Test Bank for Krasners Microbial Challenge 4th Edition by Shors

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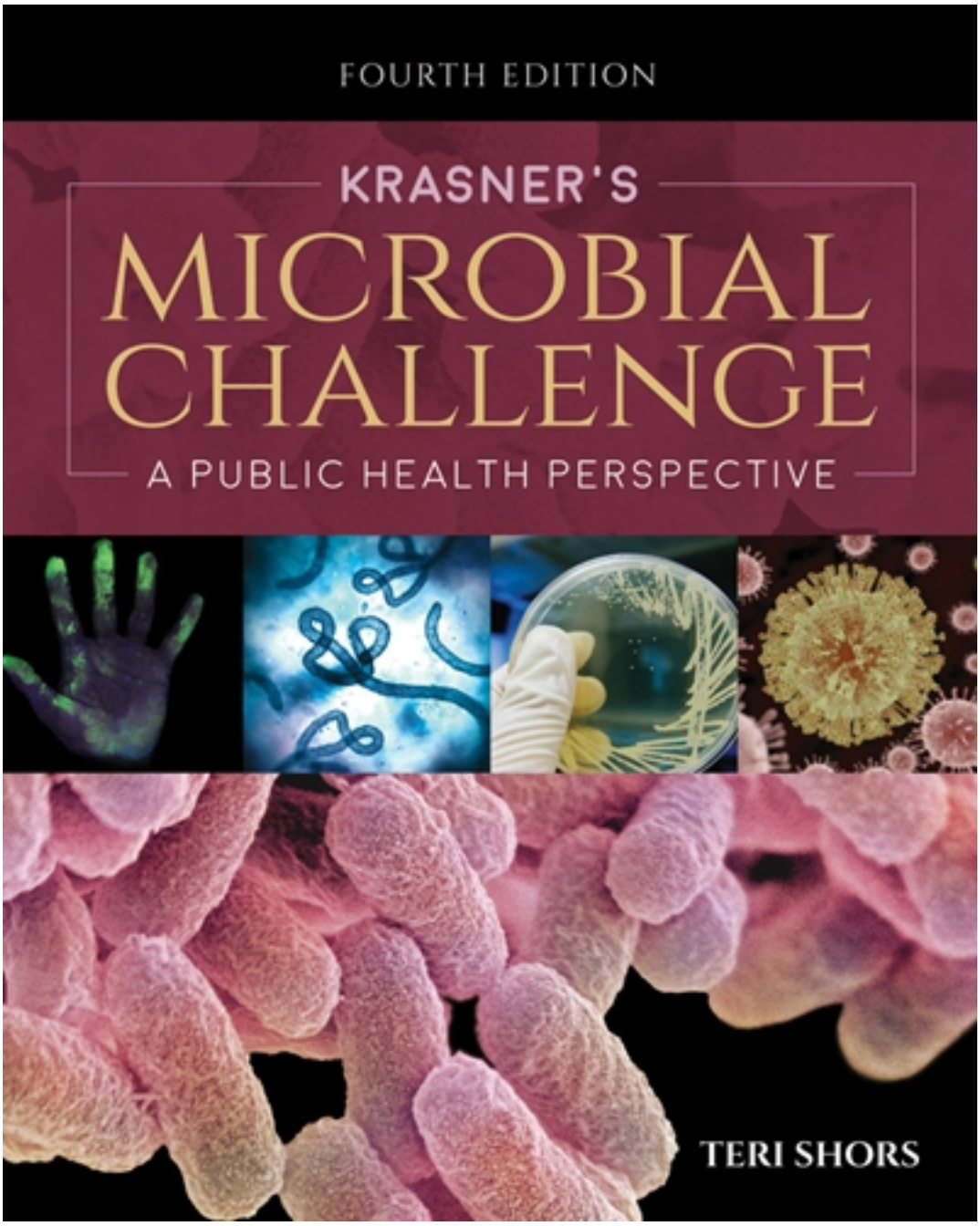

Test Bank

Krasner's Microbial Challenge, 4th Edition
Chapter 2 Test Bank
Teri Shors

File: Chapter 2, Post- Germ Theory, Microbiology, and Medicine

Multiple Choice

1) During the "golden age of microbiology" what would be the least likely question in which scientists would wrestle?

A) Can life emerge from nonlife (spontaneous generation)?
B) Do microbes cause infectious diseases?
C) How diverse is the microbial world?
D) Do viruses in the soil and water carry out beneficial activities?

Ans: D
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2) Koch's postulates are important in that

A) They help in naming diseases.
B) They are used to find cures for diseases.
C) They establish the causative organism of a disease.
D) All of the above

Ans: C
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3) Louis Pasteur and Robert Koch differed in what ways

A) Koch favored disease control where Pasteur favored immunity.
B) Koch favored vaccines where Pasteur favored disease containment.
C) Koch favored disease prevention where Pasteur favored disease eradication.
D) Koch favored disease immunity where Pasteur favored policies that prevented the spread of pathogens.
.

Ans: A
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4) Typhoid Mary is an example of a(n)

A) healthy carrier.
B) inactive carrier.
C) active carrier.
D) mail carrier.

