

NEET • CLASS 11 BIOLOGY

Cell Cycle and Cell Division — Revision Sheet

This chapter gives easy marks in NEET if you know the phases in order. Try these questions, read the reason for each answer, and then take a full 10-question test on the chapter in the app.

Quick NCERT recap

- Interphase (G1, S, G2) takes about 95% of the cell cycle; the cell grows and copies its DNA in S phase.
- Mitosis has four stages: prophase, metaphase, anaphase, telophase — chromosome number stays the same.
- Meiosis I is reductional ($2n$ to n); meiosis II is like mitosis and keeps the number the same.
- Crossing over happens in pachytene of prophase I and is the main source of variation.
- Human cell cycle takes about 24 hours; M phase is only about 1 hour of it.

Exam tips

- Learn the sub-stages of prophase I in order: leptotene, zygotene, pachytene, diplotene, diakinesis.
- Remember which stage the synaptonemal complex forms in and when it breaks down.
- NEET repeatedly asks about the number of chromosomes and chromatids at each stage — write it once on paper.

Practice questions with answers

Q1. Crossing over between homologous chromosomes takes place during which sub-stage of prophase I?

- (A) Leptotene
- (B) Zygotene
- ✓ (C) Pachytene
- (D) Diplotene

Answer: (C) Pachytene

Why: Pairing (synapsis) finishes in zygotene. In pachytene the four chromatids of each bivalent are visible and recombination nodules appear, where the enzyme recombinase carries out crossing over between non-sister chromatids.

Q2. DNA replication in a eukaryotic cell takes place in:

- (A) G1 phase
- ✓ (B) S phase
- (C) G2 phase
- (D) M phase

Answer: (B) S phase

Why: S (synthesis) phase copies the DNA, so the amount of DNA doubles from $2C$ to $4C$. The chromosome number stays the same because sister chromatids stay attached at the centromere.

Q3. Which stage of mitosis is marked by chromosomes lining up at the equatorial plate?

- (A) Prophase
- ✓ (B) Metaphase
- (C) Anaphase
- (D) Telophase

Answer: (B) Metaphase

Why: In metaphase the spindle fibres attach to the kinetochores and chromosomes align at the metaphase (equatorial) plate. This is also the best stage to study chromosome morphology.

Q4. Meiosis in a diploid cell with $2n = 20$ produces daughter cells with how many chromosomes each?

- (A) 20
- (B) 40
- ✓ (C) 10
- (D) 5

Answer: (C) 10

Why: Meiosis is a reduction division. A cell with $2n = 20$ forms four haploid cells, each with $n = 10$ chromosomes.

Revise this chapter on the right day

Study Commander AI reminds you to revise each topic on day 1, 3, 8 and 20, so you do not forget what you already learnt. Take the free 10-question test for this chapter:

<https://studycommanderai.live/practice/biology/cell-cycle-and-cell-division>

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