BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

CELL CYCLE AND CELL DIVISION

Section A Topicwise Questions Topic 1 Cell Cycle

1. The sequence of events by which a cell duplicates its genome, synthesises the other

constituents of the cell and eventually divides into two daughter cells is called

A. Cell division

B. Cell cycle

C. Karyokinesis

D. Cytokinesis

Answer: B

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2. A typical eukaryotic cell cycle is illustrated by

A. yeast

B. Bacteria

C. Human cells in culture

D. Both A and C

Answer: C

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3. In the 24 hour average of cell cycle of a human cell, cell division properly lasts for about

A. 23 hours

B. An hour

C. Half an hour

D. 90 minutes

Answer: B

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4. Of the total duration of cell cycle, the interphase lasts more than

A. $95\ \%$

B. $5\ \%$

C. $90\ \%$

D. $92\ \%$

Answer: A

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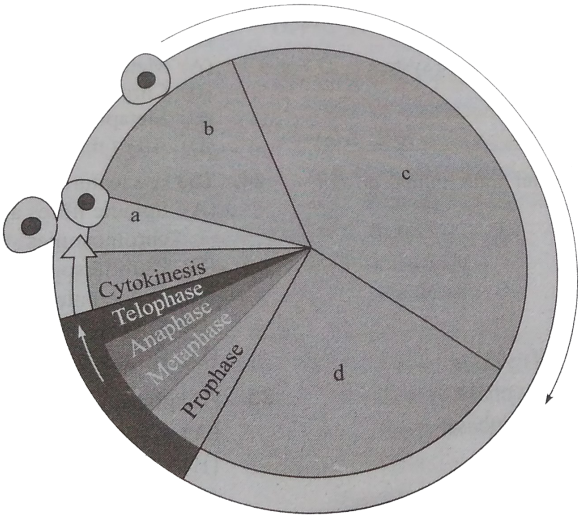
5. Recognise the figure and find out the correct matching



A. $a - G_1, b - S, c - G_2, d - M$

B. $a - G_1, b - S, c - G_2, d - G_0$

C. $a - M, b - G_1, c - S, d - G_2$

D. $a - G_0, b - G_1, c - S, d - G_2$

Answer: D

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6. The M phase starts the nuclear division, corresponding to the separation of daughter chromosomes called.....a..... And usually ends with division of cytoplasm called .....b.....

A. a-Cytokinesis, b-Karyokinesis

B. a-Interkinesis,b-Cytokinesis

C. a-Karyokinesis,b-Cytokinesis

D. a-Interkinesis,b-Karyokinesis

Answer: C

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

A. Gap $1/G_1$ phase

B. Gap $2/G_2$ phase

C. Synthesis/S phase

D. M phase

Answer: A

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8. 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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9. Centriole replicates during

A. Interphase

B. Early prophase

C. Late prophase

D. Late telophase

Answer: A

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10. G_1, S and G_2 are stages of

A. Interphase

B. Prophase

C. Metaphase

D. Anaphase

Answer: A

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11. 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 reduced end of its life span

Answer: A

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12. 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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13. Haploid complement of chromososme of an organism is

A. Genotype

B. Phenotype

C. Genome

D. Genetic system

Answer: C

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Section A Topicwise Questions Topic 2 Mitosis

1. Which of the following cells in an adult animal do not appear to exhibit division

A. Bone marrow cells

B. Upper layer of epiderms

C. Heart cells

D. All of the above

Answer: C

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2. The most dramatic period of the cell cycle is

A. M phase

B. G_1 phase

C. S phase

D. Interphase

Answer: A

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3. Prophase is marked by

A. Complete disintegration of nuclear membrane

B. Disappearance of ER, GB , nucleolus and nuclear envelope

C. Initiation of condensation of chromosomal material

D. Chromosomes aligns at the equatorial plate

Answer: B

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4. Starting of metaphase is marked by

A. Complete disintegration of nuclear membrane

B. Disappearance of ER, GB , nucleolus and nuclear envelope

C. Initiation of condensation of chromosomal material

D. Chromosomes aligns at the equatorial plate

Answer: A

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5. End of prophase is marked by

A. Complete disintegration of nuclear membrane

B. Disppearance of ER, GB , nucleolus and nuclear envelope

C. Initiated of condensation of chromosomal material

D. Chromosomes aligns at the equatorial plate

Answer: B

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6. The completion of prophase can be marked by

A. Chromosomal material condenses to form compact mitotic chromosomes

B. Initiation of condensation of chromosomal material

C. Initiation of the assembly of mitotic spindle

D. Both A and C

Answer: D

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7. Which of the following proteinaceous components of the cell cytoplasm help in the initation of the assembly of mitotic spindle ?

