

Registration form

**Bacteriological Diseases CEU Training Course \$150.00
48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00**

Start and Finish Dates: _____ *You will have 90 days from this date in order to complete this course*

List number of hours worked on assignment must match State Requirement. _____

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Professional Engineers; Most states will accept our courses for credit but we do not officially list the States or Agencies. Please check your State for approval.

You can obtain a printed version of the course from TLC for an additional \$69.95 plus shipping charges.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

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Do not solely depend on TLC's Approval list for it may be outdated.

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Some States and many employers require the final exam to be proctored.

<http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf>

Bacteriological Diseases CEU Course Answer Key

Name _____

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You are solely responsible in ensuring that this course is accepted for credit by your State. No refunds. Did you check with your State agency to ensure this course is accepted for credit?

Method of Course acceptance confirmation. Please fill this section

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PA DEP Students are required to complete the original version of the text. _____
Please initial

Please circle, underline, bold or X only one correct answer

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164. A B C D E F 183. A B C D E F
165. A B C D E F 184. A B C D E F
166. A B C D E F 185. A B C D E F

You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.

This course contains general EPA's SDWA federal rule requirements. Please be aware that each state implements water / sampling procedures/safety/ environmental / building regulations that may be more stringent than EPA's regulations. Check with your state environmental/health agency for more information. These rules change frequently and are often difficult to interpret and follow. Be careful to be in compliance and do not follow this course for proper compliance. These regulations change very frequently.

**Please fax the answer key to TLC
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Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line. Thank you...

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Please e-mail or fax this survey along with your final exam

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Please rate the difficulty of your course.

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Bacteriological Diseases CEU Course Assignment

The Assignment (Exam) is also available in Word on the Internet for your Convenience, please visit www.ABCTLC.com and download the assignment and e-mail it back to TLC.

You will have 90 days from the start of this course to complete in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % is necessary to pass this course. We prefer if this exam is proctored. No intentional trick questions. If you should need any assistance, please email all concerns and the completed manual to info@tlch2o.com.

We would prefer that you utilize the enclosed answer sheet in the front, but if you are unable to do so, type out your own answer key. Please include your name and address on your manual and make copy for yourself. You can e-mail or fax your Answer Key along with the Registration Form to TLC. **(S) Means answer may be plural or singular**

How Diseases Are Transmitted.

- Waterborne pathogens are primarily spread by the?
A. Fecal-oral, or feces-to-mouth, route D. Influenza route
B. Dermal to fecal route E. Waterborne mishaps
C. Oral to fecal route F. None of the Above
- When infected humans or animals pass the bacteria, viruses, and _____ in their stool, pathogens may get into water and spread disease.
A. Fecal Coliform and E coli D. Cryptosporidiosis
B. Protozoa E. Bioslime
C. Macroorganisms F. None of the Above
- For another person to become infected, he or she must take that pathogen in through the mouth.
A. True B. False
- This term means when in nature it is different from other types of pathogens such as the viruses that cause influenza (the flu) or the bacteria that cause tuberculosis.
A. Fecal Coliform and E coli D. Waterborne Pathogen(s)
B. Giardia lamblia E. Coliform bacteria
C. Microorganism(s) F. None of the Above
- According to the text, which of the following are spread by secretions that are coughed or sneezed into the air by an infected person.
A. Fecal Coliform and E coli D. Influenza virus and tuberculosis bacteria
B. Giardia lamblia E. Coliform bacteria
C. Microorganisms F. None of the Above

Bacterial Diseases

6. Which of the following terms is the most common diarrhea illness caused by bacteria? Symptoms include abdominal pain, malaise, fever, nausea and vomiting, and they usually begin three to five days after exposure.

- A. Pathogen
- B. Yersiniosis
- C. Hepatitis A
- D. Campylobacteriosis
- E. Incubation period
- F. None of the Above

7. Which of the following terms is been the cause of outbreaks have most often been associated with food, especially chicken and unpasteurized milk, as well as unchlorinated water.

- A. Pathogen
- B. Yersiniosis
- C. Hepatitis A
- D. Campylobacteriosis
- E. Beaver fever
- F. None of the Above

Types of Bacteria

8. Which of the following terms is an important cause of travelers' diarrhea? Medical treatment generally is not prescribed because recovery is usually rapid.

- A. Illness
- B. Cryptosporidium
- C. Bacteria
- D. Campylobacteriosis
- E. Transmission of disease
- F. None of the Above

9. Cholera, Legionellosis, salmonellosis, _____, and yersiniosis are other bacterial diseases that can be transmitted through water.

- A. Shigellosis
- B. Cysts
- C. Hepatitis A
- D. Campylobacteriosis
- E. HIV
- F. None of the Above

10. Which of the following terms lives in water, readily killed or inactivated with chlorine or other disinfectants?

- A. Cysts
- B. Cryptogiardia
- C. Bacteria
- D. Viral Plaques
- E. Oocysts
- F. None of the Above

Viral-Caused Diseases

11. Which of the following terms is an example of a common viral disease that may be transmitted through water? The onset is usually abrupt with fever, malaise, loss of appetite, nausea and abdominal discomfort, followed within a few days by jaundice.

- A. Pathogen
- B. Yersiniosis
- C. Hepatitis A
- D. Campylobacteriosis
- E. Incubation period
- F. None of the Above

12. Most _____ in drinking water can be inactivated by chlorine or other disinfectants.

- A. Illnesses
- B. Giardiasis
- C. Viruses
- D. Pathogen(s)
- E. Infections
- F. None of the Above

Contractile Vacuoles

13. Many protozoa have _____, which collect and expel excess water, and extrusomes, which expel material used to deflect predators or capture prey.

- A. Flagella
- B. Contractile vacuoles
- C. Vacuole or tonoplast
- D. Free-living amoebae
- E. Cell's cytoplasm
- F. None of the Above

14. Flagella also may have hairs or mastigonemes, scales, connecting membranes, and internal rods, their interior is continuous with the?

- A. Flagella
- B. Bacteria or viruses
- C. Haptonema
- D. Free-living amoebae
- E. Cell's cytoplasm
- F. None of the Above

Centrioles

15. Centrioles are often present even in cells and groups that do not have flagella. They generally occur in groups of one or two, called _____ that give rise to various microtubular roots.

- A. Kinetosome or centriole
- B. Kinetids
- C. Beneficial symbionts
- D. Nonpathogenic protozoa
- E. Various microtubular roots
- F. None of the Above

16. Which bug/creature/organism produces axopodia that is used in flotation or to capture prey, and the haptophytes, which have a peculiar flagellum-like organelle called the haptonema?

