

UNIT V : CELL: STRUCTURE AND FUNCTIONS

9. CELL: THE UNIT OF LIFE

1 VSAQ + 1 SAQ = 2M + 4M = 6M

ROOT POINTS

- Cell** is the **basic unit of life** and structural, functional unit of an organism.
- All living organisms are made of cells or aggregates of cells.
- Cells vary in shape, size and functions.
- Cell theory was proposed by Schleiden and Schwann and later by Rudolf Virchow.
- Cell theory**: (i) All living organisms are composed of cells and their products.
(ii) New cells arise from pre-existing cells.
- Types of cells**: (i) **Prokaryotic cells** (ii) **Eukaryote cells**:
- Vacuoles play an important role in **osmo regulation** of plant cells. [IPE]
- Meta centric** chromosome has middle centromere forming two equal arms of the chromosome.
- The **satellite chromosome** contains a small segment called satellite which is separated from the main body of the chromosome by a secondary constriction. [IPE]
- Middle lamella** is a layer made up of **calcium pectate**. It holds the neighbouring cells together.
- The **cell organelles** which contain chlorophyll pigment are called **chloroplasts**. [IPE]
- Mitochondria** are the **power houses of cell**. [IPE]
- Structure of Nucleus** consists of four main parts: [IPE]
i) Nuclear envelope ii) Nuclear matrix iii) Chromatin material iv) Nucleolus
- Types of chromosomes** (based on the position of centromere): [IPE]
i) Metacentric ii) Sub metacentric iii) Acrocentric iv) Telocentric
- A cell organelle containing hydrolytic enzymes is **lysosome**. [NEET-2017]
- Lysosomes** cell organelles is enclosed by a single membrane. [NEET-2016]
- Microtubules are the constituents of **spindle fibres, centrioles and cilia**. [NEET-2016]
- Cellular organelles with membranes are **lysosomes, Golgi apparatus, mitochondria**. [2015]
- Nuclear envelope is a derivative of **rough endoplasmic reticulum**. [NEET-2015]
- DNA is not present in **ribosomes**. [NEET-2015]
- The motile bacteria are able to move by **flagella**. [NEET-2015]
- The **shorter and longer arms** of a **submetacentric chromosome** are referred to as **p-arm and q-arm** respectively. [NEET-2019]
- Pair of organelles which do not contain DNA are **Lysosomes and Vacuoles**. [NEET-2019]
- In metacentric chromosome, the centromere is situated in the middle of two equal arms of chromosomes. [NEET-2021]
- Prokaryotic cells does not contain **Rough Endoplasmic Reticulum**. [NEET-2022]
- Circular, double stranded -DNA is present in **chloroplast**. [NEET-2024]
- Mitochondria and chloroplasts are both **double membrane** bound organelles. [NEET-2024]
- Mesosome** is a specialised membranous structure in prokaryotic cell which helps in cell wall form DNA replication & respiration [NEET-2025]