BIOLOGY

BOOKS - DINESH PUBLICATION ENGLISH

CELL CYCLE (CELL DIVISION)

Multiple Choice Questions

1. Cell division was first studied by

A. Leeuwenhoek

B. Virchow

C. Prevost and Dumas

D. Flemming

Answer: C

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2. Who found that new cells develop from preexisting cells ?

A. Remak

B. Virchow

C. Prevost and Dumas

D. Strasburger

Answer: A

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3. Nucleus develops from a pre-existing nucleus. The finding was made by

A. Farmer and Moore

B. Winiwater

C. Sutton

D. Strasburger

Answer: D

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4. A mitogen of plant origin is

A. Colchicine

B. Epidermal growth factor

C. Cytokinin

D. Lymphokine.

Answer: C

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5. A mitogen of animal origin is

A. Cyanide

B. Azide

C. Chalone

D. Platelet derived growth factor.

Answer: D

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6. Colchicine is

A. Mitotic poison

B. Prophase poison

C. Cytokinesis poison

D. None of the above

Answer: A

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7. Autumn Crocus is source of

A. Azides

B. Chalones

C. Colchicine

D. Cytokinin

Answer: C

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8. Which one induces cell division ?

A. Critical decrease in surfce volume tatio

B. Critical decrease in nucleocytoplasmic or kernplasma ratio

C. Both A and B

D. Decrease in cell size

Answer: C

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9. The mitosis was observed in animal cells by

A. Watson and Crick

B. Beadle and Tatum

C. Farmer and Moore

D. Flemming

Answer: D

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10. Colchicine results in doubling of chromosome number because of

A. Non-formation of spindle

B. Double replication of chromosomes

C. Non-pairing of chromosomes

D. Splitting of chromosomes.

Answer: A

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11. Generation time represents period of

A. Cell cycle

B. Interphase

C. M-phase

D. S-phase

Answer: A

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12. Invisible stage of M-phase is

A. G_1-phase

B. S-phase

C. G_2-phase

D. G_0-phase

Answer: B

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13. Intermitosis is

A. Stage between meiosis I and meiosis II

B. Stage between two mitotic divisions

C. Interphase

D. Both B and C.

Answer: D

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14. Which one is stored in $G_1 - phase$?

A. ATP

B. Tubulin

C. Histone

D. All the above

Answer: A

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15. Centriole/centrosome replication occurs in

A. Early prophase

B. $G_1 - phase$

C. S-phase

D. $G_0 - phase$

Answer: C

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16. Which of the following is known as post-mitotic phase ?

A. G_0-phase

B. G_1-phase

C. S-phase

D. G_2-phase

Answer: B

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17. Cell cycle was discovered by

A. Farmer and Moore

B. Prevost and Dumas

C. Howard and Pelc

D. Remak

Answer: C

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18. Decision of G_0-phase occurs

A. Towards the end of G_1-phase

B. Before middle of G_1-phase

C. At the end of telophase

D. Towards end of cytokinesis

Answer: B

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19. Which specific protein is formed in $G_2 - phase$?

A. Histone

B. DNA-polymerase

C. Scaffold proteins

D. Tubulin

Answer: D

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20. DNA duplication occurs in:

A. Prophase

B. Interphase

C. Metaphase

D. Previous telophase

Answer: B

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21. Each cell grows during the cell cycle in

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer: A

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22. The cell size doubles in a stage of cell cycle called

A. M

B. G_2

C. S

D. G_1

Answer: D

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23. The decision for cell division is taken

A. G_1-phase

B. S-phase

C. G_2-phase

D. G_2-phase

Answer: B

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24. Chromatin fibres are observed only in the

A. Prophase

B. Metaphase

C. Telophase

D. Interphase

Answer: D

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25. In is very difficult to stop cell division when the cell has entered

A. G_1-phase

B. G_2phase

C. S-phase

D. Prophase

Answer: C

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26. At the time of fission, meganucleus of Paramecium undergoes

A. Dispersion

B. Mitosis

C. Amitosis

D. Budding

Answer: C

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27. Amitosis occurs during cell division in

A. Foetal membranes

B. Endosperm

C. Cartilage cells

D. All the above

Answer: D

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28. The division in which chromosomes do not differentiate is

A. Amitosis

B. Free nuclear division

C. Intranuclear division

D. All the above

Answer: A

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29. Amitosis was discovered by Remak in

A. 1841

B. 1855

C. 1880

D. 1905

Answer: B

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30. Dividing animal cells become nearly rounded in

A. Interphase

B. Early prophase

C. Late prophase

D. Metaphase

Answer: B

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31. When do viscosity and refractivity of cytoplasm increase ?

A. G_1-phase

B. S-phase

C. Prophase

D. Metaphase

Answer: C

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32. Congression occurs during

A. Early prophase

B. Late prophase

C. Early metaphase

D. Late metaphase

Answer: C

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33. In mitotic metaphase the limbs of the chromosomes occur

A. On the equator

B. In different directions

C. In divaricate condition

D. All the above

Answer: B

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34. Phase of shortest duration is

A. Prophase

B. Metaphase

C. Anaphase

D. S-phase

Answer: C

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35. In animal cytokinesis, cleavage occurs with the help of

A. Microtubules

B. Spindle fibres

C. Microfibrils

D. Microfilaments

Answer: D

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36. A mid body is formed during

A. Animal cytokinesis

B. Plant cytokinesis

C. Metaphase

D. Both A and B

Answer: A

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37. After mitosis, the number of chromosomes in the daughter cells shall be

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: D

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38. It is important that the centromere does not divide until the end of metaphase because it

(a) contains the genes that control prophase

(b) holds the replicated DNA molecules together

(c) is connected to the nuclear membrane

(d) produces the spindle fibres

A. Is connected with nuclear envelope

B. Produces spindle fibres

C. Contains genes that control prophase and metaphase

D. Holds the replicated DNAs together.

Answer: D

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39. Microtubules appearing around centriole pair in the beginning of prophase in animal cells form

A. Spindle

B. Aster

C. Spindle pole

D. Chromosome fibres

Answer: B

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40. At what stage does cytokinesis typically start?

A. Anaphase

B. Telophase

C. G_0phase

D. Interphase

Answer: A

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41. The stage at which cleavage or cytokinesis begins in animal cells is

A. Anaphase

B. Telophase

C. G_0phase

D. Interphase

Answer: A

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42. A circle of vesicles appears at the equator of spindle towards the end of anaphase. It will form

A. Cleavage furrow

B. Phragmoplast

C. Cell plate

D. Middle lamella

Answer: C

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43. The correct sequence of different phases of mitosis is

A. Anaphase $\rightarrow$ Metaphase $\rightarrow$ Prophase $\rightarrow$ Telophase $\rightarrow$ Interphase

B. Interphase $\rightarrow$ Telophase $\rightarrow$ Metaphase $\rightarrow$ Anaphase $\rightarrow$ Prophase

C. Metaphase $\rightarrow$ Anaphase $\rightarrow$ Telophase $\rightarrow$ Prophase

D. Interphase $\rightarrow$ Prophase $\rightarrow$ Metaphase $\rightarrow$ Anaphase $\rightarrow$ Telophase

Answer: D

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

A. Ribosome

B. Centrosome

C. Lysosome

D. Chromosome

Answer: B

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45. Region of chromosome where force is exerted during chromatid separation is

A. Telomere

B. Centromere

C. Chromomere

D. Chromonemate

Answer: B

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46. Mitosis taken place in

A. All types of cells except those involved in gamete formation

B. Gonads

C. Axillary buds situated near the apical bud

D. Cells of mature leaf

Answer: A

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47. Plant and animal cell divisions differ in

A. Cell plate

B. Prophase

C. Telophase

D. Metaphase

Answer: A

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48. Cytoplasmic structures involved in cell division are

A. Mitochondria

B. Ribosomes

C. Lysosomes

D. Centrioles

Answer: D

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49. Which one occurs once in life cycle ?

A. Replication of DNA

B. Replication of chromosomes

C. Meiosis

D. Mitosis

Answer: C

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50. Bouquet stage shows convergence of chromosomal ends towards centriole during

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: A

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51. Synapsis of chromosomes was discovered by

A. Winiwater

B. Montgomery

C. Johannsen

D. Zickler

Answer: B

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52. Synaptinemal complex is found associated with

A. Paired meiotic chromosomes

B. Lampbrush chromosomes

C. Polytenel chromosomes

D. Mitotic chromosomes

Answer: A

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53. Chromosomes similar in size, shape, genes and gene sequences are

A. Sister chromatids

B. Chromomeres

C. Homologous chromosomes

D. Parental chromosomes

Answer: C

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54. Function of meiosis I is to separate

A. Homologous chromosomes

B. Sister chromatids

C. Cross-overs

D. Parental chromosomes

Answer: A

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55. Separation of homologous chromosomes is called

A. Dispersion

B. Bivalent formation

C. Disjunction

D. Crossing over

Answer: C

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56. At what phase of meiosis are there two nuclei/cells, each with sister chromatids aligned at spindle equator ?

A. Prophase

B. Metaphase II

C. Metaphase I

D. Anaphase II

Answer: B

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57. The points of crossing over in meiosis appear as

A. Synaptinemal complexes

B. Protein axes

C. Chiasmata

D. Diakinesis

Answer: C

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58. A number of bivalents are 8 in prophase I. What will be the number of chromosomes during anaphase II ?

A. 8

B. 4

C. 16

D. 32

Answer: A

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59. Genome is

A. Genes of haploid set of chromosomes

B. Genes of diploid set of chromosomes

C. A single chromosome

D. None of the above

Answer: A

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60. Chiasmata are formed during meiosis :

A. Zygotene

B. Pachytene

C. Diplotene

D. Leptotene

Answer: C

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61. Meiosis is studied in smears of

A. Developing anthers

B. Testes

C. Both A and B

D. Axillary buds

Answer: C

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62. Chromosome syndesis or bivalent formation occurs in

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: B

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63. Meiosis occurs in

A. Haploid cells

B. Mostly haploid cells but occasionally diploid cells

C. Diploid cells

D. Mistly diploid cells but occasionally haploid cells

Answer: C

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64. Oogenesis is an example of

A. Mitosis

B. Meiosis

C. Specialisation of cell

D. DNA replication

Answer: B

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65. Disjunction is

(a) Chromosome separation during mitosis

(b) Chromosome separation during prophase I

(c) Chromosome separation in anaphase I

(d) Chromosome separation during metaphase I

A. Chromosome separation during mitosis

B. Chromosome separation during prophase I

C. Chromosome separation in anaphase I

D. Chromosome separation during metaphase I

Answer: C

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

A. Diakinesis

B. Diplotene

C. Pachytene

D. Zygotene

Answer: B

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67. Swellings present over the chromosomes are

A. Centromeres

B. Centrosome

C. Puffs

D. Chromomeres

Answer: D

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68. Number of cells daily replaced in human body is

A. 1×10^9

B. 5×10^9

C. 1×10^{10}

D. 5×10^{10}

Answer: B

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69. The term eumitosis is used for

A. Mitosis is higher plants

B. Mitosis in animals

C. Mitosis where spindle is extranuclear

D. Mitosis with intranuclear spindle

Answer: C

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70. Promitosis is

A. Amitosis

B. G_1

C. G_2

D. Intranuclear mitosis

Answer: D

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71. In leptotene, the chromosomes are

A. Attached to nuclear envelope by one end

B. Attached to nuclear envelope by both ends directly

C. Attached to nuclear envelope by both ends through attachment plate

D. Both B and C.

Answer: C

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Revision Questions

1. Where can we study mitosis ?

A. Nail base

B. Brain

C. Legs

D. Kidneys

Answer: A

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2. 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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3. The spindle fibres are made up of _____ protein.