- A. Paramecium
- B. Haptonema
- C. Paramecium
- D. Protozoan pathogens
- E. Radiolaria and heliozoa
- F. None of the Above

Legionnaires' Disease Section

17. What is the causative agent, what would this agent come to be known as?

- A. Legionella
- B. Pontiac fever
- C. Aerosolized water
- D. Legionnaire's disease
- E. Legionella pneumophila
- F. None of the Above

The disease has two distinct forms:

18. Fill in the two missing answers. The more severe form of infection _____ which includes pneumonia, and _____, a milder illness.

- A. Legionella, Pontiac fever
- B. Pontiac fever, Pontiac fever
- C. Legionnaires' disease, Pontiac fever
- D. Legionnaire's disease
- E. Pontiac fever, Legionella pneumophila
- F. None of the Above

What have been the water sources for Legionnaires' disease?

19. Legionnaire's disease is caused most commonly by the inhalation of small droplets of water or fine aerosol containing?

- A. Legionella
- B. Pontiac fever
- C. Legionella bacteria
- D. Legionnaire's disease
- E. Legionella pneumophila
- F. None of the Above

How do people contract Legionella?

20. Routine biocide treatments will not eradicate _____ in the environment, only in laboratory studies.

- A. Legionella
- B. Monoclonal antibodies
- C. Legionella bacteria
- D. Legionnaire's disease
- E. Legionella pneumophila
- F. None of the Above

21. Which of the following bugs that within one month, this bacterium can multiply, in warm water-containing systems, from less than 10 per milliliter to over 1,000 per milliliter of water?

- A. Legionella
- B. Pontiac fever
- C. Monoclonal antibodies
- D. Legionnaire's disease
- E. Legionella pneumophila
- F. None of the Above

22. If high numbers of _____ have been found, a relatively simple procedure for disinfecting water systems with chlorine and detergent is available.

- A. Legionella
- B. Pontiac fever
- C. Monoclonal antibodies
- D. Legionnaire's disease
- E. Legionella pneumophila
- F. None of the Above

23. Which is the most common way that Legionella bacteria enter into the lungs to cause pneumonia?

- A. Choking
- B. Pontiac fever
- C. Aspiration
- D. Breathing
- E. Coffee drinking
- F. None of the Above

24. Culture methods are good during Laboratory studies for bio-typing; but culture methods lack sensitivity for routine, quantitative monitoring.

- A. True
- B. False

25. Many factors will inhibit growth or identification of Legionella on BCYE with or without antimicrobial agents, heat or acid treatment.

- A. True
- B. False

Circumstances under which Koch's postulates do not easily apply

26. According to the text, which of the following terms may develop only when an opportunistic pathogen invades a susceptible host?

- A. Disease(s)
- B. Mutation(s)
- C. Carriers
- D. Divide
- E. Reproduction
- F. None of the Above

27. Which of the following terms are caused by dietary deficiencies (scurvy, rickets).

- A. Disease(s)
- B. Mutation(s)
- C. Carriers
- D. Pathogen(s)
- E. Microorganisms
- F. None of the Above

28. According to the text, which of the following terms are very difficult to grow under in-vitro (in the laboratory) conditions?

- A. Disease(s)
- B. Mutation(s)
- C. Carriers
- D. Pathogen(s)
- E. Microbes
- F. None of the Above

Microbes - Basic definitions, more detailed information in the next section.

29. Coliform bacteria are common in the environment and are considered harmful.
A. True B. False
30. The presence of coliform bacteria in drinking water indicates that the water may be contaminated with germs that can cause disease.
A. True B. False
31. Microbes in human wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms and are caused by _____.
A. Fecal Coliform and E coli D. Cryptosporidiosis
B. Giardia lamblia E. Coliform bacteria
C. Microorganisms F. None of the Above

Types of Water Samples

32. It is important to properly identify the type of _____ you are collecting.
A. Colilert D. Total coliform analysis
B. Coliforms E. Pathogens
C. Sample F. None of the Above

The three (3) types of samples are:

33. Samples collected following a coliform present' routine sample. The number of repeat samples to be collected is based on the number of _____ samples you normally collect.
A. Repeat D. Total coliform analysis
B. Special E. Routine
C. QA QC F. None of the Above
34. What type of samples can be collected for other reasons? Examples would be a sample collected after repairs to the system.
A. Repeat D. Total coliform analysis
B. Special E. Routine
C. Sample F. None of the Above

Repeat Sampling

35. If a _____ is total coliform or fecal coliform present, a set of repeat samples must be collected within 24 hours after being notified by the laboratory.
A. MCL compliance D. Original sampling location
B. Distribution system E. Repeat sample(s)
C. Routine sample F. None of the Above

The follow-up for repeat sampling is:

36. If only one _____ per month or quarter is required, four (4) repeat samples must be collected.
A. Special Sample D. Coliform present
B. Routine sample E. Original sampling location
C. Repeat sample(s) F. None of the Above

37. For systems collecting two (2) or more routine samples per month, three (3) _____ must be collected.

- A. Compliance sample
- B. Distribution sample
- C. Routine sample
- D. QA/QC Split
- E. Repeat sample(s)
- F. None of the Above

38. Repeat samples must be collected from: Within five (5) service connections upstream from the?

- A. MCL compliance
- B. Distribution system
- C. Routine sample
- D. Original sampling location
- E. Repeat sample(s)
- F. None of the Above

39. Repeat samples must be collected from: Within five (5) service connections downstream from the?

- A. Special Sample
- B. Routine sample
- C. Repeat sample(s)
- D. Coliform present
- E. Original sampling location
- F. None of the Above

Symbiotic Protozoa

Parasites

40. Which term means or comprises a unique group of obligate, intracellular parasitic protozoa?

- A. Foraminifera
- B. Protozoan fauna
- C. Cytoplasm of protozoa
- D. Soil biomass
- E. Microsporidia
- F. None of the Above

Protozoan Reservoirs of Disease

41. The presence of bacteria in this is well known, whereas that of viruses is less frequently reported.

- A. Foraminifera
- B. Protozoan fauna
- C. Cytoplasm of protozoa
- D. Soil biomass
- E. Microsporidia
- F. None of the Above

42. Most of these reports simply record the presence of bacteria or viruses and assume some sort of symbiotic relationship between them and the?

- A. Flagella
- B. Bacteria or viruses
- C. Protozoa
- D. Free-living amoebae
- E. Cell's cytoplasm
- F. None of the Above

43. Some human pathogens were shown to not only survive but also to multiply in the cytoplasm of free-living?

- A. Amoeba
- B. Organisms
- C. Beneficial symbionts
- D. Nonpathogenic protozoa
- E. Various protozoa
- F. None of the Above

Symbionts

44. According to the text, some of these creatures are harmless or even beneficial symbionts.
- A. Amoeba
 - B. Viruses
 - C. Protozoa
 - D. Free-living amoebae
 - E. Bacterium Legionella pneumophila
 - F. None of the Above

Contractile Vacuoles

45. Many protozoa have _____, which collect and expel excess water, and extrusomes, which expel material used to deflect predators or capture prey.

