

Cell Cycle and Cell Division — CBSE Pattern Test 1

Class 11 Biology · 90 minutes · 40 marks · Sections A–D with answer key · Narayan Gurukul Academy

Test 1 — CBSE Pattern (90 minutes, 40 marks)

Class 11 Biology · Cell Cycle and Cell Division · Narayan Gurukul Academy (ClassApna)

General Instructions: (1) This paper has four sections — Section A (1×10), Section B (2×4), Section C (3×4) and Section D (5×2) — total 40 marks. Time allowed: 90 minutes.

(2) All questions are compulsory. No overall choice is given; internal choice, where allowed, is clearly marked.

(3) For MCQ questions choose the single correct option; for VSA answers write a single line.

(4) Take $g = 10 \text{ m/s}^2$. All symbols carry their usual meaning. Use of a calculator is not permitted.

Section A — MCQ & VSA ($10 \times 1 = 10$ marks)

- The cell cycle consists of
 - interphase and M phase
 - mitosis and meiosis
 - G1 and G2 only
 - prophase and metaphase
- DNA replication occurs during
 - S phase
 - G1 phase
 - G2 phase
 - M phase
- The number of daughter cells produced by mitosis is
 - two
 - four
 - one
 - eight
- Chromosomes align at the equator during
 - metaphase
 - prophase
 - anaphase
 - telophase
- Meiosis produces
 - four haploid cells
 - two diploid cells
 - two haploid cells
 - four diploid cells
- Crossing over occurs during
 - prophase I
 - prophase II
 - metaphase I
 - anaphase II
- Human somatic cells have
 - 46 chromosomes

- (B) 23 chromosomes
 - (C) 92 chromosomes
 - (D) 44 chromosomes
8. Human gametes have
- (A) 23 chromosomes
 - (B) 46 chromosomes
 - (C) 22 chromosomes
 - (D) 92 chromosomes
9. What is the cell cycle?
10. What is a centromere?

Section B — Short Answer I ($4 \times 2 = 8$ marks)

11. During which phase is DNA replicated?
12. In which phase do chromosomes align at the equator?
13. When does crossing over occur?
14. What does $2n$ mean?

Section C — Short Answer II ($4 \times 3 = 12$ marks)

15. Distinguish between interphase and M phase.
16. Distinguish between metaphase and anaphase.
17. Distinguish between anaphase I and anaphase II.
18. State two significances of meiosis.

Section D — Long Answers ($2 \times 5 = 10$ marks)

19. (a) Describe the phases of the cell cycle. (b) Describe the events of prophase, metaphase, anaphase and telophase.
20. (a) Describe the events of meiosis I. (b) Give a full comparison between mitosis and meiosis.

Answer Key (Marking Scheme)

- Q1 — (A) interphase and M phase. Q2 — (A) S phase. Q3 — (A) two. Q4 — (A) metaphase. Q5 — (A) four haploid cells. Q6 — (A) prophase I. Q7 — (A) 46 chromosomes. Q8 — (A) 23 chromosomes.
- Q9 — The cell cycle is the sequence of interphase and M phase by which a cell grows and divides.
- Q10 — The centromere is the constricted region where the two chromatids join.
- Q11 — S phase.
- Q12 — Metaphase.
- Q13 — Prophase I of meiosis.
- Q14 — $2n$ denotes a diploid cell (two sets of chromosomes).
- Q15 — Interphase is growth/DNA replication; M phase is the actual division.
- Q16 — Metaphase: chromosomes align at the equator; anaphase: chromatids separate to opposite poles.
- Q17 — Anaphase I: homologous chromosomes separate; anaphase II: sister chromatids separate.
- Q18 — It halves the chromosome number and creates genetic variation.

Q19 — (a) G1, S, G2 (interphase) and M phase. (b) Prophase (condensation), metaphase (alignment), anaphase (separation), telophase (envelope reforms).

Q20 — (a) Prophase I (crossing over), metaphase I, anaphase I (homologues separate), telophase I. (b) Mitosis: 1 division, 2 diploid cells, no crossing over, somatic cells; meiosis: 2 divisions, 4 haploid cells, crossing over, germ cells.