

BIOLOGY

CLASS-XI

NEET

MODULE-02

Cell Cycle & Cell Division

| Structural Organisation in Animals | Cell Unit of Life |
Transport in plants| Biomolecules |

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Physics Wallah

Multi-Concept Questions



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1. A cell divides every one minute. At this rate of division it can fill a 100 mL of beaker in one hour. How much time does it take to fill a 50 mL beaker?

- 30 minutes
- 60 minutes
- 59 minutes
- 32 minutes

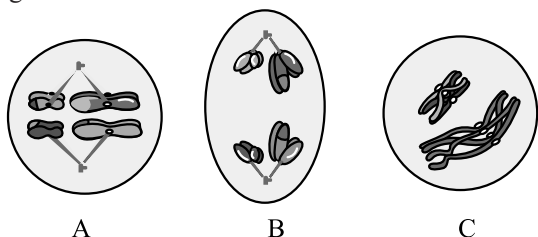
2. If a cell has twice as much DNA as in a normal functional cell, it means that the cell:

- Is preparing to divide
- Has completed division
- Has reached the ends of its life span
- Has ceased to function

3. Synaptonemal complex is a nucleoprotein structure. It is visible or found from

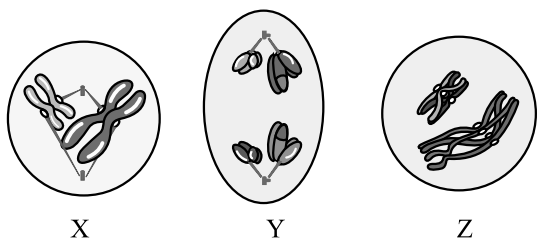
- Zygotene through pachytene
- Leptotene through diplotene
- Zygotene through metaphase
- Pachytene through diplotene

4. A, B and C are three stages in the meiosis-I as given in diagrams:



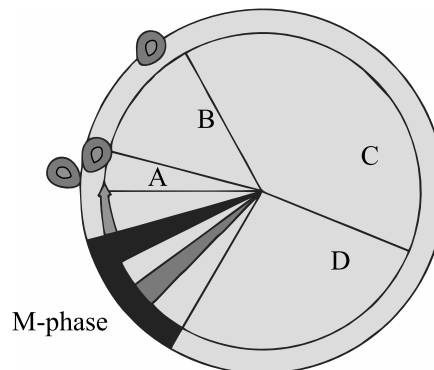
- A → C → B
- A → B → C
- C → A → B
- C → B → A

5. X, Y and Z are three stages of cell division in meiosis. Choose the option with their correct identification:



	X	Y	Z
a.	Metaphase-II	Anaphase-II	Prophase-II
b.	Prophase-II	Anaphase-I	Prophase-I
c.	Metaphase-I	Anaphase-I	Anaphase-II
d.	Prophase-II	Anaphase-II	Prophase-I

6. Identify A, B, C and D in diagram depicting cell cycle correctly.



- | | A | B | C | D |
|----|----------------|----------------|----------------|----------------|
| a. | G ₀ | G ₁ | S | G ₂ |
| b. | G ₀ | G ₁ | G ₂ | S |
| c. | S | G ₁ | G ₀ | G ₂ |
| d. | G ₂ | S | G ₁ | G ₀ |

7. Match the columns and find out the correct combination:

A. Anaphase-I	1. One spindle apparatus
B. Anaphase-II	2. Separation of two genomes
C. Metaphase-II	3. Two spindle apparatus
D. Telophase-II	4. Separation of two chromatids
	5. Four daughter nuclei

- A-2 B-4 C-1 D-3
- A-3 B-1 C-4 D-5
- A-2 B-4 C-3 D-5
- A-3 B-2 C-5 D-1

8. Pick out the correct statements:

- Synapsis of homologous chromosomes take place during prophase I of meiosis
 - Division of centromeres takes place during anaphase I of meiosis
 - Spindle fibres disappear completely in telophase of mitosis
 - Nucleoli reappear at telophase I of meiosis.
- A only
 - C only
 - A and B only
 - A, C and D only

9. Match the columns and find out the correct combination:

A. Crossing over	1. Diplotene
B. Synapsis	2. Zygotene
C. Weakening of synaptonemal force	3. Leptotene
D. Terminalisation	4. Pachytene
	5. Diakinesis

- a. A-4 B-2 C-1 D-5
 b. A-5 B-3 C-2 D-1
 c. A-4 B-2 C-5 D-3
 d. A-3 B-2 C-4 D-5

10. Match the columns and find out the correct combination:

A. Doubling of DNA	1. Anaphase
B. Double the number of chromosomes	2. Cytokinesis
C. Double the number of cells	3. S-phase
D. Doubling of cell organelles	4. G ₂ -phase