Ans: A
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5) Penicillin was first made available by prescription circa _____.

A) 1905
B) 1935
C) 1945
D) 1955

Ans: D
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6) Enders, Weller, and Robbins were awarded the 1954 Nobel Prize for

A) keeping the peace.
B) cultivating the smallpox virus.
C) cultivating poliovirus.
D) their work in polio vaccines.

Ans: C
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7) What was the type of organism Alexandre Yersin discovered as the culprit behind the Bubonic Plague and where in the human body did he discover this pathogen?

A) gram +, blood samples
B) gram -, blood sample
C) gram +, buboes
D) gram -, buboes

Ans: C
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8) Why do we not know more about the diversity of the microbial life on our planet?

A) microscopes are limited in what they can observe.
B) limited number of microbes can be isolated and cultured in the lab.
C. it is difficult to find them because of their size.
D. there is a general lack of interest from the general public about them.

Ans: B
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9) The key finding of Griffiths 1928 transformation experiment was that dead S cells transformed

A) avirulent S cells into virulent R cells.
B) virulent S cells into avirulent R cells.
C) virulent R cells into avirulent S cells.
D) avirulent R cells into virulent S cells.

Ans: D
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10) Hershey and Chase demonstrated that the radioactive component of phage that entered bacteria is/are

A) carbohydrate.
B) DNA.
C) lipids.
D) protein.

Ans: B
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11) The virulence factor made by the S cells in Griffith's transformation experiment was

A) adhesin.
B) capsule.

C) exotoxin.
D) endotoxin.

Ans: B
Page: 50

12) The significant finding made in 1953 was

A) that DNA is a double helix.
B) that nucleic acid was isolated from fish sperm and pus.
C) that phage carry DNA as the genetic material.
D) that genetic material is transferred between bacteria.

Ans: A
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13) Which of these drug(s) is NOT an antibiotic?

A) penicillin
B) sulfonamide
C) erythromycin
D) all are antibiotics

Answer: B
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14. What is a promising new tool to discover the breadth of the microbial life on earth?

A. New electron microscopes to see life never before discovered
B. Isolating DNA from environmental samples and sequencing it.
C. Using the worldwide web to connect scientists and their findings.
D. Using new chemical compounds to grow an increasing array of microbes.

Answer: B
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15) How did Fanny Hesse's cooking tip revolutionized bacteriology?

A) She suggested that scientists should grow bacteria on agar.
B) She created a chart for the proper cooking temperatures for medium
C) She created mediums that could grow a wider range of microbes

D) She created special containers to grow bacteria

Answer: A
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16) Julius Richard Petri designed the petri dish to overcome what problem in microbiology?

A) Cultures were difficult to observe in test tubes.
B) Cultures were contaminated when lids covering them were removed which exposed them to air.
C) Cultures were difficult to transport due to the weight and size of the containers.
D) The containers became too expensive to use for research.

Answer: B
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17) "Life begets life" refutes what theory?

A) cell theory
B) microbial theory
C) spontaneous generation
D) germ theory

Ans: C
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18) What was a key design feature that made the petri dish so successful?

A) Slightly larger lid than bottom
B) Light weight material
C) Easy to see colonies growing
D) Small size made it easy to transport

Answer: A
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19) Danish physician Hans Christian Gram was looking for a staining method for microbes that would do what?

A) Distinguish viruses from bacteria
B) Distinguish bacteria from the tissue in which they resided.
C) Distinguish different types of bacteria within a culture

D) None of the above

Answer: B
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20) What is an example of a microbe that is hard to find using the series of steps laid out Koch's procedure? What characteristics does this organism present that are challenging?

A) Mycobacterium leprae has one of the slowest generation times
B) Yersinia pestis cannot be isolated easily.
C) Clostridium perfringens will not grow in a laboratory.
D) Bacillus tetanus will not grow in a host animal.

Ans. A
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Short Answer

21) The creation of milk pasteurization is credited to _____.

Ans: Louis Pasteur
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22) Alexandre Yersin was a lesser-known French physician who discovered the pathogen for what dreaded disease?

Ans: Bubonic Plague (Yersinia pestis is the bacteria named in his honor)
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23) What cocktail is routinely used today in Georgia to prevent gastrointestinal infections in pediatric hospital

Ans: Intestiphage
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24) What is does the acronym DNA stand for?

Ans: deoxyribonucleic acid

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25) _____act as molecular scissors to recognize and cut specific short stretches of nucleotides in DNA.

Ans: Restriction enzymes
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26) What is the key characteristic of agar that makes it so useful in microbiology?

Ans: Microbe's enzymes cannot break it down into a liquid
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27) The creation of the rabies vaccine is credited to _____.

Answer: Louis Pasteur
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28) The discovery of penicillin is credited to _____.

Answer: Alexander Fleming
Page: 46

29) Name Koch's postulates in the correct sequence.

Ans: association, isolation, causation, reisolation
Page: 33

30) _____was the disease spread by Mary Malon in 1906.

