BIOLOGY

BOOKS - MTG BIOLOGY (ENGLISH)

CELL CYCLE AND CELL DIVISION

Cell Cycle

1. Amitosis usually occurs in

A. eukaryotic cells

B. prokaryotic cells

C. meristems

D. spore mother cells.

Answer: B

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

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

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

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

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

Answer: C

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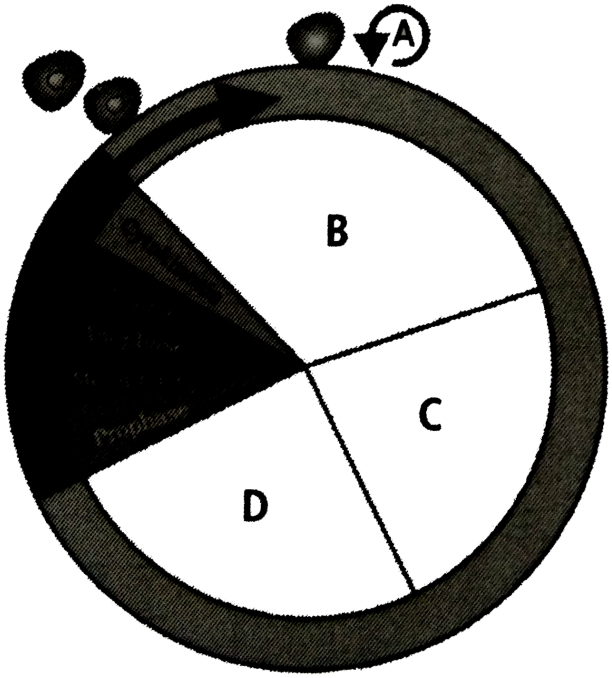
3. Identify A,B,C and D in the given diagram depicting cell cycle and select the correct option.



A. $\begin{matrix} A & B & C & D \\ G_0 & G_1 & S & G_2 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ G_1 & S & G_2 & G_0 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ G_1 & G_0 & S & G_2 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ S & G_0 & G_1 & G_2 \end{matrix}$

Answer: A

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4. Yeast cell divide once in approximately every

A. 90 minutes

B. 9 minutes

C. 24 hours

D. 24 secodns.

Answer: A

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5. Human cells in culture show a cell cycle to be completed in approximately.

A. 42 hours

B. 24 hours

C. 24 minutes

D. 24 seconds.

Answer: B

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6. Which phase occupies the maximum part of cell cycle?

A. Mitrotic phase

B. Meiotic phase

C. Interphase

D. Cytokinesis

Answer: C

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7. This phase of cell cycle is a period of intense synthesis and growth. It constitutes 95% of the duration of cell cycle. It is

A. interphase

B. telophase

C. prophase

D. anaphase.

Answer: A

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8. Read the following statements about cell division and select the correct ones.

(i) M phase represents the phase when actual cell division occurs and I phase represetns the phase between two successive M phases.

(ii) In the 24 hours average duration of cell cycle of a human cell, cell division proper lasts for only about an hour.

(iii) M phase constitutes more than 95% of the duration of cell cycle.

A. i and ii

B. ii and iii

C. i and iii

D. i,ii and iii

Answer: A

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9. Which of the following phases of the cell cycle is not a part of interphase?

A. S

B. G_1

C. G_0

D. M

Answer: D

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10. A cell cycle includes

A. interphase and M phase

B. prophase, metaphase, anaphase and telophase

C. G_1, S and G_2 phases

D. Karyokinesis and cytokinesis.

Answer: A

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11. In which stage DNA replication takes place ?

A. Metaphase

B. G_1 phase

C. S-phase

D. G_2 phase

Answer: C

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12. Synthesis of histone proteins occurs in

A. G_1 phase

B. interphase

C. anaphase

D. G_0 phase.

Answer: B

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13. Select the incorrect statement regarding S phase of interphase.

A. It occurs between G_1 and G_2

B. DNA replicates in the nucleus in this phase.

C. Centrioles duplicate in the cytoplasm.

D. As DNA doubled, number of chromosomes also doubles.

Answer: D

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14. The DNA content of individual cells and the number of cells in each phase of a cell cycle" can be determined using flow cytometry. Which of the following combinations of "phase of a cell cycle and its corresponding DNA content" can be considered

normal?

(i) Diploid cells found in the G_0 or G_1 phase.

(ii) Cells with twice the normal DNA content in the early M phase.

(iii) Cells with twice the normal DNA content in the G_2 phase.

A. i and ii

B. ii and iii

C. iii and iv

D. i,ii,iii and iv

Answer: D

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15. Cell would normally proceed to mitosis without interruption

A. once it has entered the S phase

B. once it has entered the G_2 phase

C. at any time during cell division activity

D. none of these

Answer: A

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

A. M stage

B. G_2 stage

C. S stage

D. G_0 stage

Answer: D

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17. Which of the following statements is correct ?

A. Animals can sow mitotic divisions in both haploid and diploid cells.

B. After S phase the number of chromosomes becomes double i.e., 2n to 4n.

C. During the G_2 phase, proteins are synthesised in preparation for mitosis while cell growth continues.

D. S or synthesis phase marks the period during which RNA synthesis takes place.

Answer: C

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18. In which of the following stages, a choromosome is minimum coiled?

A. interphase

B. Metaphase

C. Prophase

D. anaphase.

Answer: A

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19. Which of the following statements is correct regarding G_0 phase?

A. Mitogens are present in G_0 phase.

B. Mitogens are present but energy rich compounds are absent.

C. Both mitogens and energy rich compounds are present.

D. Neither mitogens nor energy rich compounds are present.

Answer: D

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1. Best material for studying mitosis in laboratory is

A. (a) leaf tip

B. (b) shoot tip

C. (c) root tip

D. (d) gamete

Answer: C

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2. Mitotic spindle is mainly composed of __ proteins.

A. tublin

B. myosin

C. actin

D. actomyosin

Answer: A

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3. Microtubules are absent in

A. mitochondria

B. flagella

C. spindle fibres

D. centriole.

Answer: A

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4. Centrosome undergo duplication during (i) of (ii) and begin to move towards opposite poles of the cell during (iii) state of (iv).

A. $\begin{matrix}(\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iii}) & (\mathrm{iv}) \\ \mathrm{S\ phase} & \mathrm{Interphase} & \mathrm{Prophase} & \mathrm{Mitosis}\end{matrix}$

B. $\begin{matrix}(\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iii}) & (\mathrm{iv}) \\ \mathrm{S\ phase} & \mathrm{Interphase} & \mathrm{Anaphase} & \mathrm{Mitosis}\end{matrix}$

C. $\begin{matrix}(\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iii}) & (\mathrm{iv}) \\ \mathrm{Prophase} & \mathrm{Mitosis} & \mathrm{Metaphase} & \mathrm{Mitosis}\end{matrix}$

D. $\begin{matrix}(\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iii}) & (\mathrm{iv}) \\ \mathrm{Prophase} & \mathrm{Mitosis} & \mathrm{Anaphase} & \mathrm{Mitosis}\end{matrix}$

Answer: A

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5. ___ is the best stage to count the number and study the morphology of chromosomes.

A. Prophase

B. metaphase

C. Anaphase

D. Telophase

Answer: B

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6. ___ is characterised by all the chromosomes coming to lie at the equator, with one chromatid connected by its kinetochore to spindle fibres from one pole and its sister chromatid connected by its kinetochore to spindle fibres from the opposite pole.

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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7. Read the following statements.

(i) In mitotic cell division chromosome number is halved.

(ii) Centromere is the point where two sister chromatids are held together.

(iii) The period between two successive mitotic divisions is known as telophase.

(iv) In G_1 phase of cell cycle protein and RNA are synthesised.

Which of the above given statements are correct?

A. a) i and iii only

B. b) ii and iii only

C. c) i and iv only

D. d) ii and iv only

Answer: D

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8. You are provided with floral buds of Chrysanthemum in your class and are asked to count the chromosomes, then which of the following stages would you prefer to look into?

A. Prophase

B. Metaphase

C. anaphase

D. Interphase

Answer: B

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9. During karyokinesis, the spindle fibres get attached to condensing chromosome at a highly differentiated region. This region is called as

A. chromomere

B. chromocentre

C. centriole

D. kinetochore.

Answer: D

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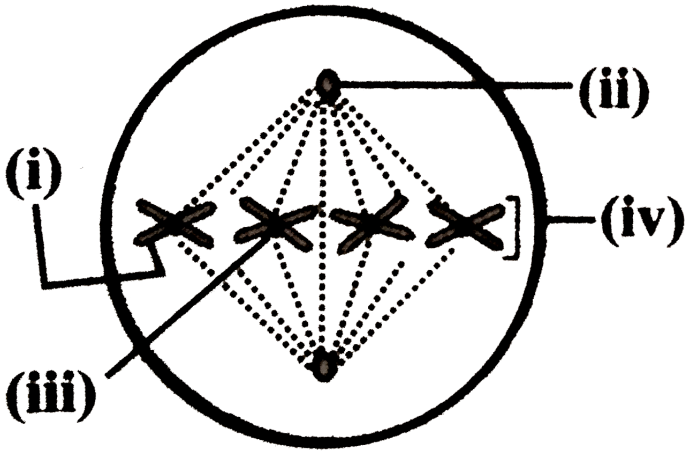
10. Identify the structure indicated by labels (i),(ii),(iii) and (iv) and select the correct option.



