

## UNIT III : CELL: STRUCTURE AND FUNCTIONS

### 5. CELL: THE UNIT OF LIFE

1 VSAQ + 1 SAQ [ 2M + 4M =6 Marks]

#### ROOT POINTS

1. **Cell** is the **basic unit of life** and structural, functional unit of an organism.
2. **Main contents of this chapter** are  
i) Cell ii) Cell theory iii) Prokaryotic cells iv) Eukaryotic cells
3. All living organisms are made of **cells or aggregates of cells**.
4. **Cells vary** in shape, size and functions.
5. **Cell theory** was proposed by **Schleiden and Schwann** and later by **Rudolf Virchow**. [SAQ]
6. **Cell theory:** (i) All living organisms are composed of cells and their products. [SAQ]  
(ii) New cells arise from pre-existing cells.
7. **Types of cells:** (i) **Prokaryotic cells** (ii) **Eukaryote cells:**
8. **Prokaryotic cells** have a cell wall, surrounding the cell membrane. [SAQ]
9. They are smaller, multiply more rapidly and vary greatly in shape and size. [SAQ]
10. In **Prokaryotic cell**, there is no well defined nucleus and nuclear membrane is absent. [SAQ]
11. The ribosomes of a polysome translate the **mRNA into proteins**. [VSAQ]
12. 'S' refers to '**sedimentation coefficient**' (Expressed in Svedberg unit). [VSAQ]
13. The **prokaryotic cells** are seen in bacteria, blue-green algae, mycoplasma and PPL0. [SAQ]
14. The **cell membrane** is mainly composed of lipids, proteins and little amount of carbohydrates.
15. The **phospholipids** are arranged in a bilayer in a particular manner. [SAQ]
16. **Active transport** is the movement of molecules across the membrane [SAQ]  
by utilizing metabolic energy (ATP).
17. **Passive Transport** is the movement of molecules across the membrane [SAQ]  
without utilizing metabolic energy
18. **Osmosis** is the diffusion of water molecules through a semi permeable membrane. [VSAQ]
19. Middle lamella is made up of with calcium and magnesium pectate. [VSAQ]
20. **Osmo regulation** is the major role of vacuole in a plant cell. [VSAQ]
21. **Mitochondria** are known as power houses of cell because they produce cellular [SAQ]  
energy in the form of ATP.
22. The ER bearing ribosomes on their surface is called **RER**. [SAQ]

23. The ER which does not bear ribosomes on their surface is called **SER**. [SAQ]
24. The cell organelles which contain chlorophyll pigment are called **chloroplasts**. [SAQ]
25. They are **double membrane** bound structures. [SAQ]
26. **Chloroplasts** are lens-shaped, oval, spherical, discoid or even ribbon-like organelles [SAQ] having variable length.
27. **Structure of Nucleus** consists of four main parts. They are  
I) Nuclear envelope II) Nuclear matrix III) Chromatin material IV) Nucleolus [SAQ]
28. **Types of chromosomes** (based on the position of centromere): [SAQ]  
i) Metacentric ii) Sub metacentric iii) Acrocentric iv) Telocentric
29. Chromosomes containing satellite, a small segment are called **satellite chromosomes**. [VSAQ]
30. Cellular organelles with membranes are **lysosomes, Golgi apparatus, mitochondria**. [2015]
31. The chromosomes in which centromere is situated close to one end are [NEET-2015]  
**acrocentric**.
32. The structures that are formed by stacking of organised flattened membranous sacs in the chloroplasts are **grana**. [NEET-2015]
33. Nuclear envelope is a derivative of **rough endoplasmic reticulum**. [NEET-2015]
34. DNA is not present in **ribosomes**. [NEET-2015]
35. The motile bacteria are able to move by **flagella**. [NEET-2015]
36. **Lysosomes** cell organelles is enclosed by a single membrane. [NEET-2016]
37. Microtubules are the constituents of **spindle fibres, centrioles and cilia**. [NEET-2016]
38. A cell organelle containing hydrolytic enzymes is **lysosome**. [NEET-2017]
39. The concept of "**Omnis Cellula -e-Cellula**" regarding cell division was [NEET-2019] proposed by **Rudolf Virchow**.
40. The **shorter and longer arms** of a **submetacentric chromosome** are [NEET-2019] referred to as **p-arm and q-arm** respectively.
41. Pair of organelles which do not contain DNA are **Lysosomes and Vacuoles**. [NEET-2019]
42. In metacentric chromosome, the centromere is situated in the middle of two [NEET-2021] equal arms of chromosomes.
43. Prokaryotic cells does not contain **Rough Endoplasmic Reticulum**. [NEET-2022]
44. Circular, double stranded -DNA is present in **chloroplast**. [NEET-2024]
45. Mitochondria and chloroplasts are both **double membrane** bound organelles. [NEET-2024]
46. **Mesosome** is a specialised membranous structure in prokaryotic cell which helps in cell wall form DNA replication & respiration [NEET-2025]