A. Microtubules

B. Microbodies

C. Centromeres

D. Kinetochores

Answer: A

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8. The centrioles begins to move towards opposite poles of the cell in

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: A

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9. By this stage, condensation of chromosome is completed. Mark this stage as

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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10. The plane of alignment of the chromosines at metaphase is refferred to as the

A. Metaphasic alignment

B. Chromosome aligment

C. Metaphase plate(equatorial plate)

D. All of the above

Answer: C

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11. The key feature(s) of metaphase is/are

A. Spindle fibres attach to kinetochores of chromosomes

B. Chromosome are moved to spindle equator and get align along metaphase plate

C. Splitting of centromere

D. Both A and B

Answer: D

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12. Anaphase stage is characterised by

A. Centromeres split and chromatids separate

B. Chromatids move to opposite poles

C. Nucleolus, GB and ER reform

D. Both A and B

Answer: D

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13. In which stage, the chromosomes that have reached their respective poles decondense and lose their individuality

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: D

14. Telophase is characterised by

A. Chromosomes cluster at opposite spindle poles and their identity is lost as

discrete elements

B. Nuclear envelope assembles around the chromosome clusters

C. Nucleolus, Golgi complex and ER reform

D. All of the above

Answer: D

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15. Read the following statements and find out the incorrect statement.

A. In an animal cell, cytokinesis is achieved by the appearance of a furrow in the plasma membrane.

B. Furrow formation starts in the centre of cell and grows outward to meet the existing lateral walls

C. Cell plate represents the middle lamella between the walls of two adjacent plant cell.

D. During cytokinesis , organelles like mitochondria and plastids get distributed between the two daughter cells.

Answer: B

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16. Multinucleated condition arises due to karyokinesis is not followed by cytokinesis , is called

A. Syncytium

B. Coenocytic

C. Synkaryon

D. Coenozoic

Answer: A

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17. Syncytium is seen in

A. Phycomycetous fungi

B. Ascomycetous fungi

C. Liquid endosperm of coconut

D. Mamalian RBCs

Answer: C

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18. What is the significance of mitosis

A. Growth

B. Repair

C. Replacement

D. All of the above

Answer: D

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19. A very significant contribution of mitosis is cell repair. Repairing takes place in our body in

A. Blood cell

B. Upper layer of epidermis

C. Cells of the lining of the gut

D. All of the above

Answer: D

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

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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21. Shape of chromosome can be best observed during

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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22. 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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23. Major event that occur during anaphase of mitosis which brings about 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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24. Chromosomes are least condensed during

A. Telophase

B. Interphase

C. Metaphase

D. Anaphase

Answer: B

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25. Centromere is required for

A. Crossing over

B. Transcription

C. Cytoplasmic cleavage

D. Movement of chromosomes towards poles

Answer: D

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26. Which of the phase is the longest?

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: A

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27. In mitosis ,centromere divides during

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: C

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28. In plant cells, cytokinesis occurs by

A. Cell plate

B. Invagination

C. Furrowing

D. All of the above

Answer: A

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29. Cytokinesis is

A. Division of nucleus

B. Division of chromosomes

C. Division of cytoplasm

D. None of above

Answer: C

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30. What is the proper sequence in mitosis?

A. Metaphase,Telophase,Prophase,Anaphase

B. Prophase,Metaphase,Anaphase,Telophase

C. Anaphase,Metaphase,Telophase,Prophase

D. Telophase,Anaphase,Telophase,Prophase

Answer: B

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Section A Topicwise Questions Topic 3 Meiosis

1. Prophase -I is subdivided into five phases based on

A. chromosomal movement

B. chromosomal alignment

C. chromosomal behaviour

D. chromosomal structure

Answer: C

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2. Shape of chiasmata is

A. C-Shaped

B. X-Shaped

C. Y-Shaped

D. U-Shaped

Answer: B

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3. The beginning of diplotene is recognised by the

A. Dissolution of the synaptonemal complex

B. Tendency of the recombined homologous chromosomes of the bivalents to separate from each other

C. Meiotic spindle is assembled

D. Both A and B

Answer: D

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4. The stages through which a cell passes from one division to the next is called

A. cell divison

B. cell cycle

C. karyokinesis

D. Cytokinesis

Answer: B

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5. Most of the organelle duplication occur during

A. M-Phase

B. Interphase

C. Interkinesis

D. Cytokinesis

Answer: B

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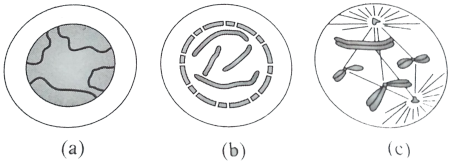
6. Recognise the figure and find out the correct matching



A. a-Early prophase,b-late prophase,c-transition to metaphase

B. b-Early prophase,c-late prophase,a-transition to metaphase

C. c-Early prophase,a-late prophase,b-transition to metaphase

D. b-Early prophase,a-late prophase,c-transition to metaphase

Answer: A

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7. Non -sister chromatids exchange segments during

