

Name: \_\_\_\_\_ Block: \_\_\_ Date: \_\_\_\_\_  
 Microbiology Chapters 1 and 2 Review

For the following description of the various microbiology fields indicate the name of the field on the line.

- |              |           |                |
|--------------|-----------|----------------|
| Protozoology | Mycology  | Bioremediation |
| Epidemiology | Phycology | Immunology     |
- Studies the biodegradation of toxic wastes. bioremediation
  - Studies the causative agents of disease and their prevention. epidemiology
  - Study of fungus. mycology
  - Study of protozoa. protozoology
  - The study of immunity. immunity
  - The study of algae. phycology

Match the following scientists to their appropriate discovery.

|                                |   |
|--------------------------------|---|
| <u>H</u> 1. Robert Hooke       | a. worked with chemotherapy   |
| <u>G</u> 2. Alexander Flemming | b. learned that cowpox could vaccinate against smallpox   |
| <u>B</u> 3. Edward Jenner      | c. discovered "animacules"  |
| <u>F</u> 4. Fransesco Redi     | d. developed a system of nomenclature for bacteria  |
| <u>A</u> 5. Paul Ehrlich       | e. found that a weakened virus may be injected to work as a means of vaccination                  |
| <u>J</u> 6. Robert Koch        | f. proved the error of spontaneous generation by proving maggots did not arise directly from meat |
| <u>P</u> 7. Carolus Linnaeus   | g. discovered penicillium   |
| <u>E</u> 8. Louis Pasteur      | h. discovered cells by observing cork under a lens  |
| <u>I</u> 9. Joseph Lister      | i. designed aspectic techniques for surgery   |
| <u>C</u> 10. Van Leeuwenhoek   | j. confirmed that bacteria cause diseases   |

Match the following microorganisms to their descriptions.

|                       |  |
|-----------------------|--|
| <u>G</u> 1. Archara   | a. not composed of cells                       |
| <u>D</u> 2. Algae     | b. cell wall made of chitin                    |
| <u>C</u> 3. Bacteria  | c. cell wall made of peptidoglycan             |
| <u>B</u> 4. Fungi     | d. cell wall made of cellulose; photosynthetic |
| <u>F</u> 5. Helminths | e. complex cell structure lacking a cell wall  |
| <u>E</u> 6. Protozoa  | f. multicellular animals                       |
| <u>A</u> 7. Viruses   | g. prokaryote without peptidoglycan cell wall  |

Describe Koch's postulates (pg <sup>401</sup>413 in text)

- The same pathogen must be present in every case of the disease.
- The pathogen must be isolated from the diseased host and grown in pure culture.
- The pathogen grown in pure culture is given to a healthy host & the host must develop the disease.
- The original pathogen must now be found in the new host.

Complete the following short answer questions.

1. This type of food spoilage is used in producing alcoholic beverages like beer and wine; fermentation.
2. Cells that do not contain their genetic material in an enclosed nucleus are referred to as prokaryotes.
3. The belief that organisms could grow from non-living substances is referred to as spontaneous generation.
4. The process in which potentially harmful bacteria in food are killed or deactivated is called pasteurization.
5. The hybrid created when a fragment of human or animal DNA is combined with the genetic information it is referred to as recombinant.
6. Because water can act as either an acid or a base it is referred to as amphoteric. (amphiprotic)
7. When an acid is dissolved in water it raises the level of this ion, hydronium  $H_3O^+$
8. Which of the following will have the highest boiling point due to its strong hydrogen bonds? (circle one) ~~hydrocarbons~~ alcohols, ~~lipids~~ R-OH
9. What base is found in DNA but not in RNA? thymine
10. What electrons are involved in bonding? valence e<sup>-</sup>
11. The nitrogen that we take in from eating meats will be incorporated into our amino acids and proteins.
12. Sugars and starches are both types of carbohydrates.
13. A pH of 3.4 is considered acidic.
14. hydrogen bonds bonds form between the bases in the strands of DNA.
15. The energy stored in ATP is released by: phosphorylation or hydrolysis

Describe two ways that microorganisms help our environment.

1. decomposition  
bioremediation
2. reduce nitrogen

## Differences in electronegativities

Using your knowledge of chemical bonding determine the type of bond for the following atom combinations. (ionic, polar covalent or non-polar covalent)

1. C-C nonpolar covalent
2. C-H nonpolar covalent
3. O-H polar covalent
4. K-Cl ionic

0.4 ↓ nonpolar covalent

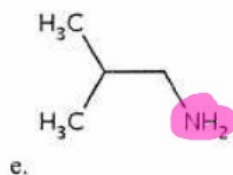
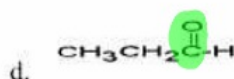
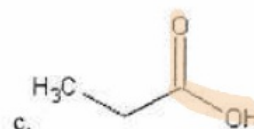
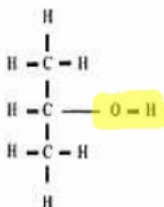
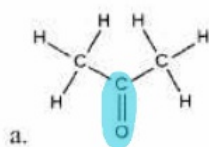
0.5 → 2 polar cov.

2 ↑ ionic

List three important factors about water.

1. most abundant substance in a cell
2. universal solvent (\* for inorganic chem)
3. it is in hydrolysis reactions
4. it has a high specific heat, retains heat + changes temp. very slowly

Classify the following compounds:



- B** 1. alcohol R-OH  
**D** 2. aldehyde terminal R=O  
**E** 3. amine R-NH<sub>2</sub>  
**C** 4. carboxylic acid R-C(=O)OH (COOH)  
**A** 5. ketone internal C=O

"R" stands for parent chain or remaining portion of the compound