- A. Flagella
 - B. Contractile vacuoles
 - C. Vacuole or tonoplast
 - D. Free-living amoebae
 - E. Cell's cytoplasm
 - F. None of the Above
46. In higher plants, most of a cell's volume is taken up by a central vacuole or tonoplast, which maintains its?
- A. Kinetosome or centriole
 - B. Vacuole or tonoplast
 - C. Osmotic pressure
 - D. Nonpathogenic protozoa
 - E. Various microtubular roots
 - F. None of the Above

47. Which bug/creature/organism have slender motile projections, usually called flagella when long and cilia when short?

- A. Eukaryotes
- B. Bacteria or viruses
- C. Protozoa
- D. Free-living amoebae
- E. Centrioles
- F. None of the Above

48. Which bug/creature/organism are variously involved in movement, feeding, and sensation?

- A. Eukaryotes
- B. Bacteria or viruses
- C. Protozoa
- D. Free-living amoebae
- E. Centrioles
- F. None of the Above

49. Which bug/creature/organism are entirely distinct from prokaryotic flagella?

- A. Eukaryotes
- B. Bacteria or viruses
- C. Protozoa
- D. Free-living amoebae
- E. Centrioles
- F. None of the Above

Centrioles

50. Centrioles are often present even in cells and groups that do not have flagella. They generally occur in groups of one or two, called _____ that give rise to various microtubular roots.

- A. Kinetosome or centriole
- B. Kinetids
- C. Beneficial symbionts
- D. Nonpathogenic protozoa
- E. Various microtubular roots
- F. None of the Above

51. Which of the following terms may also be associated in the formation of a spindle during nuclear division?

- A. Contractile vacuoles
- B. Centrioles
- C. Paramecium
- D. Microtubule-supported organelles
- E. Vacuole or tonoplast
- F. None of the Above

52. Which bug/creature/organism produces axopodia which is used in flotation or to capture prey, and the haptophytes, which have a peculiar flagellum-like organelle called the haptonema?

- A. Paramecium
- B. Haptonema
- C. Paramecium
- D. Protozoan pathogens
- E. Radiolaria and heliozoa
- F. None of the Above

Paramecium

53. If Paramecium is to maintain _____, water must be continually pumped out of the cell at the same rate at which it moves in.

- A. Life
- B. Happiness
- C. Homeostasis
- D. Osmotic
- E. Cytoplasm
- F. None of the Above

Protozoan Diseases

54. Which of the following can survive in the environment for long periods of time and be extremely resistant to conventional disinfectants such as chlorine?

- A. Paramecium
- B. Host
- C. Cyst
- D. Protozoan pathogen
- E. Cytoplasm
- F. None of the Above

Protozoan Caused Diseases

55. Which of the following terms is a commonly reported protozoan-caused disease, it has also been referred to as backpacker's disease?

- A. Giardia lamblia
- B. Giardiasis
- C. Malaise
- D. Cryptosporidiosis
- E. Anti-water Infection
- F. None of the Above

Giardia lamblia

56. Which of the following bugs has been responsible for more community-wide outbreaks of disease in the U.S. than any other, drug treatment is not 100% effective?

- A. HIV infection
- B. Giardia lamblia
- C. Giardiasis
- D. Hepatitis A
- E. Cryptosporidiosis
- F. None of the Above

57. The mode of transmission of this bug is fecal-oral, either by person-to-person or animal-to-person, there is no specific treatment.

- A. HIV infection
- B. Giardia lamblia
- C. Giardiasis
- D. Hepatitis A
- E. Cryptosporidiosis
- F. None of the Above

58. Which bug/creature/organism has been responsible for more community-wide outbreaks of disease in the U.S. than any other pathogen?

- A. Legionella
- B. Giardia lamblia
- C. Cryptosporidium organisms
- D. E-coli
- E. Hepatitis A
- F. None of the Above

59. Which bug/creature/organism is a commonly reported protozoan-caused disease?

- A. Backpacker's disease
- B. Cytoplasm disease
- C. Paramecium disease
- D. Giardiasis
- E. Protozoan-caused disease
- F. None of the Above

60. Which bug/creature/organism has also been referred to as “Backpacker’s disease” and “beaver fever” because of the many cases of drinking untreated surface water?

- A. Giardia lamblia
- B. Cytoplasm disease
- C. Paramecium disease
- D. Giardiasis
- E. Protozoan-caused disease
- F. None of the Above

61. Symptoms include chronic diarrhea, abdominal cramps, bloating, frequent loose and pale greasy stools, fatigue and weight loss.

- A. Giardia lamblia
- B. Cytoplasm disease
- C. Paramecium disease
- D. Giardiasis
- E. Protozoan-caused disease
- F. None of the Above

Bacteria Sampling

62. Water samples for this process must always be collected in a sterile container.

- A. Indicator bacteria
- B. Bacteria tests
- C. Contamination
- D. pH analysis
- E. Presence of an indicator
- F. None of the Above

63. Which bug forms an obvious slime on the inside of pipes and fixtures. A water test is not needed for identification. Check for a reddish-brown slime inside a toilet tank or where water stands for several days.

- A. Colonies
- B. Algae
- C. Coliform bacteria
- D. Escherichia coli (E. coli)
- E. Iron bacteria
- F. None of the Above

64. Which of the following are common in the environment and are generally not harmful, but the presence of these bacteria in drinking water is usually a result of a problem with the treatment system or the pipes which distribute water, and indicates that the water may be contaminated with germs that can cause disease.

- A. Diseases
- B. Germs
- C. Coliform bacteria
- D. Escherichia coli (E. coli)
- E. Iron bacteria
- F. None of the Above

Cryptosporidiosis

65. Which bug/creature/organism has symptoms usually come and go, and end in fewer than 30 days in most cases? The incubation period is 1-12 days, with an average of about seven days.

- A. Giardia lamblia
- B. Incubation period
- C. Animal-to-person contact
- D. Cryptosporidiosis
- E. Giardiasis
- F. None of the Above

66. Which bug/creature/organism have been identified in human fecal specimens from more than 50 countries on six continents?

