



PERL EDUCATION

PRIMARY EDUCATION & RIGHTEOUSNESS LEARNING

ALUMNI OF IITs / NITs

JEE - 2021 RESULT



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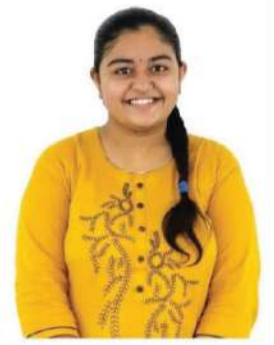


CHAYTALI JAWALEKAR
NIT

NEET - 2021 RESULT



SHREYA MULEY
AIIMS



VIDISHA JOSHI
AIIMS

Ch - 1: Cell Cycle & Cell Division

OUR ICSE - 10th TOPPERS



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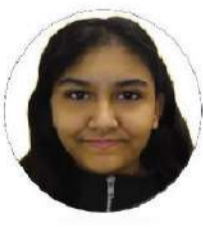
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Short Questions

- Question 1:** What is direct cell division ? Explain with an example.
- Question 2:** Name the two kinds of cell division found in living organisms.
- Question 3:** What type of cell division does occur in somatic cells of the body ?
- Question 4:** Where does the meiosis occur in our body?
- Question 5:** What do you mean by cell-cycle?
- Question 6:** Write the name of various steps of cell cycle.
- Question 7:** Name the structure which initiates cell division?
- Question 8:** Why gametes have a haploid number of chromosomes ?
- Question 9:** Mention three significant changes that occur in a cell during interphase.
- Question 10:** What is cytokinesis ?
- Question 11:** How does colchicine act as mitotic poison ? Is there any advantage of it ?
- Question 12:** Explain the significance of mitosis.
- Question 13:** Why is meiosis referred to as reduction division ?
- Question 14:** What is the importance of meiosis in creating variations?
- Question 15:** State how does meiosis maintain chromosome number in a species.
- Question 16:** How prophase-I of meiosis differs from prophase of mitosis in an essential way? Describe how it affects the daughter cells?
- Question 17:** What is the importance of chiasma formation ?
- Question 18:** What is the importance of meiosis?

Give Reasons

- Question 1:** The mitosis is called equational division.
- Question 2:** The meiosis is called reductional division.
- Question 3:** Gametes must be produced by meiosis for sexual reproduction.
- Question 4:** Chromosomes are the carriers of heredity.

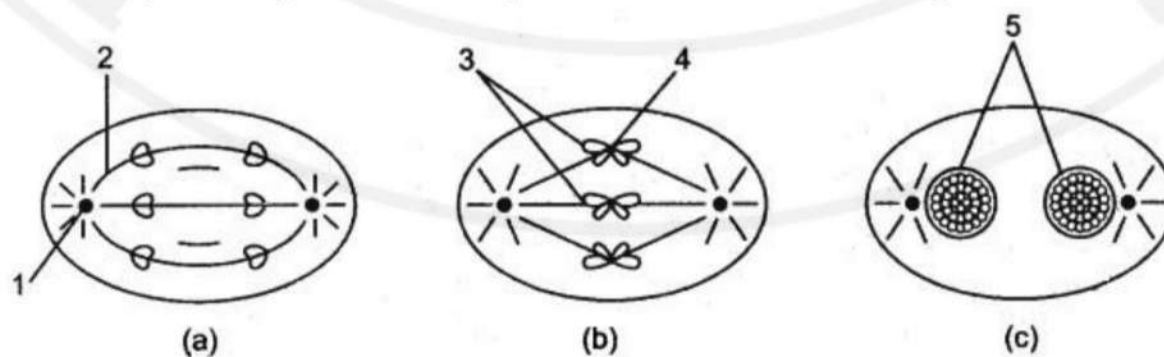
Differentiate

- Question 1:** Mitosis and Meiosis.
- Question 2:** Chromatin and Chromosome.
- Question 3:** Centrifugal cytokinesis and Centripetal cytokinesis.
- Question 4:** Anaphase of Mitosis and Anaphase of Meiosis-I.
- Question 5:** Gametic meiosis and Zygotic meiosis.
- Question 6:** Cytokinesis and Karyokinesis.
- Question 7:** Chiasmata and crossing over.

