PAST BIOMOLECULE FRQ’s  
  
Structure related to function is one of the unifying themes in biology. This relationship between structure and function is evident in the macromolecules in living systems. For THREE of the FIVE in the following list, describe the structure of the molecule and explain how that structure aids in its function  
 a. Starch and glycogen as energy storage molecules  
         b. Cellulose and chitin as structural molecules  
         c. enzymes  
         d. phospholipids and their role in cell membranes  
         e. DNA and its role in determining characteristics in organisms  
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2008 #1.  
The physical structure of a protein often reflects and affects its function.  
     (a) Describe THREE types of chemical bonds/interactions found in proteins.   
 For each type, describe its role in determining protein structure.  
      (b) Discuss how the structure of a protein affects the function of TWO of the following.  
            • Muscle contraction  
            • Regulation of enzyme activity  
            • Cell signaling  
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2006 #3   
The movement of water through vascular plants is important to their survival.  
(a) EXPLAIN the mechanism of water movement through vascular plants during transpiration.  Include a discussion of how the anatomy of vascular plants and the properties of water contribute to this process.  
(b) EXPLAIN how gas exchange affects transpiration  
(c) DESCRIBE TWO adaptations that affect the rate of transpiration in desert plants.  
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2002B #3  
The physical form of cells and organisms is often influenced by special structural polymers.  Choose ONE polymer from EACH of the following three pairs of polymers.  
    Pair 1: tubulin...myosin  
    Pair 2: cellulose...chitin  
    Pair 3: messenger RNA ... transfer RNA  
For each of the three polymers you have chosen, DESCRIBE its   
(a) structure, and   
(b) role in a cell or organism  
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2001 #4  
Proteins-large complex molecules-are major building blocks of all living organisms. Discuss the following in relation to proteins.  
(a) The chemical composition and levels of structure of proteins.  
(b) The roles of DNA and RNA in protein synthesis.  
(c) The roles of proteins in membrane structure and transport of molecules across the membrane.