The size of a single cell of *Staphylococcus aureus* is approximately _____.

a) 1 nm
b) 1 µm
c) 10 µm
d) 1 mm

Answer: b

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

8) _____ were probably the first forms of cellular life on Earth.

a) Archaea
b) Bacteria
c) Viruses
d) Protozoans

Answer: a

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

9) You discover a methane-producing prokaryotic microbe in water sample from a geyser in Yellowstone National Park. This microbe is most likely a(n) _____.

a) archean
b) bacterium

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c) virus
d) protozoan

Answer: a

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Selection

10) _____ contain a nucleus. (Select all that apply)

a) Viruses
b) Bacteria
c) Fungi
d) Algae
e) Helminths

Answer 1: c
Answer 2: d
Answer 3: e

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

11) _____ are photosynthetic microbes.

a) Algae
b) Bacteria
c) Fungi
d) Protozoans

e) Helminths

Answer: a

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Selection

12) Microbes are the dominant life form on Planet Earth because _____. (Select all that apply)

a) at an estimated 5×1030 bacteria, they are the most abundant organisms
b) there are an estimated 10 million to 1 billion different microbial species
c) microbes occupy all ecological niches of the biosphere
d) microbes have the most complex cell structure

Answer 1: a
Answer 2: b
Answer 3: c

Difficulty: Easy
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Selection

13) How did the production of oxygen by ancient photosynthetic microbes change the course of evolution on Earth? (Select all that apply)

a) Oxygen gas combined with UV light in the stratosphere to produce an ozone layer that shields Earth from the sun's excess UV rays.
b) The presence of oxygen gas allowed for evolution of aerobic respiration.
c) Oxygen is a greenhouse gas, which caused global warming to overcome the Ice Age and promote the survival of many organisms.

d) Oxygen is toxic to the ancient anaerobic microbes, killing them off to prevent over-population of the planet.

Answer 1: a
Answer 2: b

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Selection

14) Bacteria can be found living in _____. (Select all that apply)

a) clouds
b) the complex digestive system of ruminants
c) the roots of clover plants
d) ponds, lakes, and other aquatic habitats

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

15) Place in order the following events regarding the role of microbes in the evolution of life on Earth: 1. terrestrial life emerges, 2. first prokaryotic cells evolve, 3. photosynthesis occurs, 4. chemical reactions generate the molecules needed for life, 5. aerobic respiration evolves

a) 1, 2, 3, 4, 5

b) 5, 4, 3, 2, 1
c) 2, 3, 4, 1, 5
d) 4, 2, 4, 5, 1

Answer: d

Difficulty: Medium
Learning Objective 1: 1.1 Identify each of the major types of microbe, and describe their habitats.
Section Reference 1: 1.1 The Microbes

Question type: Multiple-Choice

16) When a patient is determined to have an infection, the physician's next step is to _____.

a) prescribe an antibiotic
b) collect a patient specimen and send to the lab for culture
c) quarantine the patient
d) apply an antiseptic

Answer: b

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

17) What factors must be controlled in order to promote microbial growth in the lab? (Select all that apply)

a) optimal food resources according to what the microbe prefers
b) pH levels
c) ideal temperature
d) oxygen requirements

Answer 1: a
Answer 2: b
Answer 3: c
Answer 3: d

Difficulty: Easy
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

18) How can we interrupt microbial growth that is causing disease in the human body?

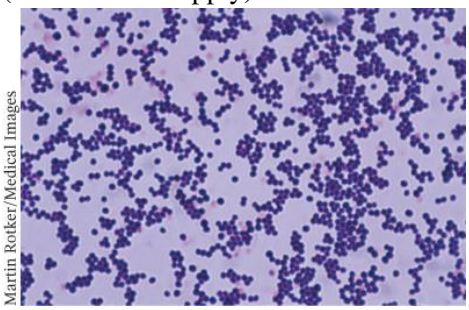
a) Generate a fever so body temperature is no longer favorable for bacterial growth
b) Change the pH
c) Modify oxygen levels
d) Increase food sources

Answer 1: a
Answer 2: b
Answer 3: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