(a) Myoglobin

(b) Tubulin

(c) Albumin

(d) Myosin

A. Tubulin

B. Fibrin

C. Flagellin

D. Actin

Answer: A

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4. Cell plate grows from

A. Well to centre

B. Centre to walls

C. One wall to another

D. Simultaneously

Answer: B

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5. Crossing-over occurs in the

A. Leptotene

B. Pachytene

C. Diplotene

D. Diakinesis

Answer: B

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6. Meiosis is

A. Multiplicational division

B. Equational division

C. Disjunctional division

D. Reductional division

Answer: D

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7. Reorganisation of genetic material or genetic recombination occurs during

A. Metamorphosis

B. Organogenesis

C. Mitosis

D. Meiosis

Answer: D

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8. Bead-like thickened portions of leptotene chromosomes are

A. Puffs

B. Chromomeres

C. Centromeres

D. Genes

Answer: B

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9. DNA replication takes place in

Or

DNA molecule of each chromosome become double in

Or

DNA and histone proteins are synthesized during the following phase of cell cycle.

A. G_1-phase

B. G_2-phase

C. S-phase

D. Prophase

Answer: C

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10. How many mitotic divisions occur in a cell of root tip to form 256 cells ?

A. 128

B. 64

C. 32

D. 8

Answer: D

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11. Synthesis of histone proteins occurs in

A. G_1-phase

B. G_2-phase

C. S-phase

D. Prophase

Answer: C

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12. Amitosis is

A. Division involving formation of chromosome bridges

B. Division involving spindle formation

C. Division in which chromosomes are unequally distributed

D. Cleavage of nucleus without recognisable chromosome distribution.

Answer: D

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13. Best material for studying mitosis in laboratory is

A. Shoot apex

B. Root apex

C. Cork/Leaf tip

D. Anther

Answer: B

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14. The significance of mitosis is to keep the chromosome number constant in a species.

A. Increasing cellular mass

B. Swift division

C. Occurrence in every tissue of body

D. Producing cells genetically similar to parent cell

Answer: D

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15. Nuclear envelope reappears at

A. Metaphase

B. Anaphase

C. Cytokinesis

D. Telophase

Answer: D

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16. Chromosomes can be counted best at the stage of

A. Telophase

B. Late Anaphase

C. Metaphase

D. Late Prophase

Answer: C

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17. Mitotic anaphase differs from metaphase in possessing

A. Same number of chromosomes and same 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 chromosomes and half number of chromatids

Answer: D

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18. The term "meiosis" was given by

A. Farmer and Moore

B. Flemming

C. Blackman

D. Robertson

Answer: A

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19. Meiosis involves

A. Two nuclear divisions and one chromosome division

B. One nuclear division and one chromosome divison

C. One nuclear division and two chromosome divisions

D. Two nuclear division and two chromosome divisions

Answer: A

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20. Prophase of reduction division is divided into number of stages. The correct chronological sequence is

A. Zygotene, Leptotene, Pachytene, Diakinesis and Diplotene

B. Leptotene, Zygotene, Pachytene, Diplotene and Diakinesis

C. Leptotene, Pachytene, Zygotene, Diakinesis and Diplotene

D. Diplotene, Diakinesis, Pachytene, Zygotene and Leptotene.

Answer: B

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21. The homologous chromosomes follow the process of synapsis in the stage or Pairing of homologous chromosome takes place in

Or

During which stage of meiosis, synaptonemal complex is formed

A. Diplotene

B. Pachytene

C. Zygotene

D. Leptotene

Answer: C

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22. Terminalisation occurs during

A. Mitosis

B. Diakinesis

C. Meiosis II

D. Cytokinesis

Answer: B

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23. Segregation of Mendelian factors (no linkage, no crossing over) occurs during

A. Diplotene

B. Anaphase I

C. Zygotene/Pachytene

D. Anaphase II

Answer: B

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24. In meiosis, the daughter cells differ form parent cell as well as amongst themselves due to

A. Segregation, independent assortment and crossing over

B. Segregation and crossing over

C. Independent assortment and crossing over

D. Segregation and independent assortment

Answer: A

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25. Disjunction is

A. Chromosome aberration involving deletion

B. Modification of gene action by a non-allelic gene

C. Separation of homologous chromosomes at anaphase

D. Incompatibility of genes

Answer: C

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26. Meiosis can be studied in angiosperms in

A. Dividing pollen mother cells in anther

B. Dividing cells of vascular cambium

C. Shoot apical meristem

D. Root apical meristem

Answer: A

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27. Poleward movement of dyads occurs during

A. Anaphase

B. Anaphase I

C. Anaphase II

D. Telophase

Answer: B

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28. The shape of chromosomes is best observed at

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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29. The correct sequence of phases of cell cycle is :

A. S, M, G_1 and G_2

B. G_1, G_2, S and M

C. M, G_1, G_2 and S

D. G_1S, $G_2$and M

Answer: D

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30. Haploid complement of chromososme of an organism is

A. Genotype

B. Phenotype

C. Genome

D. Genetic system

Answer: C

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31. In meiosis I, the centromere undergoes

A. Division between anaphase and interphase

B. Division between prophase and metaphase

C. Division but the daughter chromosomes do not separate

D. No division

Answer: D

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32. Number of chromatids at metaphase is

A. Two each in mitosis and meiosis

B. Two in mitosis and one in meiosis

C. Two in mitosis and four in meiosis

D. One in mitosis and two in meiosis

Answer: A

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33. During meiosis I,chromosome number

A. Doubled

B. Tripled

C. Halved

D. Quadrupled

Answer: C

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34. Type of meiosis just before gamete formation i.e., gametogenesis is

A. Sporic

B. Initial

C. Intermediate

D. Terminal

Answer: D

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35. Meiosis-II performs

A. Separation of sex chromosomes

B. Synthesis of DNA and centromere

C. Separation of homologous chromosomes

D. Separation of chromatids

Answer: D

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

A. Anaphase

B. Metaphase

C. Prophase

D. Telophase

Answer: B

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37. At which stage of mitosis, the two daughter chromatids separate from each other, migrate towards the opposite poles and are now referred to as chromosomes of the future daughter nuclei?

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: C

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38. Meiosis has evolutionary significance because it results in

A. Genetically similar daughters

B. Four daughter cells

C. Eggs and sperms

D. Recombinations

Answer: D

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39. Diploid chromosome number is 8. What shall be the number of chromatids in each daughter cell after meiosis I ?

A. 16

B. 8

C. 4

D. 2

Answer: B

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40. What is the proper sequence in mitosis ?

A. Metaphase, telophase, prophase and anaphase

B. Prophase, metaphase, anaphase and telophase

C. Anaphase, metaphase, telophase and prophase

D. Telophase, anaphase, metaphase and prophase

Answer: B

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41. Tetrad is made of

A. Four homologous chromosomes with four chromatids

B. Two homologous chromosomes, each with two chromatids

C. Four non-homologous chromatids

D. Four non-homologous chromosomes

Answer: B

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42. Meiosis was discovered by

A. Strasburger

B. Hofmeister

C. Sutton

D. Amici

Answer: C

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43. During mitosis chromosomes go to their poles in a stage called

Or

The shape of chromosome is clearly visible at

A. Interphase

B. Metaphase

C. Prophase

D. Telophase

Answer: B

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44. Zygotic meiosis occurs in

A. Pinus

B. Marchantia

C. Chalmydomonas

D. Dryopteris

Answer: C

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45. Phragmoplast is precursor of

A. Leucoplast

B. Chloroplast

C. Chromoplast

D. Cell plate

Answer: D

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46. Pachytene belongs to

A. Mitosis

B. Meiosis

C. Growth of cell

D. Development of endosperm

Answer: B

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47. The plant cell lacks

A. Centrioles

B. Asters

C. Spindle fibres

D. Both A and B

Answer: D

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48. In mitosis, chromosome duplication occurs during

A. Interphase

B. Prophase

C. Late prophase

D. Late telophase

Answer: A

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49. Centriole replicates during

A. Interphase

B. Early prophase

C. Late prophase

D. Late telophase

Answer: A

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50. Karyokinesis differs from cytokinesis as it involves division of

A. Cytoplasm

B. Nucleus

C. Both nucleus and cytoplasm

D. Cell

Answer: B

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51. Condensation of chromosome with visible centromere occurs during

A. G_1-phase

B. G_2-phase

C. S-phase

D. M-phase

Answer: D

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52. Four daughter cell formed after meiosis are

A. Number of chromosomes

B. Crossing over

C. Independent assortment of chromosomes

D. Both B and C.

Answer: D

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53. Meiosis occurs in Tomato in

A. Pollen sac and ovule

B. Microspore and megaspore mother cells

C. Both A and B

D. Zygote

Answer: C

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54. DNA synthesis takes place during :

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer: A

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55. When are chromatids/chromosomes clearly visible in meiosis ?

A. Zygotene

B. Diplotene

C. Pachytene

D. Diakinesis

Answer: B

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56. Cytokinesis is a division of cytoplasm.

A. Division of nucleus

B. Division of chromosomes

C. Division of cytoplasm

D. None of the above

Answer: C

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57. Meiosis is

A. Equational

B. Reductional

C. Double division

D. All the above

Answer: D

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58. The nuclear spindle consists of

A. One

B. Two

C. Three

D. Four

Answer: C

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59. Nuclear envelope disappears at

A. Anaphase

B. Metaphase

C. Early prophase

D. Late prophase

Answer: D

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60. The number of chromosome groups at the equatorial plate in metaphase-I of meiosis in a plant with 2n=50 shall be

A. 25

B. 50

C. 100

D. 75

Answer: A

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61. What is the significance of meiosis?

A. Production of genetic variability

B. Maintaning constancy of chromosome number during sexual reproduction

C. Reduction of chromosome number to one half

D. All the above

Answer: D

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62. Each chromosome at anaphase stage of bone marrow cell in our body has

A. One chromatid

B. Two chromatids

C. Several chromatids

D. No chromatids

Answer: A

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63. Mitosis is absent in

A. Zygote

B. Germinal cell

C. Bone cell

D. None of the above

Answer: B

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64. Chiasmata are formed during

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: D

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65. Which of the phases of mitosis is the longest ?