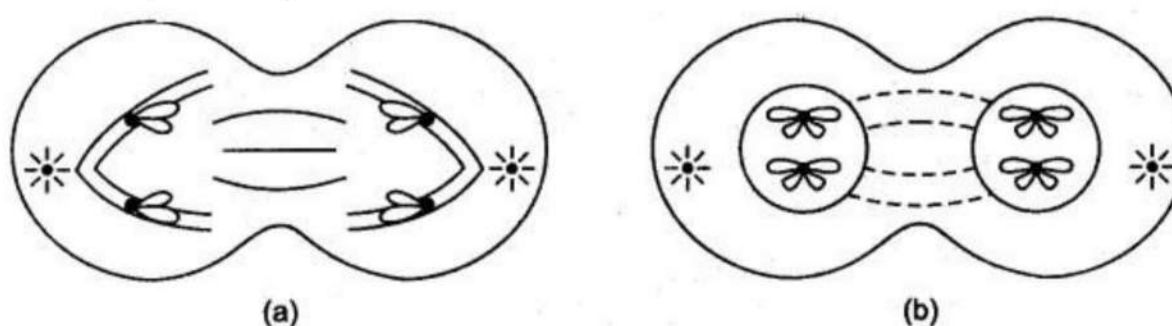
Diagram Based Questions

- Question 8:** Centrosome and centromere.
- Question 9:** Cytokinesis in plant and animal cell.

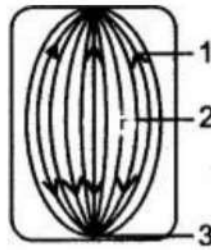
Question 1: Identify the stages of mitosis given below and label the figures.



Question 2: Identify the stages of meiosis given below and label them.



Question 3: The diagram below represents a certain stage of a cell.

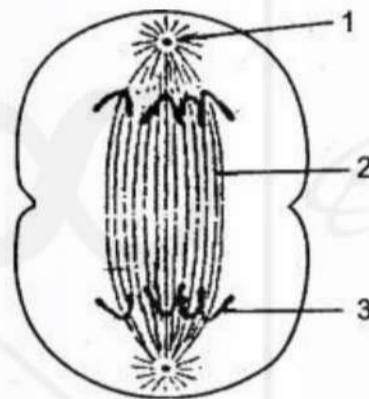


- (i) Is it an animal cell or a plant cell? Give one reason in support of your answer.
- (ii) Label the parts numbered 1 - 3.
- (iii) Which stage (phase) of mitosis is represented in this diagram.

Question 4: (i) Draw a neat labeled diagram to show the metaphase stage of mitosis in an animal cell having '6' chromosome.

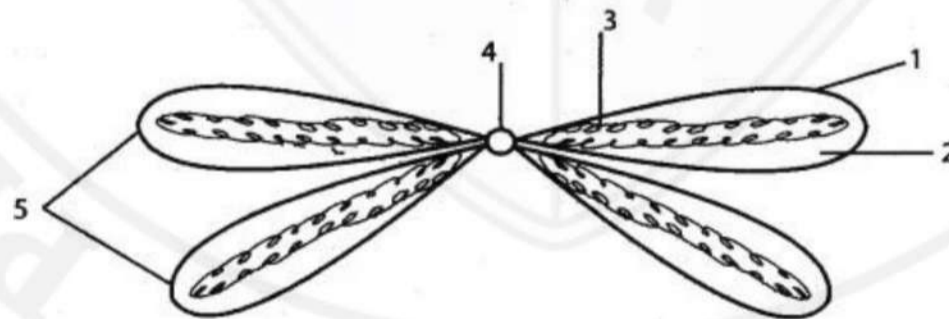
- (ii) How many daughter cells are formed at the end of mitosis and at the end of meiosis?
- (iii) With reference to cell division explain the following terms:
(Chromatid, Centromere, Haploid).
- (iv) Name the type of cell division that occurs during:
 1. Growth of shoot
 2. Formation of pollen grains.
 3. Repair of worn out tissues.

Question 5: The diagram below represents a stage during cell division. Study the same and then answer, the questions, that follow :

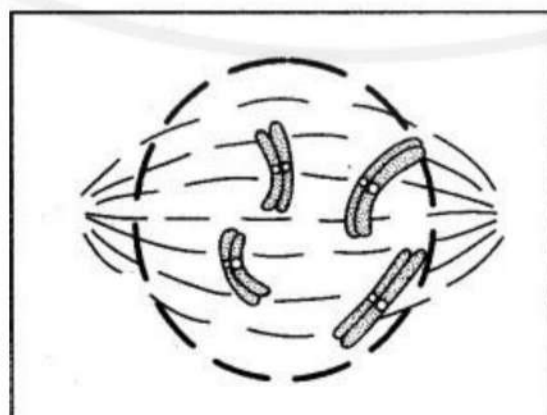


- (i) Name the parts labelled 1, 2 and 3.
- (ii) Identify the above stage and give a reason to support your answer.
- (iii) Mention where in the body this type of cell division occurs.
- (iv) Name the stage prior to this stage and draw a diagram to represent the same.