A. Leptotene

B. Diplotene

C. Zygotene

D. Pachytene

Answer: D

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8. Recombination involves

A. crossing over

B. chromosome duplication

C. spindle formation

D. cytokinesis

Answer: A

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9. 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 bivalent

C. Homologous chromosomes behave independentely

D. Chromatids are seperated during anaphase

Answer: C

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

A. Panchytene

B. Leptotene

C. Diplotine

D. Zygotine

Answer: A

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11. In which stage of meiosis crossing over takes place

A. Prophase

B. Metaphase

C. Anaphase

D. Prophase I

Answer: D

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12. homologous chromosomes seperates during

A. Metaphase I

B. Anaphase I

C. Metaphase II

D. Anaphase II

Answer: B

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13. Microtubules from opposite poles of spindle get attached to kinotochores of sister chromatids during

A. Anaphase II

B. Prophase II

C. Metaphase II

D. Metaphase I

Answer: C

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14. Exchange of segments between non -sister chromatids of homologous chromosomes is

A. crossing over

B. transolation

C. linkage

D. inversion

Answer: A

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15. In meiosis, synapsis occurs during

A. S -Phase

B. Interphase

C. Leptophase

D. Prophase

Answer: D

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16. Meiosis involves

A. Two nuclear division and one chromosomal division

B. One nuclear division and two chromosomal divisions

C. Two nuclear division and two chromosomal divisions

D. One nuclear division and one chromosomal division

Answer: A

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17. In which stage of meiosis the structure, number and shape of chromosomes can be observed

A. Prophase I

B. Metaphase I

C. Anaphase I

D. Telophase I

Answer: B

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18. 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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19. At what stage does the number of chromosomes become half ?

A. Prophase I

B. Metaphase I

C. anaphase I

D. Telophase I

Answer: C

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20. When synapsis is complete all along the chromosomes, the cell is said to have entered a stage called

A. Diakinesis

B. Diplotene

C. Pachytene

D. zygotene

Answer: C

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21. 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 become halfed

Answer: D

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22. Chromosome number is restored by

A. meiosis

B. mitosis

C. crossing over

D. interphase

Answer: B

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23. In meiosis, the centromere divides during

A. prophase I

B. metaphase I

C. anaphase I

D. anaphase II

Answer: D

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24. Variations appear during meiosis due to

A. independent assortment

B. crossing over

C. both A and B

D. linkages

Answer: C

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25. Stages in proper sequence of prophase I are

A. zygotene ,leptotene,diakinesis, and diplotene

B. leptotene,zygotene,pachytene and diakinesis

C. liptotene,pachytene ,zygotene ,diakinesis and diplotene

D. diplotene,diakinesis ,pachytene,zygotene and leptotene.

Answer: B

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26. Recombinant nodules are found during which of the following

A. anaphase

B. metaphase

C. prophase

D. telophase

Answer: C

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

A. mitosis

B. meiosis

C. splicing

D. metamorphosis

Answer: B

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28. Terminalisation occurs during

A. mitosis

B. diakinesis

C. meiosis II

D. cytokinesis

Answer: B

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29. 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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30. Meiosis II performs

A. seperation of sex chromosomes

B. synthesis of DNA and centromere

C. seperation of homologous chromosomes

D. seperation of chromatids

Answer: D

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31. Poleward movement of dyads occurs during

A. anaphase

B. Anaphase I

C. anaphase II

D. telophase

Answer: B

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Section B Assertion Reasoning Questions

1. Assertion: The duration of cell cycle can vary from organism to organism and also from cell

type to cell type

Reason: Human cells in culture divided once in approximately 24 hours.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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2. Assertion: The M phase represents the phase when the actual cell division occurs

Reason: Interphase represents the phase between two successive M phase.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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3. Assertion: In plant cells, during S-phase, DNA replication begins in the nucleus, and the centriole duplicates in the cytoplasm.

Reason: If the initial amount of DNA is denoted as 2n in G_1 even after S-phase the amount of DNA remains the same i.e., 2n.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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4. Assertion: Mitotic cell division is also called equatoral division.

Number of chromosomes in the parent and progeny cells is the same in mitosis

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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5. Assertion:In animals,mitotic cell division is only seen in the diploid somatic cells.

Reason: The plants can show mitosis divisions in both haploid and diplois cells.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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6. Assertion:Mitotic divisions results in a continous grouth of plants throughout their life.

Reason: Plants have meristematic tissue-the apical and lateral cambium.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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7. Assertion:Meiosis ensures the production of haploid phase in the lifecycle of sexually reproducing organisms.

