

Cell Cycle and Cell Division — CBSE Pattern Test 2

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

Test 2 — CBSE Pattern (90 minutes, 40 marks)

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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 longest phase of the cell cycle is
 - interphase
 - prophase
 - telophase
 - anaphase
- Sister chromatids separate during
 - anaphase
 - metaphase
 - prophase
 - telophase
- The nuclear envelope reforms during
 - telophase
 - prophase
 - anaphase
 - metaphase
- Homologous chromosomes separate during
 - anaphase I
 - anaphase II
 - metaphase I
 - telophase II
- The second meiotic division separates
 - sister chromatids
 - homologous chromosomes
 - the nucleus
 - centromeres only
- Mitosis produces _____ cells while meiosis produces _____ cells.
 - diploid; haploid
 - haploid; diploid
 - haploid; haploid
 - diploid; diploid
- The number of divisions in meiosis is
 - two

- (B) one
 - (C) four
 - (D) three
8. A diploid cell is denoted by
- (A) $2n$
 - (B) n
 - (C) $3n$
 - (D) $4n$
9. What is the G_0 phase?
10. What is a tetrad?

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

11. How many cells are produced in meiosis?
12. How does meiosis maintain chromosome number?
13. Which division produces four cells?
14. How many chromosomes are in a human gamete?

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

15. State the significance of mitosis.
16. What are the two divisions of meiosis?
17. How does crossing over create variation?
18. Distinguish between haploid and diploid.

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

19. (a) Describe the events of meiosis II and its significance. (b) Explain why mitosis is called equational and meiosis reductional.
20. (a) Explain the significance of meiosis. (b) Show how the chromosome number is maintained through fertilisation.

Answer Key (Marking Scheme)

- Q1 — (A) interphase. Q2 — (A) anaphase. Q3 — (A) telophase. Q4 — (A) anaphase I. Q5 — (A) sister chromatids. Q6 — (A) diploid; haploid. Q7 — (A) two. Q8 — (A) $2n$.
- Q9 — G_0 is the quiescent stage in which the cell does not divide.
- Q10 — A tetrad is the group of four chromatids formed by a pair of homologous chromosomes during synapsis.
- Q11 — Four haploid cells.
- Q12 — It halves the chromosome number so that fertilisation restores the diploid number.
- Q13 — Meiosis.
- Q14 — 23 chromosomes.
- Q15 — Growth, cell replacement and maintenance of the chromosome number.
- Q16 — Meiosis I (reductional) and meiosis II (equational).
- Q17 — Crossing over exchanges segments between homologous chromosomes, producing new allele combinations.
- Q18 — Haploid (n) has one set of chromosomes; diploid ($2n$) has two sets.

Q19 — (a) Meiosis II separates sister chromatids to form four haploid cells; it is like mitosis but on haploid cells. (b) Mitosis keeps the chromosome number the same (equational); meiosis halves it (reductional).

Q20 — (a) Maintains chromosome number across generations and creates variation. (b) Gametes ($n = 23$) fuse at fertilisation to give $2n = 46$.