A. a) i-Chromatid, ii-Centriole,

iii-Centromere, iv-Chromosome

B. b) i-Chromosome, ii-Centriole,

iii-Centromere, iv-Chromatid

C. c) i-Chromatid, ii-Centromere,

iii-Centriole, iv-Chromosome

D. d) i-Chromosome, ii-Centromere,

iii-Centriole, iv-Chromatid

Answer: A

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11. Which of the following statements is not correct regarding colchicine?

A. It prevents assembly of microtubules.

B. It inhibits chromosome replication.

C. It is an alkaloid.

D. It is called as mitotic poison.

Answer: B

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

A. metaphase, parthenocarphy

B. anaphae, parthenocarpy

C. metaphase, polyploidy

D. anaphase, polyploidy

Answer: C

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13. Spindle formation can be distrupted by exposing cell to the microtubule poison such as

A. high concentration of oxygen

B. vitamin A

C. cholesterol

D. colchicine.

Answer: D

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14. 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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15. During anaphasic movements of chromosomes, ___ of each chromosome is/are towards the pole and ___ of the chromosome trail(s) behind.

A. centromere, arms

B. arms, centromere

C. chromatids, centromere

D. none of these

Answer: A

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16. Select the correct match

A. Quiescent phase-G_2 phase

B. Synthesis phase-G_1 phase

C. Centromere splittting -Anaphase

D. Chromosomal condensation-Telophase

Answer: C

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17. The separation of two chromatids of each chromosome at early anaphase is initiated by

A. (a) the interaction of centromere with the chromosomal fibres

B. (b) the elongation of metaphasic spindle

C. (c) the force of repulsion between the divided kinetochores

D. (d) all of these

Answer: C

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18. Match column I with column II and select the correct option from the given codes.

Column I	Column II
V-shaped at anaphase	(ii)Acrocentric chromosome
L-shaped at anaphase	(ii)Metacentric chromosome
J-shaped at anaphase	(iii)Telocentric chromosome
I-shaped at anaphase	(iv)Sub-metacentric chromosome

A. iv,ii,i,iii

B. ii,iv,i,iii

C. ii,iv,iiii,i

D. iv,iii,ii,i

Answer: B

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19. Which of the following is key event of anaphase of mitotic division?

A. Chromosomes are mved to sprindle equator and get aligned through spindle fibres to both poles.

B. Centromeres split and chromatids separate.

C. Chromosomes cluster at opposite spindle poles and their identify is lost as discrete elements.

D. Both b and c

Answer: B

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20. Selelct the incorrect mathc regarding mitotic cell division.

(i)Prophase	–	Chromosomes begin to uncoil
(ii)Metaphase	–	Chromatids move aprt
(iii)Telophase	–	The nuclear membrane reappears
(iv)Late	–	Each chromosome consists of two
(v)Interphase	–	Chromosomes are not distinct

A. ii and iv only

B. i and iii only

C. ii,iv and v only

D. i and v only

Answer: A

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21. What is true about telophase stage of mitosis?

A. Chromosomes lose their identify as discrete elements.

B. Chromosomes duster at opposite spindle poles.

C. Nuclear envelope, nucleouls, Golgi complex and ER reform.

D. All of these

Answer: D

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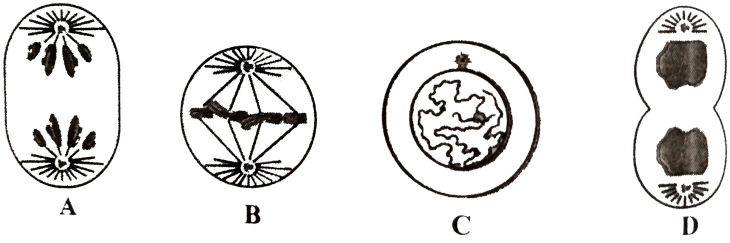
22. Refer to the given figures and answer



Identify the given stages of mitosis and select the correct option

A. A Prophase B Metaphase C Telophase D Anaphase

B. A Metaphase B Anaphase C Prophase D Telophase

C. A Anaphase B Metaphase C Prophase D Telophase

D. A Prophase B Metaphase C Anaphase D Telophas

Answer: C

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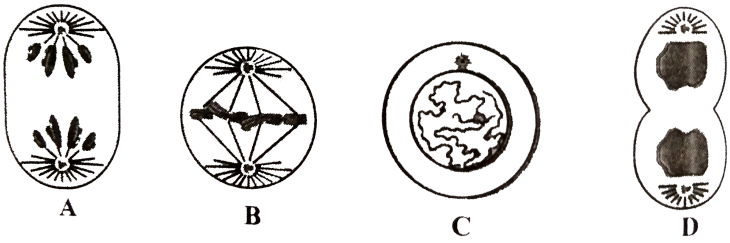
23. Refer to the given figures and answer



Which of the following shown the correct sequency of the given mitotic stages?

A. $D \rightarrow C \rightarrow B \rightarrow A$

B. $C \rightarrow B \rightarrow D \rightarrow A$

C. $B \rightarrow A \rightarrow C \rightarrow D$

D. $C \rightarrow B \rightarrow A \rightarrow D$

Answer: D

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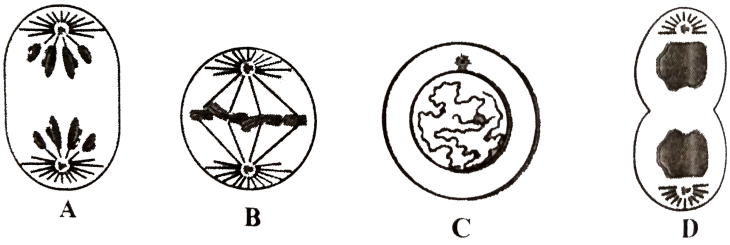
24. Refer to the given figures and answer



At which of the given stages of mitois, chromosomes appear in V,L,J and I shapes.

A. A

B. B

C. C

D. D

Answer: A

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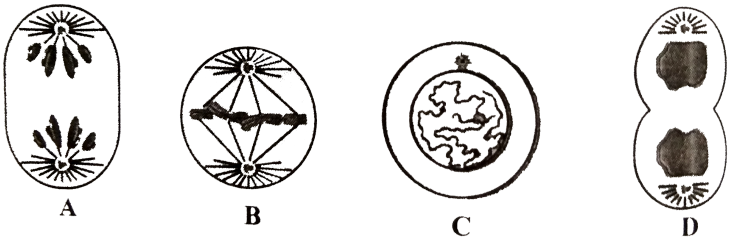
25. Refer to the given figures and answer



Read the given statements which represent the features of the figures A,B,C and D Mathc them correctly and select the correct option.

(i) Chromosomes appear like a ball of wool (spireme stage)

(ii) Reformation of nuclear envelope, nucleolus, Golgi complex and ER

(iii) Formation of equatorial plate

(iv) Splitting of centromeres

A. iv,iii,i,ii

B. iii,iv,i,ii

C. ii,iii,i,iv

D. iv,ii,iii,i

Answer: A

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26. Match the column I with column II and select the correct option from the given codes.

Column I	Column II
Disintegration of nuclear membrane	(i) Anaphase
Appearance of nucleoulus	(ii) Prophase
Division of centromere	(iii) Telophase
Replication of DNA	(iv) S-phase

A. ii,iii,i,iv

B. ii,iii,iv,i

C. iii,ii,i,iv

D. iii,ii,iv,i

Answer: A

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27. Which phase of mitosis is essentially the reverse of prophase in terms of nuclear changes?

A. S-phase

B. Anaphase

C. Telophase

D. Interphase

Answer: C

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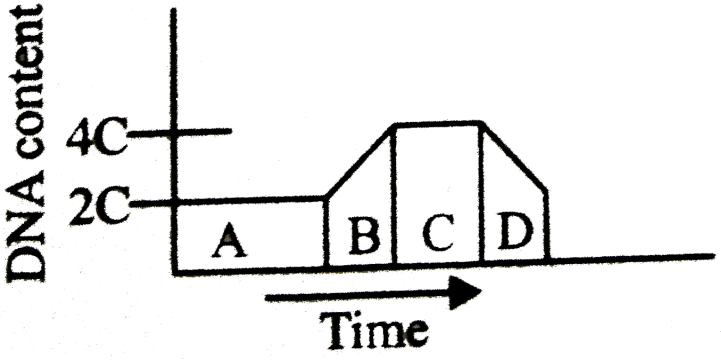
28. The given graph shows the change in DNA content during various phases (A to D) in a typical mitotic cell cycle. Identify the phases and select the correct option.



