Comprehension Questions - Module 4: Cells

Cell Theory and Types

1. Explain the three principles of cell theory and their significance in biology.
2. Compare and contrast prokaryotic and eukaryotic cells, including their structures and evolutionary relationships.
3. How do plant and animal cells differ, and what are the functional implications of these differences?

Cell Organelles

1. Describe the structure and function of the nucleus, and explain its role as the control center of the cell.
2. Compare and contrast the rough and smooth endoplasmic reticulum in terms of structure and function.
3. Explain how the Golgi apparatus processes and packages cellular products.
4. Describe the structure and function of mitochondria, and explain their role in energy production.
5. Compare and contrast chloroplasts and mitochondria in terms of structure and function.

Cell Membrane

1. Explain the fluid mosaic model of the cell membrane and its components.
2. How does the selective permeability of the cell membrane contribute to cellular function?
3. Describe the different types of membrane proteins and their functions.

Cytoskeleton

1. Compare and contrast the three types of cytoskeletal elements (microtubules, microfilaments, intermediate filaments) and their functions.
2. How does the cytoskeleton contribute to cell shape, movement, and division?

Cell Communication

1. Explain how cells communicate with each other and their environment.
2. Describe the role of cell junctions in multicellular organisms.