

Basic Micro. -----First Hour Exam

Total Marks: 40

Name: _____ Reg. No _____ Date: 05/04/2011

I. Select the best answer (31marks)

1. Who was the first to observe microorganisms with a microscope?
A) Koch
B) **van Leeuwenhoek**
C) Pasteur
D) Hooke
E) None of the above
2. Which of the following pairs is mismatched?
A) Acid-alcohol __ decolorizer
B) **Gram-negative bacteria __ negative stain**
C) Alcohol __ decolorizer
D) Iodine __ mordant
3. This microscope produces an image of a light cell against a dark background; internal structures are not visible.
A) Compound light microscope
B) Phase-contrast microscope
C) **Darkfield microscope**
D) Fluorescence microscope
4. Which of the following is *not* a structure found in prokaryotic cells?
A) Axial filament
B) Flagella
C) **Cilia**
D) Peritrichous flagella
E) Pili
5. Which of the following is a descriptive prefix for bacteria appearing in clustered groups?
A) **Staphylo**
B) Strepto
C) Terminal
D) Coryne
6. The study of fungi is:
A) Parasitology
B) Etiology
C) **Mycology**
D) Virology
7. Gram positive cells:
A) Produce exotoxins
B) Have an outer membrane
C) Have a thick layer of peptidoglycan
D) **Both A and C**
8. A nosocomial infection is
A) Acquired from aerosols
B) **Acquired from a hospital**
C) Acquired by exchanging bodily fluids
D) Acquired in a social setting
9. What is the most common type of dye used on bacteria?
A) **Cationic**
B) No charge
C) Anionic
D) Protonic
10. Which of the following structures are designed to resist phagocytosis?
A) Phagocyte
B) Inclusion granules
C) **Glycocalyx**
D) Cell wall
11. Which of the following terms refers to the transfer of DNA from one cell to another via bacteriophage?
A) Transformation
B) Transcription
C) **Transduction**
D) Conjugation

12. Which of the following is *not* true about the glycocalyx?

- A) It may be responsible for virulence.
- B) It may be composed of polysaccharide.
- C) It may be composed of polypeptide.
- D) It is used to adhere to surfaces.
- E) None of the above.



13. Which of the following terms best describes the cell in the above Figure?

- A) Amphitrichous flagella
- B) Lophotrichous flagella
- C) Monotrichous flagella
- D) Peritrichous flagella
- E) Axial filament



14. In the above Figure, which diagram of a cell wall is a gram-negative cell wall?

- A) a
- B) b
- C) Both a and b
- D) Neither a nor b
- E) Can't say

15. In the above Figure, which diagram of a cell wall contains teichoic acids

- A) a
- B) b
- C) Both a and b
- D) Neither a nor b
- E) Can't say

16. Which of the following staining procedures involves heat?

- A) acid-fast stain
- B) endospore stain
- C) capsule stain
- D) Both A and B are correct.
- E) A, B, and C are correct.

17. A bacterial cell moving toward light would be an example of

- A) negative phototaxis.
- B) positive chemotaxis.
- C) negative chemotaxis.
- D) chemotaxis.
- E) positive phototaxis.

18. Lipid A is also known as

- A) pilin.
- B) endotoxin.
- C) lipopolysaccharide.
- D) teichoic acid.
- E) mycolic acid.

19. Which of the following pairs is MISMATCHED in reference to bacteria?

- A) Metachromatic granules--stored phosphates
- B) Plasmids--extrachromosomal DNA
- C) Glycocalyx--slime layer
- D) Cell wall--NAM-NAG
- E) Ribosomes--attached to the Endoplasmic Reticulum

20. Which of the following chemical substances contributes to the unique characteristics of acid-fast bacteria?

- A) mycolic acid
- B) lipoteichoic acid
- C) peptidoglycan
- D) endotoxin
- E) N-acetylglucosamine

21. All of the following are true about agar except it

- A) liquefies at 100°C.
- B) is a polysaccharide derived from a red alga.
- C) Solidifies at approximately 40°C.
- D) is metabolized by many bacteria.
- E) facilitates obtaining pure cultures.

22. The addition of which of the following would change a chemically defined medium into a complex medium?

- A) Biotin (a vitamin)
- B) K_2HPO_4
- C) NH_4NO_3
- D) Maltose
- E) Yeast extract

23. Which of the following obtain energy from the oxidation of inorganic or organic chemicals?

- A) Chemotroph
- B) Lithotroph
- C) Autotroph
- D) Heterotroph
- E) Phototroph

24. Addition of blood to a culture medium only allows the hemolytic bacteria that grow on the plate to be picked out. This is an example of a

- A) Differential media.
- B) Liquid media.
- C) Chemically defined media.
- D) Selective media.
- E) Complex media.

25. Addition of salt to a culture medium only allows the salt-tolerant bacteria to grow. This is an example of a

- A) Complex media.
- B) Chemically defined media.
- C) Enriched media.
- D) Differential media.
- E) Selective media.

26. Capsules, sheaths, and slime layers generally aid with

- A) nutrient transport
- B) cell attachment
- C) chemotaxis
- D) heat resistance

27. Penicillin controls bacterial growth by:

- A) preventing synthesis of the lipopolysaccharide layer
- B) inhibiting protein synthesis
- C) preventing cross-link formation in peptidoglycan
- D) preventing generation of the proton motive force

28. The use of sterile techniques and agar media enabled early microbiologists to:

- A) study pure cultures
- B) demonstrate the nature of infectious disease
- C) study mixed cultures
- D) study agar-metabolizing cultures
- E) disprove spontaneous generation

29. Who was one of the first people to suspect bacteria as the cause of infection and use an antiseptic to prevent infection?

A) **Lister**

B) van Leeuwenhoek

C) Pastuer

D) Koch

30. Which two genera are capable of producing endospores?

A) *Streptomyces*

B) ***Clostridium***

C) *Escherichia*

D) ***Bacillus***

E) *Yersinia*

31. A bacterial cell exhibiting chemotaxis probably has

A) fimbriae.

B) capsule.

C) mesosomes.

D) **flagella.**

E) metachromatic granules.

II. Write the word or phrase that best completes each statement or answers the question.

(5 marks)

1) ___ **Teichoic acids** ___ contribute to the negative charge of gram positive cell wall.

2) ___ **LPS** ___ contribute to the negative charge of gram-negative cell wall.

3) ___ **Capsule** ___ is a type of glycocalyx that is firmly attached to the cell.

4) ___ **Endotoxin** ___ cause toxic shock when it is released into the bloodstream.

5) ___ **Axial filament** ___ is a structure similar to flagella except run length of cell between sheath and cell wall

III. What are Koch's postulates? (4 marks)

1. Microorganism must be present in every case of the disease but absent from healthy individuals
2. The suspected microorganism must be isolated and grown in pure cultures
3. The disease must result when the isolated microorganism is inoculated into a healthy host.
4. The same microorganism must be isolated from the disease host.

OR ANY ANSWERS WHICH GIVES THE SAME MEANINGS