A. $\begin{matrix} A & B & C & D \\ G_2 & G_1 & S & M \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ G_2 & S & G_1 & M \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ G_1 & S & G_2 & M \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ M & G_1 & S & G_2 \end{matrix}$

Answer: C

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29. A cell's division time is 1 minute. In 20 minutes, a culture tube (culture medium) is $1/8^{th}$ filled with cells. When the tube will be fully filled?

A. (a) 21 minutes

B. (b) 23 minutes

C. (c) 60 minutes

D. (d) 160 minutes

Answer: B

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30. Cytokinesis in an animal cell takes place by ___ method in ____ direction; while in a plant cell it occurs by _____method in ___

direction.

A. (a) furrowing, centrifugal, cell plate, centripetal

B. (b) furrowing, centripetal, cell plate, centrifugal

C. (c) cell plate, centrifugal, furrowing, centripetal

D. (d) cell plate, centripetal, furrowing, centrifugal

Answer: B

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

A. 512

B. 10

C. 1024

D. 256

Answer: B

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32. Spindle usually persists in the form of ___ during ___ method of cytokinesis.

A. phragmoplast, cleavage

B. phragmoplast, cell plate

C. cell plate, cell plate

D. cell plate, cleavage

Answer: B

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33. Match column I with column II and select the correct option from the given codes.

Column I	Column II
Division of nucleus	(i) Interphase
Division of cytoplasm	(ii) Cytokinesis
DNA replication	(iii) Syncytium
Karyokinesis not followed by cytokinesis	(iv) Karyokinesis

A. a.ii,b.iv,c.i,d.iii

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

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

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

Answer: B

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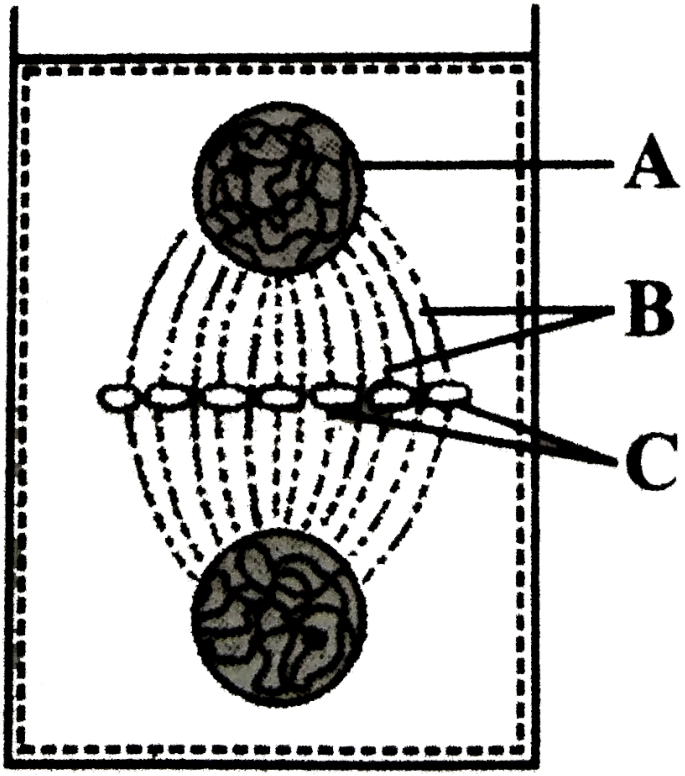
34. The given diagram depicts cell plate method of cytokinesis in plant cells. Identify A,B and C



A. A Daughter nucleus B Phramgmoplast C Vesicles

B. A Daughter nucleus B Vesicles C Phragmoplast

C. A Parent nucleus B Vesicles C Phragmoplast

D. A Parent nucleus B Phragmoplast C Vesicles

Answer: A

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35. Phragmoplast is related to

A. division of nucleolus

B. cell elongation

C. Cytokinesis

D. assemblage of chromonomes at metaphase.

Answer: C

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

A. formation of cells with new chromosomes

B. formation of two daughter cells

C. formation of two cells with identical DNA

D. halving the chromosome number between the two new cells.

Answer: C

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37. Chromosome duplication without nuclear division refers

A. meiosis

B. mitosis

C. androgenesis

D. endomitiosis.

Answer: D

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Meiosis

1. Meiosis consists of

A. two cell divisions without any DNA replication

B. two cell divisions in which chromosome number is reduced to half

C. two cell devisions with only two rounds of chromosome replication

D. a single cell division with chromosome replication.

Answer: B

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2. Which of the following is not the feature of meiosis?

A. Meiosis involves two sequential cycles of nuclear and cell division, meiosis I and meiosis II but only a single cycle of DNA replication.

B. Meiosis I is initiated after the parental chromosomes have replicated to produce identical sister chromatids at the S-

phase.

C. Meiosis involves pairing of non-homologous chromosomes and recombination between them.

D. Four haploid cells are formed at the end of meiosis II.

Answer: C

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3. Best material to study meiosis is

A. root tip

B. ovary

C. young anther

D. pollen grain.

Answer: C

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4. The term "meiosis" was given by

A. Johannsen

B. Knoll and Ruska

C. A. Flemming

D. Farmer and Moore.

Answer: D

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

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: A

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6. Zygotene of prophase-I is characterised by

A. chromomeres

B. synaptonemal complex

C. crossing over

D. terminalisation of chiasmata.

Answer: B

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7. Crossing over in diploid organisms is responsible for

A. dominance of genes

B. linkage between genes

C. segregation of alleles

D. recombination of alleles.

Answer: D

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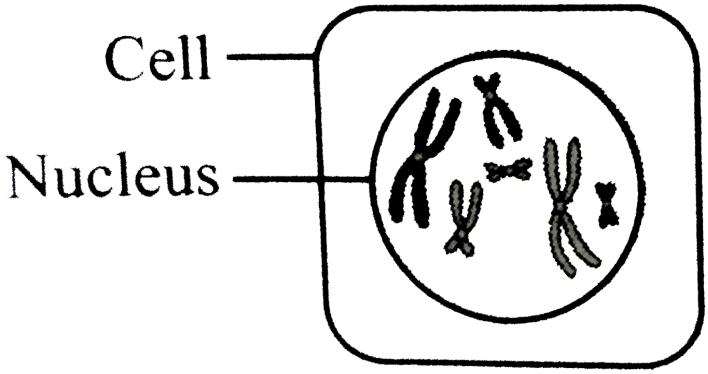
8. Which of the following is correct regarding the given figure?



A. 3 6 12

B. 3 12 6

C. 6 6 12

D. 6 12 6

Answer: B

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9. The members of a homologous pair of chromosomes

A. are identical in size and appearance

B. contain identical genetic information

C. seperation and move to opposite poles of the cell during mitosis

D. are found only in hploid cells.

Answer: A

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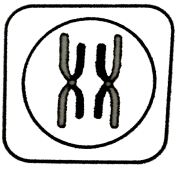
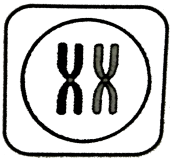
10. Which of the following correctly shows a pair of homologous chromosomes at the start of meiosis?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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11. Which of the following is correct about bivalent?

(i) Bivalents are tetrads.

(ii) A bivalent means 4 chromatids and 2 centromeres.

(iii) One bivalent consists of 2 homologous chromosomes.

(iv) Bivalents form in zygotene.

A. i,ii,iii and iv

B. iii only

C. iii and iv

D. iv only

Answer: A

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12. The process of crossing over is assisted by which of the following enzymes?

A. Endonuclease

B. Polymerase

C. Ligase

D. Both a and c

Answer: D

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13. To build up food reserves in the cytoplasm, chromosomes become unfolded to start transcription of mRNA and rRNA, during which phase of meiosis I ?

A. Diakinesis

B. Zygotene

C. Diplotene

D. Leptotene

Answer: C

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

A. Zygotene

B. Pachytene

C. Diplotene

D. Diakinesis

Answer: C

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15. Diplotene stage of prophase-I is characterised by

A. dissolution of synaptonemal complex

B. separation of synapsed homologous chromosomes except at the site of crossovers

C. formation of X-shaped structures called chiasmata

D. all of these

Answer: D

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16. (i) Thin thread like chromosomes with a beaded appearance

(ii) Appearance of recombination nodules

(iii) Formation of bivalents/tetrads

(iv) Terminalisation of chiasmata

(v) Appearance of chiasmata

Identify the different stages with respect to the above given features and select the correct option.

A.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Zygotene	Pachytene	Diplotene	Diakinesis

B.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Zygotene	Pachytene	Diakinesis	Diplotene

C.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Pachytene	Zygotene	Diakinesis	Diplotene

D.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Pachytene	Diplotene	Zygotene	Diakinesis

Answer: C

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17. (i) Thin thread like chromosomes with a beaded appearance

(ii) Appearance of recombination nodules

(iii) Formation of bivalents/tetrads

(iv) Terminalisation of chiasmata

(v) Appearance of chiasmata

Arrange the given statements in the correct sequence of their occurrence during prophase I.

