

Chapter 6 – Quick Revision Sheet

Tissues



What is a Tissue?

A tissue is a group of similar cells working together to perform a specific function. In multicellular organisms, cells specialize and divide work for better efficiency. For example, muscle tissue enables movement, nervous tissue carries messages, and plant tissues help in growth and transport.



Plant Tissues

Plants stay fixed in one place, so their tissues mainly focus on growth, support, storage, and transport of water and food. Based on their activity, plant tissues are divided into meristematic tissues (actively dividing) and permanent tissues (mature cells performing specific functions).



Meristematic Tissue

Meristematic tissues are the growth regions of plants where cells continuously divide to produce new cells. These tissues are present at the tips of roots and shoots (increase length), at nodes of stems (rapid growth), and along the sides of stems and roots (increase thickness). Their cells are small, dense, and actively dividing.



Permanent Tissue

When meristematic cells stop dividing and become specialized, they form permanent tissues. These tissues perform specific roles such as storage, protection, support, and transport of materials in the plant body.



Simple Permanent Tissue

Simple permanent tissues consist of one type of cell performing a common function.

Parenchyma mainly stores food and water, Collenchyma provides flexible support to growing parts, while Sclerenchyma forms strong and rigid structures that give plants mechanical strength.



Complex Permanent Tissue

Complex tissues are made of different cells working together for transport.

Xylem carries water and minerals from roots to leaves, while Phloem transports prepared food from leaves to all parts of the plant.



Animal Tissues

Animals perform many complex activities like movement, coordination, and response to stimuli. Therefore, their tissues are highly specialized and are mainly classified into epithelial, connective, muscular, and nervous tissues, each performing a distinct role in the body.



Epithelial Tissue

Epithelial tissue forms the protective covering of the body and internal organs. The cells are tightly packed, creating a barrier that protects tissues underneath. It also helps in absorption, secretion, and filtration in organs such as skin and intestine.



Muscular Tissue

Muscular tissue produces movement by contraction and relaxation of muscle fibers. Muscles attached to bones control voluntary actions like walking, smooth muscles work automatically in internal organs, and cardiac muscles in the heart contract rhythmically to pump blood continuously.



Nervous Tissue

Nervous tissue forms the brain, spinal cord, and nerves and is responsible for communication in the body. Specialized cells called neurons receive stimuli, process information, and transmit signals quickly to coordinate body activities.



Connective Tissue

Connective tissue connects, supports, and binds different body parts. It includes blood for transport, bone for strength, cartilage for flexible support, and ligaments and tendons for movement and connection between bones and muscles.