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: A

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66. The major importance of meiosis lies in

A. Development of mutations

B. Sexual reproduction

C. It transfers chromosomes through mitosis

D. It maintains chromosome number generation after generation

Answer: D

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67. In mitotic metaphase, each chromosome is

A. One

B. Two

C. Three

D. Four

Answer: B

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68. Meiosis is best seen in

A. Microsporangium

B. Pollen grain

C. Gamete

D. Anther wall

Answer: A

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69. In which the number of chromosomes is halved ?

A. Mitosis

B. Amitosiss

C. Meiosis

D. Fertilisation

Answer: C

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70. Exchange of chromosome segments between maternal and paternal chromatids during meiosis is called.

Or

In meiosis the daughter cells are not similar to that of parent because of

A. Dyad formation

B. Bivalent formation

C. Crossing over

D. Synapsis

Answer: C

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71. In mitosis, nuclear envelope and nucleolus disappear during

A. Prophase

B. Interphase

C. Metaphase

D. Telophase

Answer: A

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72. The active phase, also called metabolic or energetic phase with most cytogenetic activity is

A. Pachytene

B. M-phase

C. Interphase

D. Meiosis

Answer: C

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73. Chromosomes separate during

A. Early prophase

B. Early metaphase

C. Early anaphase

D. Early telophase

Answer: C

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74. How many mitotic divisions are needs for a single cell to make 128 cells?

A. 7

B. 14

C. 16

D. 32

Answer: A

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75. At which of the following stages, the chromosomes appear single, thin and thread like?

A. Zygotene

B. Leptotene

C. Pachytene

D. Prophase

Answer: B

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76. During interphase, RNA and proteins are synthesized in

A. S-phase

B. G_1-phase

C. G_2-phase

D. Both B and C.

Answer: D

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77. In meiosis, the centromere divides during

A. Prophase I

B. Metaphase I

C. Anaphase I

D. Anaphase II

Answer: D

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78. If mitotic division is restricted in G_1 phase of cell, the condition is known as

A. G_2-phase

B. S-phase

C. G_0-phase

D. M-phase

Answer: C

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79. Crossing over in diploid organisms is responsible for

A. Segregation of alleles

B. Dominance of alleles

C. Recombination of linked alleles

D. Linkage between genes

Answer: C

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80. During the first metaphase of meiosis, the centromeres

A. Undergo division

B. Do not divide

C. Divide but do not separate

D. Are not identical

Answer: B

Watch Video Solution

81. The second division in meiosis is called

A. Reductional division

B. Multiplied division

C. Equational division

D. None of the above

Answer: C

Watch Video Solution

82. The stage of cell cycle when cell decides to undergone differentiation is

A. G_0

B. G_1

C. G_3

D. G_4

Answer: A

Watch Video Solution

83. During prophase, chromosomes are

A. Large and coiled

B. Large and straight

C. Thick and uncoiled

D. Thick and straight

Answer: A

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84. Spindle fibres arise from

A. Centriole

B. Centromere

C. Nucleus

D. Mitochondria

Answer: A

Watch Video Solution

85. G_1 stage of interphase of cell cycle shows

A. Active synthesis of DNA

B. Active synthesis of RNA

C. Active synthesis of protein

D. Both B and C.

Answer: D

Watch Video Solution

86. Crossing over occurs between

A. Sister chromatids

B. Non-sister chromatids

C. Homologous chromatids

D. Any two chromosomes

Answer: C

Watch Video Solution

87. Late prophase of mitosis is characterised by

A. Condensation of chromsomes

B. Disappearance of nucleolus

C. Division of centromere

D. Formation of metaphasic plate

Answer: B

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88. In synapsis, two homologous chromosomes are connected at

A. Centromeres

B. Chromomeres

C. Telomeres

D. None of the above

Answer: B

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89. Endomitosis is

A. Mitosis without nucleus

B. Mitosis within nucleus

C. Frequent mitosis

D. Mitosis in uterine wall

Answer: B

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90. In telophase of mitosis

A. Chromosomes get arranged in middle of cell

B. Chromosome fibres become clear

C. Chromosomes aggregate at opposite poles to form daughter nuclei

D. Nuclear envelope disappears

Answer: C

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91. The process of mitosis can be studied in

A. Onion root tip

B. Garlic root tip

C. Tendril tip

D. All the above

Answer: D

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92. Which one ensures maintenance of chromosome number generation after generation ?

A. Mitosis

B. Meiosis

C. Splicing

D. Metamorphosis

Answer: B

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93. Colchicine is a cell pison which arrests cell division at __ and can induce ___

A. Prophase

B. Metaphase

C. Anaphase

D. Interphase

Answer: B

Watch Video Solution

94. Cell division is initiated by

A. Cytokinin

B. Auxin

C. Gibberellin

D. ABA

Answer: A

Watch Video Solution

95. In cell division, cell plate is formed during

A. Anaphase

B. Metaphase

C. Telophase

D. Cytokinesis

Answer: D

Watch Video Solution

96. Which is not the character of mitosis

A. Leptotene

B. Zygotene

C. Pachytene

D. All the above

Answer: D

Watch Video Solution

97. In meiosis, the centromere divides during

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: C

Watch Video Solution

98. In plant cells, cytokinesis occurs by

A. Cell plate

B. Invagination

C. Furrowing

D. All the above

Answer: A

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99. At metaphase, chromosmes are attached to the spindle fibres by their

A. Centrosome

B. Chromomere

C. Chromonema

D. Kinetochore

Answer: D

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100. G_1, S and G_2 are stages of

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer: A

Watch Video Solution

101. Colchicine results in doubling of chromosome number because of

A. Splitting of chromosomes

B. Non-pairing of chromosomes

C. Double replication of chromosomes

D. Non-formation of spindle

Answer: D

Watch Video Solution

102. Part of spindle left after chromosomes have moved to poles is

A. Centrosome

B. Centriole

C. Chromocentre

D. Phragmoplast

Answer: D

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103. What occurs in germinal cells during gamete formation

A. One reduction division and one equational division

B. Two successive equational divisions

C. Two successive reduction divisions

D. Short prophase in divisions I

Answer: A

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104. Recombinant nodules are found during which of the following

A. Anaphase

B. Metaphase

C. Prophase

D. Telophase

Answer: C

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105. A diploid living organism develops from zygote undergoes which type of repeated cell division?

A. Cyclosis

B. Mitosis

C. Glycolysis

D. Haemolysis

Answer: B

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106. During meiosis, replication of chromosomes occurs in

A. S-phase

B. S-phase and zygotene

C. S-phase and leptotene

D. All the above

Answer: B

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107. Meiosis occurs in ferns at the time of formation of

A. Spores

B. Gametes

C. Protonema

D. Prothallus

Answer: A

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108. The stage in which chiasmata can be seen is

A. Leptotene

B. Zygotene

C. Pachyene

D. Diakinesis

Answer: D

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109. During cell cycle, two molecules of DNA are present in chromosome during

A. G_1-phase

B. Beginning of S-phase

C. G_2phase

D. End of M-phase

Answer: C

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110. Variations appear during meiosis due to

1 . Independent assortment

2. Crossing over

3. Linkage

4. Glycolysis

Select the correct code

A. Independent assortment

B. Crossing over

C. Both A and B

D. Linkagess

Answer: C

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111. Kinetochore is the

A. Granule within centromere

B. Surface of centromere

C. Constriction near chromosome end

D. End of chromosome

Answer: B

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112. Repulsion of homologous chromosomes takes place in

A. Diakinesis

B. Diplotene

C. Zygotene

D. Leptotene

Answer: B

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113. Four daughter cell formed after meiosis are

A. Anucleate

B. Polynucleate

C. Genetically dissimilar

D. Genetically similar

Answer: C

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114. In meiosis disjunction of chromosomes occurs during

A. Metaphase I

B. Anaphase I

C. Metaphase II

D. Anaphase II

Answer: B

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115. What is true for mitosis ?

A. It has two divisions

B. It maintans number of chromosomes

C. It occurs in somatic cells only

D. It occurs in somatic cells as well as gonads

Answer: D

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116. Which one is connected with cell division ?

A. ER

B. Peroxisomes

C. Ribosomes

D. Microtubules

Answer: D

Watch Video Solution

117. Chromosome number is restored by

A. Meiosis

B. Mitosis

C. Crossing over

D. Interphase

Answer: A

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118. Meiosis occurs in

A. Embryo sac

B. Megaspore

C. Megapore mother cell

D. Nucellus

Answer: C

Watch Video Solution

119. When does synthesis of DNA end ?

A. S-phase

B. Prophase

C. Premitotic gap phase

D. Post mitotic gap phase

Answer: C

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120. Number of DNA strands present in chromosomes during G_2 phase is

A. One

B. Two

C. Four

D. Eight

Answer: B

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121. In metaphase I chromosomes are in

A. Tetrad stage

B. Dyad stage

C. Diploid nature

D. Attract each other

Answer: A

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122. The longest phase of meiosis-I is:

A. Prophase I

B. Prophase II

C. Anaphase I

D. Metaphase II

Answer: A

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123. Chemical for arresting cell division is extracted from

A. Crocus

B. Colchicum

C. Chrysanthemum

D. Dalbergia

Answer: B

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124. In metaphase of mitosis, the chromosomes

A. Break and disintegrate

B. Undergo condensation

C. Line up at equator

D. Decondense and elongate.

Answer: C

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125. Mitotic spindle is mainly composed of which protein?

A. Actin

B. Actinomyosin

C. Myoglobin

D. None of the above

Answer: D

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126. A short phase may intervene between Meiosis I and Meiosis II. It is called

A. Interphase I

B. Interphase II

C. Interkinesis

D. Anaphase I

Answer: C

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127. In pachytene stage of meiosis the chromosomes are

A. Single stranded

B. Double stranded

C. Three stranded

D. Four stranded

Answer: A

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128. Phase of cell cycle when DNA polymerase is active

A. G_1

B. S

C. G_2

D. M

Answer: B

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129. Meiosis II fails after completion of meiosis I. The phenomenon is

A. Brachymeiosis

B. Dinomitosis

C. Karyokinesis

D. None of the above

Answer: D

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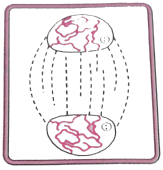
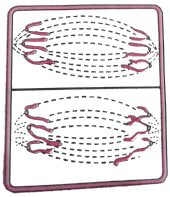
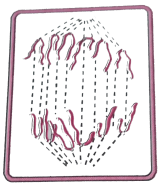
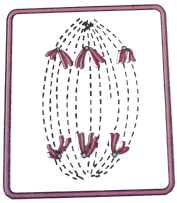
130. Select the CORRECT diagram that shows the anaphase-I stage.