A. $i \rightarrow iii \rightarrow ii \rightarrow v \rightarrow iv$

B. $i \rightarrow ii \rightarrow iii \rightarrow iv \rightarrow v$

C. $i \rightarrow iv \rightarrow v \rightarrow ii \rightarrow iii$

D. $i \rightarrow iii \rightarrow ii \rightarrow iv \rightarrow v$

Answer: A

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18. Match the column I with column II and select the option from given codes.

Column I	Column II
Synaptonemal complex	(i) Pachytene
Recombination nodule	(ii) Zygotene
Terminalisation of chiasmata	(iii) Telophase I
Formation of dyad cell	(iv) Diakinesis

A. ii,i,iv,iii

B. i,ii,iv,iii

C. iii,i,iv,ii

D. ii,i,iii,iv

Answer: A

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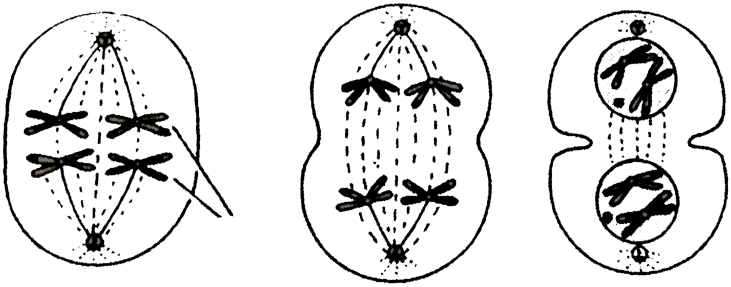
19. Identify the given figures showing meiotic phases and select the correct option.



A. $\underset{\text{Metaphase}}{A}$ $\underset{\text{Anaphase}}{B}$ $\underset{\text{Telophase}}{C}$

B. $\underset{\text{Methaphase I}}{A}$ $\underset{\text{Anaphase I}}{B}$ $\underset{\text{Telophase I}}{C}$

C. $\underset{\text{Metaphase II}}{A}$ $\underset{\text{Anaphase II}}{B}$ $\underset{\text{Telophase II}}{C}$

D. $\underset{\text{Anaphase I}}{A}$ $\underset{\text{Metaphase I}}{B}$ $\underset{\text{Telophase I}}{C}$

Answer: B

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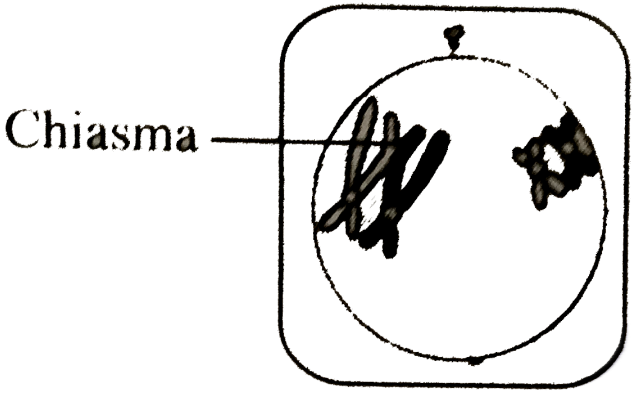
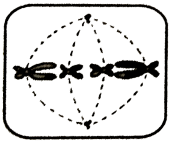
20. The figure given below shows a cell undergoing meiosis.

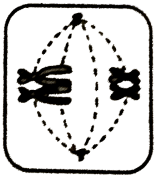


Which of the option below shows the next stage in the process?

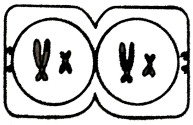
A. (a)



B. (b)



C. (c)

D. (d) 

Answer: B

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21. Disjunction refers to

A. the separation of homologous chromosomes at anaphase I

B. the type of chromosomal aberration in which there is loss of a part of a chromosome

C. incopatibility in fungi and other thallophytes

D. modification of gene action by a nonallelic gene.

Answer: A

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22. Lampbrush chromosomes are seen in which typical stage?

A. Mitotic anaphase

B. Mitotic prophase

C. Mitotic metaphase

D. Meiotic prophase

Answer: D

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23. Match column I with column II and select the correct option from the given codes.

Column I	Column II
Chromosomes move to equator	(i)Pachytene
Centromere splits and	(ii)Zygotene
Pairing between homologous chromosomes	(iii)Anaphase
Crossing over between homologous chromosomes	(iv)Metaphase

A. i,ii,iii,iv

B. ii,iii,iv,i

C. iv,iii,ii,i

D. iii,i,iv,ii

Answer: C

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24. During meiosis I,chromosome number

A. is reduced to half

B. doubles up

C. remains the same

D. either a or b

Answer: A

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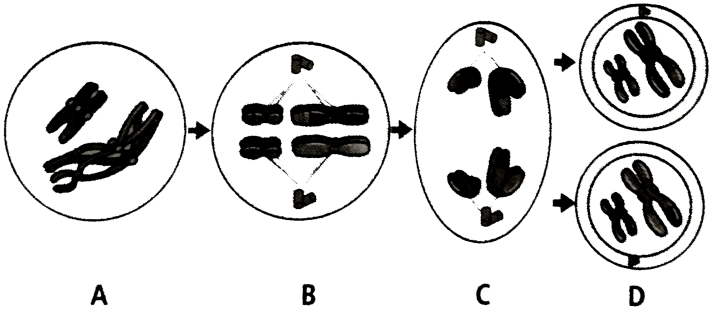
25. Refer to the given stages A,B,C and D of meiosis I and select the incorrect statement regarding them.



A. The last stage of A is diakinesis which is marked by terminalisation of chiasmata.

B. In stage B, mictrotublues from the opposite poles of the spindle attach to the pair of homologous chromosomes.

C. In stage C, homologous chromosomes separate. While sister chromatids remain associated at their centromeres.

D. In stage D, nuclear membrane and nucleolus disappear, cytokinesis follows and this is called as dyad of cells.

Answer: D

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26. During meiosis I in humans, one of the daughter cells receives

A. only maternal chromosomes

B. a mixture of maternal and paternal chromosomes

C. same number of chromosomes as present in parent cell

D. none of these.

Answer: B

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27. The number of chromosomes is reduced to half during

A. mitosis

B. meiosis II

C. Meiosis I

D. fertilisation.

Answer: C

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28. Four different steps that occur during meiosis are given in the following list.

(i) Complete separation of chromatids

(ii) Pairing of homologous chromosomes

(iii) Lining up of paired chromosomes on equator

(iv) Crossing over between chromatids

Select the correct sequential arrangement of the steps.

A. ii,iii,iv,i

B. iii,ii,iv,i

C. ii,iv,iii,i

D. iii,i,ii,iv

Answer: C

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29. Select the incorrectly matched pair.

A. Phragmoplast - Peristent spindle

B. Reductional division - Meiosis I

C. Equational division - Meiosis II

D. Crossing over - Non-homologous chromosomes

Answer: D

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30. Splitting of centromere and hence separation of chromatids occur during

A. anaphase of mitosis

B. anaphase of meiosis I

C. anaphase of meiosis II

D. Both a and c

Answer: D

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31. If gametes are produced after reduction division, they are termed as

A. coenogametes

B. mitogametes

C. pseudogametes

D. meiogametes.

Answer: D

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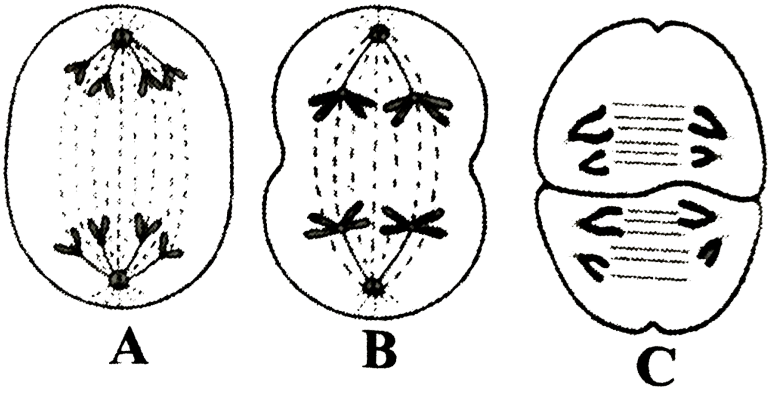
32. If 2n=4, then identify the figures A,B and C, as per the following codes and select the correct option



Anaphase of meiosis I=(i)

Anaphase of mitosis =(ii)

Anaphase meiosis II =(iii)

A. ii,i,iii

B. iii,ii,i

C. i,ii,iii

D. iii,i,ii

Answer: A

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33. What does (I) and (II) represent in the given flowchart? Parent cell $\xrightarrow{M-I}$ 2 Daughter cells $\xrightarrow{M-II}$ 4 Daughter cells

A. (I)=2n

(II)=n

B. (I)=n

(II)=n

C. (I)=n

(II) =2n

D. (i)=2n

(ii)=2n

Answer: B

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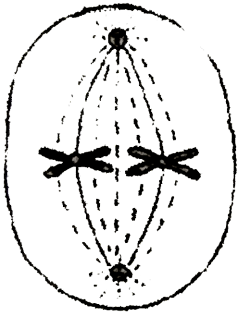
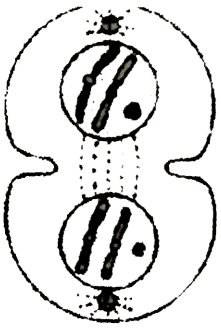
).