- a. A-3 B-1 C-2 D-4
 b. A-1 B-3 C-4 D-2
 c. A-4 B-2 C-1 D-3
 d. A-2 B-4 C-3 D-1

11. Identify wrong pair of statements from the following:

- A. Histone synthesis takes place in S phase
 B. Doubling of chromosomes occur in S phase of interphase.
 C. Nuclei formed after meiosis-I are haploid.
 D. Terminalization occurs in Anaphase-I
 a. B and D b. C and D
 c. A and B d. A and D

12. Match the columns and find out the correct combination:

A. Attraction between homologous chromosomes	1. Crossing over
B. Exchange of genetic material between homologous chromosomes	2. Synapsis
C. Repulsion between homologous chromosomes	3. Segregation
D. Separation of homologous chromosomes	4. Diplotene

- a. A-2 B-1 C-4 D-3
 b. A-1 B-3 C-4 D-2
 c. A-4 B-2 C-1 D-3
 d. A-2 B-4 C-3 D-1

13. Match the columns and find out the correct combination:

A. Metaphase	1. X-shaped structure
B. Diplotene	2. Exchange of chromatids
C. Diakinesis	3. Counting of chromosomes
D. Crossing over	4. Terminalisation
	5. Examine the structure of the chromosomes

- a. A-4 B-1 C-2 D-3
 b. A-5 B-1 C-4 D-2
 c. A-2 B-4 C-5 D-1
 d. A-5 B-1 C-3 D-4

14. Pick out the correct statements:

- a. Mitosis takes place in the somatic cells and meiosis takes place in the germ cells
 b. During mitosis, the DNA replicates once for one cell division and in meiosis, the DNA replicates twice for two cell divisions.
 c. Mitosis and meiosis occur both in sexually and asexually reproducing organisms.
 d. Mitosis takes place in germ cell and meiosis takes place in the somatic cells.

15. Correct statement is/are

- A. Nuclear membrane and nucleolus reappears in telophase I
 B. During metaphase I, the bivalents arrange on the equatorial plate.
 C. Metaphase is marked by the alignment of chromosome at the equatorial plate.
 D. During mitosis, chromosome number of the parent is conserved in the daughter cell.
 E. Cell division does not stop with the formation of the mature organism but continues throughout its life cycle.
 a. A, C and E b. B only
 c. C and D d. All of these

16. Incorrect statement is:

- a. Diplotene can last for months or years.
 b. In interkinesis, chromosomes do not reach the extremely extended state of the interphase nucleus.
 c. Meiosis II is the equational division in which the chromosome number of the parent is conserved in the daughter cell.
 d. Mitosis is usually restricted to the haploid cells only.

17. Choose the correct statements (with respect to cell division).

- A. Cell duplicates its genome.
 B. Synthesise the other constituents.
 C. The events of cell division are under genetic control.
 D. M-phase starts with increase in number of cell organelles and decondensation of chromosomes.
 a. A & D b. C & D
 c. A, B & D d. A, B & C

- 18.** Which statement is true for mitosis?
- Daughter cells exhibit division of labour, i.e., perform different functions
 - Daughter cells are exactly similar in all respect
 - Daughter cells have half the number of chromosomes as compared to mother cell
 - Daughter cells have differences in genetic characters
- 19.** Which one of the following statements that contrasts mitosis and meiosis is correct?
- Cell divided by cytokinesis only in mitosis
 - DNA is replicated before the start of meiosis only
 - Spindles consisting of microtubule form only in mitosis
 - Exchange of genetic material occurs only in meiosis
- 20.** Which one of the following list contain the correct order of meiotic events?
- Separation of sister chromatids, recombination, formation of the synaptonemal complex, separation of homologous chromosomes
 - Separation of homologous chromosomes, formation of the synaptonemal complex, recombination, separation of sister chromatids
 - Formation of synaptonemal complex, recombination, separation of sister chromatids, separation of homologous chromosomes
 - Formation of the synaptonemal complex, recombination, separation of homologous chromosomes, separation of sister chromatids.
- 21.** If a grasshopper cell contained 200 units of DNA during G_2 . What would be the quantity of DNA in one of the 4 grasshopper cells at the end of telophase II of meiosis?
- 50 units
 - 100 units
 - Between 50 and 100 units
 - 200 units
- 22.** A zoologist examined an intestine cell from a crayfish and counted 200 chromosomes, each consists of 2 chromatids, at prophase I of mitosis. What would he expect to see in each of the four cells at telophase II of meiosis if he looked in the crayfish ovary?
- 50 chromosomes, each consisting of 2 chromatids
 - 50 chromosomes, each consisting of 1 chromatid
 - 100 chromosomes, each consisting of 2 chromatids
 - 100 chromosomes, each consisting of 1 chromatid

ABOUT PHYSICS WALLAH



Alakh Pandey is one of the most renowned faculty in NEET & JEE domain's Physics. On his YouTube channel, Physics Wallah, he teaches the Science courses of 11th and 12th standard to the students aiming to appear for the engineering and medical entrance exams.



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