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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131. 'Post-mitotic phase" of the cell in which active synthesis of RNA and proteins takes place is

A. S-phase

B. Amitotic phase

C. G_2-phase

D. G_1-phase

Answer: D

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132. The two chromatids of a metaphase chromosome represent

A. Replicated chromosomes to be separated at anaphase

B. Homologous chromosome of a diploid set

C. Non-homologous chromosomes joined at the centromere

D. Maternal and paternal chromosomes joined at the centromere.

Answer: A

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133. During meiosis, replication of chromosomes occurs in

A. Prophase I

B. Prophase II

C. Telophase I

D. Interphase

Answer: D

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134. If the diploid number of chromosomes is 40, then number of chromosome in gemete will be :

A. 40

B. 20

C. 10

D. 30

Answer: B

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135. After mitosis, the number of chromosomes in the daughter cells shall be

A. Become double

B. Become half

C. Remain nuchanged

D. None of the above

Answer: C

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136. In the beginning of meiosis, a meiocyte has 16 pg of DNA . The amount in a gamete will be

A. 16 pg

B. 8 pg

C. 4 pg

D. 32 pg

Answer: C

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137. Post mitotic gap phase and synthetic phases of cell cycle are also respectively referred to as

A. G_2 and M

B. G_1 and S

C. G_2 and S

D. S and G_1

Answer: B

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138. DNA duplication takes place during :

A. Early prophase

B. Late prophase

C. Telophase

D. None of the above

Answer: D

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139. Azides and cyanide inhibit

A. Metaphase

B. Prophase

C. Anaphase

D. Telophase

Answer: B

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140. Brachymeiois consists of

A. Two reduction divisionso and one equctional division

B. One reduction division and one equational division

C. One reduction division and two equational divisions

D. Two reduction divisions and two equational divisions

Answer: A

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141. Pairing of homologous chromosomes in zygotene is

A. Synapse

B. Synapsis

C. Crossing over

D. Terminalisation

Answer: B

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142. Genetic recombination occurs during

A. Zygotene

B. Diplotene

C. Pachytene

D. Metaphase-I

Answer: C

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143. G_0 state of cell denotes

A. Exit of cell from cell cycle

B. Check point before entering next phase

C. Death of cell

D. Temporary pause/suspended cell cycle

Answer: A

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144. Astral rays arise from

A. Microfilaments

B. Microtubules

C. Intermediate filaments

D. Microvilli

Answer: B

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145. Exchange of chromosome segments between maternal and paternal chromatids during meiosis is called.

Or

In meiosis the daughter cells are not similar to that of parent because of

A. Crossing over

B. Translocation

C. Linkage

D. Inversion

Answer: A

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146. Which is not true for anaphase

A. Chromosomes move to opposite poles

B. Spindle poles move apart

C. Golgi bodies and E.R. are reformed

D. Centromeres split and chromatids separate

Answer: C

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147. When are spindle fibre proteins synthe-sised?

A. G_1-phase

B. G_2-phase

C. Metaphase

D. S-phase

Answer: B

Watch Video Solution

148. What is correct

A. DNA content becomes double during G_1-phase

B. Duration of interphase is short as compared to M-phase

C. G_2-phase follows mitotic phase

D. DNA-replication occurs in S-phase

Answer: D

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149. Which one of the following precedes re-formation of the nuclear envelope during m-phase of the cell cycle ?

A. Decondensationo of chromosomes and appearance of nuclear lamina

B. Transcription of chromosomes and reassembly of nuclear lamina

C. Formation of phragmoplast and contraction ring

D. Formation of contraction ring and transcription from chromosomes

Answer: A

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

A. 30 minutes

B. 48 minutes

C. 50 minutes

D. 59 minutes

Answer: D

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151. Second division of meiosis is

A. Formation of four gametes

B. Segregation of replicated chromosomes

C. Equal distribution of haploid chromosomes

D. Equal distribution of genes on chromosomes

Answer: B

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152. Which is synthesized in G_1 phase

A. DNA polymerase

B. Histones

C. Nucleolar DNA

D. Tubulin proteins

Answer: A

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153. Fibroblast cells in our body are those that are arrested in

A. G_0-phase

B. G_1-phase

C. G_2-phase

D. Yet to start division

Answer: B

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154. Cyclin is required for cell cycle. Which other molecule is essential for completion of cell cycle ?

A. C CK

B. CKC

C. CDK

D. CKD

Answer: C

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155. In G_2-phase, DNA content is

A. 2n

B. n

C. 3n

D. 4n

Answer: D

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156. Which type of coiling occurs in chromosomes ?

A. Plectonemic

B. Paranemic

C. Orthostichous

D. Anorthospiral

Answer: A

Watch Video Solution

157. Chromosomes are least condensed during

A. Telophase

B. Interphase

C. Metaphase

D. Anaphase

Answer: B

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158. The number of chromosomes is reduced to half during

A. Prophase I

B. Metaphase I

C. Anaphase I

D. Telophase I

Answer: C

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159. Arrange the following events of meiosis in correct sequence

(i) Crossing over

(ii) Synapsis

(iii) Terminalisation of chiasmata

(iv) Disappearance of nucleolus.

A. 4,3,2,1

B. 3,2,1,4

C. 2,1,4,3

D. 1,4,3,2

Answer: B

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160. 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 may reappear in telophase I

A. a only

B. c only

C. a and b only

D. a, c and d only

Answer: D

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161. If a cell possesses twice as much DNA as in the functional cell, the cell

A. Is preparing to divide

B. Has completed division

C. Has ceased to function

D. Has reached end of its life span

Answer: A

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162. A diploid living organism develops from zygote undergoes which type of repeated cell division?

A. Meiosis

B. Mitosis

C. Amitosis

D. Segmentation

Answer: B

Watch Video Solution

163. Centromere is required for

A. Crossing over

B. Transcription cleavage

C. Cytoplasmic cleavage

D. Movement of chromosomes towards poles.

Answer: D

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164. When synapsis is complete all along the chromosome, the cells are said to have entered a stage of prophase I, where exchange of genetic material takes place between homologous chromosomes. The stage is called

A. Diakinesis

B. Diplotene

C. Pachytene

D. Zygotene

Answer: C

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165. During meiosis

A. Linkage is disturbed

B. Homologous chromosomes are separated

C. Homologous chromosomes do not segregate

D. All the above

Answer: B

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166. In an animal cell, cytokinesis involves

A. Separation of sister chromatids

B. Contractiono of ring of microfilaments

C. Depolymerisation of kinetochore microtubules

D. Protein kinase that phosphorylates other enzynes.

Answer: B

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167. A plant cell has 12 chromosomes at the end of mitosis. How many chromosomes would it have in the G_2 phase of its next cell cycle

A. 6

B. 8

C. 12

D. 24

Answer: C

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168. Astral rays arise from

A. Centriole

B. Cytoplasm

C. Chromatid

D. Centromere

Answer: A

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169. Meiotic cell division is also termed as reduction division because of

A. Involvement of gametes

B. Doubling of chromosomes

C. Elimination of chromosomes

D. Number of chromosomes becomes halved.

Answer: D

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170. The major event that occurs during the anaphase of mitosis. Which bring about the equal distribution of chromosomes, is

A. Splitting of centromeres

B. Condensation of chromatin

C. Replication of genetic material

D. Splitting of chromatids.

Answer: A

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171. The shape of chromosomes is best observed at

A. Prophase I

B. Metaphase I

C. Anaphase I

D. Telophase I

Answer: B

Watch Video Solution

172. In which stage synaptonemal complex dissolves, chromatids become clear and bivalents are called tetrads

A. Zygotene

B. Pachytene

C. Diplotene

D. Diakinesis

Answer: C

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173. In meiosis, chromosome number becomes:

A. One half of parent cell

B. Same as parent cell

C. One-fourth of parent cell

D. Double of parent cell.

Answer: A

Watch Video Solution

174. Cell plate is formed during

A. Interphase

B. Karyokinesis

C. Cytokinesis

D. Interkinesis

Answer: C

Watch Video Solution

175. In meiosis, synapsis occurs during

A. S-phase

B. Interphase

C. Leptotene

D. Prophase

Answer: D

Watch Video Solution

176. G_2 phase occurs between

A. G_1 and S

B. M and S

C. S and M

D. G_1 and M

Answer: C

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177. Pick up the correct statement :

(a) Mitosis occurs in somatic cells and meiosis in germ cells

(b) DNA replicates once in mitosis and twice in meiosis

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

A. a only

B. b only

C. c only

D. a and b only

Answer: A

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178. Which one is the correct sequence of a cell cycle?

A. $S \to G_1 \to G_2 \to M \to S$

B. $G_2 \to G_1 \to S \to M \to G_2$

C. $G_1 \to G_2 \to S \to M \to G_2$

D. $G_1 \to S \to G_2 \to M \to G_1$

Answer: D

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179. Identify two correct statements about meiosis

(a)Bead like structures absent on chromosomes

(b) Displacement of chiasmata occurs in diakinesis

(c)Separation of two basic sets of chromosomes

(d) No division of centromeres.

A. b and d

B. b and c

C. c and d

D. a and c

Answer: B

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180. Chromosomes are visible with chromatids at one of the following phases of mitosis

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer: C

Watch Video Solution

181. In meiosis crossing over is initiated at

A. Leptotene

B. Diplotene

C. Zygotene

D. Pachytene

Answer: D

Watch Video Solution

182. Recombination is involved in the porcess of

A. Crossing over

B. Chromosome duplication

C. Spindle formation

D. Cytokinesis

Answer: A

Watch Video Solution

183. Which of the following is unique to mitosis and not a part of meiosis

A. Homologous chromosomes cross over

B. Homologous chromosomes pair and form bivalents

C. Homologous chromosomes behave independently

D. Chromatids are separated during anaphase.

Answer: C

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184. Recombination between homologous chromosomes is completed by the end of

A. Pachytene

B. Leptotene

C. Diplotene

D. Zygotene

Answer: A

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185. In which phase of prophase I, crossing over takes place?

A. Prophase

B. Metaphase

C. Anaphase

D. Prophase I

Answer: D

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186. Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centrometres. Or In which stage of meiosis homologous chromosomes are segregated

A. Metaphase I

B. Anaphase I

C. Metaphase II

D. Anaphase II

Answer: B

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187. At what phase of meiosis are there two nuclei/cells, each with sister chromatids aligned at spindle equator ?

