Practice Essay Questions: Cells, Cell Transport, Cellular Communication

5.  Describe the fluid-mosaic model of a plasma membrane. Discuss the role of the membrane in the movement of materials through it by each of the following processes:

* 1. Active transport
  2. Passive transport

6.  Describe the structure of a eukaryotic plant cell. Indicate the ways in which a nonphotosynthetic prokaryotic cell would differ in structure from this generalized eukaryotic plant cell.

8.  A laboratory assistant prepared solution of 0.8 *M*, 0.6 *M*, 0.4 *M*, and 0.2 *M* sucrose, but forgot to label them. After realizing the error, the assistant randomly labeled the flasks containing these four unknown solutions as flask A, flask B, flask C, and flask D.

Design an experiment, based on the principles of diffusion and osmosis, that the assistant could use to determine which of the flasks contains each of the four unknown solutions. Include in your answer (a) a description of how you would set up and perform the experiment: (b) the results you would expect from your experiments: and (c) an explanation of those results based on the principles involved. (Be sure to clearly state the principles addressed in your discussion.)

9.  Cells transport substances across their membranes. Choose THREE of the following four types of cellular transport.

* + Osmosis
  + Active Transport
  + Facilitated Diffusion
  + Endocytosis/exocytosis

For each of the three transport types you choose,

1. Describe the transport process and explain how the organization of cell membranes functions in the movement of specific molecules across membranes; and

b. Explain the significance of each type of transport to a specific cell (you may use difference cell types as examples.)