

# Possible Photosynthesis & Respiration Essay Questions

## CollegeNow Biology Exam

1. Aerobic multi-cellular organisms need oxygen in order to live. Please explain how a lack of oxygen can lead to the death of an aerobic organism. Make sure your answer includes what is happening physiologically as well as the role that oxygen plays in aerobic organisms.
2. In terms of respiration, please describe the body's physiological responses to exercise; such as increased heart rate, increased body temperature, increased breathing rate and ultimately, fatigue.
3. Describe, in detail, why we as humans should care about and continue to study the process of photosynthesis. Use the article reviewed in class as a reference.
4. Compare the mitochondria and the chloroplast in terms of their overall function in the cell, their anatomy and the specific processes that happen within them.
5. We are regularly bombarded with advertisements for supplements that will help us lose that ugly fat the fast and easy way with no diet or exercise required. Your roommate insists on purchasing every new supplement that hits the market in the hopes of shedding a few pounds. As a scientifically educated person, you know that the Food and Drug Administration does not regulate these supplement companies and that their claims are typically not backed by good scientific evidence. Explain to your roommate some of the risks associated with taking these supplements (based on what you know about cellular respiration and metabolism) and what will work best to lose weight.
6. You are setting up a set of experiments to demonstrate the interdependence of the photosynthesis process and the aerobic cellular respiration process. Predict what will happen in the following experiments based on what you know about photosynthesis and cellular respiration.
  - a. You place a plant alone in a covered airtight container in the presence of sunlight. Assume a watering system is provided. What will happen to the plant (will it live or die), and why?
  - b. You place a mouse alone in a covered airtight container with food and a source of water. What will happen to the mouse (will it live or die), and why?
  - c. You place a plant and a mouse together in a covered airtight container with food, water, and sunlight. What will happen to the plant and the mouse (will they live or die), and why?
7. Using the "basic" process of photosynthesis as a control, compare the actual process of C3 photosynthesis as well as contrast C4 and CAM photosynthesis.

8. Energy is the currency of the cell, just like money is the currency of our society. Please compare the process of energy transfer in photosynthesis & cellular respiration with the process of money transfer through our banking system.