

# Chapter 7 Test

7-11

## Objective Questions

- c  
Recall
1. Which of the following is best to sterilize heat-labile solutions?
- Dry heat
  - Autoclave
  - Membrane filtration
  - Pasteurization
  - None of the above
- a  
Recall
2. Which of the following best describes the pattern of microbial death?
- The cells in a population die at a constant rate.
  - All the cells in a culture die at once.
  - All of the cells in a culture are never killed.
  - The pattern varies depending on the antimicrobial agent.
  - The pattern varies depending on the species.
- e  
Analysis
3. Bacterial death will result from damage to which of the following structures?
- Cell wall
  - Plasma membrane
  - Proteins
  - Nucleic acids
  - All of the above
- c  
Recall
4. Which of the following substances can sterilize?
- Alcohol
  - Phenolics
  - Ethylene oxide
  - Chlorine
  - Soap
- c  
Recall
5. Which of the following is used for surgical hand scrubs?
- Phenol
  - Chlorine bleach
  - Chlorhexidine
  - Soap
  - Glutaraldehyde
- e  
Recall
6. Which of the following is *not* a heavy metal?
- Silver nitrate
  - Mercurochrome
  - Merthiolate
  - Copper sulfate
  - Chlorine

- d  
Analysis
7. Place the following surfactants in order from the most effective to the least effective antimicrobial activity:  
1-Soap; 2-Anionic detergent; 3-Cationic detergent.
- 1, 2, 3
  - 1, 3, 2
  - 2, 1, 3
  - 3, 2, 1
  - 3, 1, 2
- a  
Recall
8. The antimicrobial activity of chlorine is due to which of the following?
- The formation of hypochlorous acid
  - The formation of hydrochloric acid
  - The formation of ozone
  - The formation of free O
  - Disruption of the plasma membrane
- e  
Analysis
9. Iodophors differ from iodine ( $I_2$ ) in that iodophors
- Don't stain.
  - Are less irritating.
  - Are longer lasting.
  - Are combined with a nonionic detergent.
  - All of the above.
- d  
Recall
10. Phenolics differ from phenol in that phenolics are all of the following *except*
- Nonirritating.
  - Relatively odorless.
  - More effective antibacterial agents.
  - More toxic to human cells.
  - All of the above.
- b  
Recall
11. Which of the following does *not* achieve sterilization?
- Dry heat
  - Pasteurization
  - Autoclave
  - Formaldehyde
  - Ethylene oxide
- d  
Analysis
12. Which of the following is a limitation of the autoclave?
- Length of time
  - Ability to inactivate viruses
  - Ability to kill endospores
  - Use with heat-labile materials
  - Use with glassware
- e  
Recall
13. Which of the following affects the elimination of bacteria from an object?
- Number of bacteria present
  - Temperature
  - pH
  - Presence of organic matter
  - All of the above

d  
Analysis

14. Which of the following is *not* a direct result of heat?
- Breaking hydrogen bonds
  - Breaking sulfhydryl bonds
  - Denaturing enzymes
  - Cell lysis
  - None of the above

a  
Recall

15. Which of the following substances is the least effective antimicrobial agent?
- Soap
  - Cationic detergents
  - Phenolics
  - Iodine
  - Alcohol

e  
Analysis

16. Which of these disinfectants acts by denaturing proteins?
- Phenolics
  - Aldehydes
  - Halogens
  - Alcohols
  - All of the above

e  
Analysis

17. Which of these is *not* an oxidizing agent?
- Ozone
  - Hydrogen peroxide
  - Iodine
  - Chlorine
  - None of the above

e  
Analysis

18. Which of the following is *not* used for the disinfection of water?
- Ozone
  - Gamma radiation
  - Chlorine
  - Copper sulfate
  - None of the above

a  
Understanding

19. Which of the following is *not* effective against nonenveloped viruses?
- Alcohol
  - Chlorine
  - Ethylene oxide
  - Ozone
  - All are equally effective

a  
Understanding

20. Glutaraldehyde is considered one of the most effective disinfectants for hospital use. Which of the following would *not* be true about glutaraldehyde?
- Stains and corrodes.
  - Safe to transport.
  - Acts rapidly.
  - Not hampered by organic material.
  - Attacks all microorganisms.

