

11. CELL CYCLE AND CELL DIVISION

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

ROOT POINTS

1. **Cell cycle** is the **life of cycle of a cell**, which covers its birth, growth and cell division.
2. **Cell division** is the process by which a parent cell divides into two or more daughter cells.
3. Cell cycle is divided into two phases (i) **Inter phase** (ii) **Mitosis**
4. **Interphase** is a **period of preparation** for cell division.
5. **Mitosis** (M phase) is the **actual period** of cell division.
6. Inter phase is subdivided into **G₁ phase, S phase and G₂ phase.** [IPE]
7. **G₁ phase** is the period when the cell grows and carries out normal metabolism. [IPE]
8. In **S phase**, replication of DNA and duplication of centrioles occur. [IPE]
9. **G₂ phase** is the period of Cytoplasmic growth. [IPE]
10. **Mitosis** is divided into **Prophase, Metaphase, Anaphase and Telophase.** [IPE]
11. Chromosome condensation occurs during **Prophase.** [IPE]
12. The **Prophase I** is longer and more complex when compared to prophase of mitosis. [IPE]
It is sub divided as (i) Leptotene (ii) Zygotene (iii) Pachytene (iv) Diplotene (v) Diakinesis.
13. **Metaphase** is marked by the alignment of chromosomes at equatorial plate. [IPE]
14. During **Anaphase** centromere divides and chromatids start moving towards opposite poles.
15. Once chromatids reach the poles, chromosomal elongation starts, nucleolus and nuclear membrane reappear. This is called **Telophase.**
16. During cell growth, DNA synthesis takes place on **S-phase.** [NEET-2016]
17. In meiosis crossing over is initiated at **pachytene.** [NEET-2016]
18. Spindle fibres attach on to **kinetochore of the chromosome.** [NEET-2016]
19. The enzyme recombinase is required at the stage of meiosis is **Pachytene.** [NEET-2014]
20. In 'S' phase of the cell cycle **amount of DNA doubles in each cell.** [NEET-2014]
21. During mitosis, ER and nucleolus begin to disappear at **early prophase.** [2010 PMT]
22. Synapsis occurs between **two homologous chromosomes.** [2009 PMT]

23. Correct sequence of Phases of Cell cycle is $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$ [NEET-2019]
24. Cells in G_0 phase **exit the cell cycle**. [NEET-2019]
25. The centriole undergoes duplication during **Prophase**. [NEET-2021]
26. Anaphase II involves division of centromere. [NEET-2021]
27. Pairing of Homologous chromosomes does not occur in Mitosis. [NEET-2022]
28. Spindle fibers attach to kinetochores of chromosomes during **metaphase**. [NEET-2024]
29. The main function of the spindle fibers during mitosis is **to separate the chromosomes**. [NEET-2025]