BIOLOGY

BOOKS - ARIHANT NEET BIOLOGY (HINGLISH)

CELL CYCLE AND CELL DIVISION

Check Point 16 1

1. The sequence of events by which a cell duplicates its genome, synthesises the other constituents of the cell and eventually divides into two daughter cells is called

A. cell division

B. cell cycle

C. cell synthesis

D. cell lysis

Answer: B

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2. Who described C_4 pathway for the first time ?

A. schleiden and schwann

B. Rudolf Virchow

C. Howard and Pelc

D. Robert Koch

Answer: C

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3. Period between two cell divisions is known as

A. replication time

B. generation time

C. incubation time

D. interphase

Answer: B

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4. During G_1 – -phase

A. cell grows in size

B. DNA replication occur

C. neither divides nor synthesizes organelles

D. chromosomes condense

Answer: A

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5. G_0 is an extension of G_1-phase and is also termed as

A. intermitosis

B. synthetic phase

C. quiescent stage

D. premitotic gap

Answer: C

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6. Throughout interphase, . . . Are synthesised at a relatively constant rate, whereas . . Are synthesised only during the S-phase.

A. most major proteins, histones

B. histones, DNA replication enzymes

C. structural proteins, functional proteins.

D. most major proteins, DNA replication enzymes.

Answer: A

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7. Premitotic gap is also known as

A. S-phase

B. G_2-phase

C. G_0-phase

D. G_1-phase

Answer: B

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8. Rabi orientation of chromosomes during cell cycle

A. helps in breakage of chromosomes into chromatids

B. increased coordination netween chromosomes and centrioles

C. helps is interaction of non-sister chromatids

D. acts as a stimulus ofr condensation of chromosomes

Answer: B

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9. The spindle fibres during prophase are organised with the help of

A. histone proteins and kinetochores

B. cyclins and mitogens

C. calcium binding proteins called calmodulin

D. actin and myosin.

Answer: C

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10. In plant cells during metaphase, chromosomes are

A. shortened due to slow removal of proteinaceous monomers

B. pulled along behind the centromeres towards the poles

C. irregularly arranged on the equatorial plane

D. arranged peripherally on the equatorial plane

Answer: C

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11. During their migratio towards poles chromosomes may appear

A. submetacentric, metacentric and acrocentric

B. metacentric and acrocentric

C. acrocentric, telocentric, submetacentric and metacentric

D. acrocentric and telocentric

Answer: C

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12. Which among the following is not a significance of mitosis?

A. growth of unicellular animals takes place due to mitosis

B. it restores the nucleocytoplasmic ratio

C. it contributes to cell repair and asexual reproduction

D. It leads to the production of diploid daughter cell

Answer: A

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13. The mitotic poisons which inhibit prophase are

A. colchicine and mustard gas

B. mustard gas and azide

C. ribonuclease, azide and cyanide

D. cyanide and colchicine

Answer: C

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14. Durig amitosis

A. spindle is not formed

B. chromosomes do not appear

C. nuclear envelop disintegrates during spindle organisation

D. both (a) and (b)

Answer: D

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15. Durig dinomitosis

A. only nuclear envelope disintegrates during nuclear division

B. nuclear envelope disappear during spindle organisation

C. nuclear envelope persists during nuclear division

D. spindle formation does not occur

Answer: C

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Check Point 16 2

1. Durig leptotene, the cytoplasm has

A. many polyribosomes

B. few endoplasmic vesicles and many polyribosomes

C. complex bivalent structure

D. many endoplasmic vesicles and few polyribosomes

Answer: B

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2. In meiosis-I, a bivalent is an association of

A. 4 chromatids and 2 centromere

B. 4 chromatids and 4 centromere

C. 2 chromatids and 2 centromere

D. 2 chromatids and 4 centromere

Answer: A

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3. Pairing of homologous chromosomes occur in

A. leptotene

B. zygotene

C. diplotene

D. diakinesis

Answer: B

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4. Recombinase is an enzyme which mediate

A. terminalisation of chiasmata

B. chiasma formation

C. crossing over

D. formation of synaptonemal complex

Answer: C

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5. In crossing over exhange of chromosomes occur between

A. non-sister chromatids of homologous chromosomes

B. sister chromatids of homologous chromosomes

C. non-sister chromatids of non-homologous chromosomes

D. sister chromatids of non-homologous chromosomes

Answer: A

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6. Chiasma is formed by

A. rearrangment of synaptonemal complex

B. dissolution of synaptonemal complex

C. repulsion of chromosomal parts

D. separation of homologous chromosome

Answer: B

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7. Movement of chiasma at the end of chromosomes in prophase-1

A. is called terminalisation

B. occur in diakinesis

C. both (a) and (b)

D. occur in zygotene

Answer: C

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8. Achiasmatic meiosis has been reported in

A. scorpion fly

B. some grasshoppers

C. scorpion species of copopoda and lepidotera

D. all of the above

Answer: D

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9. Separation of homologous chromosomes at anaphase-I are also known as

A. chiasmata

B. disjunction

C. terminalisation of chiasmata

D. kinetochore

Answer: B

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10. Meiosis-II

A. is not associated with DNA replication

B. is called intrameiotic interphase or interkinesis

C. leads to the separation of chromatids and centromeres

D. all of the above

Answer: D

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11. Reorganisation of genetic material or genetic recombination occurs during

A. mitosis

B. meiosis

C. organogensis

D. metamorphosis

Answer: B

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12. _____increases the genetic variability in the population of organisms.

A. Mitosis

B. Meiosis

C. both (a) and (b)

D. None of these

Answer: B

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13. The kind of cytokinesis in animal cell is

A. centrifugal

B. centripetal

C. both (a) and (b)

D. None of these

Answer: B

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14. The checkpoints involved in cell cycle regulation are

A. G_1-checkpoint, G_2 and metaphase

B. G_0-checkpoint, G_1 and anaphase

C. G_1-checkpoint, G_2 and anaphase

D. G_0-checkpoint, $G_1$and metaphase

Answer: A

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15. Cell membrane in plant cell is derived from

A. endoplasmic reticulum

B. chloroplast

C. ribosome

D. golgi apparatus

Answer: D

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Chapter Exercises A Taking It Together Assorted Questions Of The Chapter Of Advanced Level Practice

1. Cells which are not dividing are likely to be at

A. G_1

B. G_2

C. G_0

D. S-phase

Answer: C

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2. The duration of cell cycle

A. varies from organism to organism

B. varies from cell type of cell type

C. both (a) and (b)

D. None of these

Answer: C

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3. The most cytogenic activity occurs during

A. interphase

B. telophase

C. prophase

D. anaphase

Answer: A

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4. Synthesis of RNA takes place in which phase of the cell cycle?

