2 The Cell

JSUNIL TUTORIAL

Answers to Exercises

B. 1. Organisms made up of a single cell are called unicellular organisms.

2. Specimens are stained before being viewed under a microscope in order to highlight different parts so that they become distinguishable.

3. The four types of animal tissue are epithelial tissue, connective tissue, muscular tissue and nervous tissue.

4. The central part of most plant cells is occupied by a large vacuole. A vacuole is a saclike structure filled with fluid containing food, wastes, pigments and other substances dissolved in it. Some animal cells also have vacuoles, although much smaller.

5. Chloroplasts are present in plant cells. Only green parts of plants have chloroplasts.

1. Since the cell is the building block of an organism, it may be called the smallest structural unit of life. In unicellular organisms, all life processes are carried out by the single cell. It is the cells that carry out all the functions even in multicellular organisms like us. This is why the cell is known as the functional unit of life.

2. The different types of plastids are chloroplasts, chromoplasts and leucoplasts. Chloroplasts contain the green pigment chlorophyll and are responsible for photosynthesis. Chromoplasts contain pigments which give fruits and flowers their colours. Leucoplasts store food and are found in the storage organs of plants.

3. Vascular bundles are made up of two types of tissues, namely xylem and phloem. The xylem is responsible for transporting water and minerals from the root. The phloem is responsible for transporting food from the leaves to the rest of the plant.

4. The nucleus is the largest and the most important organelle of the cell. Inside it are chromosomes, which carry genes. The genes order the cell to perform all its functions. Thus, the nucleus is often called the control room of the cell.

5. The covering of the cell is called the cell membrane, or plasma membrane. It acts like a sentry, allowing only some things to enter and leave the cell and stopping others. For example, it allows oxygen and nutrients to pass into the cell and permits wastes to pass out of it. This is why it is called selectively permeable.

C. 1. The basic differences between plant cells and animal cells are as follows.

	Plant Cells		Animal Cells
(i)	Plant cells have a cell wall in addition to the plasma membrane.	(i)	Animal cells do not have a cell wall.
(ii)	Plant cells have plastids.	(ii)	Animal cells do not have plastids.
(iii)	Most of the space in a plant cell is occupied by one or several large vacuoles.	(iii)	Even when vacuoles are present in animal cells, they are much smaller in size.

2. There are three distinct regions in the transverse section of a dicotyledonous stem. These are as follows.

(a) **Epidermis** The outermost region formed by a single row of closely fitting, flat, rectangular cells is called the epidermis. This is a protective tissue that covers stems, roots and leaves.

(b) **Ground tissue** This constitutes the rest of the stem except the distinct groups or bundles of cells arranged in a circle near the centre. It is divided into different zones and is actually a tissue system, consisting of different types of tissue, like the cortex and the pith. The thin-walled, oval or polygonal cells extending from the epidermis to the distinct bundles near the centre form the cortex. The central core of rounded cells forms the pith.

(c) **Vascular bundles** The distinct groups of cells arranged in a ring are called vascular bundles. They are made up of two types of tissue called the xylem and the phloem. The large, thick-walled cells form the xylem. The thin-walled, smaller cells lying more towards the outer side make up the phloem. The xylem is responsible for transporting water and minerals from the root. The phloem is responsible for transporting food from the leaves to the rest of the plant.

D. 1. (a) 2. (c) 3. (d) 4. (b) 5. (a) 6. (d)

E. 1. chromatin 2. genes 3. cortex 4. plasma 5. eyepiece