Chapter 3 Multiple Choice Practice Questions

1. Fill in the blank. …….. microscope uses visible light to observe specimens.

a. Electron

b. Light

c. Fluorescent

d. Scanning

2. True or False: A compound microscope uses two lenses to magnify the image, an objective an ocular lens.

a. True

b. False

3. For a compound microscope, the total magnification would be determined by:

a. The iris

b. The light source

c. Ocular lens x Objective lens

d. Neither of the above

4. True or False : The resolution of a microscope is best at shorter wavelengths.

a. True

b. False

5. Electrons travel a much shorter wavelength and are used for Electron microscopy. What does this microscope allow us to see?

a. Bacterial shape

b. Cell internal structures

c. Bonds between atoms

d. All of the above

6. Stains for viewing specimens under the microscope are positively or negatively charged ions. The colored negatively or positively charged dye is referred to as:

a. Destain

b. Chromophore

c. Mordant

d. Secondary Stain

7. Which of the following **is not** considered a differential stain?

1. Gram-stain
2. Acid fast
3. Endospore
4. Capsule stain
5. None of the above

8. A new bacterium has been discovered and is of interest because it causes serious respiratory infections in humans. If you need to see the surface details of this bacterium which microscope would you use?

a. Compound light microscope

b. Transmission electron microscope

c. Scanning microscope

d. Atomic Force microscope

9. True of False. A positive stain will only stain the background while the negative stain binds to the bacterium.

a. True

b. False

10. Which staining sequence is used for gram staining?

a. Crystal violet, Iodine, Alcohol wash, Safranin

b. Safranin, Iodine, Alcohol wash, Crystal violet

c. Iodine, Crystal violet, Alcohol wash, Safranin

d. Crystal violet, Safranin, Alcohol wash, Iodine.

e. None of the above

11. Which of the following organic molecules is found in bacterial peptidoglycan?

* 1. N-acetyl glucosamine (NAG)
  2. Glycerol
  3. N-acetyl muramic acid (NAM)
  4. Amino acids
  5. Teichoic acid
  6. All of the above
  7. a, b and c
  8. a, c, d and e

12. The cytoplasmic membrane of a eukaryote contains which biomolecules?

1. Sterols, lipopolysaccharide, phospholipids
2. Proteins and phospholipids
3. lipopolysaccharide, phospholipids, proteins
4. Sterols, proteins and phospholipids
5. Phospholipids and teichoic acid

13. True or False: A capsule is an organized layer of polysaccharide (protein or both) that is firmly attached to the cell wall while a slime layer is unorganized and loosely attached.

a. True

b. False

14. True or False: The slime layer formed in *Streptococcus pneumonia* is necessary for causing disease.

a. True

b. False

15. Which bacterial structure has been shown to be required for motility?

a. Cilia

b. Fimbriae

c. Mitochondria

d. Flagella

e. Nucleoid

16. True or False. For chemotaxis, bacteria will move away from an attractant and move toward a repellant.

a. True

b. False

17. Flagella are filamentous projections from the bacterial surface that allow some bacteria to:

a. Perform random walk.

b. Attach together and transfer genetic information.

c. Resist osmotic lysis in a hypotonic environment.

d. Initiate an infection by colonizing surfaces.

e. All of the above.

18. Fill in the blank: Gram positive bacteria cell walls have a thick layer of…

a. Slime

b. Proteins

c. Peptidoglycan

d. Sugars

19. Penicillin antibiotics target which bacterial structure?

a. Capsule

b. Cell membrane

c. Cell Wall

d. Flagella

20. Alcohols disrupt which feature in bacteria?

a. Cell wall

b. Cell membrane

c. Flagella

d. Nucleoid

21. The substance inside the cell is called?

a. Nucleoid

b. Cytoplasm

c. Periplasm

d. None of the above

22. The genetic information (DNA) is located in which bacterial structure?

a. Cytoplasm

b. Nucleus

c. Cell wall

d. Mitochondria

d. Nucleoid

23. True or False: The 80S ribosome is found in prokaryotes while the 70S ribosome is found in eukaryotes

a. True

b. False

24. Antibiotics such as streptomycin and erythromycin target which bacterial structure?

a. Cell wall

b. 70S ribosome

c. 80S ribosome

d. Peptidoglycan

d. None of the above

25. *Bacillus anthracis* and *Clostridium botulinum* contain which specialized dormant structures?

a. Ribosome

b. Capsule

c. Endospores

d. Flagella