UNIT 3: Cells, Membranes, and Metabolism

1. Explain how cell structures support the relatedness of all Eukaryotes (ex. Cytoskeleton, membrane-bound organelles, chromosomes, endomembrane systems).
2. Describe the structure and function of cell membranes. Include: phospholipids, integral and peripheral proteins, cholesterol, glycoproteins, and glycolipids.
3. Explain hydrophibic and hydrophilic orientation in cell membranes.
4. Biological membranes are selectively permeable. Identify which molecules can pass freely (size, charge, molarity, etc.), and which need assistance (protein channels, aquaporins).
5. Explain passive transport across a membrane. Include: osmosis, diffusion, facilitated diffusion.
6. Compare isotonic (isoosmotic), hypertonic (hyperosmotic), and hypotonic (hypoosmotic) solutions and predict the path of movement of water and solutes in given examples.
7. Explain active transport across a membrane. Include: protein pumps, exocytosis, endocytosis.
8. Relate osmotic potential to solute concentration and water potential.