Cell Transport Free Response Questions

1. The unique properties of water make life on Earth possible.
(a) **Describe** the general structure of a plasma membrane. **[8]**
(b) **Explain** the role water, a polar molecule, plays in the overall structure of plasma membranes. **[4]**
(be sure to include a detailed description of the chemical and physical structure of the plasma membrane)
(c) In terms of water potential, **explain** the need for a contractile vacuole by paramecium. **[3]**
(be sure to define and include the terms hypotonic, hypertonic and isotonic in your answer)

2. Proteins are large, complex, organic macromolecules that are the building blocks of all living things. **Discuss** the role of proteins in membrane structure and functions including:
(a) transport of molecules across the membrane (Na/K pump and ATP synthase) **[6]**
(b) the signal transduction pathway (*reception*) **[4]**

3. 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,
(**a)** **Describe** the transport process and **explain** how the organization of cell membranes functions in the movement of specific molecules across membranes. **[9]**
(**b)** **Explain** the significance of each type of transport to a specific cell. **[6]**

4. Communication among cells in multicellular organisms is vital for survival. **Describe** the signal transduction pathway and its role in cell-to-cell communication. **[10]**

5. **Calculate** Water Potential and Solute Potential.

6. **Graph** and **calculate** the diffusion rates of molecules at various concentration gradients.