19) Examine the micrograph and determine what features can be used to identify this potential pathogen. (Select all that apply)



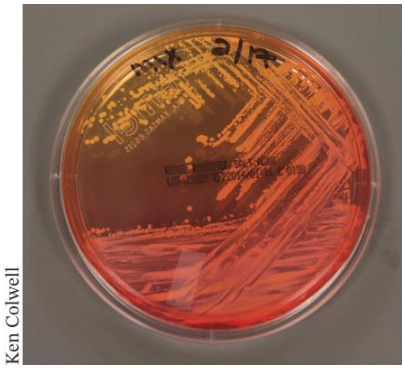
a) Color
b) Shape
c) Number
d) Arrangement

Answer 1: a
Answer 2: b
Answer 3: d

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

20) Culture media, such as the example shown below, help identify microbial specimens in the laboratory because they contain _____.



a) additional protein

b) a buffer to maintain the pH
c) indicator dyes
d) reduced salts to adjust the osmotic environment

Answer: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

21) Pathogen population size correlates with the severity of an infection. What is the most inexpensive, accurate way to quantify a bacterial population in the clinical laboratory?

a) culturing bacteria
b) directly counting the bacteria with a gridded slide
c) using a spectrophotometer to obtain an indirect bacterial count
d) counting with a fluorescence-activated cell sorter

Answer: b

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

22) Which of the following items should be cleaned with a disinfectant? (Select all that apply)

a) a patient's skin before receiving an injection
b) doorknobs, handles and other high-touch surfaces
c) a wrestling mat after practice
d) your hands before eating a meal

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Answer 1: b
Answer 2: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

23) Which of the following statements is accurate regarding the use of toxic chemicals to control microbial growth?

a) Disinfectants are used to clean living tissues.
b) Antiseptics are used to clean inanimate objects.
c) Antiseptics are milder than disinfectants.
d) Contact athletes are encouraged to shower with disinfectant to prevent transmission of skin pathogens from an opponent.

Answer: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

24) _____ is an example of a non-specific innate response to a potential pathogen. (Select all that apply)

a) Antibody production
b) Engulfment by certain leukocytes
c) Inflammation
d) Attack by cytotoxic T lymphocytes

Answer 1: b

Answer 2: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

25) True immunity results from _____. (Select all that apply)

a) innate immune responses
b) adaptive immune responses
c) inflammation
d) vaccination

Answer 1: b
Answer 2: d

Difficulty: Hard
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

26) What does the term “pathogenesis” mean?

a) Development of an infectious disease
b) Development of a pathogen
c) Development of antibodies
d) Development of a non-communicable disease

Answer: a

Difficulty: Easy

Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

27) Which is the correct order of the five basic steps of pathogenesis? 1-thwarting immune defenses, 2-pathogen attachment, 3-host damage, 4-pathogen entry, 5-pathogen exit

a) 1, 2, 3, 4, 5
b) 4, 2, 1, 3, 5
c) 2, 4, 1, 3, 5
d) 5, 4, 3, 2, 1

Answer: b

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

28) How do pathogens gain entry into the human body? (Select all that apply)

a) Nose
b) Mouth
c) Breaks in skin
d) Urethra

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy

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Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

29) Why must a pathogen attach itself to target tissues in the body?

a) without attachment, the pathogen may be washed away by body fluids such as tears, urine and sweat
b) so it can begin the toxin and enzyme secretion that causes host damage
c) to prevent antibody attack
d) pathogen attachment encourages binary fission

Answer: a

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

30) What stage of pathogenesis does consistent, correct hand-washing interfere with?

a) Pathogen entry
b) Pathogen attachment
c) Host damage
d) Thwarting the host immune system

Answer: a

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

31) Hand washing is the Number #1 way to prevent the spread of pathogens from host to host. What is the correct order of the steps in this process? 1. Wetting hands and lathering with soap while rubbing hands and arms, 2. Clean knuckles and use them to scrub inside of palm, 3. Scrubbing tops of hands being sure to wash between fingers, 4. Rinse with clean water and dry thoroughly.