?

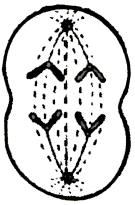


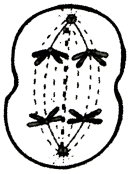
(i) (ii) (iii)

34.

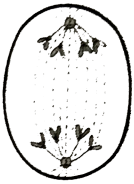
In above sequence of figures showing different stages of cell

division, the missing stage (ii) is

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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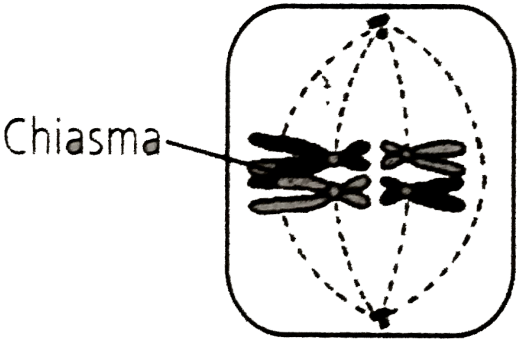
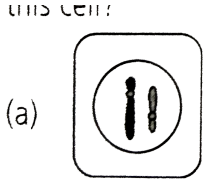
35. Consider the given cell at metaphase-I stage undergoing normal meiosis.

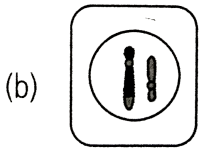


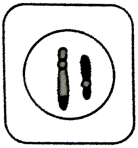
Which of the following gametes will not be formed from this cell?

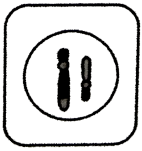
A.



B.



C. (c) 

D. (d) 

Answer: D

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36. While in mitosis, the daughter cells resemble each other and alos the parent cell, in meiosis they differ not only fom parent cell in having half the number of chromosomes. But also differ among themselves qualitatively in genetic consitution due to

A. segregation and crossing over only

B. independent assortment and segregation only

C. independent assortment and croosing over only

D. crossing over, idependent assortment and segregation.

Answer: D

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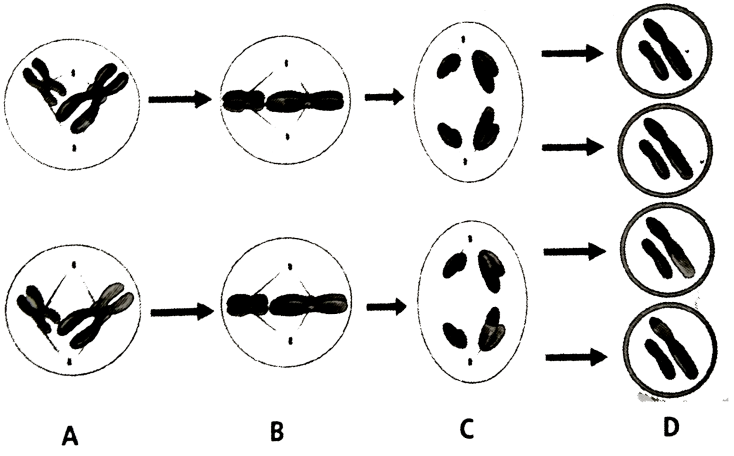
37. Refer to the the given and select the correct statement



A. In stage B homologous chromosomes are interconnected and chromosomes occurs in pairs.

B. Stage A is divisible into five substages

C. In stage D, chormosmes are not enclosed by a nuclear envelope.

D. In stage C centromeres divide and chromosomes are single stranded.

Answer: D

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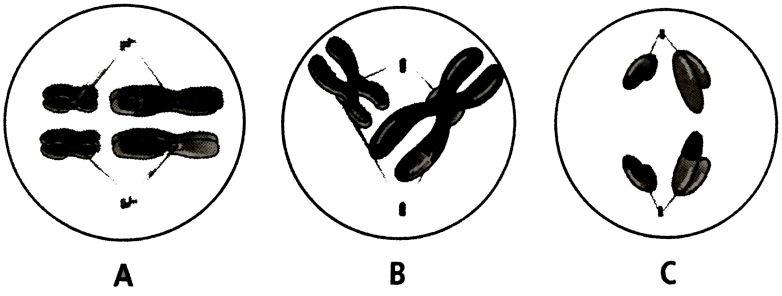
38. Refer to the given figure.



Identify A,B and C and select the correct option.

A. $\begin{matrix} A & B & C \\ \text{Prophase I} & \text{Methaphse I} & \text{Anaphase I} \end{matrix}$

B. $\begin{matrix} A & B & C \\ \text{Metaphase I} & \text{Prophase II} & \text{Anaphase II} \end{matrix}$

C. $\begin{matrix} A & B & C \\ \text{Metaphase I} & \text{Metaphase II} & \text{Anphase} \end{matrix}$

D. $\begin{matrix} A & B & C \\ \text{Prophase II} & \text{Metaphase II} & \text{Anaphase II} \end{matrix}$

Answer: B

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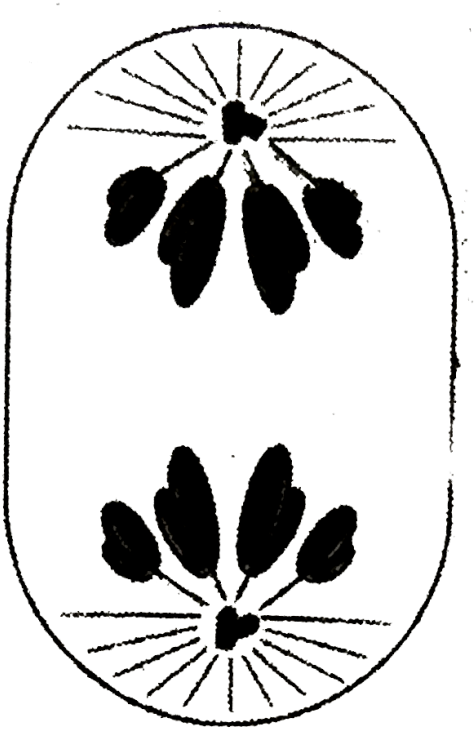
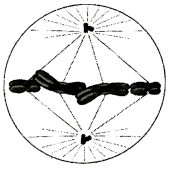
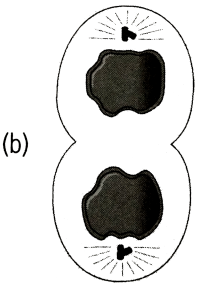
39. Refer to the given figure of cell division.



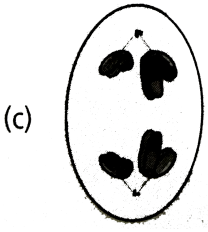
Which of the following options show previous stage of this process?

A. (a) 

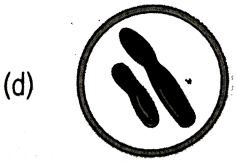
B.



C.



D.



Answer: A

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40. In which of the following ways are mitosis and meiosis similar?

A. Both have pairing of homologous chromosomes.

B. Both are preceded by DNA replication.

C. Both occur in all kinds of cells.

D. Both include separation of paired chromomes.

Answer: B

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41. At what phase of meiosis there are two cells, each with separated siter chromatids that have been moved to opposite spindle poles?

A. Anaphase II

B. Anaphase I

C. Telophase II

D. Telophase I

Answer: A

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42. An another has 1200 pollen grains. How many PMCs must have been there to produce them?

A. 1200

B. 300

C. 150

D. 2400

Answer: B

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43. Meiosis does not occur in

A. bacteria

B. cyanobacteria

C. plant cell

D. both a and b

Answer: D

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44. In animals meiotic division occurs during gamete formation. This gametic meiosis results in

A. haplontic life cycle

B. diplontic life cycle

C. diplohaplontic life cycle

D. none of these

Answer: B

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45. The durations of mitotic stages in two situations. (A and B) are tabulated below.

Phase	Duration of Mitotic Stages (in Minutes)	
	A	B
Interphase	1356(22.6 h)	870 (14.5 h)
Prophase	126	54
Metaphase	24	14
Anaphase	5	3
Telophase	22	11
Total	**1533(25.6 h)**	**952(15.9 h)**

Following are some interpretations:

1. 'A' and 'B' indicate the same plant tissue grown at higher and

lower temperature respectively.

