Question 1.1

Question: Define the term "cell." (1 mark)

Answer:
The cell is the basic structural, functional, and biological unit of all known living organisms.

Question 1.2

Question: List the main differences between plant cells and animal cells. (3 marks)

Answer:

Plant cells have a cell wall, while animal cells do not.
Plant cells contain chloroplasts, which are absent in animal cells.
Animal cells often have lysosomes which are rarely found in plant cells.

Question 2.1

Question: What is the primary function of the mitochondria? (1 mark)

Answer:
The primary function of the mitochondria is to produce ATP through cellular respiration, providing energy for the cell.

Question 2.2

Question: Briefly explain the process of osmosis. (2 marks)

Answer:
Osmosis is the passive movement of water molecules from a region of lower solute concentration to a region of higher solute concentration across a selectively permeable membrane.

Question 3.1

Question: Name three types of blood cells in humans and provide one function for each. (3 marks)

Answer:

Red Blood Cells (Erythrocytes) - Transport oxygen.
White Blood Cells (Leukocytes) - Defend the body against pathogens.
Platelets (Thrombocytes) - Aid in blood clotting.

Question 3.2

Question: Which organelle is responsible for photosynthesis in plants? (1 mark)

Answer:
Chloroplasts are responsible for photosynthesis in plants.

Question 4.1

Question: Define the term "enzyme" and explain its importance in biological reactions. (2 marks)

Answer:
An enzyme is a biological catalyst that speeds up chemical reactions in living organisms without being consumed in the reaction. It's important because it allows metabolic processes to occur at rates fast enough to sustain life.

Question 4.2

Question: What is DNA replication and why is it important? (2 marks)

Answer:
DNA replication is the process by which DNA makes a copy of itself during cell division. It's important because it ensures that each new cell has the same genetic information as the parent cell.

Question 4.3

Question: Name the four nitrogenous bases in DNA. (2 marks)

Answer:
The four nitrogenous bases in DNA are Adenine (A), Thymine (T), Cytosine (C), and Guanine (G).

Question 4.4

Question: Explain the process of transcription. (2 marks)

Answer:
Transcription is the process by which a specific segment of DNA is used as a template to synthesize a complementary RNA molecule. During this process, RNA polymerase reads the DNA template and builds the RNA molecule with complementary bases.