A. S-phase

B. M-phase

C. G_1 and G_2-phase

D. None of these

Answer: C

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5. During which phase in somatic cell division, replication of the DNA takes place?

A. interphase

B. prophase

C. metaphase

D. telophase

Answer: A

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6. In which stage of the cell cycle are histone proteins synthesised in a eukaryotic cells ?

A. During S-phase

B. During telophase

C. During entire prophase

D. During G_2-stage of prophase

Answer: A

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7. In mitosis, thenumber of chromosomes in the parent and progeny cells is same, so this is also called as

A. equational division

B. reductional division

C. may be (a) or (b)

D. None of these

Answer: A

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8. During mitosis, nuclear Membrane disappear at

A. telophase

B. prophase

C. metaphase

D. anaphase

Answer: B

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9. Which is used as mitotic spindle poison

A. Ca^{2+}

B. Mg^{2+}

C. Tubulin

D. Colchicine

Answer: D

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10. In which stage of meiotic prophase-I, chromosomes become thread-like and visible?

A. Diakinesis

B. Leptotene

C. Zygotene

D. Pachytene

Answer: B

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11. Synaptonemal complex is a structure of

A. cytokinesis

B. terminalisation

C. chromosomal dysfunction

D. chromosomal pairing

Answer: D

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12. At which stage, the homologous chromosomes separate due to repulsion, but are yet held by chiasmata?

A. zygotene

B. pachytene

C. diplotene

D. diakinesis

Answer: C

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13. At what stage of meiosis-I, the homologous chromosomes are pulled away by the centromere to opposite poles?

A. Anaphase-I

B. Metaphase-I

C. Prophase-I

D. Telophase-I

Answer: A

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14. Dyad is a pair of

A. sister chromatids

B. non-sister chromatids

C. homologous chromosomes

D. non-homologous chromosomes

Answer: A

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15. The spindle fibres are composed fo

A. 3% RNA and 97% tubulin

B. 10% RNA and 90% tubulin

C. 15% RNA and 85% tubulin

D. 22% RNA and 78% tubulin

Answer: A

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16. During cell division, the splitted chromosomes move towards opposite poles due to

A. microtubules

B. centrioles

C. cytoplasmic streaming

D. phragmoplast

Answer: A

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17. Anaphase stage is characterised by

A. centromeres split and chromatids separation

B. chromatids moving to opposite poles

C. both (a) and (b)

D. None of these

Answer: C

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18. A bivalent of meiosis i consists of

A. two chromatids and one centromere

B. two chromatids and two centromeres

C. four chromatids and two centromeres

D. four chromatids and four centromeres

Answer: C

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19. Which of the following property is seen between the homologous chromosomes during zygotene?

A. Cohesion

B. Synapsis

C. both (a) and (b)

D. Adhesion

Answer: B

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20. Chiasmata was first discovered by

A. Morgan in Drosophila

B. Beadle in Neurospora

C. Johnson in amphibians

D. hammerling in Acetabularia

Answer: C

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21. At which stage of meiosis does the genetic constitution of gametes is finally decided?

A. Metaphase-I

B. Anaphase-II

C. Metaphase-II

D. Anaphase-I

Answer: D

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22. During anaphase I of meiosis

A. homologous chromosomes separate

B. non-homologous autosomes separate

C. sister chromatids separate

D. non-sister chromatids separate

Answer: A

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23. If 2n=8, what shall be the number of chromatids in each daughter cell after meiosis-I?

A. four

B. sixteen

C. two

D. eight

Answer: A

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24. Human cells examined during G_2-phase of the cell cycle contained 100 units of DNA. What would be the quantity of DNA in one of the human cells produced by telophase-II

A. of meiosis?

B. 25 units

C. 50 units

D. 100 units

Answer: A

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25. If an organism has 15 pairs of homologous chromosomes, how many chromosomes will each daughter cell have after mitosis and meiosis?

A. 10,15

B. 45,15

C. 15,30

D. 30,15

Answer: D

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26. How many times meiotic division will take place to produce 512 pollen grains?

A. 128

B. 100

C. 256

D. 50

Answer: A

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27. Cell would normally proceed to mitosis without interruption

A. once it has entered the S-phase

B. once it has entered the G_2-phase

C. an any time during cell division activity

D. none of the above

Answer: B

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28. Which of the following correctly matched, a phase of the cell cycle with its description?

A. G_2-cell division

B. $M-$ duplication of DNA

C. G_1-synthesis of RNA

D. S-immediately precedes cell division

Answer: C

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29. In eukaryotic cell cycle, cell fusion experimetns show that

A. when a S-phase cell is fused with a G_1-phase cell, G_1-phase cell is stimulated to synthesise DNA

B. when a S-phase cell is fused with a G_1-phase cell, DNA synthesis is induced in G_1-phase cell

C. when a S-hase cell is fused with a G_1-phase cell, DNA synthesis in induced in an M-phase cell

D. when a G_1-phase cell is fused with an M-phase cell, both G_1 and M-phase cells are stimulated to synthesise DNA

Answer: B

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30. It is difficult to observe individual chromosomes during interphase because

A. the DNA has not been replicated yet

B. they have uncoiled to form long, thin strands

C. homologous chromosomes do not pair up until division starts

D. the spindle must move them to the metaphase plate before they becom visible.

Answer: B

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31. Liver cells are highly specialised,but when the liver cell is damaged or parts of it are removed surgically, tissue grows. Liver cells fall into which category of cells?

A. cells permanently locked in G_0

B. cell subjected to continual removal

C. cells that can be induced to enter the G_1-phase

D. Can not be determined from the information given

Answer: C

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32. A cell that is entering the mitotic phase (M-phase) of cell cycle is :-

A. always haploid, always with duplicated chromosomes

B. either haploid or diploid, always with duplicated chromosomes

C. always diploid, either with duplicted or unduplicated chromosomes

D. either haploid or diploid, either with duplicated or unduplicated chromosomes.

Answer: B

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33. How would the daughter cell at the end of mitosis and cytokinesis compare with their parent cell when it was in G_1 of the cell cycle?