Fertilisation restores th diploid phase.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

8. Assertion:Meiosis causes variations in population from one generation to the next. Variations are very important for the process of evolution.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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Section D Chapter End Test

1. Synaptonemal complex is formed during

A. Leptotene

B. Pachytene

C. Diakinesis

D. Zygotene

Answer: D

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2. A bivalent of meiosis i consists of

A. Four chromatids and two centromeres

B. Two chromatids and one centromeres

C. Two chromatids and two centromeres

D. Four chromatids and four centromeres

Answer: A

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3. On treatment with colchicine a diplod cell transforms

A. Haploid

B. Diploid

C. Triploid

D. Tetraploid

Answer: D

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4. DNA replication takes place at _____ phase the cell cycle.

A. G_1

B. S

C. G_2

D. M

Answer: B

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5. Spindle fibres are formed of

A. Tubulin

B. Fibrin

C. Flagellin

D. Actin

Answer: A

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

" "

The filaments associated with cilia and flagella are constituted by

A. Mirofilaments

B. Microtubles

C. Golgi apparatus

D. Endoplasmic reticulum

Answer: B

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7. Four phases of cell cycle are

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

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

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

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

Answer: A

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8. The term synaptonemal complex refers to site of

A. Spindle attachment

B. Replication

C. Chromatid separation

D. Chromosome aligment and recombination

Answer: D

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9. Division of cytoplasm after completion of nuclear division is celled

A. Cytokinesis

B. Cytomixis

C. Karyokinesis

D. Apomixis

Answer: A

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10. Crossing over takes place in

A. Mitotic cell

B. Meiotic cell

C. Mutating cell

D. Amitotic cell

Answer: B

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11. When does pairing/synapsis of homologous chromosomes (bivalent formation) occur in meiosis

A. Diplotene

B. Pachytene

C. Zygotene

D. Leptotene

Answer: C

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12. In which stage the chromosomes appear thin and long thread-like

A. Zygotene

B. Leptotene

C. Pachytene

D. Prophase

Answer: B

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13. What is the stage of mitosis when chromosomes separate and move towards poles ?

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: C

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

A. Zygotene

B. Diplotene

C. Pachytene

D. Diakinesis

Answer: B

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15. Chiasmata are first seen in

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: D

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16. In meiosis

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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17. Chromosomes appear beaded during

A. Pachytene

B. Leptotene

C. Diakinesis

D. Diplotene

Answer: B

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

A. 7,14,14

B. 14,14,14

C. 14,14,7

D. 7,7,7

Answer: B

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19. Which is correct for meiotic cell cycle ?

A. $S...G_1...G_2...M...S$

B. $G_2...G_1...S...M...G_2$

C. $G_1...G_2...S...M...G_2$

D. $G_1...S...G_2...M...G_1$

Answer: D

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20. 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

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21. 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

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22. Cell plate is formed during

A. Interphase

B. Karyokinesis

C. Cytokinesis

D. Interkinesis

Answer: C

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23. 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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24. Chemical for arresting cell division is extracted from

A. Crocus

B. Colchicum

C. Chrysanthemum

D. Dalbergia

Answer: B

25. A diploid living organism develops from zygote by repeated

A. meiosis

B. mitosis

C. Amitosis

D. Segmentation

Answer: B

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26. Histone protein synthesis occurs during

A. G_1-phase

B. G_2-Phase

C. S-phase

D. Prophase

Answer: C

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27. Which one amoung the following 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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28. What is the requirement of equational division in meiosis

A. Formation of four gametes

B. Segretation of replication chromosomes

C. Equal distribution of halpoid chromosomes

D. Equal distributed of genes on chromosomes

Answer: B

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29. '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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30. 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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31. Four daughter cells formed after meiosis are

A. Anucleate

B. Polynucleate

C. Genetically dissimilar

D. Genetically similar

Answer: C

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32. The term meiosis was coined by

A. Farmer and Moore

B. Flemming

C. Blackman

D. Robertson

Answer: A

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33. Cell division is initiated by

A. Cytokinin

B. Auxin

C. Gibberellin

D. ABA

Answer: A

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34. 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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35. Significance of meiosis in

A. Production of genetic variability

B. Maintaining constancy of chromosome number during sexual reproduction

C. Reduction of chromosome number to one half

D. All of the above

Answer: D

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36. Crossing over results in

A. Segregation of alleles

B. Dominance of alleles

C. Recombination of linked alleles

D. Linkage between genes

Answer: C

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37. The second division in meiosis is called

A. Reductional division

B. Multiplied division

C. Equational division

D. None of the above

Answer: C

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38. Spindle fibres arise from

A. Centriole

B. Centromere

C. Nucleus

D. Mitochondria

Answer: A

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39. Number of mitotic divisions required to produce 128 cells from a single cell is

A. 7

B. 14

C. 16

D. 32

Answer: A

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40. Exchange of paternal and maternal chromosome material during cell division is

