



# BIOLOGY

## BOOKS - SARAS PUBLICATION

### CELL CYCLE

#### Exercise

1. The correct sequence in cell cycle is

A. S-M-G1-G2

B. G1-S-G2-M

C. S-G1-G2-M

D. M-G-G2-S

**Answer:**



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2. If cell division of restriction in G1 phase of the cell cycle then the condition is known as

A. S Phase

B.  $G_2$  Phase

C. M phase

D.  $G_0$  Phase

**Answer:**



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**3.** Anaphase promoting complex APC is a protein degradation machinery necessary for proper mitosis of animal cells. If APC is

defective in human cell, which of the following is expected to occur ?

- A. Chromosomes will be fragmented
- B. Chromosomes will not segregate
- C. Chromosomes will not segregate
- D. Recombination of chromosomes will occur

**Answer:**



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4. In S phase of the cell cycle.

A. Amount of DNA doubles in each cell.

B. Amount of DNA doubles in each cell.

C. Chromosomes number is increased

D. Amount of DNA is reduced to half in  
each cell

**Answer:**



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5. Centromere is require for

A. Transcription.

B. Crossing over

C. Cytoplasmic cleavage

D. Movement of chromosome to wards  
pole

**Answer:**



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6. Synapsis occurs between

A. mRNA and ribosomes

B. Spindle fibres and centromeres

C. Two homologous chromosomes

D. A male and a female gamete.

**Answer:**



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7. In meiosis crossing over is initiated at

A. Diplotene

B. Pachytene

C. Leptotene

D. Zygotene

**Answer:**



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8. Colchicine prevents the mitosis of the cells at which of the following stage

A. Anaphase

B. Metaphase

C. Prophase

D. Interphase

**Answer:**



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9. The pairing of homologous chromosomes on meiosis is known as

A. Bivalent

B. Synapsis

C. Disjunction

D. Synergids

**Answer:**



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10. Anastral mitosis is the chracteristic feature of

- A. Lower animals
- B. Higher animals
- C. Higher plants
- D. All living organisms.

**Answer:**



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11. Condensation of chromosomes occurs in

A. Prophase I

B. Prophase II

C. Anaphase

D. Metaphase

**Answer:**



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12. The replication of nuclear DNA occurs in

A.  $G_1$  phase

B.  $G_2$  Phase

C. S phase

D. M phase

**Answer:**



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**13.** Spindle apparatus is formed during which stage of mitosis?

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

**Answer:**



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**14. Which is not the character of mitosis?**

A. Leptotene

B. Zygotene

C. Pachytene

D. All the above.

**Answer:**



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**15. Synaptonermal complex is formed during**

A. Meiosis

B. Amitosis

C. Mitosis

D. Cytokinesis

**Answer:**



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**16.** Recombinant nodules are found during which of the following?

A. Anaphase

B. Prophase



C. Telephase

D. Metaphase

**Answer:**



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**17.** Four daughter cells formed after meiosis are

A. Genetically similar

B. Genetically different

C. Anucleate

D. Multinucleate

**Answer:**



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**18.** In pachytene stage of meiosis the chromosomes appear

A. Single stranded

B. Double stranded

C. Three stranded

D. Four stranded

**Answer:**



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**19.** Recombination of genes occurs at

A. Prophase in mitosis

B. Prophase I in meiosis

C. Prophase II in meiosis

## D. Metaphase II in meiosis

**Answer:**



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**20.** Chromosome number is halved in meiosis during

A. Metaphase - I

B. Metaphase - II

C. Anaphase - I

## D. Telophase -I

**Answer:**



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**21. Protein synthesis occurs primarily during.**

A. Interphase

B. Anaphase

C. Metaphase

D. Prophase

**Answer:**



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**22.** Terminalization occurs in which stage?

A. Pachytene

B. Diplotene

C. Zygotene

D. Diakinesis

**Answer:**



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**23.** What does G1 stand for?

- A. First growth phase
- B. First gap phase
- C. Ground phase
- D. Regrowth phase

**Answer:**



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24. What does the 'S' phase stand for?