A. The daughter cells have half the amount of cytoplasm and half the amount of DNA

B. The daughter cells have half the number of chromosomes and hal the amount of DNA

C. The daughter cells have the same number of chromosomes and half and amount of DNA

D. The daugher cells have the same number of chromosomes and same amount of DNA

Answer: D

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34. Centrioles are responsible for the formation of

A. spindle apparatus of a dividing cell

B. brush border of a cell

C. transduction of signals received from other cell

D. synthesis of actin and myosin

Answer: A

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35. The thread-like structures, which begin rediating from each centromere by the end of prophase are

A. kinetochore microtubules

B. polar microtubules

C. aster microtubules

D. spindle microtubules

Answer: A

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36. Cellular structure, which always disappear during mitosis are

A. plastids and mitochondria

B. nuclear envelope and plasmalemma

C. cell wall and nucleolus

D.

Answer: B

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37. Mitotic anaphase differs from metaphase in possessing

A. same number of chromosomes and half number of chromatids

B. half number of chromosomes and half number of chromatids

C. half number of chromosomes and same number of chromatids

D. same number of chromosome and same number of chromatids

Answer: C

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38. During anaphase, the chromosomes of the future daughter nuclei, begin their migration towards the two opposite poles. These are called

A. daughter chromatids

B. chromatids moving to opposite poles

C. daughter chromosomes

D. chromosomes

Answer: B

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39. Which of the events listed below is not observed during mitosis?

A. chromatin condensation

B. movement of centrioles to opposite poles

C. appearance of chromosomes with two chromosome joined together at the centromere

D. crossing over

Answer: D

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40. The role of mitosis is not merely to divide a cell into two daughter cells but to ensure genetic continuity from one cell generation to another cell generation. The mechanism ensuring genetic continuity is

A. the formation of cells with new chromosomes

B. formation of two halpoid daughter cells

C. formation of two cells with identical DNA

D. halving the chromosome number between the new cells

Answer: C

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41. Which type of chromosomes segregate during prophase-I of meiosis?

A. Homologous chromosomes

B. Non-homologous chromosomes

C. A' and 'B' chromosomes

D. Centric and acentric chromosomes

Answer: A

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42. Crossing over occurs between

A. non-sister chromatids of non-homologous chromosomes

B. non-sister chromatids of homologous chromosomes

C. sister chromatids of homolgous chromosomes

D. sister chromtids of non-homologous chromosomes

Answer: B

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43. Disjunction refers to

A. the separation of homologous chromosomes at pachytene

B. the process of separation of homologous chromosomes

C. incompatibility in fungi and other thallophytes

D. modification of gene action by a non-allelic gene

Answer: B

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44. Meiosis-II differs from mitosis because meiosis-II

A. involves the formation daughter cells

B. involves the separation of sister chromatids that are genetically identical

C. begins with a haploid number of chromosomes

D. involves duplication of chromosomes to form sister chromatids

Answer: C

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45. Meiosis in diploid organisms results in

A. production of gametes

B. reduction in the number of chromosomes

C. introduction of variation

D. all of the above

Answer: D

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46. The following events occur in mitosis and/or meiosis. Which event occurs only in meiosis?

A. chromatid formation

B. chromosome condensation

C. chromosome movement to poles

D. chromosome pairing

Answer: D

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47. Mitosis is an equational division, while meiosis is completed in two divisions, i.e., meiosis-I and meiosis-II is equational due to

A. pairing of homologous chromsomes

B. chiasmata hormation

C. separation of homologous chromosome in meiosis-I

D. None of the above

Answer: C

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48. Why is meiosis important for living organisms?

A. It produces new daughter cells that are highly similar to the parent cell

B. it allows organisms to produce new clones of themselves

C. it produces two daughter cells from every parent cell

D. it introduces genetic variation by producing genetically different daughter cells

Answer: D

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49. What will happen just after crossing over?

A. Crossing over

B. Terminalisation of chiasmata

C. Chiasma formation

D. synaptonemal complex

Answer: C

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50. Which oe of the following statements is true?

A. The cell lies dormant

B. The cell increases I size durig G_0-phase

C. The cell increases in size during G_1 and G_2-phase

D. The key event of S-phase is the synthesis of proteins required for mitosis

Answer: C

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51. Which of the following is true?

A. Cytokinesis and karyokinesis occur together

B. Cytokinesis and karyokinesis are random

C. Karyokinesis precedes cytokinesis

D. cytokinesis precedes karyokinesis

Answer: C

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52. True statement for mitosis is

A. the cell formed by it do not restore nucleocytoplasmic ratio

B. two cells formed as a result of this division are identical in all respects

C. cell formed by it have half the number of chromosomes than that of parent cell

D. cells formed as a result of mitosis have different genetic characters

Answer: B

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53. Identify the correct statement.

A. Mitosis occur in plants when there is a change from sporophyte to gametophyte

B. meiosis produces genetically identical daughter cells

C. mitosis ensures genetic continuity from generation to generation

D. after meiosis-II, the daughter cells are diploid.

Answer: C

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54. Identify the false statement.

A. DNA synthesis does not occur during the interkinesis of meiotic cycle

B. The chronological sequence of meiosis is leptotene -zygotene-pachytene -diplotene- diakinesis

C. Synapsis of homologous chromosomes occurs during diplotene

D. Crossing over occurs during pachytene

Answer: C

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55. Identify the wrong statement about meiosis

A. Pairing of homologous chromosomes

B. Four haploid cells are formed

C. At the end of meiosis the number of chromosomes are reduced to half

D. Two cycle of DNA replication occurs

Answer: D

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56. Select the statement, which is not correct.

A. Spindle fires arise from centriole

B. centromere facilitate attachments of chromosomes to spindle fibres

C. Movement of chromosomes during cell divison is due to cytoplasmic streaming

D. Minimum coiling of chromosomes is seen during interphase

Answer: C

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57. Choose the correct statement.

A. Plant cell lacking spindle fibres

B. anastral mitosis found in plant cell

C. centrifugal cytokinesis in animals

D. Animal mitosis controlled by cytokinin

Answer: B

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58. Which of the following is an event which does not occur during anaphase-I?