Question 6: In the given diagram name the parts labeled 1, 2, 3, 4 and 5 and describe about them in short.

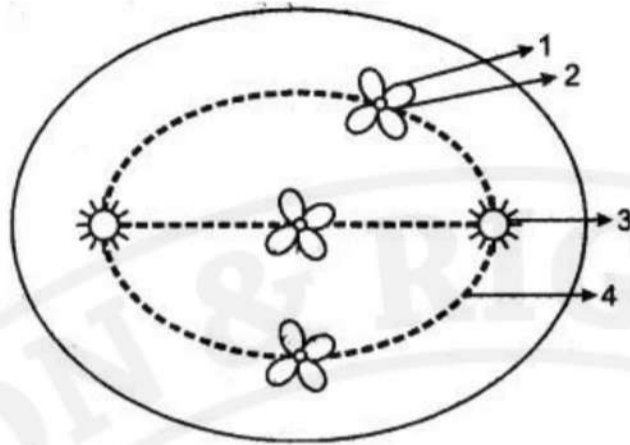


Question 7: Given below is a diagram representing a stage during mitotic cell division. Study it carefully and answer the questions that follow:



- (i) Is it a plant cell or an animal cell? Give a reason to support your answer.
- (ii) Identify the stages shown.
- (iii) Name the stage that follows the one shown here. How is that stage identified?
- (iv) How will you differentiate between mitosis and meiosis on the basis of the chromosome number in the daughter cells?

Question 8: The figure below shows a certain stage of mitosis:



- (i) Name the stage,
- (ii) Label the part-4
- (iii) How many chromosomes are shown here?

Sketch and Label the Diagram

Question 1: Give a labeled diagram to illustrate amitosis.

Question 2: Draw a labeled schematic representation of mitosis cell division.

Question 3: Draw a duplicate chromosome and label its part.

Question 4: Draw a well-labelled diagram to show the anaphase stage of mitosis in a plant cell having four chromosomes.

Explain the Terms

Question:

- 1. Leptotene
- 2. Zygotene
- 3. Pachytene
- 4. Diplotene
- 5. Diakinesis
- 6. Cell division
- 7. Chromatids
- 8. Centromeres
- 9. Centrioles
- 10. Spindle
- 11. Cell Plate
- 12. Cleavage furrow
- 13. Chromosomes
- 14. Chromatin

Name the Following

Question:

1. The process by which cell divides into two equal daughter cells.
2. The type of cell division present in unicellular organisms.
3. The two kinds of cell division found in living organisms.
4. Mitosis takes place in which cells.
5. Replacement of dead cells is accomplished by which process.
6. The kind of division normally seen at the tip of root and shoot system.
7. Microtubules form a bipolar spindle in which stage.
8. The structure responsible for initiating cell division in animal cells.
9. The part of the cell associated with heredity.
10. Process by which gametes are produced by . .
11. The process responsible for variation.
12. The kind of division takes place in the reproductive tissues.
13. The largest phase of a normal cell cycle.
14. The stage when chromosomes arrange at the equator.
15. Separation of sister chromatids takes place in which stage.
16. Stage in which the crossing-over takes place.
17. The point at which the explicated chromosomes are joined.
18. Name the stage during which nuclear membrane and nucleolus reappear.
19. 'V' shaped chromosome having the centromere at the centre.
20. Nuclear envelope and nucleoli reappear in which stage.
21. Result of uncontrolled cell division.

Give Technical Terms

Question:

1. The stage in mitosis when the nucleolus start disappearing.
2. The stage at which spindle fibres begin to be formed.
3. The shortest phase of mitosis.
4. The stage when sister chromosomes separate from their paired condition.
5. The period between two successive mitotic division.
6. Point at which two sister chromatids are held together.
7. The stage at which chromosomes occurs reach the opposite poles.
8. The process of cytoplasmic division.
9. Division of nucleus.
10. During cytokinesis when the cell plate begins in the centre and moves towards the wall.
11. The phase of the cell cycle during which the cell grows.
12. The phase of the cell cycle in which DNA replication takes place.
13. Division which brings about vegetative growth.
14. The largest phase of a normal cell cycle.
15. The stage at which progressive condensation and coiling of chromatin fibres.
16. The stage at which synapsis in chromosomes to form bivalents.
17. The stage at which formation of chiasmata occurs. .
18. Crossing over occurs during this substage of meiosis.
19. The stage at meiosis at which there are two cells, each with sister chromatids aligned at the equator.
20. The phase usually skipped in meiosis.