- A. Slow phase
- B. Stop phase
- C. Synthesis phase
- D. Short phase

**Answer:**



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25. After cell division, the new cells are referred to as:

- A. Brother cells
- B. Twin cells
- C. Young cells
- D. Daughter cells

**Answer:**



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26. Which cell part contains the chromosomes?

A. Ribosomes

B. Cytoplasm

C. Nucleus

D. Golgi body

**Answer:**



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27. Colchicine is

- A. Mitotic poison
- B. Prophase poison
- C. Cytokinesis poison
- D. None of the above.

**Answer:**



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28. Which one is the longest phase of cell cycle

A. S' phase

B. M' phase

C.  $G_1$  phase

D.  $G_2$  phase

**Answer:**



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29. Which specific protein is formed in  $G_2$  phase?

- A. Histone
- B. DNA polymerase
- C. Scaffold proteins
- D. Tubulin

**Answer:**



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30. After mitosis, the number of chromosomes in the daughter cells are

- A. One fourth of parent cell
- B. One half of parent cell
- C. Twice of the parent cell
- D. Same as the parent cell

**Answer:**



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**31.** Which one of the organelles is responsible for the formation of aster in cell division?

A. Ribosomes

B. Centromere

C. Lysosome

D. Chromosomes

**Answer:**



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**32.** Plant and animal cell division differ in

- A. Cell plate
- B. Prophase
- C. Telophase
- D. Metaphase

**Answer:**



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**33.** Cell cycle was discovered by



A. Farmer and Moore

B. Prevost and Dumas

C. Howard and Pelc

D. Remak

**Answer:**



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**34.** Synapsis is pairing of

A. Any two chromosomes

B. Non Homologous chromosomes

C. Acentric chromosomes

D. Homologous chromosomes

**Answer:**



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**35.** During gamete formation, the enzyme recombinase participates during

A. Metaphase - I

B. Anaphase - II

C. Prophase - I

D. Prophase - II

**Answer:**



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**36.** The complex formed by a pair of synapsed homologous chromosomes is called

A. Equatorial plate

B. Kinetochore

C. Bivalent

D. Axoneme

**Answer:**



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**37.** Anaphase promoting complex APC is a protein degradation machinery necessary for proper mitosis of animal cells. If APC is

defective in human cell, which of the following is expected to occur ?

- A. Chromosomes will be fragmented
- B. Chromosomes will not segregate
- C. Recombination of chromosome arms will occur
- D. Chromosomes will not condense

**Answer:**



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**38.** In S phase of the cell cycle.

A. Amount of DNA doubles in each cell.

B. Amount of DNA remains same in each cell.

C. Chromosome number is increased.

D. Amount of DNA is reduced to half in each cell

**Answer:**



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**39. Meiosis takes place in**

A. Meiocyte

B. Conidia

C. Gemmule

D. Megaspore

**Answer:**



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40. During the metaphase stage of mitosis spindle fibers attach to chromosomes at

A. Centromere

B. Kinetochore

C. Both centromere and kinetochore

D. Centromere, kinetochore and areas adjoining centromere

**Answer:**



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**41.** During meiosis I, the chromosomes start pairing at

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

**Answer:**



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**42.** During mitosis ER and nucleolous being to disappear at

- A. Late prophase
- B. Early metaphase
- C. Early prophase
- D. Late metaphase

**Answer:**



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**43.** Arrange the following events of meiosis in correct sequences and select the correct option

Crossing over

Synapsis

Terminalisation of chiasmata

Disappearance of nucleolous.

A. B,A,C,D

B. A,B,C,D

C. B,C,D,A

D. B,A,D,C

**Answer:**



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**44.** Microtubules are the constituents of

- A. Centrosome, Nucleosome and Centrioles
- B. Cilia, flagella and peroxisome
- C. Spindle fibers, centrioles and cilia
- D. Centrioles, spindle fibers and chromatin

**Answer:**



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**45.** Spindle fibers attach on to

- A. Kinetosome of the chromosomes
- B. Telomere of the chromosomes
- C. Kinetochore of the chromosomes
- D. Centromere of the chromosomes.