A. Spindle fibres pull homologous chromosoes towards the opposite poles of the spindle

B. The homologous chromosomes break their connection and separate out into two haploid sets or dyads

C. one such set is present at each end of the spindle

D. The process of separation of chromosomes which takes place is called disengagement

Answer: D

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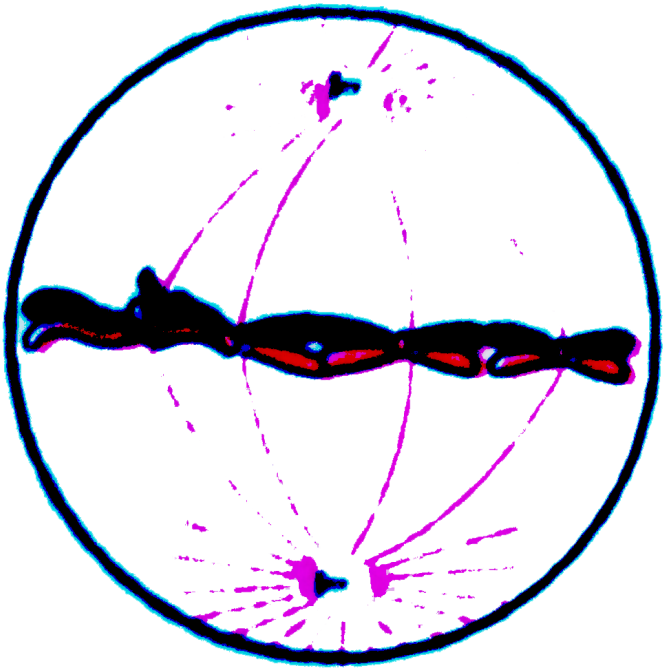
59. Identify the stage of mitosis with its characteristics



A. Metaphase-Chromosomes move to spindle equator, chromosomes made up of two chromatids

B. Anaphase-centromeres split, chromatids separate and start moving away

C. Late prophase-chromosomes move to spindle equator

D. Metaphase- Spindle fibres attached to kinetochores, centromeres split and chromatids separate.

Answer: A

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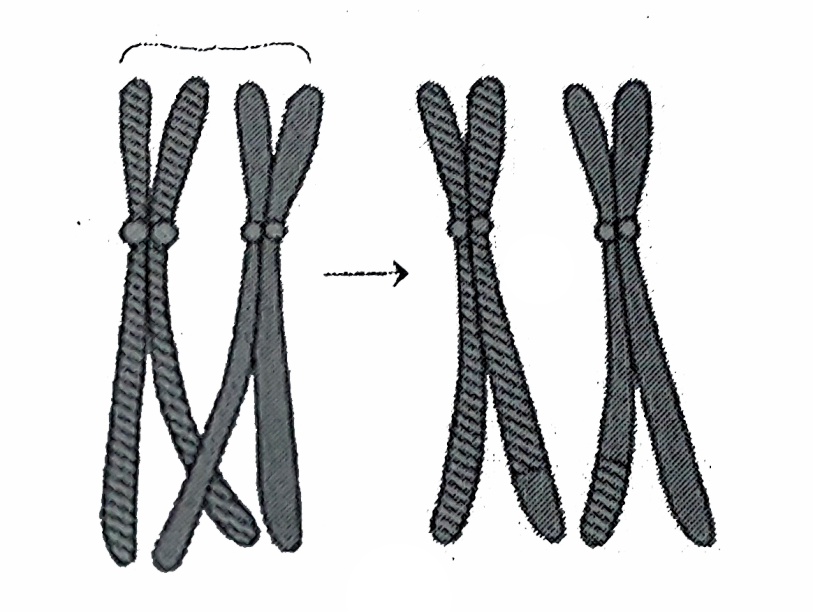
60. The given event occurs in



A. prophase-I

B. prophase-II

C. prophase of mitosis

D. prophase and metaphase of mitosis

Answer: A

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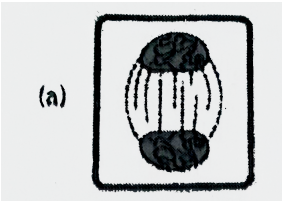
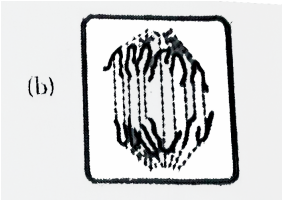
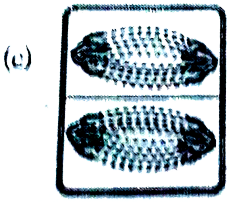
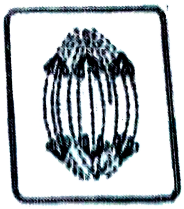
61. Choose the diagram which correctly depicts anaphase I

A. 

B. 

C. 

(d) 

D.

Answer: D

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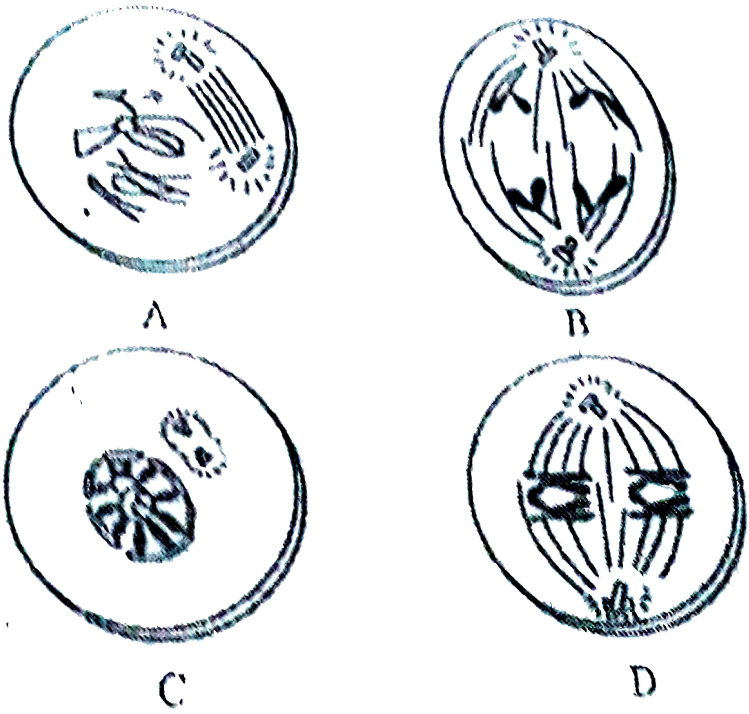
62. Identify the following figures.



