

Cell Cycle and Cell Division — Assignment 1

Class 11 Biology · Topic-wise question bank covering every concept of the chapter · Narayan Gurukul Academy

Instructions: (1) Attempt all questions. This worksheet walks through every concept of the chapter, topic by topic.
(2) The interactive MCQ version of these questions (with instant answer reveal) is available on the notes page.
(3) Universal values: $g = 10 \text{ m/s}^2$ unless stated. Give answers with correct SI units.

The Cell Cycle

MCQ Questions (choose the correct option)

- 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 longest phase of the cell cycle is
 - interphase
 - prophase
 - telophase
 - anaphase
- The phase between S phase and mitosis is
 - G2
 - G1
 - S
 - G0

1 Mark Questions

- What is the cell cycle?
- During which phase is DNA replicated?
- What is the G0 phase?

2 Mark Questions

- Distinguish between interphase and M phase.
- Name the phases of interphase and state what happens in each.

3 Mark Questions

- Describe the phases of the cell cycle.
- Explain the events of interphase.

Mitosis

MCQ Questions (choose the correct option)

1. The number of daughter cells produced by mitosis is
 - (A) two
 - (B) four
 - (C) one
 - (D) eight
2. Chromosomes align at the equator during
 - (A) metaphase
 - (B) prophase
 - (C) anaphase
 - (D) telophase
3. Sister chromatids separate during
 - (A) anaphase
 - (B) metaphase
 - (C) prophase
 - (D) telophase
4. The nuclear envelope reforms during
 - (A) telophase
 - (B) prophase
 - (C) anaphase
 - (D) metaphase

1 Mark Questions

1. How many daughter cells are formed in mitosis?
2. In which phase do chromosomes align at the equator?
3. What is a centromere?

2 Mark Questions

1. Distinguish between metaphase and anaphase.
2. State the significance of mitosis.

3 Mark Questions

1. Describe the events of prophase, metaphase, anaphase and telophase.
2. Explain the significance of mitosis in organisms.

Meiosis

MCQ Questions (choose the correct option)

1. Meiosis produces
 - (A) four haploid cells
 - (B) two diploid cells
 - (C) two haploid cells
 - (D) four diploid cells
2. Crossing over occurs during

- (A) prophase I
 - (B) prophase II
 - (C) metaphase I
 - (D) anaphase II
3. Homologous chromosomes separate during
- (A) anaphase I
 - (B) anaphase II
 - (C) metaphase I
 - (D) telophase II
4. The second meiotic division separates
- (A) sister chromatids
 - (B) homologous chromosomes
 - (C) the nucleus
 - (D) centromeres only

1 Mark Questions

1. How many cells are produced in meiosis?
2. When does crossing over occur?
3. What is a tetrad?

2 Mark Questions

1. Distinguish between anaphase I and anaphase II.
2. What are the two divisions of meiosis?

3 Mark Questions

1. Describe the events of meiosis I.
2. Describe the events of meiosis II and its significance.

Significance of Meiosis

MCQ Questions (choose the correct option)

1. Meiosis maintains the chromosome number by
 - (A) halving it in gametes
 - (B) doubling it
 - (C) keeping it constant
 - (D) deleting it
2. Genetic variation is produced mainly by
 - (A) crossing over and independent assortment
 - (B) DNA replication only
 - (C) cytokinesis
 - (D) binary fission
3. Meiosis occurs in
 - (A) reproductive cells
 - (B) somatic cells
 - (C) all cells

- (D) only root cells
4. Without meiosis, sexual reproduction would
- (A) double the chromosome number each generation
 - (B) keep it constant
 - (C) reduce it
 - (D) have no effect

1 Mark Questions

1. How does meiosis maintain chromosome number?
2. What is the main source of genetic variation in meiosis?
3. Where does meiosis occur?

2 Mark Questions

1. State two significances of meiosis.
2. How does crossing over create variation?

3 Mark Questions

1. Explain the significance of meiosis.
2. How does meiosis contribute to evolution and variation?

Mitosis vs Meiosis — Key Differences

MCQ Questions (choose the correct option)

1. Mitosis produces _____ cells while meiosis produces _____ cells.
 - (A) diploid; haploid
 - (B) haploid; diploid
 - (C) haploid; haploid
 - (D) diploid; diploid
2. The number of divisions in meiosis is
 - (A) two
 - (B) one
 - (C) four
 - (D) three
3. Crossing over is absent in
 - (A) mitosis
 - (B) meiosis I
 - (C) meiosis II
 - (D) prophase I
4. Mitosis occurs in
 - (A) somatic cells
 - (B) germ cells
 - (C) only gametes
 - (D) only meristems

1 Mark Questions

1. Which division produces four cells?
2. In which division is crossing over absent?
3. Which division keeps the chromosome number constant?

2 Mark Questions

1. Give two differences between mitosis and meiosis.
2. Which division is responsible for growth?

3 Mark Questions

1. Give a full comparison between mitosis and meiosis.
2. Explain why mitosis is called equational and meiosis reductional.

Ploidy and Chromosome Number — Quick Reference

MCQ Questions (choose the correct option)

1. Human somatic cells have
 - (A) 46 chromosomes
 - (B) 23 chromosomes
 - (C) 92 chromosomes
 - (D) 44 chromosomes
2. Human gametes have
 - (A) 23 chromosomes
 - (B) 46 chromosomes
 - (C) 22 chromosomes
 - (D) 92 chromosomes
3. A diploid cell is denoted by
 - (A) $2n$
 - (B) n
 - (C) $3n$
 - (D) $4n$
4. After meiosis, the chromosome number of a human gamete is
 - (A) $n = 23$
 - (B) $2n = 46$
 - (C) $n = 46$
 - (D) $2n = 23$

1 Mark Questions

1. How many chromosomes are in a human diploid cell?
2. How many are in a human gamete?
3. What does $2n$ mean?

2 Mark Questions

1. Distinguish between haploid and diploid.
2. Why do gametes need to be haploid?

3 Mark Questions

1. Explain ploidy with examples.
2. Show how the chromosome number is maintained through fertilisation.