**Answer:**



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**46.** The complex formed by a pair of synapsed homologous chromosomes is called

A. Equatorial plate

B. Kinetochore

C. Axoneme

D. Bivalent

**Answer:**



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47. How many daughter cells are produced at the end of mitosis?

A. 2

B. 4

C. 6

D. 8

**Answer:**



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**48.** What is the correct order of steps in the cell cycle?

- A. Interphase, cytokinesis, mitosis
- B. Interphase, mitosis, cytokinesis
- C. Mitosis, Interphase, cytokinesis
- D. Cytokinesis, interphase, Mitosis

**Answer:**



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**49.** Which of the following is the longest stage of mitosis?

A. Telophase

B. Anaphase

C. Prophase

D. Metaphase

**Answer:**



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50. The resting stage of the cell is known as

A. Telophase

B. Interphase

C. Prophase

D. Anaphase

**Answer:**



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51. How many daughter cells are formed in meiosis?

A. 23

B. 2

C. 46

D. 4

**Answer:**



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52. Arrange the stages of meiotic prophase - I  
below in order

A. Zygotene, Diplotene, diakinesis,  
Pachytene, Leptotene.

B. Leptotene, zygotene, Pachytene,  
Diplotene, Diakinesis

C. Leptotene, Pachytene, zygotene,  
Diplotene, Diakinesis

D. Leptotene, zygotene, Pachytene,  
Diakinesis, Diplotene

**Answer:**



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**53.** Mitosis results in two-cells, while meiosis results in four -- cells.

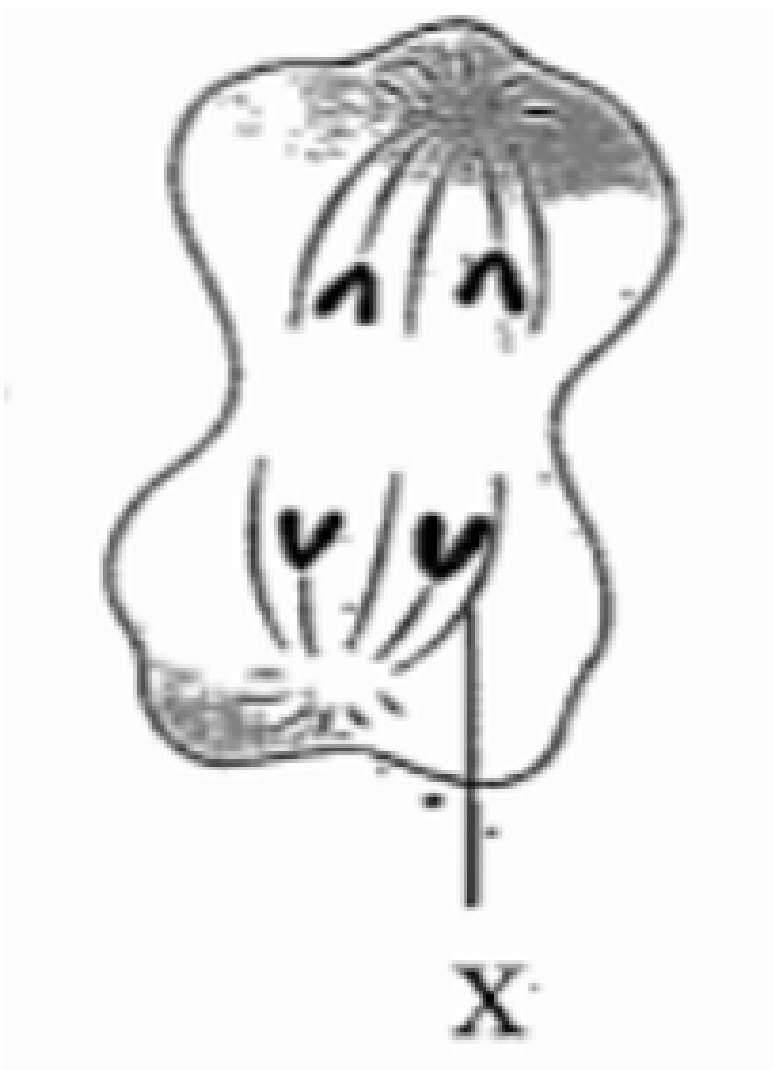
- A. Haploid/diploid
- B. Haploid/haploid
- C. Diploid/haploid
- D. Diploid/diploid

**Answer:**



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**54.** What is the name of the structure labeled 'X'?