A. Dyad formation

B. Bivalent formation

C. Crossing over

D. Synapsis

Answer: C

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41. 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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42. 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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43. Meiosis is evolutionary significant because it results in

A. Genetically similar daughters

B. Four daughter cells

C. Eggs and sperms

D. Recombinations

Answer: D

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44. Meiosis was discovered by

A. Strassburger

B. Hofmeister

C. Sutton

D. Amici

Answer: C

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45. Zygotic meiosis occurs in

A. Pinus

B. Marchanita

C. Chlamydomonas

D. Dryopteris

Answer: C

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46. Segregation of mendelian factors (As) occurs during

A. Diplotene

B. Anaphase I

C. Zygotene/Pachytene

D. Anaphase II

Answer: B

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47. Number of chromatids per chromosome 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: B

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48. 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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49. Mitotic stages are not observed in

A. Saccharomyces

B. E.coli

C. Cosmarium

D. Chlorella

Answer: B

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50. Meiosis is

A. Equational

B. Reductional

C. Double division

D. All the above

Answer: D

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Others

1. Synapsis occurs between

A. spindle fibres and centromeres

B. Mrna and ribosomes

C. a male and female gametes

D. two homologous chromosomes

Answer: D

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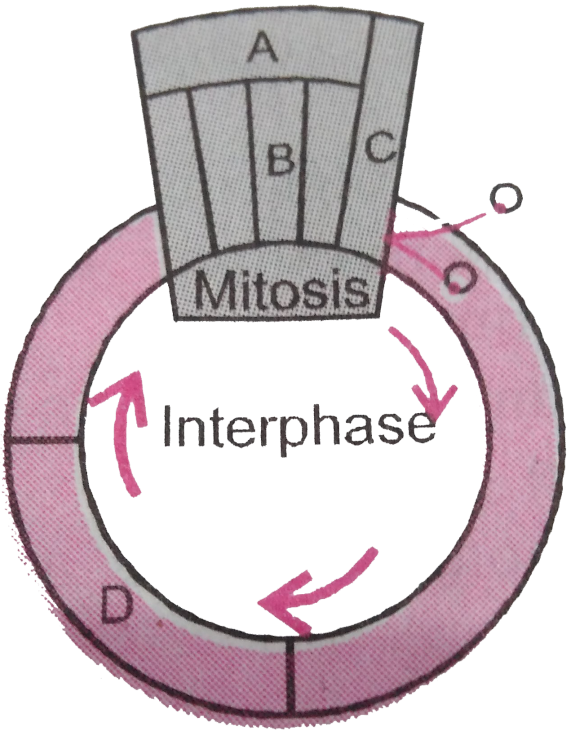
2. Given below is schematic break-up of phases of cell cycle. Which one is correct matching ?



A. A-cytokinesis

B. B-Metaphase

C. C-Karyokinesis

D. D-Synthetic phase

Answer: D

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3. During cell cycle, RNA and protein are synthesised in

A. S-phase

B. G_1-phase

C. G_2-phase

D. Both A and B

Answer: B

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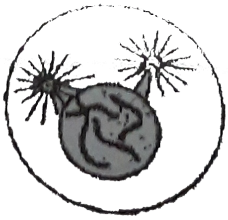
4. Which stages of cell division do the following figures A and B represent respectively

A



B

A. telophase-metaphase

B. late anaphase-prophase

C. Prophase-Anaphase

D. Metaphase-Telophase

Answer: B

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5. 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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6. DNA/chromosome replication or chromatid formation takes place during

A. G_1-phase

B. G_2-Phase

C. S-phase

D. Prophase

Answer: C

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7. 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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8. Crossing over requires an anzyme

A. Recombinase

B. Ligase

C. Polymerase

D. Endonuclease

Answer: A

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9. Select the corret matches

(a) S-phase - DNA replication

(b) Zygotene - Synapsis

(c) Diplotene - Crossing over

(d) Meiosis - Both haploid and diploid cells

(e)Gap 2 phase - Quiescent stage

A. a and b

B. c and d

C. c and e

D. a, c and e

Answer: A

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10. 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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11. 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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12. Spindle fibres are attached to chromosomes in the region of

A. Centrosome

B. Chromomere

C. Chromonema

D. Kinetochore

Answer: D

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13. Longest phase of meiosis is

A. Prophase I

B. Prophase II

C. Anaphase I

D. Metaphase II

Answer: A

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14. Which stage connecting link between Meiosis 1 and Meiosis II

