**Cell Diversity**

**At the end of this section you should be able to ….**

|  |  |  |
| --- | --- | --- |
|  | Y | N |
| Define a tissue. |  |  |
|  Give **4 examples** of tissue types ( two each from a plant and an animal). |  |  |
| Tissue culture: explanation  |  |  |
| Refer to any **two applications** of tissue culture |  |  |
| Define an organ.  |  |  |
|  Give **2 examples** of organs(one each from a plant and an animal) |  |  |
| Define an organ system.  |  |  |
| Give **2 examples** of animal organ systems |  |  |

**Key words**

**Tissue, organ, organ system, differentiation, tissue culture**

**Tissue:**  A group of similar cells specialised to carry out the same function

|  |  |
| --- | --- |
| **Plant Tissue** | **Animal Tissue** |
| **Meristematic tissue** (cells which are continuously dividing)Found in root tip and shoot tip | **Epithelial tissue** (lining)Single layer of flattened cellsCovers inner and outer surfaces |
| **Dermal tissue** Outer layer of root stem and leaf(protecting) | **Connective tissue** (holding)Cells scattered through a web of protein fibresBinds, supports other tissue |
| **Ground tissue** (packing)Fills interior Inside the dermal layer | **Muscular** (moving)Composed of fibresCan shorten to allow movement |
| **Vascular tissue** (transporting)Consists of xylem (water) and phloem (food) | **Nervous** ( Communicating))Cells with long insulated axons to carry impulsesCarry electrical impulses |

**Tissue culture;** a technique in which individual cells are grown and divide in a bath of sterile nutritive fluid which often contains hormones and growth substances

**Applications:**

* cancer research: HELA cells
* plant breeding: Micropropagation
* routine analysis of chromosome karyotypes

**Organ System:** A group of organs and tissues

working together to carry out a specific function.

**Examples**

Urinary system, reproductive system, nervous system

**Organ:** A structure, containing different tissues,

which has a specific function

**Examples**

**Human organs**: Heart, stomach

**Plant organs**: root, stem