AP* Biology: Ecology Name: _____

Period:_____

Directions: Answer the following question.

Answers must be in essay form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but in no case will a diagram alone suffice. It is important that you read the question completely before you begin to write. Write your answer on the lined pages that appear at the end of the question.

1. Interdependence in nature is illustrated by the transfer of energy through trophic levels. The diagram below depicts the transfer of energy in a food web of an Arctic lake located in Alaska.

a) Choosing organisms from four different trophic levels of this food web as examples, explain how energy is obtained at each trophic level.

b) Describe the efficiency of energy transfer between trophic levels and discuss how the amount of energy available at each trophic level affects the structure of the ecosystem.

c) If the cells in the dead terrestrial plant material that washed into the lake contained a commercially produced toxin, what would be the likely effects of this toxin on this food web? Explain.

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