A. Interphase I

B. Interphase II

C. Interkinesis

D. Anaphase I

Answer: C

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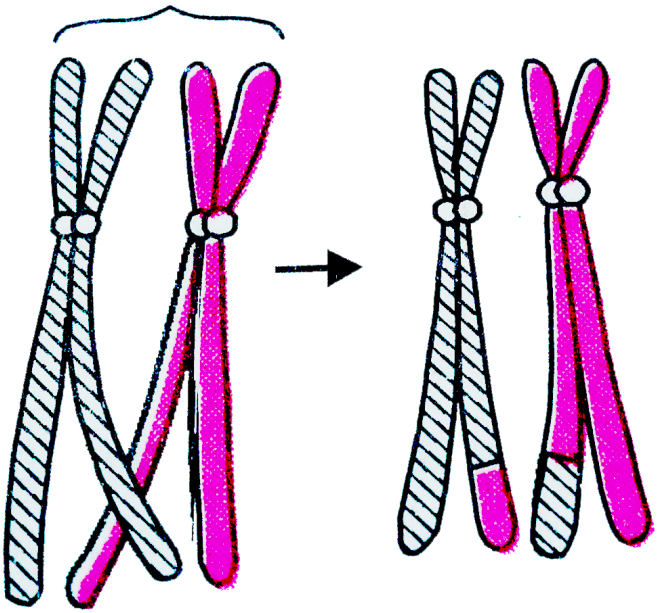
15. The given figure represents



A. Prophase I

B. Prophase II

C. Prophase of mitosis

D. Prophase and metaphase of mitosis

Answer: A

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16. Identify the meiotic sage 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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17. Yeast cell 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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18. 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. a,d correct

C. b,e correct

D. b,c correct

Answer: C

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19. Which is not characteristic of telophase

1. Chromatin condenses to form chromosomes.

2. Nucleolus, Golgi comlex and ER reform

3. Nuclear envelopes assemble around chromosome clusters

4. Centromeres split and chromatids separate

5. Chromosome clusters and their identity is lost.

A. 1,2,4 only

B. 1,4 only

C. 2,3 only

D. 3,4,5 only

Answer: B

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20. 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: B

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21. What is incorrect about G_0

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

A. a-Chromonema,b-Chromatin,c-Metaphase

B. a-Chromatin,b-chromatid,c-Metaphase

C. a-Chromonema,b-Chromosome,c-Anphase

D. a-Chromonema,b-Chromatids,c-Anaphase

Answer: A

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23. Colchicine interferes with cell division because of

A. Splitting of chromosomes

B. Non-pairing of chromosomes

C. Double replication of chromosomes

D. Non-formation of spindle

Answer: D

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

A. Bivalent

B. Axoneme

C. Equatorial plate

D. kinetochore

Answer: A

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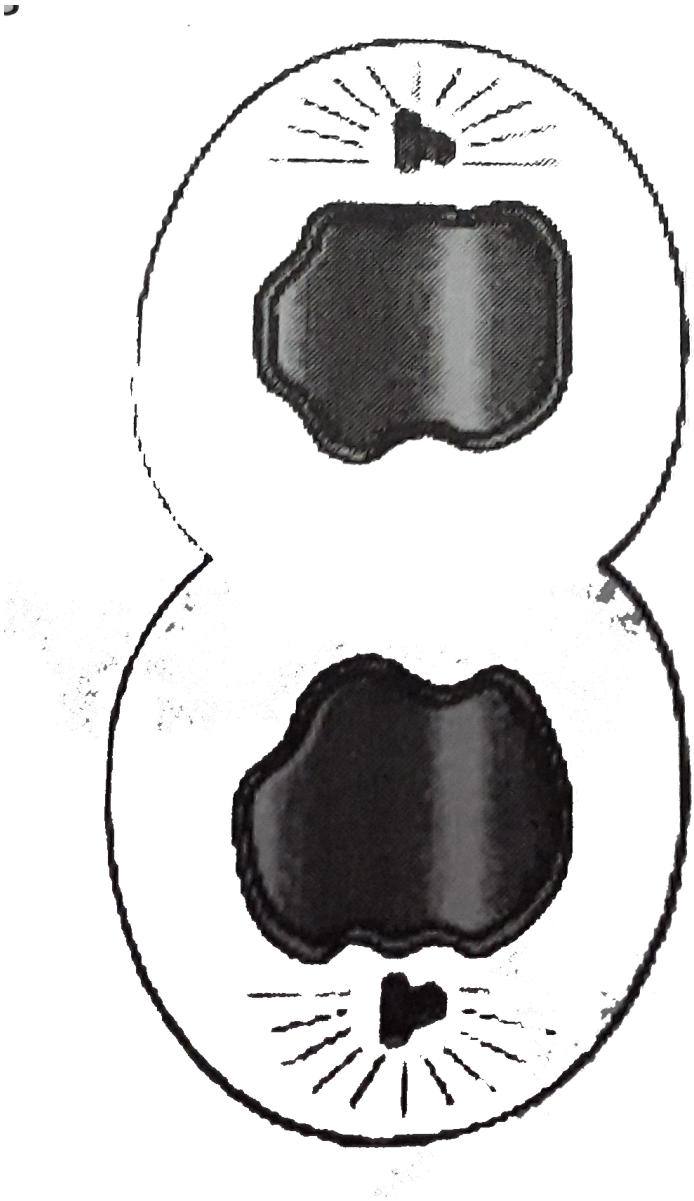
25. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its

chracteristics



A. Cytokinesis Cell plate formed , mitochondria distributed between two daughter cells

B. Telophase Endoplasmic reticular and nucleolus not reformed yet

C. Telophase Nuclear envelope reforms, Golgi complex reforms

D. Late anaphase Chromosomes move away from equatorial plate, Golgi complex not present

Answer: C

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26. During meiosis I , the chromosomes start pairing at

