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- ☐ Nucleic acid synthesis is involved in the formation of the viral envelope.
 - ✓ ☒ **Nucleic acid synthesis is crucial for producing copies of the viral genome, which are needed for assembling new viruses.**
 - ☐ Nucleic acid synthesis allows viruses to evade the immune response.
8. If a virus is unable to bud from the host cell membrane, what impact would this have on its ability to infect other cells?
- ☐ The virus would become a prion.
 - ✓ ☒ **The virus would be unable to spread to new host cells.**
 - ☐ The virus would increase its virulence.
 - ☐ The virus would replicate faster within the host cell.
9. What is the primary goal of sanitization in microbial control?
- ✓ ☒ **Reducing the number of microorganisms on inanimate objects to acceptable levels.**
 - ☐ Increasing the number of microorganisms on surfaces.
 - ☐ Eliminating all microorganisms from surfaces.
 - ☐ Enhancing the growth of beneficial microorganisms.
10. Which of the following relies upon existing biodiversity for the decontamination of polluted ecosystems?
- ☐ After centuries of agricultural production, soils depleted of nitrogen can be replenished by promoting the growth of nitrogen-fixing organisms.
 - ☐ Sawdust from lumber mills can be used to soak up chemicals that have saturated natural ecosystems.

- ☐ Capsomers assist in the replication of the viral genome.
- ☐ Capsomers help the virus evade the host immune system.
- ✓ ☒ **Capsomers assemble to form the nucleocapsid, which encases and protects the viral genome.**
- ☐ Capsomers are involved in the metabolic processes of the virus.

48. Many microbes are sensitive to osmotic pressure. Which of the following statements correctly describes an environment with improper osmotic pressure and its effects on a bacterial cell?

- ☐ High concentrations of hydrogen ions are too acidic for many bacteria
- ✓ ☒ **High salt concentrations can kill bacteria by drawing water out of bacterial cells**
- ☐ High oxygen concentrations can kill bacteria by generating free radicals

49. The function of the viral capsid is to

- ☐ None of the above
- ☐ Encode viral proteins
- ☐ Replicate the viral genome
- ✓ ☒ **Protect the viral genome**

50. What is a key characteristic of nonenveloped viruses?

- ☐ They contain a lipid membrane.
- ☐ They only infect bacterial cells.
- ✓ ☒ **They lack a lipid membrane.**
- ☐ They are larger than enveloped viruses.

69. If a laboratory is working with a heat-sensitive culture medium that may contain endospores, which method would be most appropriate to ensure sterility, and why?
- ☐ Incubation, because it promotes the growth of all microorganisms.
 - ☐ Filtration, because it removes all bacteria without heat.
 - ☐ Autoclaving, because it kills all microorganisms instantly.
 - ✓ ☒ **Tyndallization, because it allows endospores to germinate before killing the vegetative cells.**
70. Prophylaxis is the use of antimicrobial drugs to
- ✓ ☒ **prevent infection.**
 - ☐ reduce infective dose.
 - ☐ treat an infection.
 - ☐ test susceptibility.
71. Describe the process by which moist heat inactivates microbial enzymes.
- ✓ ☒ **Moist heat denatures proteins, leading to the inactivation of enzymes essential for microbial function.**
 - ☐ Moist heat causes enzymes to become more active, increasing microbial metabolism.
 - ☐ Moist heat has no effect on microbial enzymes.
 - ☐ Moist heat promotes enzyme synthesis, enhancing microbial growth.
72. Describe the role of the host cell membrane in the release of enveloped viruses.
- ☐ The host cell membrane prevents the release of enveloped viruses.

- ☐ My instructor tells me they are important.
- ✓ ☒ **Reducing the number of pathogenic microorganisms and hindering their transfer reduces opportunities for infections to spread.**
- ☐ Older adults and individuals with chronic disease are less susceptible to pathogens than healthy, younger people
- ☐ Microorganisms are always present in the environment; and, all microorganisms caused disease.

95. If a bacterial culture is placed in a hypertonic solution, what immediate effect would you expect on the cells, and what might be the long-term consequence for the culture?

- ☐ The cells would replicate faster due to increased osmotic pressure.
- ✓ ☒ **The cells would undergo plasmolysis, leading to inhibited growth and potential cell death over time.**
- ☐ The cells would swell and burst due to excess water intake.
- ☐ The cells would remain unaffected and continue to grow normally.

96. Describe how osmotic pressure influences the survival of microorganisms in environments with high solute concentrations.

- ☐ Osmotic pressure has no effect on microbial growth in hypertonic environments.
- ✓ ☒ **In hypertonic environments, high solute concentrations can inhibit microbial growth by causing bacteria to undergo plasmolysis.**
- ☐ Osmotic pressure only affects eukaryotic cells, not bacteria.
- ☐ Microorganisms thrive in hypertonic environments due to increased nutrient availability.

- ☐ Alcohols inhibit the growth of bacteria by blocking nutrient absorption.
- ☐ Alcohols create a protective layer on surfaces to prevent microbial growth.
- ☐ Alcohols neutralize toxins produced by bacteria.
- ✓ ☐ **Alcohols kill bacteria and viruses by denaturing proteins and dissolving lipids.**

145. Hydrogen peroxide typically kills microbes by:

- ☐ Causing mutations in DNA
- ✓ ☐ **Producing toxic free radicals**
- ☐ Disrupting the cell wall
- ☐ Inhibiting protein synthesis
- ☐ Disrupting the cell membrane
- ☐ Inhibiting RNA synthesis

146. Describe how spike proteins contribute to the infection process of a virus.

- ✓ ☐ **Spike proteins allow viruses to attach to host cells, which is essential for the infection process.**
- ☐ Spike proteins provide structural support to the virus.
- ☐ Spike proteins help in the replication of viral genetic material.
- ☐ Spike proteins protect the virus from being destroyed by the host's immune system.

147. During lysogeny,

- ✓ ☐ **E. B & C**
- ☐ B. The phage genome integrates into the bacterial chromosome