- A. E-coli
- B. Giardia lamblia
- C. Cryptosporidium organisms
- D. Giardia trophozoites
- E. Hepatitis A
- F. None of the Above

67. The mode of transmission is fecal-oral, either by person-to-person or animal-to-person. There is no specific treatment for _____.
- | | |
|------------------------------|-------------------------------|
| A. Giardia lamblia treatment | D. Major symptom |
| B. Incubation period | E. Cryptosporidium infections |
| C. Animal-to-person contact | F. None of the Above |

Giardia Lamblia

68. Which bug/creature/organism absorb their nutrients from the lumen of the small intestine, and are anaerobes?

- | | |
|-------------------------|-----------------------|
| A. Water-borne sources | D. Giardia infections |
| B. Giardia trophozoites | E. Giardia parasites |
| C. Giardia cysts | F. None of the Above |

69. Which bug/creature/organism/disease can occur through ingestion of dormant cysts in contaminated water, or by the fecal-oral route (through poor hygiene practices)?

- | | |
|-------------------------|---------------------------|
| A. Giardiasis | D. Giardia infection |
| B. Giardia trophozoites | E. Trophozoites and cysts |
| C. Cytoplasm | F. None of the Above |

70. Which bug/creature/organism/disease is (synonymous with Lamblia intestinalis and Giardia duodenalis) is a flagellated protozoan parasite that colonizes and reproduces in the small intestine?

- | | |
|-----------------------------|-------------------------------|
| A. Giardia trophozoites | D. Giardia lamblia |
| B. Incubations | E. Cryptosporidium infections |
| C. Animal-to-person contact | F. None of the Above |

71. Which bug/creature/organism/disease attaches to the epithelium by a ventral adhesive disc, and reproduces via binary fission?

- | | |
|-------------------------|-------------------------|
| A. Water-borne source | D. Giardia infection(s) |
| B. Giardia trophozoites | E. Giardia parasite |
| C. Giardia cyst | F. None of the Above |

72. Which bug/creature/organism/disease does not spread via the bloodstream, nor does it spread to other parts of the gastro-intestinal tract, but remains confined to the lumen of the small intestine?

- | | |
|---------------|---------------------------|
| A. Giardiasis | D. Giardia infection |
| B. Infected | E. Trophozoites and cysts |
| C. Cytoplasm | F. None of the Above |

73. Which bug/creature/organism/disease can survive for weeks to months in cold water and therefore can be present in contaminated wells and water systems?

- | | |
|-------------------------|-----------------------|
| A. Water-borne sources | D. Giardia infections |
| B. Giardia trophozoites | E. Giardia parasite |
| C. Giardia cyst | F. None of the Above |

74. Which bug/creature/organism/disease is also possible, and therefore Giardia infection is a concern for people camping in the wilderness or swimming in contaminated streams?

- | | |
|---------------|--------------------------|
| A. Giardiasis | D. Giardia infection |
| B. Infected | E. Zoonotic transmission |
| C. Cytoplasm | F. None of the Above |

75. Which bug/creature/organism/disease can also occur, for example in day care centers, where children may have poorer hygiene practices?

- A. Water-borne sources
- B. Giardia trophozoites
- C. Giardia cyst
- D. Giardia infections
- E. Fecal-oral transmission
- F. None of the Above

76. Which bug/creature/organism/disease is not symptomatic, so some people can unknowingly serve as carriers of the parasite?

- A. Water-borne illness sources
- B. Giardia trophozoites
- C. Giardia problems
- D. Giardia infections
- E. Parasites
- F. None of the Above

77. A distinguishing characteristic of the cyst is 4 nuclei and a _____.

- A. Large eye
- B. Foot
- C. Cytoplasm
- D. Retracted cytoplasm
- E. Trophozoites and cysts
- F. None of the Above

78. Once ingested by a host, the _____ emerges to an active state of feeding and motility.

- A. Host
- B. Trophozoite
- C. Giardia cyst
- D. Giardia infection
- E. Giardia parasite
- F. None of the Above

79. Which bug/creature/organism/disease then passes through the digestive system in the feces.

- A. Giardiasis
- B. Infected host
- C. Cytoplasm
- D. Giardia infection
- E. Trophozoites and cysts
- F. None of the Above

80. Which bug/creature/organism/disease is not primitively amitochondrial and that it has retained a functional organelle derived from the original mitochondrial endosymbiont"?

- A. Giardiasis
- B. Tubular sheath
- C. Cytoplasm
- D. Giardia
- E. Trophozoites and cysts
- F. None of the Above

Cryptosporidium

81. According to the text, municipal drinking water utilities may meet federal standards for safety and quality of drinking water, but complete protection from _____ is not guaranteed.

- A. Symptoms
- B. Ameba
- C. Cryptosporidial infection
- D. Prokaryotes
- E. Entamoeba histolytica or E. histolytica
- F. None of the Above

82. All waterborne outbreaks of _____ have occurred in communities where the local utilities met all state and federal drinking water standards.

- A. Cyst of C. parvum
- B. Outbreaks
- C. C. parvum
- D. Cryptosporidiosis
- E. Entamoeba histolytica or E. histolytica
- F. None of the Above

83. Which bug/creature/organism/disease was first identified as a human pathogen, diagnosis was made by a biopsy of intestinal tissue?

- A. Cyst of *C. parvum*
- B. Outbreaks
- C. *C. parvum*
- D. *Entamoeba histolytica* or *E. histolytica*
- E. Cryptosporidial oocysts
- F. None of the Above

84. Which bug/creature/organism/disease does not utilize an insect vector and is capable of completing its life cycle within a single host?

- A. Cyst of *C. parvum*
- B. Cryptosporidium
- C. *C. parvum*
- D. Shigellosis (bacillary dysentery)
- E. Cryptosporidial oocysts
- F. None of the Above

85. Which bug/creature/organism/species/disease infects mammals. In humans, the main causes of disease are *C. parvum* and *C. hominis*?

- A. Cryptosporidium
- B. Parasites
- C. Shigellosis (bacillary dysentery)
- D. Cryptosporidiosis
- E. Parasitic infection
- F. None of the Above

86. Which bug/creature/organism/species/disease is typically an acute short-term infection but can become severe and non-resolving in children and immunocompromised individuals?

- A. Cyst of *C. parvum*
- B. Outbreaks
- C. *Entamoeba histolytica*
- D. Cryptosporidiosis
- E. Shigellosis (bacillary dysentery)
- F. None of the Above

87. Bacteriophages, which use bacteria as their hosts often resemble an insect with an icosahedral head attached to a _____.

- A. Shell
- B. Tubular sheath
- C. Normal protein
- D. Appendage
- E. Viroids and prions
- F. None of the Above

88. The parasite is transmitted by environmentally hardy cysts (_____) that, once ingested, excyst in the small intestine and result in an infection of intestinal epithelial tissue.