A. Zygotene

B. Pachytene

C. Diplotene

D. Leptotene

Answer: A

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27. During the metaphase stage of mitosis, spindle fibres attach to chromosomes at

A. Kinetochore

B. Both centromere and kinetochore

C. Centromere, kinetochore and adjoining centromere

D. Centromere

Answer: A

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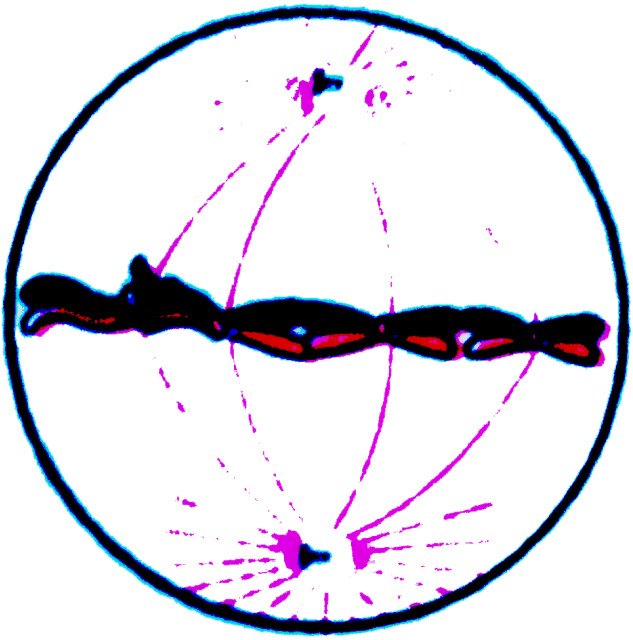
28. Identify the stage of mitosis with its characteristics



A. Metaphase-Spindle fibres attached to kinetochores, centromeres split an chromatids separate

B. Metaphase-Chromosomes moved to spindle equator, chromosomes made up

of two sister chromatids

C. Anaphase -Centromeres split and chromatids separate and start moving away

D. Late prophase-Chormosomes move to spindle equator

Answer: B

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29. In onion root tip during metaphase stage of mitosis the number of kinetochores will be

A. 4

B. 8

C. 16

D. 32

Answer: D

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

A. G_1 and G_2 phase

B. G_0 Phase

C. S, G_2 and M phase

D. S phase

Answer: D

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31. Interval between two successive cell divisions is called

A. Cell-cycle

B. Interphase

C. S-phase

D. Interkinesis

Answer: B

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32. A bacteria divides in every one minute. A cup is filled in one hour. Time taken to fill one-fourth cup is

A. 30 Minutes

B. 59 minutes

C. 29 minutes

D. 58 minutes

Answer: D

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33. Which of the following is not the characteristic of prophase-I ?

A. Synapsis

B. Segregation

C. crossing over

D. Chiasmata formation

Answer: B

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34. Centromere split in which stage of cell division

A. Anaphase

B. Telophase

C. prophase

D. Metaphase

Answer: A

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35. In 'S' phase of the cell cycle

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

B. Amount of DNA doubles in each cell

C. Amount of DNA remains same in each cell

D. Chromosome number is increased

Answer: B

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

A. G_2 and M

B. G_0 and G_1

C. G_1 and S

D. Only G_2

Answer: A

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

A. Diakinesis

B. Pachytene

C. Zygotene

D. Diplotene

Answer: B

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38. In meiotic division, crossing over takes place during

A. Leptotene

B. Diplotene

C. Zygotene

D. Pachytene

Answer: D

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

A. Kinetochore

B. Bivalent

C. Axoneme

D. Equatorial plate

Answer: B

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40. The centromere or primary constriction of the cromosome contains ring of protein that are intimately associated with a spindle fibre. These ring are called

A. Cenrioles

B. Secondary constrictions

C. Asters

D. Kinetochores

Answer: D

41. Spindle fibres of a mitotic cell consists of

A. Actin

B. Fibrin

C. Collagen

D. Tubulin

Answer: D

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42. Which of the following processes takes place during pachytene stage of meiosis?