A. A-metaphase-II, B-anaphase-I, C-prophase-I, D-anaphase-II

B. A-prophase-I,B-anaphase-I,C-interphase,D-metaphase-I

C. A-Metaphse-I,B-anaphase-I, C-prophase-I, D-anaphase-II

D. A-prophase-II,B-anaphase-I,C-interphase, D-metaphase-II

Answer: B

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63. Identify the pair which is a mismatch for plant cell division.

A. Spindle-amphiaster

B. Centrioles-absent

C. cytokinesis-by cell plate formation which grows centrifugally

D. new cell membrane-endoplasmic reticulum

Answer: A

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64. Identify the pair that does not match.

A. Gametes formed by meiosis-meiocytes

B. separation of chromatids and centromere-Meiosis-II

C. DNA duplication-Mitosis and meiosis-I

D. Best stage to observe chromosome morphology and number-Interphase

Answer: D

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65. At which stage of mitosis, do these events occur?

A.

Spiralisation and condensation of DNA	Nuclear envelope breakdown
Interphase	Interphase

B.

Spiralisation and condensation of DNA	Nuclear envelope breakdown
Interphase	Prophase

C.

Spiralisation and condensation of DNA	Nuclear envelope breakdown
Prophase	Metaphase

D.

Spiralisation and condensation of DNA	Nuclear envelope breakdown
Prophase	Prophase

Answer: D

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Chapter Exercises A Taking It Together Assorted Questions Of The Chapter Of Advanced Level Practice

1. Beads on string like structures of A are seen in B, which further condense to form chromosomes in C stage of cell division. Identify A, B, C.

A. A-Chromonema, B-chromatin, C-metaphse

B. A-Chromation, B-Chromatid, C-metaphase

C. A-Chromonema, B-chromosome, C-anaphase

D. A-chromonema, B-chromatid, C-anaphase

Answer: D

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Chapter Exercises B Medical Entrances Special Formate Questions Statement Based Questions

1. Which of the following processes involve(s) mitosis?

I. production of new sperms cells.

II. Propagation of carrot plants by underground roots.

III. Deelopment of the zygote into an embryo.

IV. Replacement of worn-out muscle tissue.

Choose the option with correct statement(s).

A. Only II

B. Only III

C. II, III and IV

D. I,II,III and IV

Answer: C

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2. At anaphase stage of mitosis

I. The centromeres split into two and the spindle fibres pull the daughter centromeres to opposite poles.

II. Chromosomes shorten and thicken by coiling and tighten packaging of their components.

III. The separated chromatids are pulled along behind the centromeres.

IV. Chromosomes line up around the equator of the spindle.

Choose the option which correct statement(s).

A. I and II

B. II and IV

C. Ony III

D. I and III

Answer: D

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3. Prophase of meiosis includes

I. Leptotene

II. Pachytene

III. Cytokinesis

IV. Karyokinesis

Choose the option with correct statement(s).

A. Only I

B. I and II

C. I,II and IV

D. Only II

Answer: B

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4. In meiosis,

I. every chromosome behaves independently,

II. Homologous chromosomes show pairing.

III. Found in somatic cells.

IV. Crossing over occurs.

Choose the option with correct statement(s).

A. Only IV

B. I and III

C. II and IV

D. I and II

Answer: C

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5. Synapsis

I. is pairing of homologous chromosomes.

II. Is also called syndesis.

III. When begins at the centromere and proceeds towards the ends, is called proterminal.

IV. When begins at and proceeds towards centromere, is called procentric.

Choose the correct option with correct statement(s).

A. Only I

B. I and II

C. Only II

D. Only III

Answer: B

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6. Pick up the correct statement :

(a) Synapsis of homologous chromosomes occurs during prophase I

(b) Division of centromeres takes place during anaphase I

(c)Spindle fibres disappear completely in telophase of mitosis

(d) Nucleoli mey reappear in telophase I

A. Only I

B. Only III

C. I and II

D. I, III and IV

Answer: D

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Chapter Exercises B Medical Entrances Special Formate Questions Match The Columns

1. Match the column

	Column I		Column II
A.	Interkinesis	1.	S-phase
B.	Histone synthesis	2.	Cytokinesis
C.	Colchicine	3.	Chromosome fibre
D.	Terminalisation	4.	Spindle

A. A-4,B-1,C-2,D-3

B. A-2,B-1,C-4,D-3

C. A-1,B-2,C-3,D-4

D. A-3,B_2,C-1,D-4

Answer: B

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Chapter Exercises B Medical Entrances Special Formate Questions Assertion And Reason

1. Assertion: In mitosis, two identical cells are produced from a single cell and karyokinesis is followed by cytokinesis.

Reason- Cytokineis is of two types.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Assertion is false, but reason is true

Answer: B

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2. Assertion: Division of protoplast is called cytokinesis.

Reason: This cytokinesis occur due to cell plate formation or by cleavage.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Assertion is false, but reason is true

Answer: B

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3. Assertion: In mitosis, prophase has no substages.

Reason: In meiosis, prophase has six substages.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Assertion is false, but reason is true

Answer: C

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4. Assertion: Histone proteins are synthesised during S-phase.

Reason: Histone proteins are found associate with DNA to form bead-like nucleosomes.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Assertion is false, but reason is true

Answer: B

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5. Assertion: Meiotic division results in the production of haploid cells.