A. Anaphase II

B. Prophase II

C. Metaphase II

D. Metaphase I

Answer: C

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188. In which stage of cell division chromosomes are most condensed

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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189. Synapsis occurs between:

A. Spindle fibres and centromeres

B. mRNA and ribosomes

C. A male and female gamete

D. Two homologous chromosomes.

Answer: D

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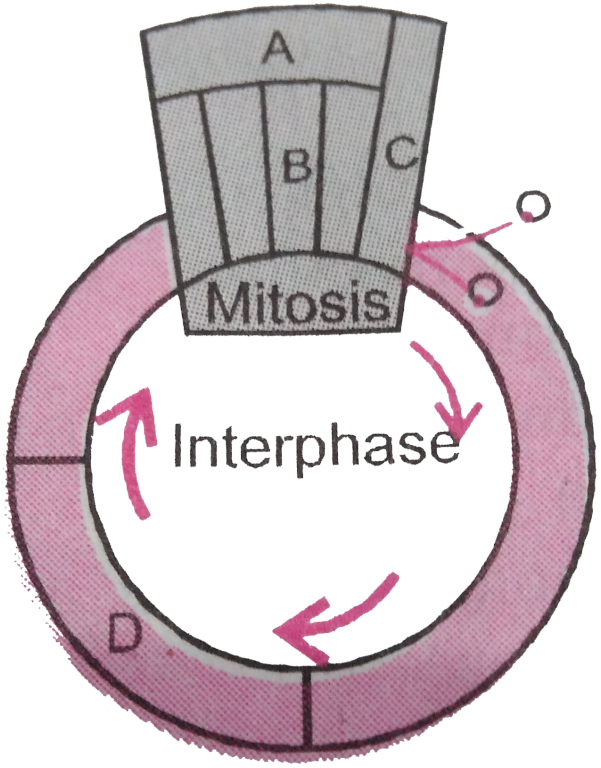
190. Given below is schematic break-up of phases of cell cycle. Which one is correct matching ?



A. A-Cytokinesis

B. B-Metaphase

C. C-Karyokinesis

D. D-Synthetic phase.

Answer: D

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191. Which of the following chracters is not related with telophase

A. Formation of nuclear membrane

B. Formation of nucleolus

C. Elongation of chromosome

D. Formation of two daughter nuclei.

Answer: D

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192. The chemical substances found most abundantly in the middle lamella is released into the phragmoplast by

A. Spindle fragments

B. Interzonal fibres

C. Endoplasmic reticulum

D. Golgi complex.

Answer: D

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193. Select the correct option

Column-I

a. Synapsis align homologous

b. Synthesis of RNA and Protein

c. Action of enzyme recombinase

d. Centromeres do not separate but chromatids move towards opposite p

A. a-ii, b-iii, c-iv, d-v

B. a-iii, b-ii, c-i, d-v

C. a-i, b-iii, c-v, d-iv

D. a-v, b-iii, c-I, d-ii

Answer: A

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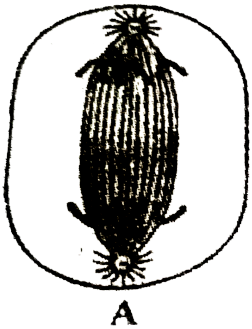
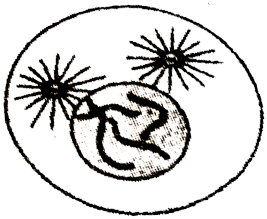
194. Which stages of cell division do the following figures A and B represent respectively?



A



B

A. Telophase-Metaphase

B. Late Anaphase-Prophase

C. Prophase-Anaphase

D. Metaphase-Telophase

Answer: B

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195. During mitosis ER and nucleolus begin to disappear at

A. Early metaphase

B. Late metaphase

C. Early prophase

D. Late prophase

Answer: D

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196. Synptanemal complex is formed during

A. Leptotene

B. Pachytene

C. Diakinesis

D. Zygotene

Answer: D

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197. In meiosis, division is

A. First division is reductional

B. First division is equational

C. Second division is reductional

D. None of the above

Answer: A

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198. Chromosomes appear beaded during

A. Pachytene

B. Leptotene

C. Diakinesis

D. Diplotene

Answer: B

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199. Syncytium formation takes place if

A. Cytokinesis is not followed by karyokinesis

B. Karyokinesis does not occur

C. Karyokinesis is not followed by cytokinesis

D. Both karyokinesis and cytokinesis are prevented.

Answer: C

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200. Crossing over requires an enzyme

A. Recombinase

B. Ligase

C. Polymerase

D. Endonuclease

Answer: A

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201. Select the correct match .

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

A. a and b

B. c and d

C. c and e

D. a, c and e

Answer: A

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202. How many chromosomes will the cell have at G_1, after S and after M phase repectively, if it has 14 chromosomes at interphase ?

A. 7, 14, 14

B. 14, 14, 14

C. 14, 14, 7

D. 7, 7, 7

Answer: B

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203. Select the correct option with respect to mitosis.

A. Golgi complex and endoplasmic reticulum are still visible at the end of prophase

B. Chromatids separate but remain in the centre of cell in anaphase

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

D. Chromatids start moving towards opposite poles in telophase.

Answer: C

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204. Which is not characteristic of meiosis

A. Two stages of DNA replication, first before meiosis I and second before meiosis II

B. Recombination and crossing over

C. Sister chromatids separate during anaphase II

D. Nuclear membrane disappears towards end of prophase.

Answer: A

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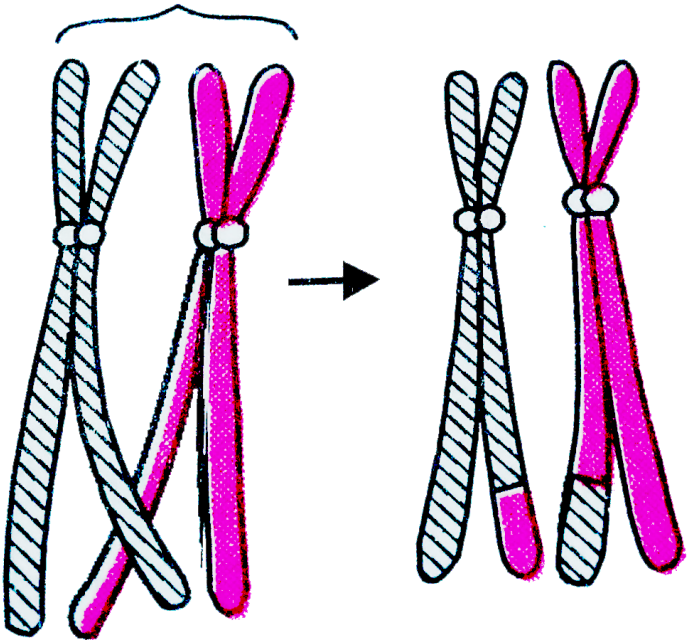
205. The given figure represents



A. Prophase I

B. Prophase II

C. Prophase of mitosis

D. Prophase and metaphase of mitosis

Answer: A

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206. Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centrometres. Or In which stage of meiosis homologous chromosomes are segregated

A. Metaphase I

B. Metaphase II

C. Anaphase I

D. Anaphase II

Answer: C

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207. Yeast can progress through the cell cycle in about

A. 30 minutes

B. 60 minutes

C. 90 minutes

D. 120 minutes

Answer: C

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208. Choose the correctly matched pairs and correct option

(a) Leptotene - chromosomes become invisible

(b) Zygotene - pairing of homologous chromosomes

(c)Pachytene - Dissolution of synaptonemal complex takes place

(d) Diplotene - Bivalent chromosomes appear as tetrads

(e) Diakinesis - Terminalisation of chiasmata takes place

A. a, b correct

B. b, d correct

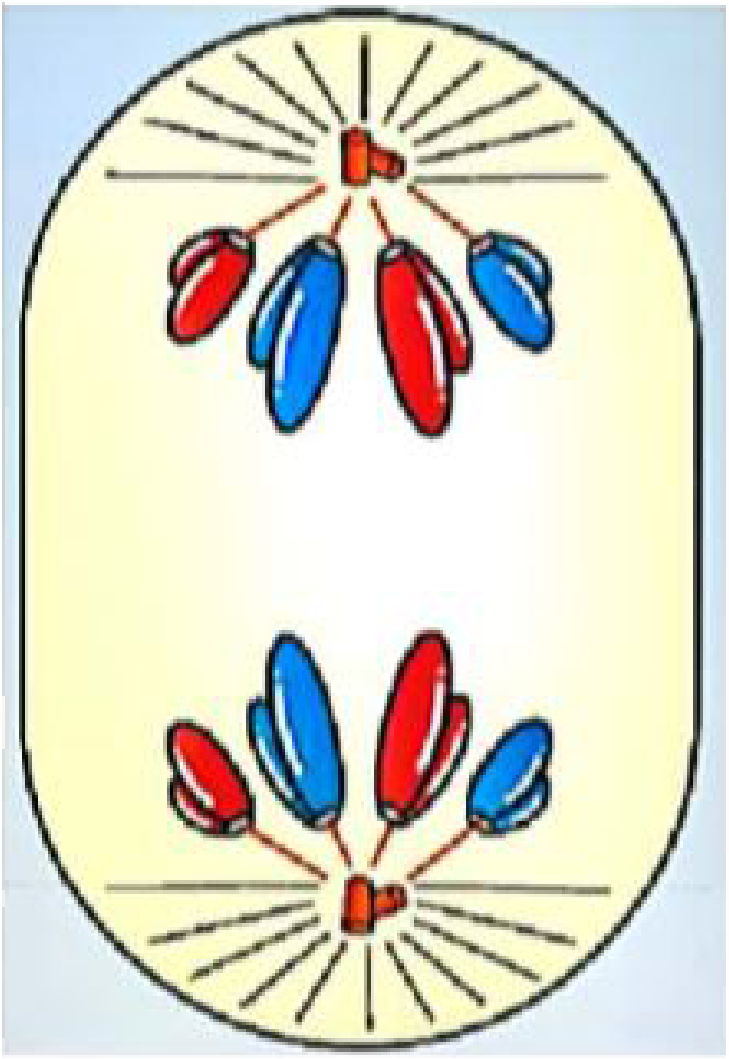
C. b, d, e correct

D. b, c correct

Answer: C

Watch Video Solution

209. The figure given below represents the stage of cell division. Read the following statements.



(i) Nucleolus, Golgi complex and ER reform.

(ii) Chromatids move to the opposite pole.

(iii) The activity of the recombinase enzyme.

(iv) Homologous chromosomes separate while sister chromatids

associated at their centromere.

(v) Initiation of the assembly of the mitotic spindle.

