Micro 260 Lecture test 2 review questions

Study the chapter questions, Enzyme worksheet and unit study guides

You should be able to answer these questions, if so, you will do well on the second lecture test.

You are also held responsible for all work sheet activities handed out.

What does metabolism refer to? (2 pt)

Describe an enzyme: (15 pt)

1) Name the two major structural types of enzymes and were should one expect to find them

2) Describe the function of an enzyme (the role an enzyme plays in a bio-chemical reaction)

3) List and briefly describe the factors which influence the enzyme activity

4) How is enzymatic regulation accomplished?

5) What suffix is commonly used to define enzymes.

Please provide a description for the following enzyme theories: (6 pt)

• Lock and Key theory:

• Induced-fit theory:

List and describe six different types of enzymatic categories based on their general biochemistry

	List (1 pts)	Describe (2 pts)	
1			-
2			_
3.			_
4			-
5			_
6			_

Name three Inhibitions of Enzyme Actions and how do they control biochemical reactions? (10 pt)

Describe the differences between aerobic, anaerobic and fermentation process. (8 pts)

Describe how pH affect enzymatic activity rates (4 pts)

What is the purpose of the phospho-hexose shunt pathway and what are the major products of this pathway? (8 pts)

How does the phospho-hexose pathway relate to glycolysis? Note which metabolites are in common. (8 pts)

Describe the importance of oxidative-reductive reactions as it relates to life of a microbe? (5 pt)

Know how many ATP's are formed during Glycolysis, the Citric Acid cycle, and Electron transport system within an aerobic bacteria. Provide a generalized accounting where you would find formation each sum total ATP formed. (12 pts)

Why are fewer ATP's formed during the anaerobic respiratory pathway than during aerobic (4 pts)

How many and where NADH, FADH₂ and NADPH are during metabolism. (6 pts)

What is the purpose of NADH, FADH₂ and NADPH (6 pts)

Where would expect to find the electron transport system in a prokaryotic cell? In a eukaryotic cell? (4 pt)

What purpose does the electron transport system? (6 pts)

What is the begining and end produce(s) of the electron transport system (4 pts)

What is the role of oxygen for cellular respiration? (2 pts)

What role does nitrates or carbonates play a role in anaerobic respiration (2 pts)

What can be a electron source for a photo lithotrophic bacteria? (2 pts)

What enzymatic complex must obligate anaerobes possess to survive an oxygen rich environment? (5 pt)

List and describe where you would find each of the major elements found in a bacterial. (10 pts)

Provide a general category for the various different types of pH dependent bacteria. (8 pts)

Describe how the bio-chemical composition of a cell membrane contributes to the formation of a proton gradient. (15 pt's)

Why is this important to an aerobic microbe? To an acidophilic microbe?

How do some bacteria adapt to various pH hostile environments. (2 pts)

State the names of bacteria which can grow at the various pH levels, and then graph the pH range each of these microbes. (12 pts)

Graph (diagram) the various temperature optimum that bacteria grow at (12 pts)

How temperature affect bacterial growth? (2 pts)

How would bacteria flourish at 95°C differ from microbes that grow best at 37°C? (6 pts)

How does salt affect bacterial growth? (4 pts)

How does the bacterial cell control for potential harmful oxygen products? (6 pts)

Some bacteria, known as microaerophiles, can live in a limited oxygen atmosphere. What type of enzymatic system do they use to rid themselves of *reactive oxygen species* "ROS?" (6 pts)

How are "ROS" type of molecules created in an aerobic bacteria? (4 pts)

List the various "ROS" type molecules. (6 pts)

Graph a bacterial growth curve of a microbe providing the appropriate graphical labels followed with an explanation for each graphical label. (10 pt's)

The bacterial growth curve provides clues to why bacterial loose their gram staining ability. At what points on the growth curve should we take sub-samples for staining and when should we not expect consistent results? (6 pts)

List and briefly describe (stating their purpose) for four (4) different types of media commonly used. (12 pt's)

Name three (3) criteria that a culture medium must meet to successfully grow microbes (6 pt's)

Certain bacteria can dissolve sheep's hemoglobin while feed on peripherally. State the various types of hemolysis type conditions. (6 pts)

What are the three properties for a selective and or differential type media (6 pt's)

List and describe several common methods of preserving bacterial cultures. (9 pts)

Why is a logarithmic graphically representation of bacterial growth curve preferred over that of an arithmetic growth curve? (4 pts)

Be able to annotate and describe a bacterial growth curve (12 pts)

LAB Quiz Review questions

Be prepared to answer several of the following questions as related to our lab activity.

We preformed a lab where-by two petri dishes were inoculated with *B. cereus*, *E. coli*, and *Clostrium sporogens*. One dish with these microbes was placed into incubation chamber containing CO_2 while the other was incubated in ambient air. Both *B. cereus* and *E. coli* grew vigorously in the 'air' environment *C. sporogens* did not. Why? (8 pts)

Comparing the growth vigor of *E. coli* to that of *B. cereus* we found that some bacterial growth was observed with *E. coli* and not with *B. cereus* in the anaerobic atmosphere. Why? (6 pts)

This question requires knowledge form the agar plate cultures lab. Four different bacteria are streaked onto MacConkey's salt agar. Two bacterial colonies never established, however, two others do become established. Now, these same bacteria are streaked to Blood agar. All bacterial types grow. However, two of the four result in a clearing about themselves, while one has a greenish halo about its colony and the last one is growing as a slimy grey colony with no color change to the agar. Name and correctly spell out the four different bacterial used. (4 pts)

When performing a standard plate count, why are the counts reported as colony forming units (CFUs) rather than cells? (6 pts)

What test could you use to demonstrate that bacteria has catalase enzyme capability? Describe what you should see if the test is positive. (4 pts)

If were given two unknown bacterial and I told you one was *E. coli* and the other was *Clostrium sporogens*, what simple test could you do to quickly tell them apart (2 pts)

Fully describe the process for a 1:10,000,000 dilution, using µl amounts of fluid. (10 pts)

Following your set up you notice that all petri dishes dilution series seems to have the same number of colonies, what are the possible (possibilities) that could account for this circumstance? (4 pts)

The five-digit code for all members of the family *Enterobacteriacease* starts with the number 2 or 3. What does this indicate about their common biochemistry? (3 pts)

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