A. Apperaance of recombination nodules

B. Formation of synaptonemal complexes

C. Dissolution of synaptonemal complexes

D. Terminalisation of chiasmata

Answer: A

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43. In ‘S phase’, the amount of DNA

A. As well as number of chromososmes doubles in each cell

B. Doubles but number of chromosomes remains same in each cell

C. And number of chromosomes remain unchanged in each cell, but amount of protein doubles

D. Remains same in each cell but number of chromosomes doubles

Answer: B

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44. Arrange the following events of meiosis in correct sequence

(a) Crossing over

(b) Synapsis

(c)Terminalisation of chiasmata

(d) Disappearance of nucleolus.

A. (ii),(i),(iii),(iv)

B. (i),(ii),(iii),(iv)

C. (ii),(iii),(iv),(i)

D. (ii),(i),(iv),(iii)

Answer: A

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

A. Twice the number of chromosomes and four times the amount of DNA

B. Four the number of chromosomes and twice the amount of DNA

C. Twice the number of chromosomes and twice the amount of DNA

D. Same number of chromosomes and twice the amount of DNA

Answer: A

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46. Select the correct option . ltbr gt

Column I	Column II
(a) Synapsis	(i) Anaphase II
(b) Synthesis of RNA and protein	(ii) Zygotene
(c) Action of enzyme recombinase	(iii) G_2 phase
(d) Centromeres do not separate but chromatids move towards opposite poles	(iv) Anaphase I
	(v) Pachytene

A. a-(i),b(ii),c-(v),d-(iv)

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

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

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

Answer: D

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47. Spindle fibers attach on to

A. Telomere of the chromosome

B. Kinetochore of the chromosome

C. Centromere of the chromosome

D. Kinetosome of the chromosome

Answer: B

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48. In meiosis crossing over is initiated at

A. Pachytene

B. Leptotene

C. Zygotene

D. Diplotene

Answer: A

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

A. Spindle fibres

B. Disappearance of nucleolus

C. Chromosome movement

D. Synapsis

Answer: D

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

A. M

B. Both G_2/M and M

C. G_1 / S

D. G_2 / M

Answer: D

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51. Which of the following option gives the correct sequence of events during mitosis

A. Condensation $\rightarrow$ nuclear membrane disassembly $\rightarrow$ arrangement at equator $\rightarrow$ centromere division $\rightarrow$ segregation $\rightarrow$ telephase

B. Condensation $\rightarrow$ crossing over $\rightarrow$ nuclear membrane disassembly $\rightarrow$ segregation $\rightarrow$ telephase

C. Condensation $\rightarrow$ arrangement at equator $\rightarrow$ centromere division $\rightarrow$ segregation $\rightarrow$ telephase

D. Condensation $\rightarrow$ nuclear membrane disassembly $\rightarrow$ crossing over $\rightarrow$ segregation $\rightarrow$ telephase

Answer: A

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52. 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 be fragmented

B. Chromosomes will not segregate

C. Recombination of chromosome arms will occur

D. Chromosomes will not condense

Answer: B

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53. The stage during which separation of the paired homologous chromosomes begin is

A. Pachytene

B. Diplotene

C. Diakinesis

D. Zygotene

Answer: B

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54. When synapsis is complete all along the chromosomes, the cell is said to have entered a stage called

A. Zygotene

B. Pachytene

C. diplotene

D. diakinsis

Answer: B

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55. Which one of the following precedes re-formation of the nuclear envelope during M phase of the cell cycle.

A. Decomdensation from chromosomes and reassembly of the nuclear lamina

B. Transcription from chromosomes and reassembly of the nuclear lamina

C. Formation of the contractile ring and formation of the phragmoplast

D. Formation of the contractile ring and transcription from chromosomes

Answer: D

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56. During which stages (or prophase I substacne) of meiosis do you expect to find

the bivalents and DNA replication respectively ?

A. Pachytene and interphase (between two meiotic divisions)

B. Pachytene and interphase (just prior to prophase I)

C. Pachytene and S phase (of interphase just prior to prophase I)

D. Zygotene and S shape (of interphase prior to prophase I)

Answer: D

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57. Which chromosome may lost during cell division ?

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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58. The stage of meiosis where centromere separate

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

View Text Solution

59. During meiosis I , the chromosomes start pairing at

A. Zygotene

B. Pachytene

C. Diplotene

D. Leptotene

Answer: B

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60. Assertion: Meiosis II is known as equational or homotypic division.

Reason: Meiosis II produces same number of chromosome in cell.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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61. Assertion: Interphase is resting stage.

Reason: The interphase cell is metabolically inactive.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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62. Assertion: During zygotene, chromosmes show bivalent stage.

Reason: Bivalent is half the number of chromosomes

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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63. Assertion: G_1 -phase is also called anaphase , as during this phase the cell stores ATP for cell division.

Reason: Cell produce structural and functional proteins. Cell's metabolic rate is high and is controlled by the enzymes,

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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