- A. Cryptosporidium
- B. Parasite
- C. Oocysts
- D. Cryptosporidiosis
- E. Parasitic infection
- F. None of the Above

89. Swimming pools and water park wave pools have also been associated with outbreaks of?

- A. Cryptosporidium
- B. Parasite
- C. Shigellosis (bacillary dysentery)
- D. Cryptosporidiosis
- E. *Entamoeba histolytica*
- F. None of the Above

90. According to the text, the highly environmentally resistant cyst of _____ allows the pathogen to survive various drinking water filtrations and chemical treatments such as chlorination.

- A. Cyst of *C. parvum*
- B. Outbreaks
- C. *C. parvum*
- D. Cryptosporidiosis
- E. Cryptosporidial oocysts
- F. None of the Above

Entamoeba histolytica

91. Which bug/creature/organism/species/disease invades the liver and forms an abscess. Even less commonly, it spreads to other parts of the body, such as the lungs or brain?

- A. Symptoms
- B. Ameba
- C. Cryptosporidiosis
- D. Shigellosis (bacillary dysentery)
- E. Entamoeba histolytica or E. histolytica
- F. None of the Above

92. Which bug/creature/organism/species/disease may eat the dead cell or just absorb nutrients released from the cell?

- A. Symptoms
- B. Ameba
- C. Endoplasmic reticulum
- D. Prokaryotes
- E. Cells
- F. None of the Above

93. Which bug/creature/organism/species/disease on the average, only about one in 10 people who are infected will becomes sick from the infection?

- A. Cyst of C. parvum
- B. Shigellosis (bacillary dysentery)
- C. E. histolytica
- D. Cryptosporidiosis
- E. Cryptosporidial oocysts
- F. None of the Above

94. Which bug/creature/organism/species/disease can cause diarrhea or a more serious invasive liver abscess?

- A. Cyst of C. parvum
- B. Shigellosis (bacillary dysentery)
- C. Entamoeba histolytica
- D. Cryptosporidiosis
- E. Cryptosporidial oocysts
- F. None of the Above

95. There is a rapid influx of _____ into the contacted cell, it quickly stops all membrane movement save for some surface blebbing. Internal organization is disrupted, organelles lyse, and the cell dies.

- A. Zinc
- B. Calcium
- C. Glucosamine
- D. Iron
- E. Magnesium
- F. None of the Above

96. Amebic dysentery is a severe form of _____ associated with stomach pain, bloody stools, and fever.

- A. Cyst of C. parvum
- B. Amebiasis
- C. C. parvum
- D. Cryptosporidiosis
- E. Amebic dysentery
- F. None of the Above

Mitochondria

97. Which terms means that the bacterial cell is surrounded by a lipid membrane, or cell membrane, which encloses the contents of the cell and acts as a barrier to hold nutrients?

- A. Ciliate group
- B. Unicellular ciliate protozoa
- C. Endoplasmic reticulum
- D. Prokaryotes
- E. Cytoplasm
- F. None of the Above

98. Which bug/creature/organism/species/disease do not tend to have membrane-bound organelles in their cytoplasm and thus contain few large intracellular structures?
A. Ciliate group
B. Unicellular ciliate protozoa
C. Endoplasmic reticulum
D. Prokaryotes
E. Bacterial cell
F. None of the Above

99. Which bug/creature/organism/species/disease lack a nucleus, mitochondria, chloroplasts and the other organelles present in eukaryotic cells, such as the Golgi apparatus and endoplasmic reticulum?
A. Ciliate group
B. Unicellular ciliate protozoa
C. Endoplasmic reticulum
D. Prokaryotes
E. Bacterial cell
F. None of the Above

Paramecia

100. According to the text, Paramecia are a group of unicellular ciliate protozoa formerly known as _____ from their slipper shape.
A. Ciliate group
B. Unicellular ciliate protozoa
C. Slipper animalcules
D. Prokaryotes
E. Bacterial cell
F. None of the Above

101. According to the text, Paramecia are commonly studied as a representative of the?
A. Ciliate group
B. Unicellular ciliate protozoa
C. Endoplasmic reticulum
D. Prokaryotes
E. Bacterial cell
F. None of the Above

102. This term covers the body which allows the cell to move with a synchronous motion (like a caterpillar).
A. Paramecia
B. Osmoregulation
C. Unicellular organism
D. Compound oral cilia
E. Simple cilia
F. None of the Above

103. There is also a deep oral groove containing inconspicuous _____ (as found in other peniculids) that is used to draw food inside.
A. Paramecia
B. Osmoregulation
C. Unicellular organism
D. Compound oral cilia
E. Acidic conditions
F. None of the Above

104. Osmoregulation is carried out by a pair of _____, which actively expel water absorbed by osmosis from their surroundings.
A. IpaB and IpaC proteins
B. Osmoregulation
C. Unicellular organism
D. Compound oral cilia
E. Contractile vacuoles
F. None of the Above

105. Which bug/creature/organism/species/disease are widespread in freshwater environments, and are especially common in scums?
A. Shigella
B. Bacteria
C. S. dysenteriae
D. Paramecia
E. Shigellosis (bacillary dysentery)
F. None of the Above

106. Paramecia are attracted by?
- | | |
|----------------------|----------------------|
| A. Paramecia | D. Basic conditions |
| B. Osmoregulation | E. Acidic conditions |
| C. Natural condition | F. None of the Above |

107. Which bug/creature/organism/species/disease such as Paramecium, are examples for exceptions to the universality of the genetic code?
- | | |
|-------------------------|----------------------|
| A. Paramecia | D. Amoeboids |
| B. Bacteria | E. Eukaryotes |
| C. Unicellular organism | F. None of the Above |

Amoeba

108. Amoeba (sometimes amœba or ameba, plural amoebae) is a genus of protozoa that moves by means of pseudopods, and is well-known as a?
- | | |
|-------------------------|------------------------|
| A. Paramecia | D. Amoeboids |
| B. Pleomorphic bacteria | E. Non-motile bacteria |
| C. Unicellular organism | F. None of the Above |

109. The word amoeba or ameba is variously used to refer to it and its close relatives, now grouped as the Amoebozoa, or to all protozoa that move using pseudopods, otherwise termed _____.
- | | |
|-------------------------|------------------------|
| A. Paramecia | D. Compound oral cilia |
| B. Osmoregulation | E. Amoeboids |
| C. Unicellular organism | F. None of the Above |

Bacteriophage

110. According to the text, bacteriophages consist of _____ enclosing genetic material.

- | | |
|-------------------|--------------------------|
| A. Bacteriophages | D. Peptidoglycan |
| B. Phages | E. An outer protein hull |
| C. Microbial mats | F. None of the Above |

111. One of the densest natural sources for phages and other viruses is sea water, where up to 9×10^8 virions per milliliter have been found in _____ at the surface, and up to 70% of marine bacteria may be infected by phages.