a) 1, 3, 2, and 4
b) 1, 2, 3, and 4
c) 2, 1, 3, and 4
d) 2, 3, 1 and 4

Answer: a

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Choice

32) The concept of antibiosis was accidentally discovered by _____.

a) pasteur
b) florey
c) chain
d) fleming

Answer: d

Difficulty: Easy
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

33) Selective toxicity is more challenging when treating a viral infection than treating a bacterial infection because _____. (Select all that apply)

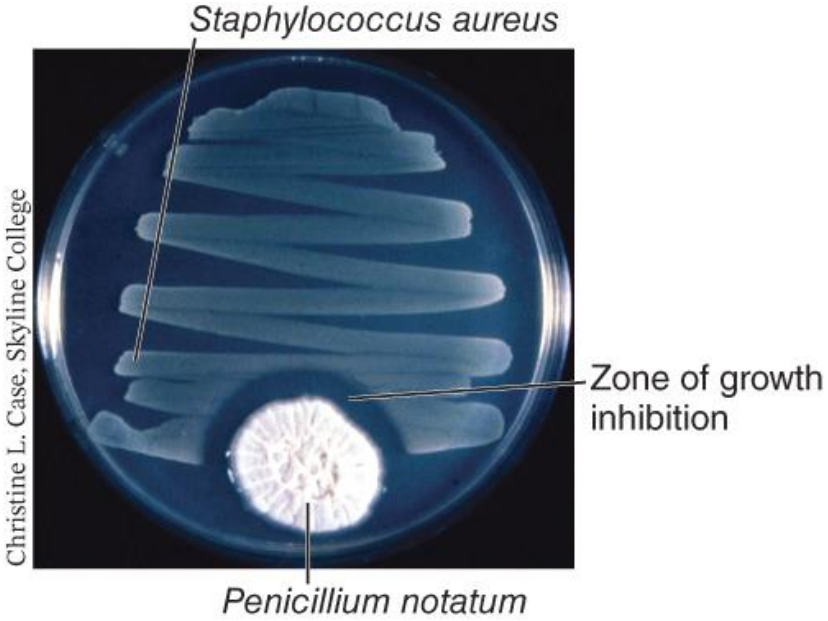
a) viruses are intracellular pathogens and effective treatment typically destroys the infected host cell
b) viruses have thick cell walls made of chitin which slows the penetration of antibiotics
c) bacteria have many prokaryotic-specific features to target with antibiotics that won't cause collateral damage to the eukaryotic host cells
d) viruses are eukaryotic like the host cells they infect

Answer 1: a
Answer 2: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

34) Examine the photo below and determine which of the following statements is accurate. (Select all that apply)



a) The zone of growth inhibition is an example of antibiosis.
b) The *Staphylococcus aureus* is secreting an antibiotic compound.
c) The growth of *Penicillium notatum* is being inhibited by the secretions of the *Staphylococcus aureus*.
d) It is clear that the *Staphylococcus aureus* is resistant to the inhibitory chemicals secreted by the *Penicillium notatum*.

Answer: a

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

35) Antibiosis is _____. (Select all that apply)

a) unique to prokaryotic microbes
b) an interaction between organisms that harms one of them
c) a naturally-occurring situation that helps an organism better compete for resources within a microbial community
d) the preferred option whenever an infection is diagnosed

Answer 1: b
Answer 2: c

Difficulty: Medium
Learning Objective 1: 1.2 Review the human defenses and additional strategies employed to control the growth of negatively interacting microbes such as pathogens and food spoilers.
Section Reference 1: 1.2 The Conflicts

Question type: Multiple-Selection

36) What is the difference in morbidity versus mortality rates in tracing disease progression in a population within a geographic area? (Select all that apply)

a) morbidity is the incidence rate of a disease within a population

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b) mortality is the number of deaths in patients diagnosed with the disease in a specific area within a specific time period
c) mortality is a subset of the morbidity rate of a disease
d) both morbidity and mortality rates are needed to accurately determine disease prevalence

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

37) Epidemiologists _____. (Select all that apply)

a) are clinical laboratorians who focus on microbial identification and quantification
b) help develop effective disease treatment/prevention programs
c) use surveillance protocols to predict disease outbreaks
d) investigate the geographic distribution of illness