Fill in the Blanks

Complete the following sentences with appropriate words :

1. The type of cell division that occurs in apical meristem of plants is_____.
2. _____means splitting of nucleus.
3. The stage between Meiosis-I and Meiosis-II is called_____.
4. Colchicine arrests cell division at_____.
5. _____is the point at which sister chromatids are held together.
6. The spindle fibres are made of_____.
7. The pairing of homologous chromosomes is called_____.
8. Chromosomes are_____material.
9. Polytene chromosomes are found in_____of fly larvae.

True & False

Mention, if the following statements are True or False. If false rewrite the wrong statement in its correct form:

1. Somatic cells of a multicellular organisms arise from a single cell by mitosis.
2. Mitosis results in four daughter cells.
3. Mitosis keeps the chromosome number constant through the generations.
4. Germ cells divide meiotically to produce gametes.
5. The alkaloid coichicine inhibits formation of mitotic spindle.
6. Asexual reproduction is accomplished through mitosis.
7. Chromosomes other than sex-chromosomes are autonomous.
8. Cytokinesis takes place through cleavage furrow in animal cells.
9. Chromosomes are arranged in the form of chromatids at the equator in prophase.
10. Chromosomes are the thickest and shortest in telophase.

State the Location

Name	Location
Asters	
Cell plate	
Chromosomes	
Polytene chromosome	

State the Function

Write the functional activity of the following structures:

Name	Function
Chromosome	
Spindle fibres	
Chiasmata	
Colchicine.	

Choose the Odd One Out

1. Amitosis, Mitosis, Meiosis, Cell cycle.
2. Prophase, Metaphase, Anaphase, Telophase, Meiosis.
3. Leptotene, Zygotene, Pachytene, Diplotene, Telophase.

Multiple choice question

1. Cytokinesis is the division of:
 - (a) Cell
 - (b) Cytoplasm
 - (c) Cell wall
 - (d) Nucleus
2. Karyokinesis is the division of:
 - (a) Cytoplasm
 - (b) Nucleus
 - (c) Cell wall
 - (d) Pollen grains
3. Cell division occurring in somatic cells is:
 - (a) Mitosis
 - (b) Meiosis
 - (c) Diplotene
 - (d) Diakinesis
4. In meiotic cell division four daughter cells are produced by two successive divisions in which:
 - (a) First division is equational and second is reductional
 - (b) First division is reductional and second is equational
 - (c) Both divisions are reductional
 - (d) Both divisions are equational.
5. Duplication of DNA occurs in:
 - (a) G -phase
 - (b) G -phase
 - (c) S-phase
 - (d) M-phase
6. The nuclear membrane disappears in:
 - (a) Prophase
 - (b) Anaphase
 - (c) Zygotene
 - (d) Pachytene
7. How many chromosomes are found in a cell of human?
 - (a) 20 Pairs
 - (b) 46
 - (c) 23
 - (d) 46 Pairs
8. The nuclear membrane and nucleolus become indistinguishable during:
 - (a) Telophase
 - (b) Metaphase
 - (c) Prophase
 - (d) Interphase
9. The disappearance of spindle and uncoiling of chromosomes takes place in:
 - (a) Anaphase
 - (b) Telophase
 - (c) Pachytene
 - (d) Meiosis
10. The regions where crossing-over takes place are called:
 - (a) Chiasmata
 - (b) Cell plate
 - (c) Spindle fibres
 - (d) Chromosomes
11. Duplicated chromosomes are joined at a point termed:
 - (a) Centrosome
 - (b) Centromere
 - (c) Centriole
 - (d) Chromatid
12. The centromere divides into two in:
 - (a) Prophase
 - (b) Metaphase
 - (c) Anaphase
 - (d) Telophase
13. After mitotic cell division, a female human cell will have:
 - (a) yy + xx chromosome
 - (b) yy + xy chromosome
 - (c) 22 + x chromosome
 - (d) 22 + y chromosome
14. The period between two successive mitotic divisions is:
 - (a) Diakinesis
 - (b) Interphase
 - (c) Anaphase
 - (d) Mitosis
15. The term meiosis was coined by:
 - (a) Farmer and Moore
 - (b) Winiwarter
 - (c) Flemming
 - (d) Strasburger
16. Meiosis is also known as:
 - (a) Equational division
 - (b) Reductional division
 - (c) Direct cell division
 - (d) All of the above
17. Meiosis occurs in:
 - (a) Vegetative cells
 - (b) Reproductive cells
 - (c) Meristematic cells
 - (d) None of the above
18. The process of meiosis takes place to produce:
 - (a) Cells of the body
 - (b) Cells of the brain
 - (c) Sperms and ova
 - (d) Testis and ovary
19. Leptotene, Zygotene and Diplotene phases are found in:
 - (a) Prophase of Meiosis-II
 - (b) Prophase of Meiosis-I
 - (c) Interphase
 - (d) Mitosis