Reason: Synapsis occurs during zygotene of meiosis.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Assertion is false, but reason is true

Answer: B

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Chapter Exercises C Medical Entrances Gallery Collection Of Questions Asked In Neet Various Medical Entrance Exams

1. During cell growth, DNA synthesis takes place in

A. S-phase

B. G_1-phase

C. G_2-phase

D. M-phase

Answer: A

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2. When cell has stalled DNA replication fork , which checkpoint should be predominantly activated

A. G_1 / S

B. G_2 / M

C. M

D. Both G_1 / M and M

Answer: B

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3. Match the stages of meiosis in Column - I to their characteristic features in Column - II and select the correct option using the codes given below

Column – I	Column – II
1. Pachytene	(i) Pairing of homologous chromosomes
2. Metaphase I	(ii) Terminalization of chiasmata
3. Diakinesis	(iii) Crossing over takes place
4. Zygotene	(iv) Chromosomes align at equatorial plate

A. A-3,B-4,C-2,D-1

B. A-1,B-4,C-2,D-3

C. A-2,B-4,C-3,D-1

D. A-4,B-3,C-2,D-1

Answer: A

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4. In meiosis crossing over is initiated at

A. leptotene

B. zygotene

C. diplotene

D. pachytene

Answer: D

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5. A cell at telophase stage is observed by a student in a plant brought from a field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell containing more number of chromosomes as compared to other dividing cells. This would result in

A. polyploidy

B. somachlonal variation

C. polyteny

D. anuploidy

Answer: A

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6. Which of the following is not a characteristic feature during mitosis in somatic cells ?

A. disappearance of nucleolus

B. chromosomes movement

C. synapsis

D. spindle fibres

Answer: C

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7. Spindle fibers attach on to

A. kinetochore of the chromosome

B. centromere of the chromosome

C. kinetosome of the chromosome

D. telomere of the chromosome.

Answer: A

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8. Identify the correct combination regarding ana[hase, anaphase I and anaphase II

A. anaphse-centromere splits

Anaphase-I-centromere splits

B. Anaphase-chromatids move to oppsite poles

Anaphase-I-homologous chromosomes separate, Anaphase-II-centromere splits.

C. Anaphase-Chromosomes move to opposite poles

Anaphase-I-Homologous chromosomes separate, anaphase-II-centromere splits.

D.

Answer: B

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9. Match the following columns

Column I	Column II
A. Synapsis aligns homologous chromosomes	1. Anaphsase-II
B. Synthesis of RNA and protein	2. Zygotene
C. Action of enzyme recombinase	3. G_2-phase
D. Centromeres do not separate, but chromatids move towards opposite poles	4. Anaphase-I
	5. Pachytene

A. A-2,B-1,C-3,D-4

B. A-2,B-3,C-5,D-4

C. A-1,B-2,C-5,D-4

D. A-2,B-3,C-4,D-5

Answer: B

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10. A somatic cell that has just completed has just completed the S-phase of its cell cycle, as compared to gamete of the same species, has

A. twice the number of chromosomes and twice the amount of DNA

B. same number of chromosomes, but twice the amount of DNA

C. twice the number of chromosomes and four times the amount of DNA

D. four times the number of chromosomes and twice the amount of DNA

Answer: C

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11. During meiosis-I, the number of chromosomes is

A. halved

B. tripled

C. doubled

D. quadrupled

Answer: A

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12. Arrange the following events of meiosis in correct sequence

(a) Crossing over

(b) Synapsis

(c)Terminalisation of chiasmata

(d) Disappearance of nucleolus.

A. II,I,IV,III

B. II,I,III,IV

C. I,II,III,IV

D. II,III,IV,I

Answer: B

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13. Which does not occur in interphase of eukaryotic cell division

A. Increase of ATP synthesis

B. Increase of RNA synthesis

C. Increase of DNA synthesis

D. Reduction in cell size

Answer: D

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14. Match of the iem in column I with those in column II and the choose the correct answer. ltBrgt

Column I	Column II
A. Mitosis	1. Occurs in diploid cells only
B. Meiosis	2. Occurs in both haploid and diploid cells
	3. Daughter and parent cells have same chromosome numbers
	4. Synapsis of homologous chromosomes

A. A-1,B-2

B. A-2,B-3

C. A-3,B-4

D. A-4,B-1

Answer: C

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15. Which one of the following is the significance of mitosis

A. Restricted to haploid cells

B. cell repair

C. increase in genetic variability

D. leads to evolution of new genotypes

Answer: B

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16. Find the correct statement

A. During mitosis, endoplasmic reticulum and nucleolus disappear completely at early prophase

B. Chromosomes are arranged along the equator during prophase of mitosis.

C. chromosome is made up of two sister chromatids at anaphase of mitosis.

D. Small disc-shaped structures at the surface of centromeres that appear during metaphase are kinetochores

Answer: D

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17. Math the followng column.

Column-I	Column-II
A. G_1-phase	1. Replication of DNA
B. S-phase	2. Quiescent stage
C. G_2-phase	3. Condensation of chromatin
D. G_0-phase	4. Protein synthesis
	5. Interval between mitosis and initiation of DNA replication

A. A-3,B-5,C-1,D_2

B. A-5,B-4,C-1,D-3

C. A-5,C-1,D-4,D-2

D. A-5,B-2,C-3,D-4

Answer: C

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18. What are spindle fibres that connect the centromere to respective poles called

A. Astral rays

B. Interphase fibres

C. Chromosomal fibres

D. Interchromosomal fibres

Answer: C

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19. Match the following column

Column I	Column II
A. Leptotene	1. Terminalisation of chiasma
B. Zygotene	2. Crossing over and recombination
C. Pachytene	3. Synapsis
D. Diakinesis	4. Visibility of chromosomes

A. A-1,B-2,C-3,D-4

B. A-1,B-3,C-2,D-4

C. A-4,B-2,C-2,D-1

D. A-4,B-1,C-2,D-3

Answer: C

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20. In 'S' phase of the cell cycle

A. amount of DNA remains same in each cells

B. chromosome number is increased

C. amount of DNA is reduced to half in each cell

D. amount of DNA doubles in each cell

Answer: D

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21. The enzyme recombinase is required in which stage of meiosis ?

A. Zygotene

B. Diplotene

C. Diakinesis

D. Pachytene

Answer: D

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22. During which phase(s) of cell cycle amount of DNA in a cell remains at 4C level if the initial amount is denoted an 2C

A. G_1 and S

B. only G_2

C. G_2 and M

D. G_0 and G_1

Answer: B

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23. In a diploid cell, at which stage of cell cycle, the amount of DNA is doubled

A. G_1 and G_2-phase

B. G_0-phase

C. S, G_2 and M-phase

D. S-phase

Answer: D

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24. Assertion- Meiosis-II is similar to mitosis.