How many of the above statements is not true with respect to the above figure

A. 1, 2, 4 only

B. 1, 4 only

C. 2, 3 only

D. 3, 4, 5 only

Answer: B

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210. A stage in mitosis that starts towards the middle of anaphase and is completed with the telophase is Or Division of cytoplasm after completion of nuclear division is called

A. Crossing over

B. Karyokinesis

C. Cytokinesis

D. Interkinesis

Answer: C

Watch Video Solution

211. Which of the following statements is incorrect about G_0 phase?

A. Cell metabolism continues in G_0

B. Cell growth occurs in G_0

C. Biocatalyst help exit G_0

D. Mitosis occurs after G_0

Answer: D

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212. 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. $\begin{matrix} & a & b & c \\ (A) & \text{Chromonema} & \text{Chromatin} & \text{Metaphase} \end{matrix}$

B. $\begin{matrix} & a & b & c \\ (B) & \text{Chromatin} & \text{Chromatid} & \text{Metaphase} \end{matrix}$

C. $\begin{matrix} & a & b & c \\ (C) & \text{Chromonema} & \text{Chromosome} & \text{Anaphase} \end{matrix}$

D. $\begin{matrix} & a & b & c \\ (D) & \text{Chromonema} & \text{Chromatid} & \text{Anaphase} \end{matrix}$

Answer: A

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213. The plane of cell wall formation in a dividing cell is determined by

" "

The filaments associated with cilia and flagella are constituted by

A. Microfilaments

B. Microtubules

C. Golgi apparatus

D. Endoplasmic reticulum

Answer: B

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214. The term synaptonemal complex refers to site of

A. Spindle attachment

B. Replication

C. Chromatid separation

D. Chromosomes alignment and recombination

Answer: D

Watch Video Solution

215. Division of cytoplasm after completion of nuclear division is called

A. Cytokinesis

B. Cytomixis

C. Karyokinesis

D. Apomixis

Answer: A

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216. Crossing over takes place in

A. Mitotic cell

B. Meiotic cell

C. Mutating cell

D. Amitotic cell

Answer: B

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217. Identify the correct pair of statements

I. Movement of cytoplasm around vacuoles occurs in clockwise and anticlockwise manners in Hydrilla

II. Heteropicnosis refers to differential stainability of chromatin

III, Dissolution of synaptonemal complex occurs in diplotene

IV. Either clockwise or anticlockwise movement of cytoplasm around vacuoles occurs in Rheo discolor

A. I and III

B. II and III

C. II and IV

D. I and IV

Answer: B

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218. Match the lists and find the correct option

	I		II
$a.$	G_2 phase	$i.$	Fusion microtubules to form spindle apparatus
$b.$	Prometaphase	$ii.$	Production of energy required for spindle format
$c.$	Anaphase	$iii.$	Recombination of genetic material
$d.$	Pachytene	$iv.$	Contraction of tublin proteins
		$v.$	Reappearance of plasmasome

A. a-v, b-iv, c-ii, d-iii

B. a-ii, b-iv, c-i, d-v

C. a-v, b-i, c-iv, d-ii

D. a-ii, b-i, c-iv, d-iii

Answer: D

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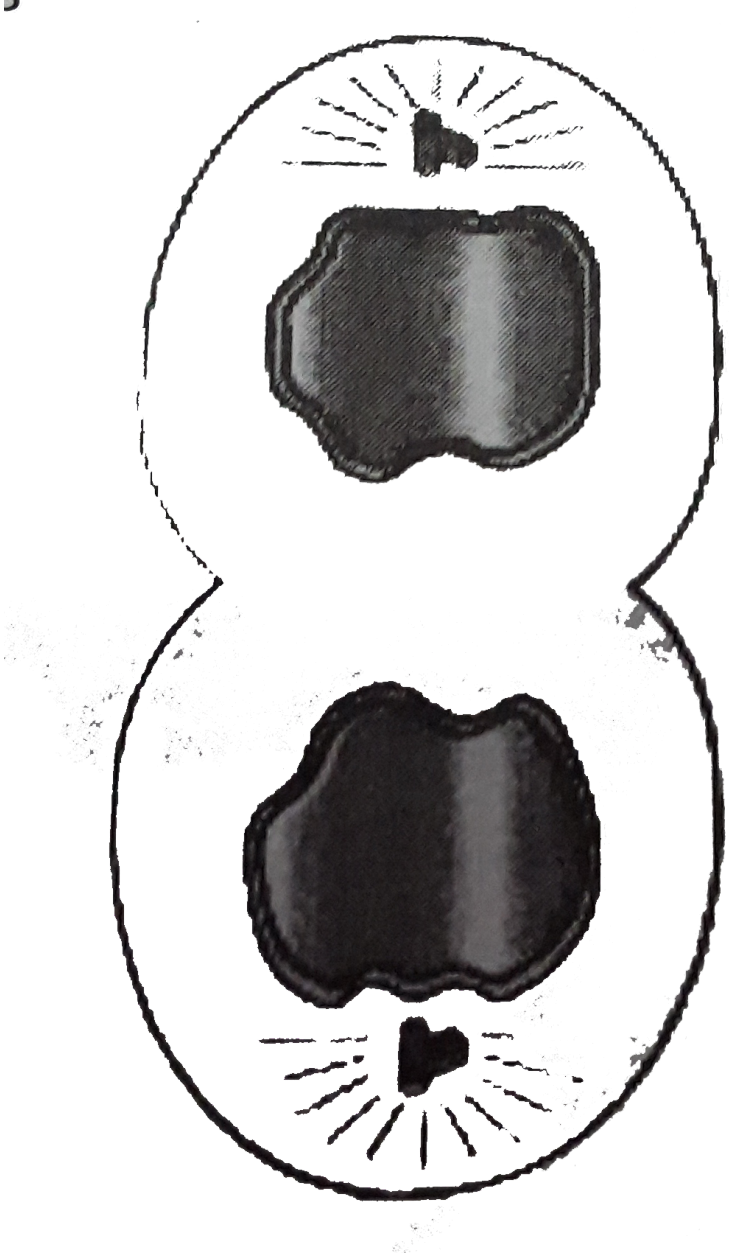
219. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its chracteristics



A. Telophase-Endoplasmic reticulum and nucleolus not reformed yet

B. Telophase-Nuclear envelop 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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220. The complex formed by a pair of syn- apsed homologous chromosomes is called

A. Axoneme

B. Equatorial plate

C. Kinetochore

D. Bivalent

Answer: D

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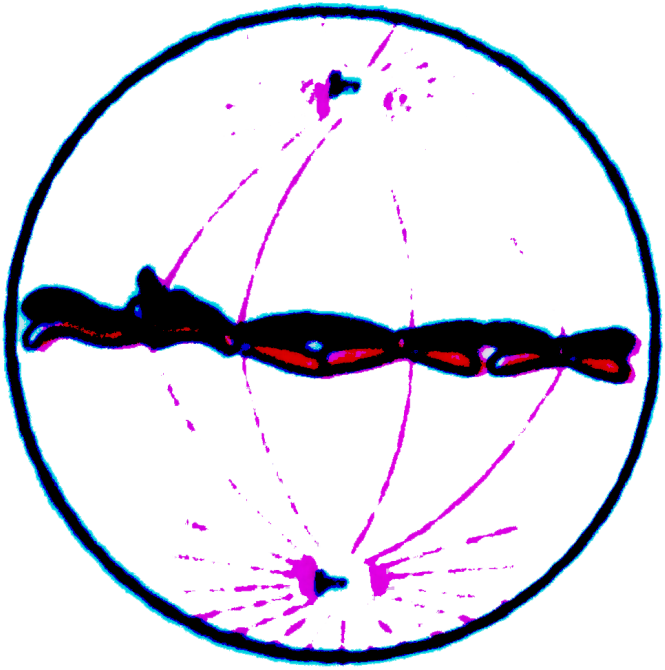
221. Identify the stage of mitosis with its characteristics



A. Metaphase-chromosomes moved 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 fibers attached to kinetochores, centromeres split and chromatids separate.

Answer: A

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222. In onion root tip during mitotic metaphase, the number of kinetochores is

A. 4

B. 64

C. 32

D. 16

Answer: C

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223. Metaphase chromosome appears to be longitudinally divided into two identical parts known as

A. Sister chromosomes

B. Satellites

C. Daughter chromsomes

D. Sister chromatids.

Answer: D

Watch Video Solution

224. The homologous genes are separated at

A. Anaphase I

B. Pachytene

C. Diplotene

D. Anaphase II

Answer: A

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225. Which substance is used to keep cells in metaphase stage of mitosis in blood culture technique

A. Cholecystokinin

B. Chitin

C. Colchicine

D. Phytohaemoglobin

Answer: C

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

A. G_1 and G_2phase

B. G_0phase

C. S, G_2 and M-phase

D. S-phase

Answer: D

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227. Given below are assertion and reason. Point out if both are true with reason being correct explanation (A), both true but reason is not correct explanation (B), assertion true but reason is wrong (C) and both are wrong (D).

Assertion. Meiosis II is similar to mitosis

Reason. Meiosis I cannot occur in haploid cells.

A. A

B. B

C. C

D. D

Answer: B

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228. 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 only

B. II and III only

C. III and IV only

D. I and IV only

Answer: B

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229. Match the lists and choose the correct option

	I		II
$a.$	G_1 phase	$i.$	Replication of DNA
$b.$	S-phase	$ii.$	Quiescent stage
$c.$	G_2 phase	$iii.$	Condensation chromatin
$d.$	G_0 phase	$iv.$	Protein synthesis
		$v.$	Interval between mitosis and initiation of DNA repl

A. a-iii, b-v, c-i, d-ii

B. a-v, b-iv, c-i, d-iii

C. a-v, b-i, c-iv, d-ii

D. a-v, b-ii, c-iii, d-iv

Answer: C

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230. 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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231. Match the columns and choose the right option

	I		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-3, c-2, d-1

D. a-4, b-1, c-2, d-3

Answer: C

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232. In 'S' phase of the cell cycle

A. Amount of DNA remains same in each cell

B. Chromosome number is increased

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

D. Amount of DNA double in each cell.

Answer: D

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233. The enzyme recombinase is required in which stage of meiosis

A. Zygotene

B. Diplotene

C. Diakinesis

D. Pachytene

Answer: D

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

A. G_1 and S

B. only G_2

C. G_2 and M

D. G_0 and G_1

Answer: C

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235. Which of the phases of cell cycle is of longest duration?

A. M-phase

B. Interphase

C. Leptotene

D. S-phase.

Answer: B

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236. The check point in cell cycle plays important role in

A. Repair of DNA damage

B. Apoptosis initiation

C. Assess DNA damage

D. Inhibit cell damage

Answer: C

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237. Which of the following is not a significance of mitosis?

A. Restricted to haploid cells

B. Cell repair

C. Increase in genetic variability

D. Recombination of chromosomes

Answer: B

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238. 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 aer kinetochores.

Answer: D

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239. During meiosis I,chromosome number

A. Doubled

B. Tripled

C. Quadrupled

D. Halved

Answer: D

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240. When do homologous chromosomes pair up

A. Only in mitosis

B. Only in meiosis I

C. Only in meiosis II

D. In both mitosis and meiosis.

Answer: B

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241. If the number of chromosomes in G_1 phase is 18. What will be the number of chromosomes in S-phase.

A. 36

B. 18

C. 9

D. 19

Answer: B

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242. If a tissue has at a given time 1024 cells, how many cycles of mitosis had the original paraental single cell undergone?