A. Centriole

B. Centrosome

C. Chromatid

D. Spindle

**Answer:**



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**55.** Another name of amitosis is

A. Direct cell division

B. Indirect cell division

C. Reduction division



D. Endomitotic division

**Answer:**



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**56.** Polytene chromosomes are formed by .....

A. Salivary glands of Amphibians

B. Salivary glands of flies

C. Salivary glands of Aves

D. Salivary glands of worms

**Answer:**



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**57. Anastral is present only in**

- A. Animal cells
- B. Fungal cells
- C. Plant cells
- D. Bacterial cells

**Answer:**



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58. The correct sequence in cell cycle is

A.  $S - M - G_1 - G_2$

B.  $S - G_1 - G_2 - M$

C.  $G_1 - S - G_2 - M$

D.  $M - G - G_2 - S$

**Answer:**



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**59.** Centromere is required for

A. Transcription

B. Crossing over

C. Cytoplasmic cleavage

D. Movement of chromosome towards pole

**Answer:**



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60. In meiosis crossing over is initiated at

A. Diplotene

B. Pachytene

C. Leptotene

D. Zygotene

**Answer:**



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61. Which specific protein is formed in  $G_2$  phase?

- A. Histone
- B. DNA polymerase
- C. Scaffold protein
- D. Tubulin

**Answer:**



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62. How many daughter cells are produced at the end of mitosis?

A. 2

B. 4

C. 6

D. 8

**Answer:**



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**63.** Write any three significance of mitosis .



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**64.** What are the drawbacks of Amitosis?



**Watch Video Solution**

**65.** What is kinetochore?



**Watch Video Solution**



**66.** Give the chromosome number in mouse, onion, human.



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**67.** How are neurons replaced in the human brain?



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**68.** Why are cells arrested in  $G_1$  phase?



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**69.** Write about pachytene of prophase I.



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**70.** Differentiate cytokinesis in plant cells and animal cells.



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71. Give an account of  $G_0$  phase.



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72. How is cell division activated?



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73. Write short notes on APC/C.



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**74.** Differentiate between mitosis and meiosis.



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**75.** What are mitotic poisons?



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**76.** Write notes on Dolly



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77. Comment on restriction point.



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78. Write about MPF.



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**Example**

1. Write any three significance of mitosis .



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2. Give an account of  $G_0$  phase.



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3. Differentiate between mitosis and meiosis.



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4. Differentiate cytokinesis in plant cells and animal cells.



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5. Write about Pachytene and diplotene of prophase I.



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6. How are neurons replaced in the human brain?



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7. Why is cell division important?



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8. Give the chromosome number in mouse, onion, human.





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**9.** When are chromosomes copied?



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**10.** What are chromatids?



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**11.** Define cytokinesis.



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**12.** Define Cell cycle.



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**13.** How is the cell cycle divided?



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**14.** How often does the eukaryotic cell divide?



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**15. What is C- value?**



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**16. What is the role of kinases and cyclins in cell cycle?**



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**17.** Write about MPF.



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**18.** What are the different types of cell divisions?



**Watch Video Solution**

**19.** What are the drawbacks of Amitosis?



**Watch Video Solution**

**20.** How many stages are there in mitosis?

What are they?



**Watch Video Solution**

**21.** What is kinetochore?



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22. What effect does mitosis have on transcription?



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23. What is the unique feature of cell membrane of Archaeobacteria?



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24. How is meiosis I divided?



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**25.** Prophase I is a unique stage in Meiosis.

How?



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**26.** What do you mean by interkinesis?



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27. Why is meiosis called reduction division?



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28. Why is mitosis called equational division ?



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29. What are mitotic poisons?



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**30.** What is anastral mitosis.