Ans: Typhoid fever
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31) Name at least one of the advantages of using phages for research

Ans: Should have a least one of the following answers: Phages are easily grown and purified and are relatively inexpensive. Small doses can be used because their numbers increase exponentially as they spread from bacterium to bacterium. Toxicity to humans is not an issue because phages invade bacterial cells, not human cells. The replication and activity of phages introduced into the body are self-limited. Once their bacterial targets are destroyed, they gradually disappear from the body.
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32) Immigrants going through Ellis Island would go through this procedure in which inspectors would look at their feet, legs, body, hands, arms, face, eyes, and head for deformities _____.

Ans: six-second medical examination
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33) _____ is a bacterial chlamydia infection that can cause blindness.
Ans: trachoma
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34) _____ are antimicrobials, not antibiotics because they are synthetic compounds, not products of microbes.

Ans: sulfonamide (sulfa) drugs.
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35) Name the three scientists that received the Nobel Prize in 1954 for their work with poliovirus.

Ans: Enders, Weller, and Robbins
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36) What was labeled in the phage experiment performed by Hershey and Chase when using ^{32}P _____ and ^{35}S_____?

Answer: DNA, protein
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37) How were Louis Pasteur and Edward Koch different in their approach to infective diseases?

Ans: Pasteur was highly interested in immunity and disease prevention through vaccination. Koch favored the use of public health measures to control infectious diseases.
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38) What did Pasteur mean when he wrote, “In the field of observation, chance favors only the prepared mind”?

Ans: It is not just sheer luck but rather the ability to recognize the significance of unexpected
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39) What are the four nitrogenous bases that make up DNA?

Ans: adenine (A), thymine (T), guanine (G) and cytosine (C)
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True/False

40) Hershey and Chase demonstrated that the radioactive component of phage that entered bacteria is DNA

Ans: True
Page: 50

41) Human microbiota is unique to you. It may replace a thumb print or retinal scan for authentication.

Ans: True
Page: 57

42) Increased bacterial diversity is associated with allergies.

Ans: False
Page: 57

43) Morning breath is caused by the microbes in your mouth.

Ans: True
Page: 57

44) Vegans and vegetarians have less diverse gut microbiota than meat-eaters.

Ans: False
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Essay

45) Describe the chronology of experiments that determined that DNA is the genetic material.

Ans: In 1928, Griffith discovered that the genetic material (transforming principle) in bacteria could be transferred from one cell to another in streptococci (dead S cells transformed live R cells). In 1944, Avery, MacLeod and McCarty, used biochemical analyses to determine that Griffith's transforming principle was DNA and not some other macromolecule. In 1952, Hershey and Chase confirmed that DNA, not protein, was the genetic material, using radioactively labeled phage; they determined that ^{32}P-labled phage DNA, not protein, entered bacteria and that new phage contained labeled DNA, not protein.
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46) Explain the process and significance of phage conversion. Make sure to include the terms prophage, lysogenized, and phage conversion.

Ans: The bacterium is infected by the bacteriophage, and phage nucleic acid known as prophage is incorporated into the bacterial chromosome. The bacterial cell is lysogenized and, in some cases, phage nucleic acid confers new properties (e.g., virulence), a phenomenon known as phage conversion.
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47) Describe Pasteur's experiments and how they were used to disprove spontaneous generation.

Answer: Cultivating bacteria as pure cultures in the laboratory was the key to identifying a bacterium that was the cause of a specific infectious disease. Pure cultures contain a homogeneous population of one bacterial species or clones of the same bacterium. Pasteur's experiments involved the use of nutrient broths, which he called *infusions which contained the pathogen.*
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48) List Koch's postulates and summarize their relevance.

Answer: 1. *Association:* The causative agent must be present in every case of the specific disease. 2. *Isolation:*The causative agent must be isolated in every case of the disease and grown in pure

culture. 3. *Causation:*The causative agent in the pure culture must cause the disease when inoculated into a healthy and susceptible laboratory animal. 4. *Reisolation:* Microbes identical to those identified in postulate 2 are isolated from the dead animal. These postulates have been invaluable to medical microbiologists and physicians throughout the 20th century and into the 21st century and continue to play an important role in the identification of the causes of new and reemerging infections. They are not perfect (see page 33, leprosy) however they give scientists a method to uncover the underlining pathogens behind infectious diseases.
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49) Justify why the mapping of the human genome was so important for the development of molecular biology tools.

Answer: All human diseases have a genetic basis, whether the genes are inherited or occur through changes caused by the environment (e.g., exposure to carcinogens that alter one's genes, increasing a person's cancer risk). Sequencing of the human genome and all major pathogens is beginning to impact diagnosis, treatment, and prevention of diseases. We have entered the era of personalized medicine. Personalized medicine is treatment uniquely developed for each patient based on genetic, diet, lifestyle, and environmental factors.
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50) Describe the human microbiome and its association with diseases caused by microbes and changes in the immune system.

Answer: Knowledge about the human microbiome is strengthening our appreciation that microbes make major contributions toward human health and well-being. From the moment we are born, we are inhabited and surrounded by microbes that dictate the healthy development of the immune system.
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