A. 8

B. 10

C. 32

D. 64

Answer: B

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243. An example of mitogen is

A. Cytokinin

B. Glucose

C. Glycerol

D. Fructose

Answer: A

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244. Which one of the following is wrong for meiosis

A. It leads to formation of sister chromatids

B. It occurs in diploid cells

C. It occurs in haploid cells

D. It occurs by splitting of centromeres and separation of sister chromatids.

Answer: C

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

A. Increase of ATP synthesis

B. Increase of DNA synthesis

C. Increase of RNA synthesis

D. Reduction in cell size.

Answer: D

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246. Match the columns and choose the correct answer

(p)	Mitosis	(i)	Occurs in diploid cells only
		(ii)	Occurs in both haploid and diploid cells
(q)	Meiosis	(iii)	Daughter and parent cells have same chromosome nur
		(iv)	Synapsis of homologous chromosomes

A. p-i, q-ii

B. p-ii, q-iii

C. p-iii, q-iv

D. p-iv, q-i

Answer: C

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247. The cells that do not divide further, exit G_1 phase to enter an inactive stage called__ of the cell cycle.

A. G_2phase

B. G_0phase

C. S-phase

D. M-phase

Answer: B

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248. Arrange the following events of meiosis in correct sequence

(a) Crossing over

(b) Synapsis

(c)Terminalisation of chiasmata

(d) Disappearance of nucleolus.

A. b,a,d,c

B. b,a,c,d

C. a,b,c,d

D. b,c,d,a

Answer: B

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249. Find the correct match

(a)	Anaphase I	(i)	Splitting of the centromere
(b)	Anaphase II	(ii)	Recombinase
(c)	Pachytene	(iii)	Sister chromatids associated at their centromere
(d)	Diakinesis	(iv)	Chromosomes aligned on the equatorial plate
		(v)	Nucleolus disappears

A. a-iii, b-i, c-ii, d-v

B. a-iii, b-v, c-ii, d-iv

C. a-ii, b-iii, c-v, d-iv

D. a-i, b-iii, c-iv, d-ii

Answer: A

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250. Assertion (A). Events in pachytene play a key role in evolutionary changes in organisms

Reason(R).Exchange of genetic material takes place between sister chromatids of homologous chromosomes

A. A and R are true, R is corret explanation of A

B. Both A and R are true, R is not the correct explanation of A

C. A is true, R is false

D. A is false, R is true.

Answer: C

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251. Identify the correct combination regarding anaphase, anaphase I and anaphase II

A. Anaphase - centromere splits, Anaphase I - centromere splits, Anaphase II - centromere splits

B. Anaphase - chromatids move to opposite poles, Anaphase I - homologous chromosomes separate, Anaphase II - centromere splits

C. Anaphase - chromosomes cluster at opposite poles, Anaphase I - homologous chromosomes separate, Anaphase II - centromere splits

D. Anaphase - chromosomes move to one pole, Anaphase I - homologous chromosomes separate, Anaphase II - centromere splits.

Answer: B

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252. A duplicated chromosome has how many chromatids

A. One

B. Two

C. Three

D. Four

Answer: B

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253. An interconnecting membranous network of the cell composed of vesicles, flattened sacs and tubules is

" " Or

Nuclear membrane is formed around the groups of daughter chromosomes during the telophase by

A. Endoplasmic reticulum

B. Lysosomes

C. Golgi apparatus

D. Microbodies

Answer: A

Watch Video Solution

254. Which of the following is not true for meiosis

A. Production of genetic variability

B. Maintaining constancy of chromosome number during sexual reproduction

C. Reduction of chromosome number to half

D. Production of diploid cell.

Answer: D

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255. Progression of cell cycle is regulated by the concentration of which type of molecule

A. Centrosomes

B. Cyclin dependent kinases

C. Cyclins

D. Microtubules.

Answer: C

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256. Which of the following phases correspond to the interval between mitosis and initiation of DNA replication

A. S-phase

B. $G_1 - \text{phase}$

C. $G_2 - \text{phase}$

D. M-phase

Answer: B

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257. Which of these is not a key feature of meiosis

A. Meiosis involves two sequential cycles of nuclear and cell division

B. Meiosis involves pairing of homologous chromosomes

C. Two cycles of DNA replication occur during meiosis

D. There is recombination between the paired homologous chromosomes

Answer: C

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258. When a cell undergoes meiosis, the number of chromosomes in daughter cells will be

A. Reduced to half

B. Increased to double

C. Remains unchanged

D. Distributes unequally

Answer: A

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

A. Formation of synaptonemal complex

B. Crossing over between nonsister chromatids

C. Condensation of chromosomes

D. Alignment of bivalent chromosomes on equatorial plate.

Answer: B

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260. In meiosis, centromere divides during

A. Anaphase I

B. Anaphase II

C. Both A and B

D. Metaphase II

Answer: B

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

A. Synapsis

B. Spindle fibres

C. Disappearance of nucleolus

D. Chromosome movement.

Answer: A

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262. A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this ceU is not like other cells at telophase stage. There is no formation of cell plate and thus the cell is contain- ing more number of chromoso~es as com- pared to other dividing cells. This would re- sult in

A. Polyteny

B. Aneuploidy

C. Polyploidy

D. Somaclonal variation.

Answer: C

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263. When cells have stalled DNA replication fork, which checkpoint should be predominantly activated?

A. Both G_2 / M and M

B. G_1 / S

C. G_2 / M

D. M

Answer: C

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264. 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-iv, b-iii, c-ii, d-i

B. a-iii, b-iv, c-ii, d-i

C. a-i, b-iv, c-ii, d-iii

D. a-ii, b-iv, c-iii, d-i

Answer: B

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265. Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centrometres. Or In which stage of meiosis homologous chromosomes are segregated

A. Metaphase I

B. Anaphase I

C. Anaphse II

D. Metaphase II

Answer: B

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266. Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animal cells. If APC is defective in a human cell, which of the following is expected to occur?

A. Chromosomes will not condense

B. Chromosomes will not fragmented

C. Chromosomes will not segregate

D. Recombination of chromosome arms will occur.

Answer: C

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267. Which of the following options gives the correct sequences of events during mitosis?

A. Condensation $\rightarrow$ Nuclear membrane disassembly $\rightarrow$ crossing over $\rightarrow$ Segregation $\rightarrow$ Telophase

B. Condensation → Nuclear membrane disassembly → Arrangement at equator → Centromere division → Segregation → Telophase

C. Condensation → Crossing over → Nuclear membrane disassembly → Segregation → Telophase

D. Condensation → Arrangement at equator → Centromere division → Segregation → Telophase.

Answer: B

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Check Your Grasp

1. A short phase may intervene between Meiosis I and Meiosis II. It is called

A. Interphase

B. Interkinesis

C. D-phase

D. Diakinesis

Answer:

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2. Congression occurs during

A. Coming together of homologous chromosomes

B. Separation of paired chromosomes

C. Bringing the chromosomes on the equator

D. Movement of chromosomes towards the poles.

Answer:

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3. Chiasmata were first seen by

A. Morgan

B. Muller

C. Johanssen

D. Janssens.

Answer: 4

Watch Video Solution

4. How many divisions are required to produce 64 cells by a root tip cell

A. 63

B. 32

C. 16

D. 6

Answer:

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5. Spindle can be observed best under

A. Light microscope

B. Polarising microscope

C. Phase contrast microscope

D. Interference microscope

Answer: b

Watch Video Solution

6. Dinomitosis is characterised by

A. Intranuclear spindle

B. Absence of spindle

C. Absence of chromosome movement

D. All the above

Answer: a

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7. Oocytes contain

A. Polytene chromosomes

B. Lempbrush chromosomes

C. m-chromosomes

D. B-chromosomes

Answer: B

Watch Video Solution

8. In idiogram of Drosophila, sex chromosomes are shown

A. In the beginning

B. At number two position

C. At number three position

D. At the end.

Answer: a

Watch Video Solution

9. Germ-line chromosome of Parascaris equorum is

A. Monocentric

B. Dicentric

C. Polycentric

D. Holocentric.

Answer: D

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10. NOR is located at

A. Tip

B. Trabant

C. Secondary constriction

D. Primary constriction

Answer: c

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11. Lateral loops of lampbrush chromosomes are thin in the

A. Middle

B. End

C. At places

D. Beginning

Answer:

Watch Video Solution

12. Chromomeres were discovered by

A. Flemming

B. Strasburger

C. Brown

D. Pfitzner.

Answer:

Watch Video Solution

13. L-shaped chromosomes are

A. Acentric

B. Isobrachial

C. Dicentric

D. Submetacentric

Answer:

Watch Video Solution

14. Synapsis of homologous chromosomes was first observed by

A. Johanssen

B. Montgomery

C. Remak

D. Paleviz et al.

Answer:

Watch Video Solution

15. Centriole/centrosome replication occurs in

A. $G_1 - \text{phase}$

B. S-phase

C. $G_2 - \text{phase}$

D. Early prophase.

Answer:

Watch Video Solution

16. Bouquet stage shows convergence of chromosomal ends towards centriole during

A. Metaphase I

B. Late prophase of mitosis

C. Leptotene

D. Zygotene

Answer:

Watch Video Solution

17. In bouquet stage the chromosomes converge at a point near

A. Golgi apparatus

B. Centrosome

C. Middle of nucleus

D. Roughly their middle.

Answer: B

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18. Leptotene chromosomes have

A. Two chromatids

B. One chromatid

C. Four chromatids

D. No chromatid.

Answer: A

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Brain Teasers Iii

1. Cell wall is absent in

A. Mycoplasma

B. Gametes

C. Animal cells

D. All the above

Answer: D

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2. A procaryote with linear DNA is

A. Chlamydia

B. Mycoplasma

C. Bacterium

D. Cyanobacterium

Answer: B

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3. Red colour of tomato is due to

A. Anthocyanin

B. β-carotene of chloroplasts

C. Lycopene of chloroplasts

D. Zeaxanthin.

Answer: C

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4. Beet root is coloured because of the presence of

A. Anthocyanin in cytoplasm

B. Anthocyanin in vacuole

C. Anthocyanin in chromoplasts

D. Carotenoids of chromoplasts.

Answer: B

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5. Idioblast is

A. A dissimilar cell with inclusions

B. A cell without inclusions

C. Cell inclusion

D. Cell organelle.

Answer: A

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6. Polished rice has less protein due to

A. Removal of aleurone layer

B. Denaturation of protein by polish

C. Heat treatment that causes destruction of proteins

D. Both B and C.

Answer: A

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7. The lagest normal metaphasic chromosome has a size of

A. $1\mu m$

B. $10\mu m$

C. $20\mu m$

D. $30\mu m$

Answer: D

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8. Maximum arm ratio is found in

A. Metacentric chromosome

B. Acrocentric chromosome

C. Telocentric chromosome

D. Submetacentric chromosome.

Answer: C

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9. Largest metaphasic chromosome is found in

A. Cuscuta

B. Onion

C. Trillium

D. Wheat.

Answer: C

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10. Parascaris possesses chromosome

A. Monocentric

B. Dicentric

C. Polycentric

D. Holocentric

Answer: C

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11. The term chromonema was coined by

A. Flemming

B. Strasburger

C. De Robertis

D. Vijdovsky.

Answer: D

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12. Non-genomic RNA takes part in