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**31.** What is amphiastral mitosis?



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**32.** Write short notes on Edouard van Beneden.



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**33.** Write short notes on the significance of nucleus.



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**34.** Write the four important features of the chromosome.



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**35.** Write notes on centromere.



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**36.** Describe homologous pairs of chromosomes.



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**37.** What do you mean by haploid state (n)?



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**38.** List the different phases of a cell cycle.



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**39.** How is cell division activated?



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**40.**  $G_0$  phase is called a quiescent stage. Why?



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**41.** Describe karyokinesis in amitosis.



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**42.** Describe cytokinesis in amitosis.



**Watch Video Solution**

**43.** Write short notes on mitosis.



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**44.** A Culture of animal cells in which the cell cycles were asynchronous was incubated with  $^3\text{H}$ -Thymidine for 10 minutes. Autoradiography showed that 50% of the cells were labelled. If the cell cycle time (generation time) was 16 hrs, how long was the S period?



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**45.** Distinguish between closed and open mitosis.



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**46.** Write short notes on prophase I



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**47.** Write short notes on Leptotene.



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**48.** Write short notes on meiosis II.



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**49.** What do you know about the prophase II of Meiosis II?



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**50.** Explain briefly metaphase II of meiosis II.





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**51.** Write notes on the events in Anaphase II.



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**52.** What is the significance of meiosis ?



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**53.** What is an aster?



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**54. Differentiate mitosis in plants and animals**



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**55. What is mitogen ?**



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**56. Describe endomitosis.**



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**57.** Write short notes on polytene chromosomes.



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**58.** Define synaptonemal complex.



**Watch Video Solution**

**59.** Write notes on lampbrush chromosomes.



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**60.** Write notes on Dolly



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**61.** Write short notes on chromosome.



**Watch Video Solution**

**62.** Write short notes on the interphase of cell division.



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**63.** Write short notes on  $G_1$  phase?



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**64.** Comment on restriction point.



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**65.** Give an account of the 'S' phase.



**Watch Video Solution**

**66.** Give an account on  $G_2$  phase.



**Watch Video Solution**

**67.** Describe amitosis.



**Watch Video Solution**

**68.** Give an account of the prophase of mitosis.



**Watch Video Solution**

**69.** Write short notes on the metaphase of mitosis.



**Watch Video Solution**

**70.** Give an account of the anaphase of mitosis.



**Watch Video Solution**

**71.** Write short notes on APC/C.



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**72.** Give an account of the telophase of mitosis.





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**73.** Give an account of cytokinesis in animal cells.



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**74.** Briefly describe cytokinesis in plant cells.



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**75.** Write notes on meiosis.



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**76.** Give an account of the substage zygotene.



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**77.** Describe diakinesis.



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**78.** Describe the events that take place in Metaphase I



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**79.** Explain the Anaphase I stage of Meiosis I.



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**80.** Explain Telophase I of Meiosis I.



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**81.** Describe Telephose II.



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**82.** How is prophase I of meiosis I different from prophase of Mitosis?



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**83.** What are chromatids?



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**84.** Define cytokinesis.



[Watch Video Solution](#)

**85.** Define Cell cycle.



[Watch Video Solution](#)

**86.** What is C- value?



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**87.** What is kinetochore?



[Watch Video Solution](#)

**88.** What are mitotic poisons?



[Watch Video Solution](#)

**89.** What is anastral mitosis.



[Watch Video Solution](#)

**90.** What is amphiastral mitosis?



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**91.** What is mitogen ?



[Watch Video Solution](#)

**92.** What is an aster?



**Watch Video Solution**

**93.** Define synaptonemal complex.



**Watch Video Solution**

**94.** Write notes on lampbrush chromosomes.



**Watch Video Solution**

**95.** Differentiate mitosis in plants and animals





**Watch Video Solution**

**96.** Differentiate between mitosis and meiosis.



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**97.** Differentiate cytokinesis in plant cells and animal cells.



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**98.** Distinguishing between closed and open mitosis.



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**99.** How is prophase I of meiosis I different from prophase of Mitosis?



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