Answer 1: b
Answer 2: c
Answer 3: d

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

38) Which of the following is NOT an example of health care-associated infections (HAIs)?

a) Urinary tract infections (UTIs)
b) Surgical site infections
c) Respiratory infections
d) Ear infections

Answer: d

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

39) What is the most common HAI?

a) Urinary tract infections
b) Surgical site infections
c) Respiratory infections
d) Sepsis

Answer: a

Difficulty: Easy
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

40) How are hospitalized patients protected from HAIs or nosocomial infections? (Select all that apply)

a) Hand washing
b) MRSA screening of patients

c) Daily disinfection of frequently touched surfaces
d) Isolation of immune-compromised patients

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

41) How are health care workers protected from patient pathogens? (Select all that apply)

a) use of personal protective equipment (PPE)
b) use of universal precautions when dealing with body fluids
c) hand washing
d) taking prophylactic antibiotics

Answer 1: a
Answer 2: b
Answer 3: c

Difficulty: Easy
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

42) Your normal microbiota help protect you against transient pathogenic microbes by using all of the following strategies except _____. (Select all that apply)

a) competing for space in and on the body's microhabitats
b) producing toxic metabolic byproducts that prevent pathogen colonization
c) secreting antibodies to kill off potential pathogens
d) secreting acids that discourage pathogen growth

Answer: c

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

43) When treated for an infection with a strong antibiotic, the normal microbiota of the gut may also be destroyed, subsequently resulting in an intestinal infection with endospore-forming bacteria such as _____.

a) *Escherichia coli*
b) *Campylobacter jejuni*
c) *Salmonella typhimurium*
d) *Clostridium difficile*

Answer: d

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

44) When treated for an infection with a strong antibiotic, the normal microbiota of the vagina may also be destroyed, predisposing a woman to an infection with _____.

a) *Escherichia coli*
b) *Candida albicans*
c) *Clostridium difficile*
d) *Lactobacillus spp.*

Answer: b

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

45) What is the first step in diagnosing and treating a disease caused by a pathogenic microbe?

a) Accurate identification of the pathogen
b) Diagnosis of the infectious disease
c) Testing of appropriate antibiotics against the patient specimen
d) DNA analysis of the pathogen's genotype

Answer: a

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

46) How does MALDI-TOF mass spectrometry help a patient with an acute infection? (Select all that apply)

a) The procedure can identify pathogens in 1 hour versus 24-28 hours using conventional lab methods.

b) It produces a patient sample spectrum that is compared to other spectra stored in an existing instrument database for very accurate pathogen identification.
c) It can identify pathogens using a number of microbial colonies growing on a plate.
d) Preparation time for this procedure is only 1 minute compared to the 10+ minutes needed to use other microbial analyzers.

Answer 1: a
Answer 2: b
Answer 3: d

Difficulty: Hard
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

47) What is a notable limitation of MALDI TOF?

a) Specimen preparation time
b) Specimen run time
c) Accuracy of pathogen identification
d) Lack of antibiotic susceptibility data

Answer: d

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

48) Based on epidemiological data in your text, what infectious disease process is the #1 killer of humans worldwide each year?

a) Diarrheal disease

b) Lower respiratory disease
c) HIV
d) Malaria

Answer: b

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

49) What factors will increase the risk of EIDs (emerging infectious diseases) in the future? (Select all that apply)

a) Misuse of antibiotics
b) Modern transportation
c) Human movement into new habitats
d) Continued evolution of microbes

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Choice

50) What EID was responsible for the significant increase in mortality due to pneumonia in the winter of 2019-2020?

a) Novel H1N1 influenza

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b) COVID-19
c) MERS
d) XDR-tuberculosis

Answer: b

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

51) What are the major problems encountered in the worldwide effort to eradicate polio? (Select all that apply)

a) increased risk of viral transmission in the unsanitary conditions of refugee camps.
b) disruption of preventive medical programs including childhood vaccinations.
c) a lack of WHO and UNICEF health care workers to deploy to refugee camps.
d) insufficient supply of the oral polio vaccine.

