FARM MICROBIOLOGY 2007

SAMPLE MID-TERM QUIZ QUESTIONS THAT WERE GIVEN IN RECENT YEARS

I. MULTIPLE CHOICE. Circle the letter of the correct answer for each question.

1. Groups of organisms included in the study of microbiology are all of the following except
   A. white blood cells of humans
   B. protozoa
   C. yeasts
   D. archae

2. The **genetic material** of bacteria is composed of
   A. ATP
   B. DNA
   C. ribosomes
   D. protein

3. **Proteins** are made up of
   A. RNA
   B. DNA
   C. amino acids
   D. sugars

4. Growth of molds is favored by
   A. acidic conditions.
   B. aerobic conditions.
   C. presence of moisture.
   D. all of the above

5. Photosynthesis in algae and cyanobacteria
   A. is like that of plants in that O_2 is produced.
   B. involves getting energy from fermentation.
   C. involves getting carbon from organic compounds.
   D. all of the above

6. The highly-resistant "resting cells" produced by *Bacillus* and *Clostridium* are called
   A. reproductive spores.
   B. seeds.
   C. endospores.
   D. vegetative cells.

7. The following is caused by a **prion**:
   A. Bubonic plague.
   B. Mad cow disease.
   C. Anthrax.
   D. all of the above

8. Which of the following is true?
   A. Prions and viruses are each composed of DNA and protein.
   B. A **satellite virus** is like a **virus** which depends upon a "helper virus" to multiply, and **satellite nucleic acid** is like a **viroid** which also depends upon such a virus to multiply.
   C. The chromosome is the actual site of protein synthesis.
   D. Bacteria do not normally live on the surface of plants or animals.

9. Bacterial cells
   A. are usually larger than typical eucaryotic cells.
   B. do not possess a cell wall.
   C. do not have a membrane around their genetic material.
   D. usually reproduce by a large cell fragmenting into many small cells.

10. Which of the following is not true about the **acid** that is produced in the fermentation of yogurt?
   A. It affects the taste.
   B. It affects the preservation
   C. It affects the texture.
   D. It takes a full day of fermentation to make a successful product.

11. Which of the following is not a common bacterial shape?
   A. doughnut
   B. rod
   C. coccus
   D. spirillum

12. Which of the following is not true?
   A. The ribosome is the site of protein synthesis.
   B. Denitrification is a bacterial process which results in the escape of nitrogen from soils.
   C. Bacteria do not normally live on the surface of plants or animals.
   D. Freezing is an effective means of preserving foods but not sterilizing them.

13. Water is related to microbial activity for the following reasons **<u>except</u> which one**?
   A. All enzymatic activities take place in an aqueous (H_2O) environment.
   B. Nutrients are taken into bacterial cells while in solution.
   C. No matter what the humidity level, bacteria can extract H_2O from the atmosphere and thus grow well on any solid surface.
   D. Aerobic respiration involves the reduction of O_2 to H_2O when a source of energy is oxidized.

14. Sterilization is
   A. the same as pasteurization.
   B. removal of all life forms (including viruses) from an object.
   C. impossible to do for endospores.
   D. a common method of curing diseases.

15. In the laboratory, we saw that
   A. the air and objects around us are certainly not sterile.
   B. "gram-positive" bacteria are **purple** when stained in the gram-stain procedure.
   C. we use specific bacterial cultures as **starter cultures** in the production of yogurt.
   D. all of the above

16. Bacteria that grow at refrigerator temperatures
    A. may be psychrotrophs or psychrophiles.
    B. include one or more kinds that can cause a food-borne disease.
    C. may cause spoilage of foods in the refrigerator.
    D. all of the above

II. MATCHING. Place the letter of the most appropriate item from column **b** in the blank by each statement in column **a**. *Only one letter in each blank.*

a	**b**
_____ Organism that uses organic compounds as its source of carbon.	**A**. aerobic respiration
_____ Organism that uses carbon dioxide as its source of carbon.	**B**. anaerobic respiration
_____ Organism that oxidizes (removes electrons from) inorganic compounds.	**C**. anthrax
_____ Organism that utilizes light in the generation of energy.	**D**. autotroph
_____ Organism that utilizes just chemical reactions (no light) in the generation of energy.	**E**. chemotroph
_____ Disease caused by a species of bacteria.	**F**. *Escherichia coli*
_____ Disease caused by a virus.	**G**. eukaryote
_____ Disease caused by a protozoan.	**H**. fermentation
_____ Example of a yeast.	**I**. foot & mouth disease
_____ Reduction of oxygen to water happens in this process of generating energy.	**J**. heterotroph
_____ Reduction of nitrate to nitrite or nitrogen gas happens in this process of generating energy.	**K**. lithotroph
_____ Organism in which the nucleus is surrounded by a membrane.	**L**. organotroph
	M. phototroph
	N. prokaryote
	O. *Saccharomyces*
	P. trypanosomiasis

III. LAB-RELATED QUESTIONS.

1. If you take a **one-tenth ml** sample of drinking water, inoculate it onto an all-purpose medium in a petri dish, and eventually count **85 colonies** on the plate after a suitable period of incubation, what would you calculate as the number of colony-forming units **per ml** of the original, undiluted water sample?

2. If you inoculate **1 ml** of a **1/10 dilution** of hamburger onto a petri dish, this is equivalent to inoculating **how much** of an **undiluted** sample of hamburger onto the dish? Circle the one correct answer:

   1 gram 1/10 gram 1/100 gram 1/1000 gram

3. DEFINITIONS. Briefly give the meaning of each of these terms:
   a. Culture

   b. Colony-forming unit

   c. Colony

   d. Selective medium

IV. TRUE OR FALSE. Circle T for true and F for false. Also, in the space provided, **justify statements that you marked false**.

T F 1. In typical cells, the processes of (1) DNA replication, (2) messenger RNA synthesis and (3) protein synthesis occur one after the other in this order. One process has to be completed before the next one starts.

T F 2. Anaerobic respiration and fermentation are among the processes which bacteria can use to generate energy.

T F 3. Endospores are simply structures formed inside some bacterial cells that store nutrients for future use by the cells.

T F 4. Groups of organisms included in the study of microbiology include protozoa, yeasts and bacteria.

T F 5. Algae are simply molds which can photosynthesize.

T F 6. Endospores can be killed in an autoclave where such is not the case when they are simply boiled.

T F 7. Freezing is not an effective means of sterilizing things.

T F 8. Antibiotics are basically **any** chemical that can inhibit bacteria in the human body.

T F 9. Drying is not an effective means of preserving milk or other food products, as the essential components of the food are still present and can still serve as a source of nutrients for spoilage and disease-causing organisms that might contaminate the food.