Reason- Meiosis-I cannot occur in haploid cells.

A. Assertion is true and reason is the correct explanation of asertion

B. Assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false

D. Both Assertion and reason are false

Answer: B

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25. Which of the following events takes place during anaphase stage of mitosis

I. Spindle fibres attach to kinetochores of chromosomes

II. Centromeres split and chromatids separate

III. Chromatids move to opposite poles

IV. Nucleolous, Golgi complex and E.R. reform

A. I and II

B. II and III

C. III and IV

D. I and IV

Answer: B

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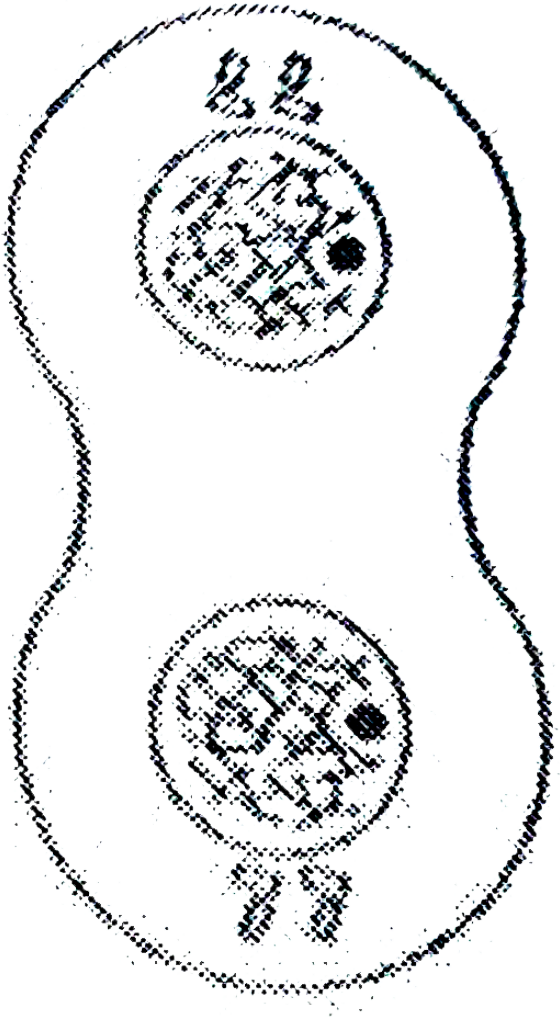
26. Identify the correct stage in cell division with its characteristics.



A. Telophase-Endoplasmic reticulum and nucleolus not reformed yet

B. Telophase- nuclear envelope reforms, golgi complex reforms

C. Late anaphase-Chromosomes move away from equatorial plate, golgi complex not present

D. Cytokinesis-cell plate formed, mitochondria distributed between two daughter cells

Answer: B

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

A. Kinetochore

B. bivalent

C. axoneme

D. equatorial plate

Answer: B

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28. Name the stage of mitosis in which chromosomes are arranged on the equator of spindle

A. Prophase

B. metaphase

C. Anaphase

D. Telophase

Answer: B

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29. During gamete formation, the enzyme recombinate participates during

A. metaphase-I

B. Anaphase-II

C. Prophase-I

D. Prophase-II

Answer: C

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30. The substance which causes doubling of the chromosome is called

A. carcinogen

B. teratogen

C. clasterogen

D. colchicine

Answer: D

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31. Synaptonemal complex is formed during

A. pachytene

B. leptotene

C. zygotene

D. diakinesis

Answer: C

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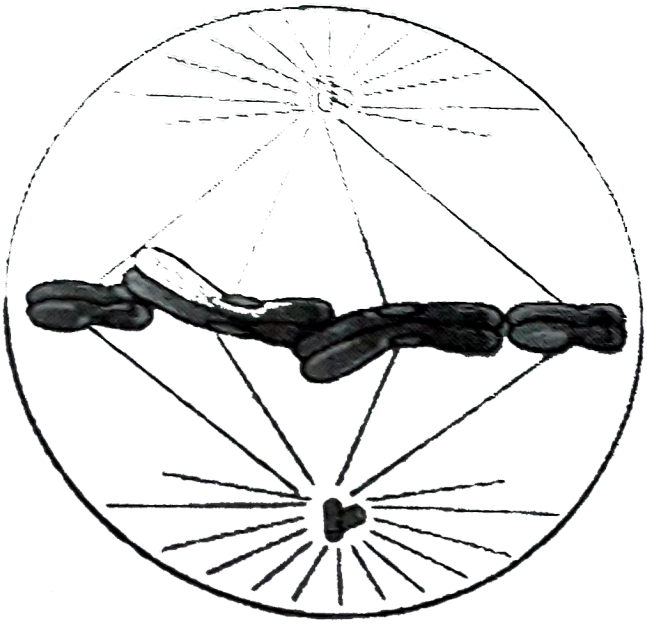
32. Select the correct option with respect to mitosis



A. chromatids start moving towards opposite poles in telophase

B. golgi complex and endoplasmic reticulum are still visible at the end of prophase

C. Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase

D. Chromatids separate, bur remains I the centre of the cell in anaphase

Answer: C

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33. The phragmoplast is organised at the

A. beginning of anaphase

B. end of anaphase

C. beginning of telophase

D. end of telophase

Answer: D

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34. Select the corret matches

(a) S-phase - DNA replication

(b) Zygotene - Synapsis

(c) Diplotene - Crossing over

(d) Meiosis - Both haploid and diploid cells

(e)Gap 2 phase - Quiescent stage

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35. The stage between two meiotic divisions is called

A. interphase

B. cytokinesis

C. interkinesis

D. karyokinesis

Answer: C

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36. How many chromosomes will the cell have at G_1,after S and after M-phase respectively if it has 14 chromosomes at interphase

A. 14,14,7

B. 14,14,14

C. 7,7,7

D. 7,14,14

Answer: B

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37. Chromatid formation takes place in

A. S-phase

B. metaphase

C. G_1-phase

D. G_2-phase

Answer: A

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38. Longest phase of meiosis is

A. prophase-I

B. Prophase-II

C. anaphase-I

D. metaphase-II

Answer: A

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39. Which of the protein is found in spindle fibres?