b  
Recall

21. Which concentration of ethyl alcohol is the most effective bactericide?
- 100%
  - 70%
  - 50%
  - 40%
  - 30%

e  
Analysis

22. All of the following contribute to hospital-acquired infections *except*
- Invasive procedures can produce a portal of entry for bacteria.
  - Bacteria are naturally found in water.
  - Biofilms are resistant to many disinfectants.
  - Bacteria can colonize pipes and tubing.
  - Equipment is sterilized before shipping to the consumer.

d  
Recall

23. Which of the following treatments is the most effective for controlling microbial growth?
- 63°C for 30 min.
  - 72°C for 15 sec.
  - 140°C for < 1 sec.
  - They are equivalent treatments.
  - None are effective.

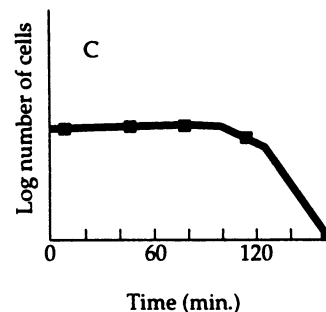
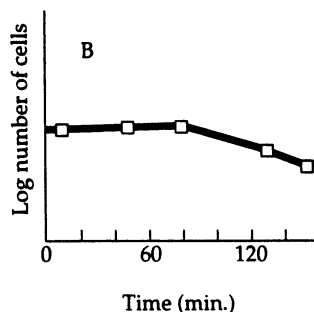
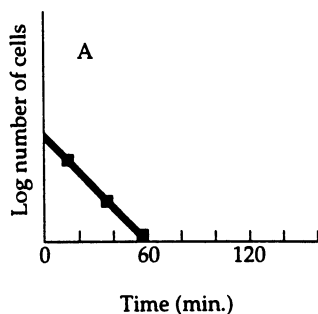
c  
Analysis

24. Which of the following could be used to sterilize plastic Petri plates in a plastic wrapper?
- Microwaves
  - Ultraviolet radiation
  - Gamma radiation
  - Sunlight
  - None of the above

a  
Analysis

25. Which of the following treatments does *not* yield a sterile product?
- 0.45  $\mu\text{m}$  filtration
  - Autoclaving
  - Gamma radiation
  - Ionizing radiation
  - 170°C for 2 hr

Use these graphs to answer questions 26 and 27.



b  
Analysis

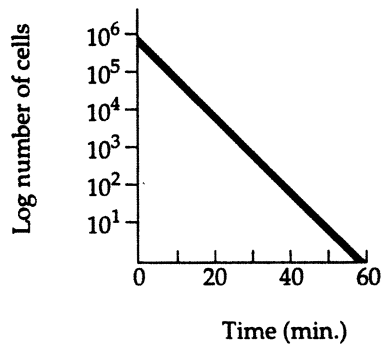
26. What is the thermal death time for culture A?
- 150°C
  - 60 min.
  - 120 min.
  - 100°C
  - Can't tell

c  
Understanding

27. Assume that one culture is a freshly opened package of dried yeast with 0.1% moisture, another culture is the same yeast with 7.5% moisture, and the third culture is a package of yeast mixed with water. Each culture was exposed to 130°C in a hot-air oven. Which graph most likely shows the yeast with 0.1% moisture?
- A
  - B
  - C
  - A and B
  - B and C

Understanding

Use these data for questions 28 through 30. A suspension of  $10^6$  *Bacillus cereus* endospores was put in a hot-air oven at 170°C. Plate counts were used to determine the number of endospores surviving at the time intervals shown.



- e
28. The thermal death point for this culture is
- 15 min.
  - 50°C.
  - 30 min.
  - 170°C.
  - Can't tell from the data provided.

- b
29. The decimal reduction time (D value) for the culture is approximately
- 0 min.
  - 15 min.
  - 30 min.
  - 45 min.
  - 60 min.