- | | |
|-------------------|----------------------|
| A. Bacteriophages | D. Peptidoglycan |
| B. Phages | E. Virions |
| C. Microbial mats | F. None of the Above |

112. The genetic material can be ssRNA (single stranded RNA), dsRNA, ssDNA, or dsDNA between 1 and 100 kilo base pairs long with circural arrangement.

- A. True B. False

113. Bacteriophages are much smaller than the Plasma membrane they destroy - usually between 20 and 200 nm in size.

- A. True B. False

114. Which creature or substance is estimated to be the most widely distributed and diverse entities in the biosphere?

- A. Bacteriophages
- B. Phages
- C. Microbial mats
- D. Peptidoglycan
- E. Virions
- F. None of the Above

115. Which creature or substance is ubiquitous and can be found in all reservoirs populated by bacterial hosts, such as soil or the intestine of animals?

- A. Host cell secretion
- B. Phage(s)
- C. Lysogenic
- D. Plasma membrane
- E. Bacterial hosts
- F. None of the Above

116. Phages may be released via cell lysis or by?

- A. Host cell secretion
- B. Phage(s)
- C. Lysogenic
- D. Plasma membrane
- E. Bacterial hosts
- F. None of the Above

117. Which phages does not kill the host but rather become long-term parasites and make the host cell continually secrete more new virus particles?

- A. Host cell secretion
- B. Phage(s)
- C. Lysogenic
- D. Plasma membrane
- E. Bacterial hosts
- F. None of the Above

Shigella dysenteriae

118. *Shigella dysenteriae* is a species of the rod-shaped bacterial genus Shigellois (bacillary dysentery).

- A. True
- B. False

119. Enterotoxin and Shiga toxin can cause shigellosis (bacillary dysentery).

- A. True
- B. False

120. Shigellae are Gram-negative, non-spore-forming, facultatively anaerobic, Pleomorphic bacteria.

- A. True
- B. False

121. Salmonella is spread by contaminated water and food, causes the most severe dysentery because of its potent and deadly Shiga toxin, but other species may also be dysentery agents.

- A. True
- B. False

122. Amebiasis is typically via ingestion (fecal–oral contamination); depending on age and condition of the host as few as ten bacterial cells can be enough to cause an infection.

- A. True
- B. False

123. *Shigella* causes dysentery that result in the destruction of the Epithelial cells of the intestinal mucosa in the cecum and rectum.

- A. True
- B. False

124. Shiga toxin and verotoxin are associated with causing _____.
- A. Shigellae
 - B. Gram's stain
 - C. Enterotoxin and Shiga toxin
 - D. Gram-negative bacterium
 - E. Hemolytic uremic syndrome
 - F. None of the Above

Salmonella

125. Salmonella is a _____.
- A. Gram-negative bacterium
 - B. Microscopic organism
 - C. Fecal matter
 - D. Fecal coliform bacteria
 - E. Conditions are favorable for growth
 - F. None of the Above
126. Because they cause _____ and are greatly outnumbered by the bacteria normally found in the healthy bowel, primary isolation requires the use of a selective medium.
- A. Bacteria levels
 - B. Fecal coliform bacteria
 - C. Salmonellae
 - D. Bacterial concentrations
 - E. Intestinal infections
 - F. None of the Above
127. Which of the following terms may be so low in clinical samples that stools are routinely also subjected to "enrichment culture"?
- A. Enrichment culture
 - B. Microscopic organisms
 - C. Fecal matter
 - D. Salmonella
 - E. Conditions are favorable for growth
 - F. None of the Above
128. Salmonellae usually do not ferment lactose; most of them produce hydrogen sulfide, which in media containing _____, reacts to form a black spot in the center of the creamy colonies.
- A. Ferric ammonium citrate
 - B. Fecal coliform bacteria
 - C. Salmonellae
 - D. Bacterial concentrations
 - E. Fecal matter
 - F. None of the Above

Fecal Coliform Bacteria

129. Fecal coliform bacteria are _____ that live in the intestines of warm-blooded animals.
- A. Enrichment culture
 - B. Microscopic organisms
 - C. Fecal matter
 - D. Fecal coliform bacteria
 - E. Conditions are favorable for growth
 - F. None of the Above
130. They also live in the waste material, or feces, excreted from the intestinal tract. When fecal coliform bacteria are present in high numbers in a water sample, it means that the water has received _____ from one source or another.
- A. Bacteria levels
 - B. Fecal coliform bacteria
 - C. Salmonellae
 - D. Bacterial concentrations
 - E. Fecal matter
 - F. None of the Above
131. Although not necessarily agents of disease, _____ may indicate the presence of disease-carrying organisms, which live in the same environment as the fecal coliform bacteria.
- A. Enrichment culture
 - B. Microscopic organisms
 - C. Fecal matter
 - D. Fecal coliform bacteria
 - E. Conditions are favorable for growth
 - F. None of the Above

Reasons for Natural Variation

132. Unlike the other conventional water quality parameters, _____ are living organisms.

- A. Bacteria levels
- B. Fecal coliform bacteria
- C. Salmonellae
- D. Bacterial concentrations
- E. Fecal matter
- F. None of the Above

133. Which term is dependent on specific conditions for growth, and these conditions change quickly, fecal coliform bacteria counts are not easy to predict?

- A. Bacteria levels
- B. Fecal coliform bacteria
- C. Salmonellae
- D. Bacterial concentrations
- E. Fecal matter
- F. None of the Above

134. Winter rains may wash more _____ from urban areas into a stream, cool water temperatures may cause a major die-off.

- A. Enrichment culture
- B. Microscopic organisms
- C. Fecal matter
- D. Fecal coliform bacteria
- E. Favorable for growth
- F. None of the Above

Expected Impact of Pollution

135. The primary sources of _____ to fresh water are wastewater treatment plant discharges, failing septic systems, and animal waste.

- A. Enrichment culture
- B. Microscopic organisms
- C. Fecal matter
- D. Fecal coliform bacteria
- E. Conditions are favorable for growth
- F. None of the Above

136. Bacteria levels do not necessarily decrease as a watershed develops from rural to urban. Instead, urbanization usually generates?

- A. Bacteria levels
- B. Fecal coliform bacteria
- C. New sources of bacteria
- D. Bacterial concentrations
- E. Fecal matter
- F. None of the Above

137. Farm animal manure and septic systems are replaced by domestic pets and leaking sanitary sewers. In fact, stormwater runoff in urbanized areas has been found to be surprisingly high in ?

- A. Enrichment culture
- B. Microscopic organisms
- C. Fecal matter
- D. Fecal coliform bacteria concentrations
- E. Conditions are favorable for growth
- F. None of the Above

Indicator Connection Varies

138. General coliforms, E. Coli, and Enterococcus bacteria are the " _____ " organisms generally measured to assess microbiological quality of water.

