

UNIT III : CELL: STRUCTURE AND FUNCTIONS**7. CELL CYCLE AND CELL DIVISION****1 OMQ + 1 SAQ [1 M + 4M = 5 M]****ROOT POINTS**

1. **Cell cycle** is the **life of cycle of a cell**, which covers its birth, growth and cell division.
2. **Main contents of this chapter:** i) Cell cycle iii) M phase iii) Significance of Mitosis
iv) Meiosis v) Significance of Meiosis
3. **Cell division** is the process by which a parent cell divides into two or more daughter cells.
4. Cell cycle duration of yeast is **90 minutes**. [MCQ]
5. Approximate duration of human cell cycle is **24 Hours**. [OWQ]
6. Cell cycle is divided into two phases (i) **Inter phase** (ii) **Mitosis** [OWQ]
7. Inter phase is subdivided into **G₁ phase, S phase and G₂ phase**. [SAQ]
8. Phase between two successive M-phases is **Interphase**. [MCQ]
9. **Interphase** is a **period of preparation** for cell division. [SAQ]
10. **G₁ phase** is the period when the cell grows and carries out normal metabolism. [SAQ]
11. In **S phase**, replication of DNA and duplication of centrioles occur. [IPE]
12. DNA synthesis of cell cycle occurs in **S-phase** [OWQ]
13. **G₂ phase** is the period of Cytoplasmic growth. [IPE]
14. **Mitosis** is divided into **Prophase, Metaphase, Anaphase and Telophase**. [SAQ]
15. **Mitosis** cell division is also known as equational division. [OWQ]
16. Most suitable phase of cell division to study the morphology of chromosomes is **Metaphase**
17. The disc shaped structures at the surface of the centromeres are called **Kinetochores**. [FIB]
18. Centromere splitting occurring in **Mitotic anaphase and meiotic anaphase – II**. [OWQ]
19. The prophase chromosome have **two chromatids**. [OWQ]
20. **Meiosis** division increases the genetic variability in the population. [FIB]
21. The **Prophase I** is longer and more complex when compared to prophase of mitosis. [SAQ]
It is sub divided as (i) Leptotene (ii) Zygotene (iii) Pachytene (iv) Diplotene (v) Diakinesis.
22. Compaction of chromosomes start from **Leptotene**. [MCQ]
23. Bivalent formation occurs in the **Zygotene stage**. [MCQ]
24. The X-shaped structures called chiasmata appears in **Diplotene**. [MCQ]

25. Terminalisation of chiasmata happens in **Diakinesis**. [OWQ]
26. The enzyme recombinase is required at the stage of meiosis is **Pachytene**. [NEET-2014]
27. In 'S' phase of the cell cycle **amount of DNA doubles in each cell**. [NEET-2014]
28. During gamete formation, the enzyme recombinase participates during **Prophase-I**. [2012PMT]
29. During mitosis, ER and nucleolus begin to disappear at **early prophase**. [2010 PMT]
30. Synapsis occurs between **two homologous chromosomes**. [2009 PMT]
31. During cell growth, DNA synthesis takes place on **S-phase**. [NEET-2016]
32. In meiosis crossing over is initiated at **pachytene**. [NEET-2016]
33. Spindle fibres attach on to **kinetochore of the chromosome**. [NEET-2016]
34. Correct sequence of Phases of Cell cycle is $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$ [NEET-2019]
35. Cells in G_0 phase **exit the cell cycle**. [NEET-2019]
36. The centriole undergoes duplication during **Prophase**. [NEET-2021]
37. Anaphase II involves division of centromere. [NEET-2021]
38. Pairing of Homologous chromosomes does not occur in Mitosis. [NEET-2022]
39. The main function of the spindle fibers during mitosis is **to separate the chromosomes**. [NEET-2025]
40. Spindle fibers attach to kinetochores of chromosomes during **metaphase**. [NEET-2024]