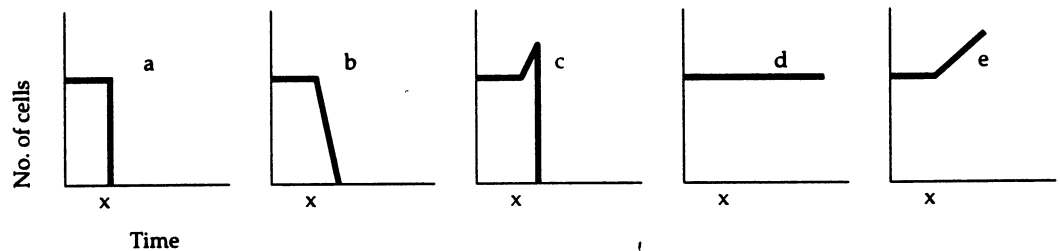
- e
30. The thermal death time for this culture is
- 0 min.
  - 15 min.
  - 30 min.
  - 45 min.
  - 60 min.

b  
Recall

31. Which of the following pairs is *not* correctly matched?
- AgNO<sub>3</sub>—newborns' eyes
  - Merthiolate—open wounds
  - CuSO<sub>4</sub>—algicide
  - H<sub>2</sub>O<sub>2</sub>—open wounds
  - None of the above

Understanding

Use the following graphs to answer questions 32 and 33. Choices may be used once, more than once, or not at all. Assume 10<sup>9</sup> *E. coli* cells/ml are in a flask.



- b 32. Which graph best depicts the effect of placing the culture in an autoclave for 15 min. at time *x*?
- d 33. Which graph best depicts the effect of placing the culture at 7°C at time *x*?

Understanding

Use the following chart to answer questions 34 through 36. A filter paper disk test using *Staphylococcus* gave the following results:

Disinfectant	Zone of inhibition (mm)
A	0
B	2.5
C	10
D	5

- c 34. Which compound was the most effective against *Staphylococcus*?
- A
  - B
  - C
  - D
  - Can't tell
- e 35. Which compound was the most effective against *E. coli*?
- A
  - B
  - C
  - D
  - Can't tell
- e 36. Which compound was bactericidal?
- A
  - B
  - C
  - D
  - Can't tell

b  
Analysis

37. The fate of *E. coli* O157:H7 in apple cider held at 8°C for 2 weeks, with and without preservatives, is shown below:

	Bacteria/ml
Cider only	2.2
Cider with	
Potassium sorbate	2.0
Sodium benzoate	0
Sorbate + benzoate	0

Which preservative is most effective?

- Sorbate
- Benzoate
- Sorbate + benzoate
- No preservative

a  
Analysis

38. Which one of the following does *not* belong with the others?
- Acid-anionic detergents
  - Benzoic acid
  - Commercial sterilization
  - Pasteurization
  - Sorbic acid

d  
Analysis

39. Which one of the following does *not* belong with the others?
- Beta-propiolactone
  - Glutaraldehyde
  - Ethylene oxide
  - Hydrogen peroxide
  - Propylene oxide

a  
Recall

40. Foods are preserved with all of the following *except*
- Biguanides
  - Nisin
  - Potassium sorbate
  - Sodium nitrite
  - Sodium propionate

e  
Recall

41. Which one of the following is *most* useful for disinfecting medical instruments?
- Benzoic acid
  - Biguanides
  - Chlorine
  - Phenol
  - Quats

c  
Analysis

42. Which one of the following is the best advertisement for a disinfectant?
- Kills *E. coli*.
  - Kills *Staphylococcus aureus*.
  - Kill *Pseudomonas*.
  - Kills lipophilic viruses.
  - All are equal.

Understanding

Use this information to answer questions 43 through 45. The following data were obtained by incubating the bacteria in nutrient medium + disinfectant for 24 hr, then transferring one loopful to nutrient medium (subculturing).

Dilution	Doom		K.O.		Mortum		Sterl	
	Initial	Subculture	Initial	Subculture	Initial	Subculture	Initial	Subculture
1:16	-	+	+	+	-	-	-	+
1:32	-	+	+	+	-	+	+	+
1:64	-	+	+	+	+	+	+	+
1:128	+	+	+	+	+	+	+	+

- a
43. Which disinfectant is the most effective at stopping bacterial growth?
- Doom
  - K.O.
  - Mortum
  - Sterl
  - Can't tell
- c
44. Which disinfectant was bactericidal?
- Doom
  - K.O.
  - Mortum
  - Sterl
  - Can't tell
- e
45. Which disinfectant was most effective against *Salmonella*?
- Doom
  - K.O.
  - Mortum
  - Sterl
  - Can't tell