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Biol 240

General Microbiology

Practice Midterm

January 31 2012

Instructions

The purpose of this test is to allow you to become familiar with the format of the upcoming midterm and to test yourself under a simulated exam setting. Midterms take up a complete lecture period (75 minutes) to make the most effective use of the practice exam time yourself to complete all of the questions within 19 minutes, (one quarter of the normal time). This practice exam is part of the class assessment and is worth 25 points.

Section 1 Multiple Choice - Each Question is worth 1 point circle one answer only

What makes sourdough sour?

- a. addition of extra salt to the dough
- b. fermentation by *Lactobacillus sanfranciscensis*
- c. Fermentation by *Sacchromyces*
- d. addition of vinegar to the dough

Which of the following is NOT a domain in the three domain system?

- a. Eukarya
- b. Archaea
- c. Bacteria
- d. Fungi

Who introduced aseptic techniques in surgery?

- a. Koch
- b. Jenner
- c. Semmelweis
- d. Lister
- e. Fleming

Who experimented with a technique to obtain immunity to smallpox virus by deliberate exposure to cow pox virus?

- a. Koch
- b. Jenner
- c. Semmelweis
- d. Lister
- e. Fleming

Identify the following reaction: $\text{Lactose} + \text{H}_2\text{O} \rightarrow \text{Glucose} + \text{Galactose}$.

- a. ionic reaction
- b. dehydration synthesis reaction
- c. hydrolysis reaction
- d. exchange reaction
- e. Neutralization

Section 2 - Written Answer Questions

Part 1 Mandatory Question. ten points.

- 1) How many amino acids are there? Draw the structure of a typical amino acid circling and labeling the amino group and the carboxylic group. Provide named examples of each of the following types of amino acids: Polar R Groups, Non-Polar R Groups, negatively charged, positively charged.*

Part 2. ANSWER 2 questions. To indicate which questions you wish to have graded circle the question number. If you require additional space to answer a question cross out one of the questions you will NOT be answering and use the space provided for that question. Each question is worth five points.

- 1) Compare the theory of spontaneous generation, and the theory of biogenesis. Describe the series of early experiments that both supported and refuted the theory of Spontaneous Generation. (up until 1858).

2) Discuss the hypothesis developed by Ignaz Semmelweis following observations made while working in an obstetrics ward in 19th century Austria. Describe how he tested his hypothesis and how these insights are still in use today.

3) *Provide a definition of an acid. The concentration of which ion is measured by the pH scale? In terms of ion concentration how does a solution of pH 5 differ from a solution of pH 3? Why do acids have lower numbers than bases?*

4) *What are hydrogen bonds? Provide an example of a biological macromolecule that possesses hydrogen bonds and describe the structural role of hydrogen bonds in that molecule. Describe two changes in the chemical environment by which hydrogen bonds can be disrupted and describe what would happen to the structure of the molecule.*