A. tubulin

B. albumin

C. mucin

D. haemoglobin

Answer: A

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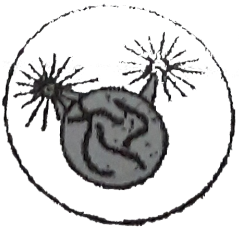
40. Which stages of cell division do the following figures A and B represent respectively

A



B

A. A-Prophase

B- Anaphase

B. A-metaphase, B-telophase

C. A-telophase, B-metaphase

D. A-Late anaphase, B-prophase

Answer: D

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41. During meiosis I, the bivalent chromosomes clearly appear as tetrads during

A. diakinesis

B. diplotene

C. leptotene

D. zygotene

Answer: D

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42. Which phase comes in between the G_1 and G_2 phase of cell cycle. Or The formation of chromatid takes place in

A. M-phase

B. G_0-phase

C. S-phase

D. Interphase

Answer: C

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43. During mitosis ER and nucleolus begin to disappear at

A. early prophase

B. late prophase

C. early metaphase

D. late metaphase

Answer: A

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44. Synapsis occurs between :

A. a make and a female gamete

B. mRNA and ribosomes

C. spindle fibres and centromere

D. two homologous chromosomes

Answer: D

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45. Assertion: Reduction division occurs in anaphase-I. So there is no need of meiosis.

Reason: Meiosis-II occurs to separate homologous chromosomes.

A. Both assertion and reason are true and the reason is a correct explanation of assertion.

B. Both assertion and reaso are true, but the reason is not the correct explanation of the assertion.

C. Assertion is true, but reason is false

D. Both Assertion and reason are false

Answer: D

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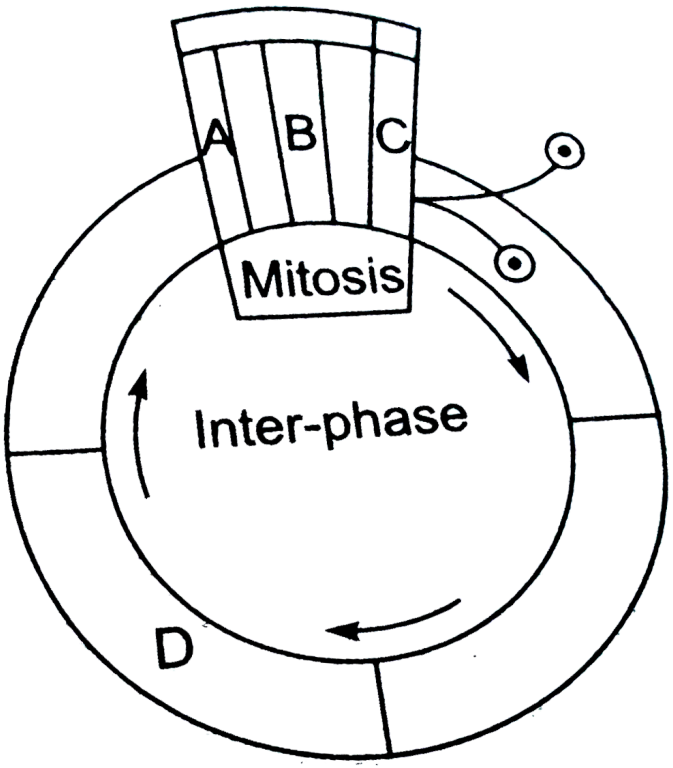
46. Given below is a schematic break-up of the phases/stages of cell cycle. Which one of the following is the correct indication of the stage/phase in

the cell cycle?



A. B-metaphase

B. C-karyokinesis

C. D-synthetic phase

D. A-cytokinesis

Answer: C

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47. In meiosis-I, a bivalent is an association of

A. four chromatids and four centromeres

B. two chromatids and two centromeres

C. two chromatids and one centromere

D. four chromatids and two centromeres

Answer: D

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48. Replication of centriole occurs during

A. interphase

B. prophase

C. late prophase

D. late telophase

Answer: A

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49. Crossing-over occurs in

A. single-strand stage

B. two-strand stage

C. four-strand stage

D. eight-strand stage

Answer: C

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50. Which of the following events occur during G_1-phase?

A. DNA replication

B. Growth and normal function of cell

C. Mutation

D. Fertilisation

Answer: B

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51. The stage during which cell decides to et specialised is

A. S-phase

B. M-phase

C. G_1-phase

D. G_2-phase

Answer: C

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52. Differentiated reserve cell remains at which stage?

A. G_1

B. G_2

C. G_0

D. M

Answer: C

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53. Astral rays are formed of

A. microfilaments

B. microtubules

C. intermediate filaments

D. microvilli

Answer: B

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54. Phragmoplast is

A. proplasted in cytoplasm of dividing cells

B. cell plate formed by vesicles of ER and dictyosomes during cytokinesis

C. array of spindle fibre at equator

D. None of the above

Answer: B

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55. 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 divison

(C) Mitosis and meiosis occur both in sexually and asexually reproducing organisms

A. Only I

B. Only III

C. Only III

D. I and III

Answer: A

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56. Contromere is required for

A. transcription

B. crossing-over

C. cytoplasmic cleavage

D. movement of chromosomes towards poles

Answer: D

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57. Congression is

A. movement of sister chromatids towards the poles

B. pairing of homologous chromosomes

C. separation of paired chromosomes

D. bringing the chromosomes on equator of spindle apparatus

Answer: D

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58. In which of the following stage, the chromosome is thin and like long thread

A. leptotene

B. Zygotene

C. Pachytene

D. diakinesis

Answer: A

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59. Meiosis was discovered by

A. Strasburger

B. Hofmeister

C. sutton

D. van beneden

Answer: D

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60. A cell plate is laid down during

A. cytokinesis

B. karyokinesis

C. interphase

D. none of the above

Answer: A

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61. In meiosis chromosome number becomes

A. half of its parent chromosome

B. same as that of parent chromosome

C. one fourth of its parent chromosome

D. none of the above

Answer: A

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62. In the somatic cell cycle.

A. In G_1-phase, DNA content is double the amount of DNA present in the original cell

B. DNA replication takes plaec in S-phase

C. a short interphase is followed by a long mitotic phase

D. G_2-phase follows mitotic phase

Answer: B

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63. Colchicine arrests spindle at

A. Anaphase-I

B. prophase

C. telophase

D. metaphase

Answer: D

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