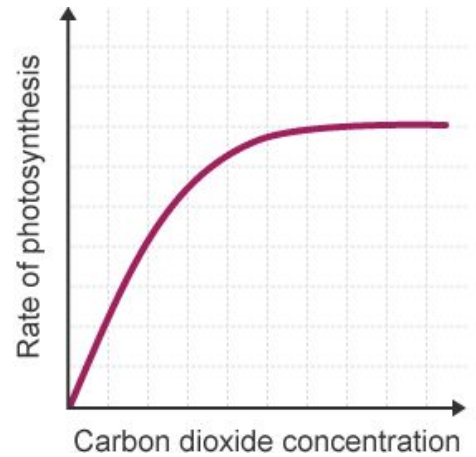


## **SHORT ANSWER**

1. The graph below represents the effect of CO<sub>2</sub> concentration on photosynthesis at 20°C. The rate of photosynthesis is measured by O<sub>2</sub> production in a C<sub>3</sub> plant.
  - a. Explain the shape of the graph.
  - b. On the graph, draw what you expect the graph to look like if the temperature was raised to 25°C. Explain, in detail, the line you drew.
  - c. Draw the graph at 25°C for a C<sub>4</sub> plant. Explain, in detail, the difference in the lines.



2. Hyponatremia is a condition when there is too little sodium in the body.
  - a. Explain the effects of this on different body systems.
  - b. How do different organisms combat this problem?
3. Both photosynthesis and cellular respiration contain cycles as part of their biochemical reactions. Compare and contrast the two cycles that occur in these processes.
4. Assume that a particular genetic condition in a mammalian species causes an inability to digest starch. This disorder occurs with equal frequency in males and females. In most cases, neither parent of affected offspring has the condition. Explain, using detailed examples, how mutations could cause this inability to digest starch.
5. Ectotherms live much longer and have higher populations than Endotherms. Explain what advantages Ectotherms have over Endotherms.
6. Bodybuilders and athletes need extra protein to repair the muscle tissue that is damaged when they work out. Protein shakes are a solution to this. However, these shakes need to be taken with small amounts of carbohydrates. Explain.
7. Cellular respiration takes place in 3 major phases.
  - a. Outline the major events that occur in the aerobic breakdown of a molecule of glucose to carbon dioxide and water.
  - b. How does this get altered if oxygen is limited?
8. List the symptoms of someone with Type II Diabetes, and explain the causes of each symptom.
9. Draw a diagram of the action potential below to explain, step-by-step, what occurs when signals are sent along a neuron in the nervous system.