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Indicator
- F. None of the Above

What are these Indicators?

139. Which bug/creature/organism/species may indicate that there are feces from warm blooded animals in the water?

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Fecal streptococci
- F. None of the Above

140. Which bug/creature/organism/species is a type of Fecal streptococci?

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus
- E. Fecal streptococci
- F. None of the Above

141. According to studies conducted by the EPA, _____ have a greater correlation with swimming-associated gastrointestinal illness.

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Gastroenteritis
- E. Enterococci
- F. None of the Above

142. There isn't currently a quantitative method for measuring specifically _____ (expensive genetic studies can give a presence/absence result).

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Human fecal bacteria
- E. Gastroenteritis
- F. None of the Above

143. Which term represents that the water has come in contact with plant or animal life?

- A. Pathogen are present
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Biological
- F. None of the Above

144. Which bug/creature/organism/species/disease are universally present, including in pristine spring water?

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Shigella dysenteriae
- F. None of the Above

145. Which bug/creature/organism/species/disease at very high levels they indicate there is what amounts to a lot of compost in the water, which could easily include (Ten thousand general coliform bacteria will get you a beach closure, compared to two or four hundred fecal coliforms, or fifty enterococcus)?

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Shigella dysenteriae
- F. None of the Above

146. Which bug/creature/organism/species/disease, particularly E. coli, indicate that there are mammal or bird feces in the water?

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Shigella dysenteriae
- F. None of the Above

147. The more closely related the animal, the more likely _____ excreted with their feces can infect us.

- A. Pathogens
- B. General coliforms
- C. Fecal coliforms
- D. Enterococcus bacteria
- E. Gastroenteritis
- F. None of the Above

148. Ingesting feces from someone who is not carrying any pathogens can't infect you.

- A. True
- B. False

E. coli O157:H7

149. Symptoms of E. coli O157:H7 (bacterium) vary with type caused _____.

- A. Shigella dysenteriae
- B. Bacterium
- C. Enterococcus bacteria
- D. E. coli
- E. Gastroenteritis
- F. None of the Above

150. Which bug/creature/organism/species is an emerging cause of foodborne illness?

- A. Preventive measures
- B. Escherichia coli O157:H7
- C. Enterovirulent E. coli
- D. Gastroenteritis
- E. Person-to-person contact
- F. None of the Above

151. Which bug/creature/organism/species have been associated with eating undercooked, contaminated ground beef?

- A. Shigella dysenteriae
- B. Bacterium
- C. Most illnesses
- D. E. coli
- E. E. coli O157:H7
- F. None of the Above

152. Which term is used to express that in families and child care centers are an important mode of transmission and that infection can also occur after drinking raw milk and after swimming in or drinking sewage-contaminated water?

- A. Preventive measures
- B. E. coli O157:H7
- C. Enterovirulent E. coli
- D. A cause of illness
- E. Person-to-person contact
- F. None of the Above

153. Consumers can prevent _____ infection by thoroughly cooking ground beef, avoiding unpasteurized milk, and washing hands carefully.

- A. Shigella dysenteriae
- B. Bacterium
- C. Most illnesses
- D. E. coli
- E. E. coli O157:H7
- F. None of the Above

What is Escherichia coli O157:H7?

154. Systems serving 25 to 1,000 people typically take one sample per month. Some states reduce this frequency to quarterly for ground water systems if a recent sanitary survey shows that the system is free of Sanitary defects.

- A. True
- B. False

155. Larger types of systems can qualify for five samples a month.

- A. True
- B. False

156. Systems using surface water, rather than ground water, are required to take extra steps to protect against bacterial contamination because surface water sources are more vulnerable to such contamination.

A. True B. False

157. At a minimum, all systems using surface waters must treat, this will kill E. coli O157:H7.

A. True B. False

158. Which bug/creature/organism/species is a normal inhabitant of the intestines of all animals, including humans?

A. Shigella dysenteriae D. E. coli
B. Bacterium E. E. coli O157:H7
C. Most illnesses F. None of the Above

159. Under the Safe Drinking Water Act, the EPA requires public water systems to monitor for?

A. Indicators D. E. coli contamination
B. Five samples a month E. Coliform bacteria
C. Bacterial contamination F. None of the Above

160. Systems analyze first for total coliform, any time that a sample is positive for total coliform, the same sample must be analyzed for either _____.

A. Total coliform D. EPA regulations
B. Sanitary survey E. Coliform bacteria
C. Fecal coliform or E. coli F. None of the Above

161. Smaller systems must take at least five samples a month unless the state has conducted a sanitary survey – a survey in which a state inspector examines system components and ensures they will protect public health – at the system within the last five years.

A. True B. False

162. E. coli O157:H7 is one of hundreds of strains of the Enterococcus bacteria.

A. True B. False

163. E. coli O157:H7 was first recognized as a cause of illness in 1982 during an outbreak of severe bloody diarrhea; the outbreak was traced to contaminated hamburgers. Since then, most infections have come from eating undercooked ground beef.

A. True B. False

164. The combination of letters and numbers in the name of the bacterium refers to the specific markers found on its surface and distinguishes it from other types of E. coli.

A. True B. False

165. Currently, there are four recognized classes of _____ (collectively referred to as the EEC group) that cause gastroenteritis in humans.

A. Preventive measures D. A cause of illness
B. E. coli O157:H7 E. Person-to-person contact
C. Enterovirulent E. coli F. None of the Above

How is E. coli O157:H7 spread?

166. The _____ can be found on a small number of cattle farms and can live in the intestines of healthy cattle. Meat can become contaminated during slaughter, and organisms can be thoroughly mixed into beef when it is ground.

- A. Organism(s)
- B. Bacteria
- C. E. coli O157:H7
- D. Infected persons
- E. Hemorrhagic colitis
- F. None of the Above

167. Which bug/creature/organism/species is present on a cow's udders or on equipment may get into raw milk?

- A. Organism(s)
- B. Bacteria
- C. E. coli O157:H7
- D. Infected persons
- E. Hemorrhagic colitis
- F. None of the Above

Microorganism Appendix

Protozoa

168. When protozoa are in the form of _____, they actively feed and grow.

- A. Cysts
- B. Trophozoites
- C. Pathogens
- D. Hermaphroditic
- E. Apicomplexans
- F. None of the Above

169. Which bug/creature/organism/species play a role both as herbivores and as consumers in the decomposer link of the food chain?

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

170. Which bug/creature/organism/species are an important food source for microinvertebrates?

- A. Meiofauna
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Protozoa
- F. None of the Above

171. The ecological role of protozoa in the transfer of bacterial and _____ to successive trophic levels is important.

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

172. According to the text, the process by which the protozoa takes its cyst form is called encystation, while the process of transforming back into _____ is called excystation.