II. 'A' indicates a slow growing plant species and 'B' indicates a fast growing plant species.

III. Both 'A' and 'B' indicate dormant plant tissues with excessively long interphase.

The correct interpretations is/are

A. i and iii only

B. II and III

C. III only

D. II only

Answer: D

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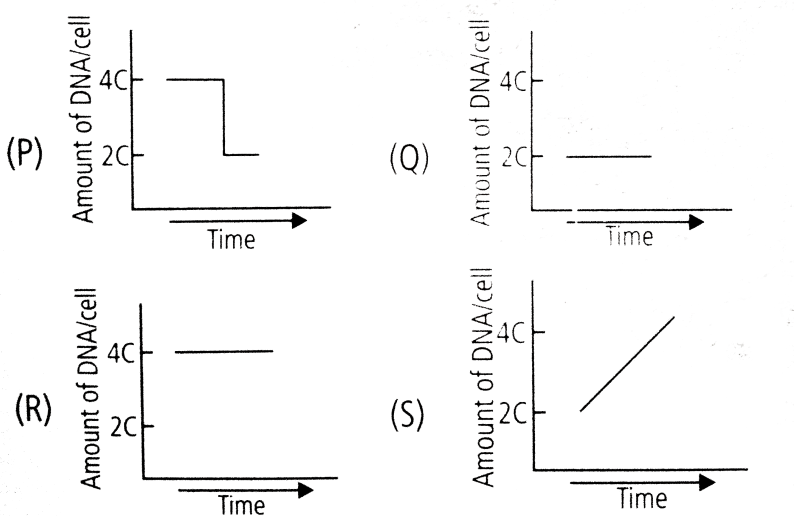
46. Given graphs P,Q,R and S show four stages of cell cycle i.e., G_1 ,S,G_2 and M, but in random order. Identify the stages and match with the activites of the cell.

I. Taxol treatment, which prevent microtubule depolymerization, arrests the cell at this tage .

II. With a mitogen treatment , such as an epidermal growth factor, and arrested cell at this stage proceeds to the next stage of the cell cycle.

III. The cell cycle check point at this stage confirms. that DNA duplication is complete before the cell proceeds to the next

stage



A. I-P,II-Q,III-R

B. I-Q,II-S,III-R

C. I-R,II-Q,III-S

D. I-P,II-S,III-Q

Answer: A

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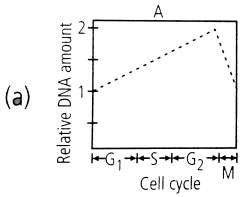
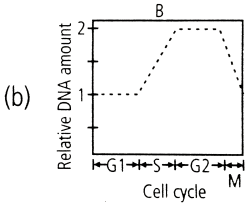
47. Which of the following graphs shows the relative change in the amount of mitochondrial DNA of a cell undergoing mitosis?

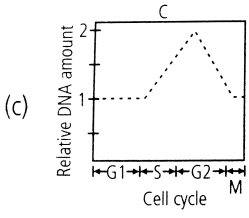
A.



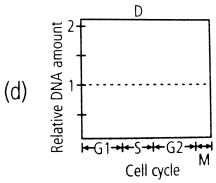
B.



C.



D.



Answer: A

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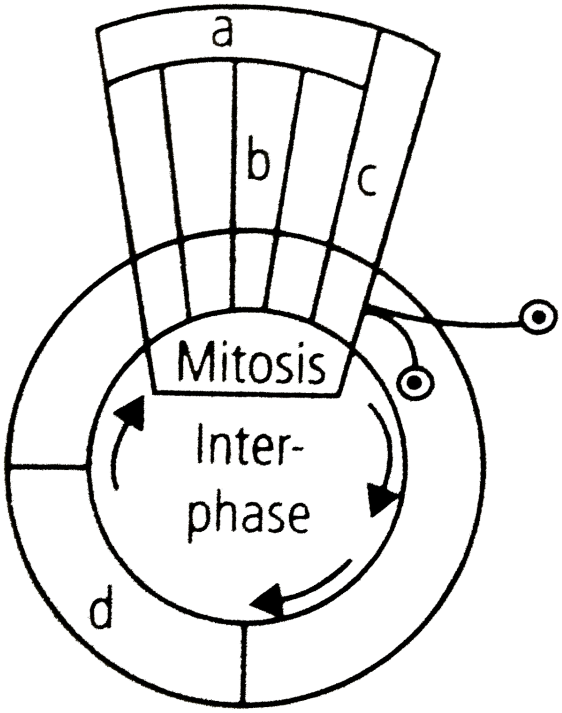
48. The given figure is a schematic breadk-up of the phases/stages of cell cycle. Select the correct option regarding it.



A. a' represents karyokinesis which is the division of cytoplasm.

B. b' is telophase which is just reverse of prophase.

C. c' is the best phase to count total number of chromosomes in any species.

D. in 'd' stage, replication of DNA takes place on the template of the existing DNA.

Answer: D

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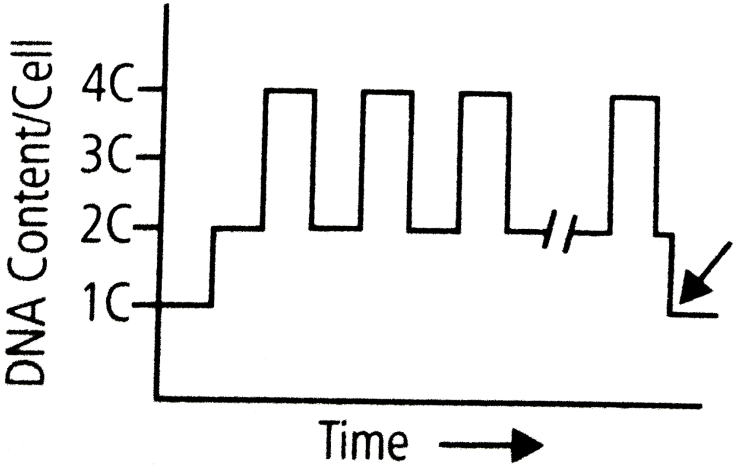
49. Given diagram shows variations in the amount of DNA of a developing eukaryote. What the arrow denotes?



A. First meiotic anaphase

B. Second meiotic anaphase

C. Mitotic anaphase

D. Mitotic telophase

Answer: B

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Ncert

1. Meiosis in diploid organisms results in

A. production of gametes

B. reduction in the number of chromosomes

C. introduction of variation

D. all of the above

Answer: D

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

A. Metaphase I

B. Anaphase II

C. Metahphase II

D. Anaphase I

Answer: D

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3. Meiosis occurs in organisms during

A. sexual reproduction

B. vegetative reproduction

C. both sexual and vegetative reproduction

D. none of these

Answer: A

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4. During anaphase I of meiosis

A. homologous chromosomes separate

B. non-homologous chromosomes separate

C. sister chromatids chromosomes separate

D. non-sister chromatids chromosomes separate.

Answer: A

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5. Mitosis is characterised by

A. reduction division

B. equal division

C. both reduction and equal division

D. paring of homologous chromosomes.

Answer: B

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6. 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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7. Cells which are not dividing are likely to be at

A. G_1 phase

B. G_2 stage

C. G_0

D. S phase.

Answer: C

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

A. chromatic condensation

B. Movement of centrioles to opposite poles

C. Appearance of chromosomes with two chromatids joined together at the centromere

D. Crossing over

Answer: D

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9. Identify the wrong statement about meiosis.

A. Pairing of homologous chromosomes.

B. Four haploid cells are formed.

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

D. Two cycles of DNA replication occur

Answer: D

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10. Select the correct statement about G_1 phase.

A. Cell is metabolically inactive.

B. DNA in the cell does not replicate.

C. It is not a phase of synthesis of macromolecules.

D. Cell stops growing.

Answer: B

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Corner

1. Assertion : Interphase occupies 75-95% of the total generation time.

Reason: Interphase (I-phase) is the long non-dividing phase.

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

B. If both assertion and reason are true but reason is not the correct explnantion of 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: Some cells enter G_0 phase leasding to inactivation of cell cycle.

Reason: G_0 phase occurs due to non-availability of mitogen and enrgy rich compounds.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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3. Assertion: G_1 phase is the interval between mitosis and initiation of DNA replication.

Reason: The cell is metabolically inactive druing G_1 phase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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4. Assertion: Prophase is the first stage of mitosis which follows S and G_1 phases of interphase.

Reason: Prophase is marked by the intiation of clusters of chromocomes.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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5. Assertion: Small disc-shaped structures at the surface of the centromeres are called kinetiochores.

Reason: Kinetochores serve as the sites of attachement of spindle fibres to the centreomeres.

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

B. If both assertion and reason are true but reason is not the correct explnantion of 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: During anaphase, centromere of each chromosome splites and chromatids separate.

Reason: During anaphase, chromatids move to opposte poles.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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7. Assertion: Karyokinesis follows cytokinesis.

Reason: Karyokinesis is the division of cytoplasm into two daughter cells.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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8. Assertion: Cell growth results in disturbing the ratio between the nucleus and cytoplasm.

Reason: Mitosis helps the cell to restore the nucleocytoplasmic ratio:

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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9. Assertion: The process of pairing of the chromosomes is called synapsis.

Reason: Synapsis occurs during leptotene stage.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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10. Assertion: Crossing over leads to recombination of genetic material on the two chromosomes.

Reason: Crossing over is the exchange of genetic material between two homologous chromosomes.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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11. Assertion: The crossing over is an enzyme-mediated process.

Reason: The enzyme involved in crossing over is lyase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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12. Assertion: The final stage of meiotic prophase I is diplotene.