A. Transfer of hereditary information

B. Protein synthesis

C. Inhibition in operon

D. Induction in operon.

Answer: B

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13. Which one is non-genetic RNA

A. tRNA

B. rRNA

C. mRNA

D. All the above

Answer: D

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14. Which is the largest

A. tRNA

B. rRNA

C. mRNA

D. Both B and C.

Answer: B

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15. tRNA is soluble in

A. Water

B. 1 M sodium choride solution

C. 0.1 M sucrose solution

D. Alcohol

Answer: B

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16. The term amitosis was coined by

A. Flemming

B. Strasburger

C. Remak

D. Moore

Answer: A

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17. The longest stage of meiosis is

A. Zygotene

B. Diplotene

C. Pachytene

D. Diakinesis

Answer: B

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18. The first filming of live karyokinesis was carried out by

A. Michel

B. Moses

C. Abbe

D. Franklin

Answer: A

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19. Dolly is a product of

A. Genetic engineering

B. Animal cloning

C. Cell fusion

D. Gene therapy

Answer: B

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20. Which is the antithesis of meiosis

A. Mitosis

B. Amitosis

C. Budding and sporulation

D. Fertilization

Answer: D

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21. Chiasmata were first seen by

A. Janssen

B. Johannsen

C. Moses

D. Morgan

Answer: B

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22. Synaptonemal complex was first described by

A. Moses

B. Bowmann

C. Montgomery

D. Pfitzner.

Answer: A

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23. Dictyotene is

A. Movement of dictyosomes

B. Movement of chromosomes as in synapsis

C. Prolonged diplotene stage in oocytes

D. None of the above

Answer: C

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24. Dictyokinesis is

A. Production and segregation of chromosomes during mitosis

B. Breaking up of Golgi apparatus

C. Movement of chromosomes during karyokinesis

D. Breaking of nuclear envelope

Answer: B

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25. Ribozyme was discovered by

A. Altman et al

B. Cech et al

C. Lehninger

D. Buchner.

Answer: B

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26. Ribozyme is

A. Antibiotic

B. Hormone

C. Proteinaceous enzyme

D. RNA enzyme.

Answer: D

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27. Mitotic poison is

A. Nitrate

B. Carbon dioxide

C. Colchicine

D. Trehlose.

Answer: C

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28. Number of iron atoms present in haemoglobin molecule is

A. One

B. Two

C. Three

D. Four

Answer: D

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29. First, scientist to find out protein nature of enzyme was

A. Kuhne

B. Buchner

C. Sumner

D. Altman et al

Answer: C

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30. First scientist to find out amino acid sequence of a protein was

A. Sanger

B. Moses

C. Lehninger

D. Sumner

Answer: A

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31. Pitch of α-helix of a polypeptide is

A. 7.0 Å

B. 5.4 Å

C. 3.4 Å

D. 34 Å

Answer: B

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32. 1 pgm of DNA is about

A. 174 cm long

B. 31 cm long

C. 86 cm long

D. 11 cm long

Answer: B

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33. One of the possibilities of curing most of the dreaded diseases is

A. Gene replacement therapy

B. Stimulation of endorphins

C. Antisense therapy

D. Interpherons

Answer: C

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34. Artificial silk is a

A. Polysaccharide

B. Mucopolysaccharide

C. Lipoprotein

D. Protein

Answer: A

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35. Father of ATP cycle is

A. Galton

B. Berg

C. Lipman

D. Alec Jeffreys

Answer: C

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36. Hydroxyapatite constitutes

A. Bone

B. Cartilage

C. Teeth

D. Nails

Answer: C

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37. Birds, bees and bacteria are able to navigate their path with the help of

A. Brain

B. Hormones

C. Intuition

D. Magnetoreception

Answer: D

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38. The lowest melting point of an essential fatty acid is that of

A. Linoleic acid

B. Linolenic acid

C. Arachidonic acid

D. Both B and C.

Answer: C

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39. Melting point of arachidonic acid is

A. $13.4^\circ C$

B. $-5^\circ C$

C. $-11^\circ C$

D. $-49 \cdot 5^\circ C$

Answer: D

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40. Fatty acid arachidonic acid is

A. Monounsaturate

B. Biunsaturate

C. Triunsaturate

D. Tetra-unsaturate.

Answer: D

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41. Deficiency of essential fatty acids produces

A. Follicular hyperkeratosis

B. Kwashiorkor

C. Marasmus

D. Sicklemia

Answer: A

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42. Milk is

A. Deficient in some of the essential amino acids

B. Deficient in some of the essential fatty acids

C. Contains all the essential fatty acids but in low quantity

D. Full of all the food ingredients.

Answer: C

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43. Most abundant mineral of animal body is

A. Sodium

B. Calcium

C. Potassium

D. Iron

Answer: B

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44. Most abundant mineral of body fluid is

A. Sodium

B. Chloride

C. Potassium

D. Phosphate

Answer: A

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45. Most abundant mineral of cellular pool is

A. Calcium

B. Magnesium

C. Potassium

D. Chloride

Answer: C

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46. A polypeptide that regulates hunger is

A. Endorphin

B. Encephalin

C. Insulin

D. None of the above

Answer: A

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47. Endorphin is produced by

A. Pituitary

B. Hypothalamus

C. Medulla oblongata

D. Both A and B

Answer: D

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48. Endorphin release is stimulated by

A. Sleep

B. Endogenous rhythm

C. Exercise

D. Carotene-rich food

Answer: C

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49. Endorphin lowers perception of pain through

A. Reduction in nerve impulse transmission

B. Sedating pain receptors

C. Sedating pain perceptors

D. All the above

Answer: A

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50. Encephalins are

A. Carbohydrates

B. Fatty acids

C. Amino acids

D. Peptides

Answer: D

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51. Peptides produced by nerve cells of brain which overcome the feeling of pain are

A. Encephalins

B. Endorphins

C. Growth hormone

D. Insulin

Answer: A

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52. Diosgenin is

A. Saccharide

B. Steroid

C. Amino acids

D. Peptide

Answer: B

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53. Smallest human cells are

A. Leucocytes

B. Erythrocytes

C. Liver cells

D. Sperms.

Answer: B

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54. Tissue culture technique was first attempted by

A. Haberlandt

B. Laibach

C. White

D. Steward

Answer: C

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55. The simplest amino acid is

A. Glycine

B. Leucine

C. Lysine

D. Valine

Answer: A

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56. Cellophane is derived from

A. Plastic

B. Protein

C. Cellulose

D. Lipid

Answer: C

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57. Relation between structure and size of the body is

A. Anthropometry

B. Allometry

C. Biomechanics

D. Ethnography

Answer: B

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58. In addition to essential amino acids, children require two more amino acids in their diet. They are

A. Arginine and leucine

B. Histidine and valine

C. Arginine and phenylalnine

D. Arginine and histidine.

Answer: D

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59. The number of essential amino acids in adult human is

A. Nine

B. Five

C. Eight

D. Eleven

Answer: C

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60. Milk protein is used commercially in

A. Sizing for coating paper

B. Glues

C. Cosmetics

D. All the above

Answer: D

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61. tRNA was discovered by

A. Brenner and Jacob

B. Jacob and Monod

C. Hoagland and Zamecnick

D. Payen and Persoz.

Answer: C

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62. mRNA was discovered by

A. Brenner and Jacob

B. Jacob and Monod

C. Watson and Crick

D. Payen and Persoz.

Answer: A

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63. Specific odour of dead fish is due to

A. H_2S

B. Methyl amines

C. Amino acids

D. Alkaloids.

Answer: B

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64. Enzyme was first isolated by

A. Kuhne

B. Sumner

C. Payen and Persoz

D. Buchner.

Answer: C

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65. Number of erthyrocytes formed per hour is

A. 1 million

B. 90 million

C. 1000 million

D. 100 billion

Answer: D

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66. Energy value per gram of alcohol is

A. 4 kcal

B. 4.3 kcal

C. 9.3 kcal

D. 7.1 kcal.

Answer: D

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67. Chitin is

A. Insoluble in water

B. Resistant to acids and alkalies

C. Insoluble in most organic solvents

D. All the above

Answer: D

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68. Carbomethylchitosan is modified form of chitin which is

A. Non-toxic

B. Soluble and biodegradable

C. Both A and B

D. Extremely toxic and non-biodegradable.

Answer: C

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69. Apples coated with carbomethylchitosan remains fresh for

A. 1 month

B. 6 months

C. 1 year

D. 1 year and 6 months

Answer: B

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70. Heavy metals like nickel can be removed from water with the help of

A. Filtration

B. Carbomethylchitosan

C. Biological treatment

D. Ultrafiltration

Answer: B

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71. Enthalpy is

A. Energy of reaction

B. Tendency for loss of energy

C. Tendency for rendomess

D. Use of energy in overcoming entropy.

Answer: A

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72. Car wax is prepared from

A. Vegetable wax

B. Animal wax

C. Mineral wax

D. Mixture of B and C.

Answer: A

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73. Petrolatum is

A. Animal wax

B. Petroleum jelly

C. Hard paraffin wax

D. Vegetable wax.

Answer: B

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74. Sealing wax is

A. Vegetable wax

B. Hard paraffin wax

C. Shellac

D. Lanolin.

Answer: C

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75. Which is useful in human beings

A. Cholesterol

B. Animal fat

C. High density lipoprotein cholesterol

D. Low density lipoprotein cholesterol.

Answer: C

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76. Miximum amount of lactose is present in

A. Human milk

B. Cow's milk

C. Buffalo's milk

D. Goat's milk.

Answer: A

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77. Number of glucose residues present in each spiral turn of glycogen is

A. 4

B. 6

C. 8

D. 10

Answer: B

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78. A banned sweetener is

A. Saccharine

B. Acesulfame-K

C. Cyclamate

D. All the above

Answer: D

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79. Which one is a plant wax

A. Lanolin

B. Spermaceti

C. Carnauba

D. Petrolatum

Answer: C

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80. Spermaceti is

A. Sweetener

B. Animal wax

C. Mineral wax

D. Defensive protein

Answer: B

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81. The term microscope wax coined by

A. Janssens

B. Faber

C. Hooke

D. Leeuwenhoek

Answer: B

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82. Fluorescent dye bonded to monoclonal antibodies is used to locate particular

A. Cell proteins

B. Cells

C. Diseased parts

D. Organs of defence.

Answer: A

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83. Spectroscopy useful for gas analysis is

A. Absorption spectroscopy

B. Infra-red spectroscopy

C. Emission spectroscopy

D. Nuclear magnetic resonance spectroscopy

Answer: B

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84. Study of light absorption by chlorophyll is

A. Absorption spectroscopy

B. Infra-red spectroscopy

C. Nuclear magnetic resonance spectroscopy

D. Emission spectroscopy.

Answer: A

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85. Elements can be diagonsed by

A. Emission spectroscopy

B. NMR spectroscopy

C. Infra-red spectroscopy

D. Absorption spectroscopy

Answer: A

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