- A. Cysts
- B. Trophozoite
- C. Pathogens
- D. Hermaphroditic
- E. Apicomplexans
- F. None of the Above

173. Protozoa occupy a range of trophic levels, as predators, they prey upon unicellular or filamentous algae, bacteria, and?

- A. Microfungi
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

174. Most protozoa exist in 5 stages of life which are in the form of?

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

175. Which bug/creature/organism/species can survive harsh conditions, such as exposure to extreme temperatures and harmful chemicals, or long periods without access to nutrients, water, or oxygen for a period of time.

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

176. An individual protozoan is?

- A. Cysts
- B. Trophozoite
- C. Pathogens
- D. Hermaphroditic
- E. Apicomplexans
- F. None of the Above

177. Which bug/creature/organism/species are around 10–50 micrometer, but can grow up to 1 mm and can easily be seen under a microscope.

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

178. Which bug/creature/organism/species exist throughout aqueous environments and soil.

- A. Protozoa
- B. Malaria parasites
- C. Microinvertebrates
- D. Algal production
- E. Trophozoites and cysts
- F. None of the Above

Classification

179. Protozoa were commonly grouped in the kingdom of Protista together with the plant-like algae and fungus-like water molds and slime molds. In the 21st-century systematics, protozoans, along with ciliates, mastigophorans, and apicomplexans, are arranged as animal-like protists. Protozoans are neither Animalia nor Metazoa (with the possible exception of the enigmatic, moldy Myxozoa).

- A. True
- B. False

180. Trophozoite usually have non-specific routes by which they are transmitted, and these routes may depend on the type of cells and tissue that a particular agent targets.

- A. True
- B. False

181. Once in the air, the viruses can infect another person who is unlucky enough to inhale air containing the Virus particles.

- A. True
- B. False

182. Agents vary greatly in their stability in the environment. Some viruses may survive for only a few minutes outside of a host, while some Apicomplexans are extremely durable and may survive in a dormant state for a week or more.

- A. True
- B. False

Protozoa Section

183. The diverse assemblage of organisms that carry out all of their life functions within the confines of a single, complex _____ are called protozoa.

- A. Eukaryotic cell
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. Cytoplasma
- F. None of the Above

184. Which bug/creature/organism/species, and Paramecium, and Amoeba are well-known examples of these major groups of protozoans?

- A. Eukaryotes
- B. Enterovirulent E. coli
- C. Marine ciliates
- D. Euglena
- E. Cytoplasma
- F. None of the Above

185. Which bug/creature/organism/species are more closely related to animals, others to plants, and still others are relatively unique?

- A. Eukaryotic cell
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. Cytoplasma
- F. None of the Above

186. Which bug/creature/organism/species are sometimes also called algae and are addressed elsewhere?

- A. Eukaryotes
- B. Enterovirulent E. coli
- C. Amoeba(s)
- D. Marine ciliates
- E. Unicellular photosynthetic protozoa
- F. None of the Above

Free-living Protozoa

187. Because of their small size, production of resistant cysts, and ease of distribution from one place to another, many species appear to be cosmopolitan and may be collected in similar?

- A. Eukaryotic cell
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. Cytoplasma
- F. None of the Above

188. Which bug/creature/organism/species inhabit interstices of sediment and beach sands, surfaces, deep sea and cold Antarctic environments, planktonic habitats, and the algal mats and detritus of estuaries and wetlands.

- A. Eukaryotes
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. Cytoplasma
- F. None of the Above

189. Which bug/creature/organism/species are found in all moist habitats within the United States, but we know little about their specific geographic distribution?

- A. Eukaryotes
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. Cytoplasma
- F. None of the Above

Amoebas

How does an amoeba locomote?

190. Which bug/creature/organism/species locomote by way of cytoplasmic movement. (cytoplasm is the cell content around the nucleus of the cell)

- A. Eukaryotes
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. E. coli
- F. None of the Above

191. Which bug/creature/organism/species forms pseudopods (false feet) with which they 'flow' over a surface.

- A. Eukaryotes
- B. Protozoa(ns)
- C. Amoeba(s)
- D. Marine ciliates
- E. E. coli
- F. None of the Above

192. These pseudopods are also used to capture prey; they simply engulf the food. They can detect the kind of prey and use different?

- A. Eukaryotic cell
- B. Protozoa(ns)
- C. Amoeba(s)
- D. 'Engulfing tactics'
- E. Cytoplasm
- F. None of the Above

Protozoa Information

193. Which bug/creature/organism/species have been documented from almost every type of soil and in every kind of environment, from the peat-rich soil of bogs to the dry sands of deserts?

- A. Foraminifera
- B. Protozoan fauna
- C. Soil-dwelling protozoa
- D. Soil-loving Amoeba
- E. Microsporidia
- F. None of the Above

194. In freshwater habitats, the foraminifera and radiolaria common in marine environments are absent or low in numbers while _____ exist in greater numbers.

- A. Foraminifera
- B. Testate amoebae
- C. Cytoplasm of protozoa
- D. Soil biomass
- E. Microsporidia
- F. None of the Above

Environmental Quality Indicators

195. Polluted waters often have a rich and characteristic?

- A. Foraminifera
- B. Protozoan fauna
- C. Cytoplasm of protozoa
- D. Soil biomass
- E. Microsporidia
- F. None of the Above

E-Coli Section

196. Escherichia coli. There are several pathogenic strains of Escherichia coli, which are classified under enterovirulent E. coli. They are enterohemorrhagic, enteroinvasive, enterotoxigenic, enteropathogenic, and enteroaggregative.

- A. True
- B. False

197. Escherichia coli. In its most severe form, it can cause?

- A. Hemorrhagic colitis
- B. Escherichia coli O157:H7
- C. Beaver fever
- D. Pseudomonas
- E. Salmonellosis
- F. None of the Above

198. Prevention strategies for E. coli O157:H7 include _____, halogenation of water, or boiling water for one minute.

- A. Primary protection
- B. Source protection
- C. Sodium chlorite
- D. Eliminating snails with a molluscicide
- E. Backflow prevention
- F. None of the Above

199. What is the bacterial disease caused by the Salmonella species that causes diarrheal illness?

- A. Beaver fever
- B. Escherichia coli O157:H7
- C. Bacteria
- D. Pseudomonas
- E. Salmonellosis
- F. None of the Above

200. Prevention strategies for Salmonella include source protection, halogenation of water, and also?

- A. KNMO4
- B. Source protection
- C. Chlorine dioxide
- D. Eliminating snails with a molluscicide
- E. Boiling water for one minute
- F. None of the Above