Reason: Diplotene is marked by terminalisation of chaisamata.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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13. Assertion: The stage between the two meiotic divisions is called interkinesis.

Reason: Interkinesis is generally short lived.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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14. Assertion: Metaphase II begins with splitting of centromere of each chromosome into two.

Reason: In Anaphase II chromosomes align at the equator.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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15. Assertion: Variations are important for the process of evolution.

Reason: Meiosis increases the genetic variability in the population of organisms from one generation ot the next.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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Cell Cycle And Cell Division

1. Amitosis usually occurs in

A. eukaryotic cells

B. prokaryotic cells

C. meristems

D. spore mother cells.

Answer: B

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

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

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

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

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

Answer: C

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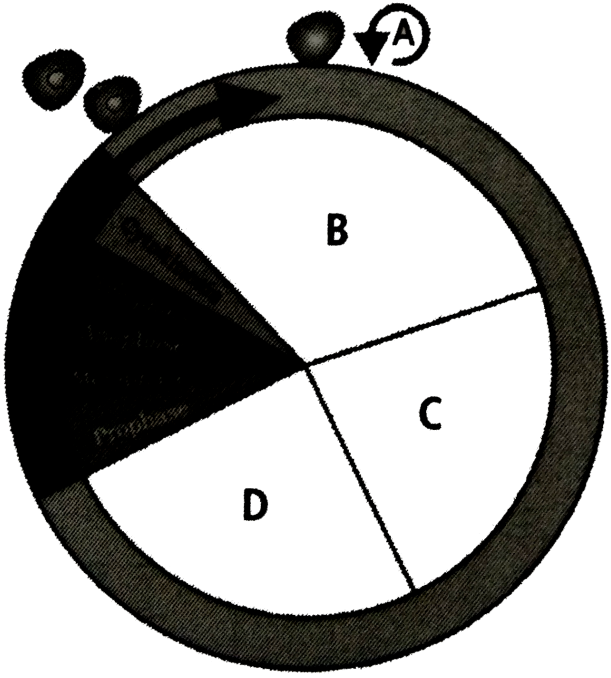
3. Identify A,B,C and D in the given diagram depicting cell cycle and select the correct option.



A. $\begin{matrix} A & B & C & D \\ G_0 & G_1 & S & G_2 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ G_1 & S & G_2 & G_0 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ G_1 & G_0 & S & G_2 \end{matrix}$

D.

A	B	C	D
S	G_0	G_1	G_2

Answer: A

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4. Yeast cell divide once in approximately every

A. 90 minutes

B. 9 minutes

C. 24 hours

D. 24 secodns.

Answer: A

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5. Human cells in culture show a cell cycle to be completed in approximately.

A. 42 hours

B. 24 hours

C. 24 minutes

D. 24 seconds.

Answer: B

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6. Which phase occupies the maximum part of cell cycle?

A. Mitrotic phase

B. Meiotic phase

C. Interphase

D. Cytokinesis

Answer: C

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7. This phase of cell cycle is a period of intense synthesis and growth. It constitutes 95% of the duration of cell cycle. It is

A. interphase

B. telophase

C. prophase

D. anaphase.

Answer: A

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8. Read the following statements about cell division and select the correct ones.

(i) M phase represents the phase when actual cell division occurs and I phase represetns the phase between two successive M phases.

(ii) In the 24 hours average duration of cell cycle of a human cell, cell division proper lasts for only about an hour.

(iii) M phase constitutes more than 95% of the duration of cell cycle.

A. i and ii

B. ii and iii

C. i and iii

D. i,ii and iii

Answer: A

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9. Which of the following phases of the cell cycle is not a part of interphase?

A. S

B. G_1

C. G_0

D. M

Answer: D

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10. A cell cycle includes

A. interphase and M phase

B. prophase, metaphase, anaphase and telophase

C. G_1, S and G_2 phases

D. Karyokinesis and cytokinesis.

Answer: A

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11. In which stage DNA replication takes place ?

A. Metaphase

B. G_1 phase

C. S-phase

D. G_2 phase

Answer: C

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12. Synthesis of histone proteins occurs in

A. G_1 phase

B. interphase

C. anaphase

D. G_0 phase.

Answer: B

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13. Select the incorrect statement regarding S phase of interphase.

A. It occurs between G_1 and G_2

B. DNA replicates in the nucleus in this phase.

C. Centrioles duplicate in the cytoplasm.

D. As DNA doubled, number of chromosomes also doubles.

Answer: D

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14. The DNA content of individual cells and the number of cells in each phase of a cell cycle" can be determined using flow cytometry. Which of the following combinations of "phase of a cell cycle and its corresponding DNA content" can be considered

normal?

(i) Diploid cells found in the G_0 or G_1 phase.

(ii) Cells with twice the normal DNA content in the early M phase.

(iii) Cells with twice the normal DNA content in the G_2 phase.

A. i and ii

B. ii and iii

C. iii and iv

D. i,ii,iii and iv

Answer: D

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15. Cell would normally proceed to mitosis without interruption

A. once it has entered the S phase

B. once it has entered the G_2 phase

C. at any time during cell division activity

D. none of these

Answer: A

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

A. M stage

B. G_2 stage

C. S stage

D. G_0 statge

Answer: D

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17. Which of the following statements is correct ?

A. Animals can sow mitotic divisions in both haploid and diploid cells.

B. After S phase the number of chromosomes becomes double i.e., 2n to 4n.

C. During the G_2 phase, proteins are synthesised in preparation for mitosis while cell growth continues.

D. S or synthesis phase marks the period during which RNA synthesis takes place.

Answer: C

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18. In which of the following stages, a choromosome is minimum coiled?

A. interphase

B. Metaphase

C. Prophase

D. anaphase.

Answer: A

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19. Which of the following statements is correct regarding G_0 phase?

A. Mitogens are present in G_0 phase.

B. Mitogens are present but energy rich compounds are absent.

C. Both mitogens and energy rich compounds are present.

D. Neither mitogens nor energy rich compounds are present.

Answer: D

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20. Best material for studying mitosis in laboratory is

A. leaf tip

B. shoot tip

C. root tip

D. gamete.

Answer: C

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21. Mitotic spindle is mainly composed of __ proteins.

A. tublin

B. myosin

C. actin

D. actomyosin

Answer: A

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22. Microtubules are absent in

A. mitochondria

B. flagella

C. spindle fibres

D. centriole.

Answer: A

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23. Centrosome undergo duplication during (i) of (ii) and begin to move towards opposite poles of the cell during (iii) state of (iv).

A. (i) S phase (ii) Interphase (iii) Prophase (iv) Mitosis

B. (i) S phase (ii) Interphase (iii) Anaphase (iv) Mitosis

C. (i) Prophase (ii) Mitosis (iii) Metaphase (iv) Mitosis

D. (i) Prophase (ii) Mitosis (iii) Anaphase (iv) Mitosis

Answer: A

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24. ___ is the best stage to count the number and study the morphology of chromosomes.

A. Prophase

B. metaphase

C. Anaphase

D. Telophase

Answer: B

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25. ___ is characterised by all the chromosomes coming to lie at the equator, with one chromatid connected by its kinetochore to spindle fibres from one pole and its sister chromatid connected by its kinetochore to spindle fibres from the opposite pole.

A. Prophase

B. Metaphase

C. Anaphase

D. Telophase

Answer: B

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26. Read the following statements.

(i) In mitotic cell division chromosome number is halved.

(ii) Centromere is the point where two sister chromatids are held together.

(iii) The period between two successive mitotic divisions is known as telophase.

(iv) In G_1 phase of cell cycle protein and RNA are synthesised.

Which of the above given statements are correct?

A. i and iii only

B. ii and iii only

C. i and iv only

D. ii and iv only

Answer: D

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27. You are provided with floral buds of Chrysanthemum in your class and are asked to count the chromosomes, then which of the following stages would you prefer to look into?

A. Prophase

B. Metaphase

C. anaphase

D. Interphase

Answer: B

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28. During karyokinesis, the spindle fibres get attached to condensing chromosome at a highly differentiated region. This region is called as

A. chromomere

B. chromocentre

C. centrioie

D. kinetochore.

Answer: D

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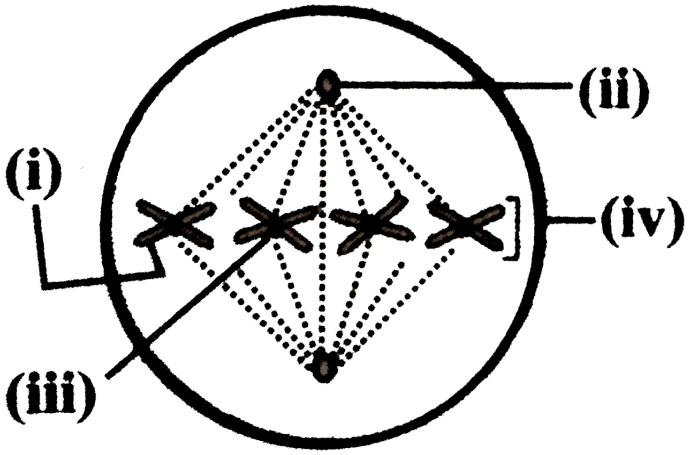
29. Identify the structure indicated by labels (i),(ii),(iii) and (iv) and select the correct option.