Answer 1: a
Answer 2: b

Difficulty: Medium
Learning Objective 1: 1.3 Relate the concepts of epidemiology and host defenses to the ability of microorganisms to cause disease both in individuals and populations.
Section Reference 1: 1.3 Infectious Disease

Question type: Multiple-Selection

52) Why are biogeochemical cycles crucial to the maintenance of our planet's ecosystems? (Select all that apply)

a) unusable forms of elements such as carbon, sulfur and nitrogen are converted to forms usable by living organisms.

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b) decomposition of dead organisms releases minerals back into the ecosystem for reuse by other organisms.
c) breakdown of waste materials from living organisms puts bacteria back into the environment.
d) these cycles prevent pollutants from spreading throughout the biosphere.

Answer 1: a
Answer 2: b

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

53) Which of the following statements BEST describes the symbiotic relationship between *Rhizobium* and leguminous plants such as peanuts?

a) It serves as basis for crop rotation every five years.
b) *Rhizobium* receives nitrogen from plant roots.
c) Leguminous plants receive a usable form of carbohydrate.
d) *Rhizobium* creates a usable form of nitrogen that is absorbed via plant roots while it receives sugar in return.

Answer: d

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

54) Besides providing nutrients for this year's crop of soybeans, peanuts or other legumes, what does the symbiotic relationship with *Rhizobium* do for NEXT year's crop?

a) It enriches soil with nitrogenous compounds that may be used by next year's crop without the need for additional fertilizer.
b) It enriches soil with decaying organic matter from bacterium.
c) It enriches soil with proteins and nucleic acids made with nitrogen.
d) It enriches soil with carbohydrates made from glucose created by plant.

Answer: a

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

55) Fungi often live in symbiotic relationships with plant roots. What specific nutrient do they help supply that will help a plant that produces fruits?

a) nitrogen needed for amino acids and nucleic acids
b) phosphorus needed for producing flowers
c) calcium needed for proper gravitropic response
d) sodium and potassium for bud production

Answer: b

Difficulty: Hard
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

56) Microbial bioremediation of pollutants was used to help cleanup what recent environmental disaster?

a) Deepwater Horizon crude oil spill in Gulf of Mexico.
b) Contamination of river water with *Vibrio cholerae* in Haiti following the earthquakes.
c) Exxon Valdez crude oil spill in Antarctica.

d) Contamination of drinking water in Flint, Michigan.

Answer: a

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

57) Bioreactors are used to grow large populations of bacteria for the production of _____.

a) beer
b) kefir
c) vitamins
d) human insulin

Answer: c

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

58) The earliest form of biotechnology was used to make _____.

a) beer
b) kefir
c) vitamins
d) human insulin

Answer: a

Difficulty: Easy

Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Selection

59) How has pasteurization made milk and other dairy products safer to consume? (Select all that apply)

a) It kills pathogenic microbes without affecting the taste or nutritional value.
b) Pasteurization sterilizes milk and other dairy products.
c) Pasteurization reduces spoilage of dairy products.
d) Pasteurization makes milk easier to digest.

Answer 1: a
Answer 2: c

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

60) Which of the following diseases is NOT caused by contamination and consumption of unpasteurized milk?

a) Brucellosis
b) Diphtheria
c) Q fever
d) Polio

Answer: d

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Selection

61) Commercial food preparation focuses on eliminating disease-causing and spoilage-causing microbes via _____. (Select all that apply)

a) use of high pressure for canning
b) heat for pasteurization
c) use of chemical preservatives like sugar and salt
d) use of ionizing radiation to scramble microbial DNA

Answer 1: a
Answer 2: b
Answer 3: c
Answer 4: d

Difficulty: Easy
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
Section Reference 1: 1.4 Microbial Ecology and Commercial Applications

Question type: Multiple-Choice

62) Most recent outbreaks due to the consumption of non-pasteurized milk are caused by _____.

a) *Escherichia coli*
b) *Salmonella typhimurium*
c) *Clostridium difficile*
d) *Campylobacter jejuni*

Answer: d

Difficulty: Medium
Learning Objective 1: 1.4 Describe how microbial interactions in the environment or in commercial uses help to maintain either human or global health.
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