**Cell Diversity**

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

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| --- | --- | --- | --- |
|  | 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 cells  Covers inner and outer surfaces |
| **Dermal tissue**  Outer layer of root stem and leaf  (protecting) | **Connective tissue** (holding)  Cells scattered through a web of protein fibres  Binds, supports other tissue |
| **Ground tissue** (packing)  Fills interior  Inside the dermal layer | **Muscular** (moving)  Composed of fibres  Can shorten to allow movement |
| **Vascular tissue** (transporting)  Consists of xylem (water) and phloem (food) | **Nervous** ( Communicating))  Cells with long insulated axons to carry impulses  Carry 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