A. i-Chromatid, ii-Centriole,

iii-Centromere, iv-Chromosome

B. i-Chromosome, ii-Centriole,

iii-Centromere, iv-Chromatid

C. i-Chromatid, ii-Centromere,

iii-Centriole, iv-Chromosome

D. i-Chromosome, ii-Centromere,

iii-Centriole, iv-Chromatid

Answer: A

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30. Which of the following statements is not correct regarding colchicine?

A. It prevents assembly of microtubules.

B. It inhibits chromosome replication.

C. It is an alkaloid.

D. It is called as mitotic poison.

Answer: B

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

A. metaphase, parthenocarphy

B. anaphae, parthenocarpy

C. metaphase, polyploidy

D. anaphase, polyploidy

Answer: C

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32. Spindle formation can be distrupted by exposing cell to the microtubule poison such as

A. high concentration of oxygen

B. vitamin A

C. cholesterol

D. colchicine.

Answer: D

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33. 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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34. During anaphasic movements of chromosomes, ___ of each chromosome is/are towards the pole and ___ of the chromosome trail(s) behind.

A. centromere, arms

B. arms, centromere

C. chromatids, centromere

D. none of these

Answer: A

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35. Select the correct match

A. Quiescent phase-G_2 phase

B. Synthesis phase-G_1 phase

C. Centromere splittting -Anaphase

D. Chromosomal condensation-Telophase

Answer: C

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36. The separation of two chromatids of each chromosome at early anaphase is initiated by

A. the interaction of centromere with the chromosomal fibres

B. the elongation of metaphasic spindle

C. the force of repulsion between the divided kinetochores

D. all of these

Answer: C

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37. Match column I with column II and select the correct option from the given codes.

Column I	Column II
V-shaped at anaphase	(ii) Acrocentric chromosome
L-shaped at anaphase	(ii) Metacentric chromosome
J-shaped at anaphase	(iii) Telocentric chromosome
I-shaped at anaphase	(iv) Sub-metacentric chromosome

A. iv,ii,i,iii

B. ii,iv,i,iii

C. ii,iv,iiii,i

D. iv,iii,ii,i

Answer: B

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38. Which of the following is key event of anaphase of mitotic division?

A. Chromosomes are mved to sprindle equator and get aligned through spindle fibres to both poles.

B. Centromeres split and chromatids separate.

C. Chromosomes cluster at opposite spindle poles and their identify is lost as discrete elements.

D. Both b and c

Answer: B

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39. Selelct the incorrect mathc regarding mitotic cell division.

(i)Prophase	–	Chromosomes begin to uncoil
(ii)Metaphase	–	Chromatids move aprt
(iii)Telophase	–	The nuclear membrane reappears
(iv)Late	–	Each chromosome consists of two
(v)Interphase	–	Chromosomes are not distinct

A. ii and iv only

B. i and iii only

C. ii,iv and v only

D. i and v only

Answer: A

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40. What is true about telophase stage of mitosis?

A. Chromosomes lose their identify as discrete elements.

B. Chromosomes duster at opposite spindle poles.

C. Nuclear envelope, nucleouls, Golgi complex and ER reform.

D. All of these

Answer: D

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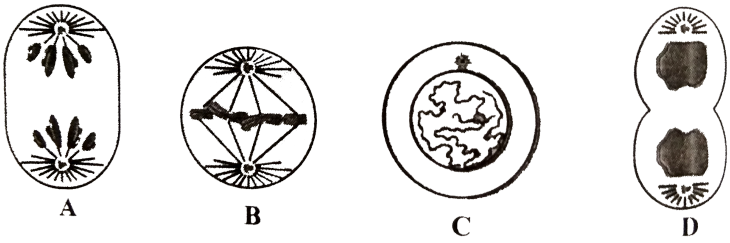
41. Refer to the given figures and answer



Identify the given stages of mitosis and select the correct option

A. $\begin{matrix} A & B & C & D \\ \text{Prophase} & \text{Metaphase} & \text{Telophase} & \text{Anaphase} \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ \text{Metaphase} & \text{Anaphase} & \text{Prophase} & \text{Telophase} \end{matrix}$

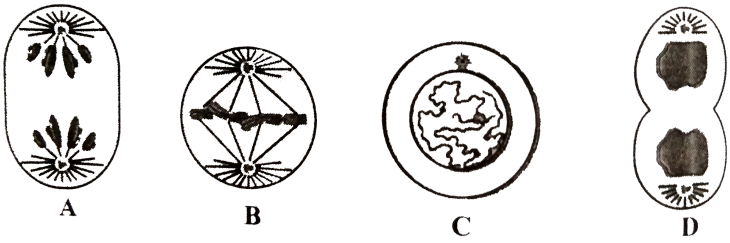
C. $\begin{matrix} A & B & C & D \\ \text{Anaphase} & \text{Metaphase} & \text{Prophase} & \text{Telophase} \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ \text{Prophase} & \text{Metaphase} & \text{Anaphase} & \text{Telophas} \end{matrix}$

Answer: C

View Text Solution

42. Refer to the given figures and answer



Which of the following shown the correct sequency of the given mitotic stages?

A. $D \rightarrow C \rightarrow B \rightarrow A$

B. $C \rightarrow B \rightarrow D \rightarrow A$

C. $B \rightarrow A \rightarrow C \rightarrow D$

D. $C \rightarrow B \rightarrow A \rightarrow D$

Answer: D

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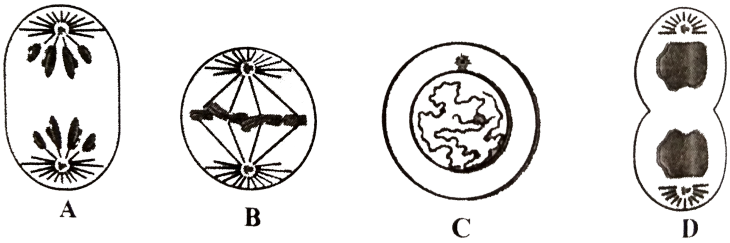
43. Refer to the given figures and answer



At which of the given stages of mitois, chromosomes appear in V,L,J and I shapes.

A. A

B. B

C. C

D. D

Answer: A

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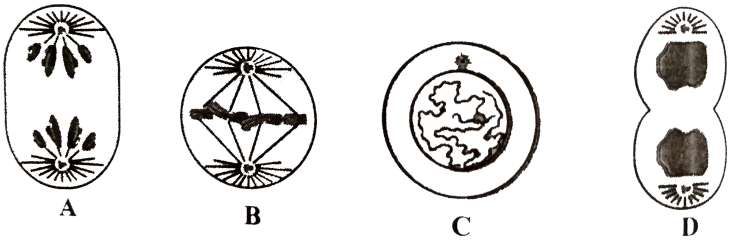
44. Refer to the given figures and answer



Read the given statements which represent the features of the figures A,B,C and D Mathc them correctly and select the correct option.

(i) Chromosomes appear like a ball of wool (spireme stage)

(ii) Reformation of nuclear envelope, nucleolus, Golgi complex and ER

(iii) Formation of equatorial plate

(iv) Splitting of centromeres

A. iv,iii,i,ii

B. iii,iv,i,ii

C. ii,iii,i,iv

D. iv,ii,iii,i

Answer: A

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45. Match the column I with column II and select the correct option from the given codes.

Column I	Column II
Disintegration of nuclear membrane	(i) Anaphase
Appearance of nucleoulus	(ii) Prophase
Division of centromere	(iii) Telophase
Replication of DNA	(iv) S-phase

A. ii,iii,i,iv

B. ii,iii,iv,i

C. iii,ii,i,iv

D. iii,ii,iv,i

Answer: A

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46. Which phase of mitosis is essentially the reverse of prophase in terms of nuclear changes?

A. S-phase

B. Anaphase

C. Telophase

D. Interphase

Answer: C

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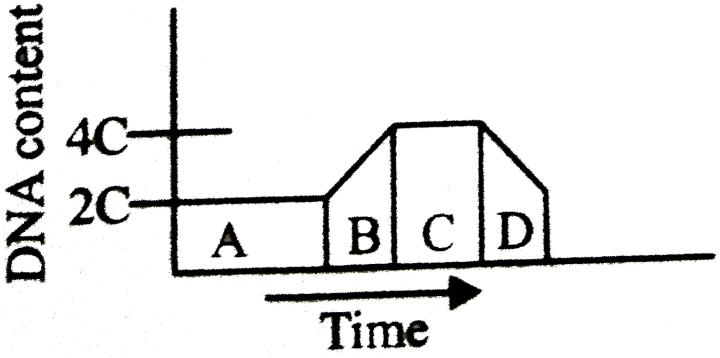
47. The given graph shows the change in DNA content during various phases (A to D) in a typical mitotic cell cycle. Identify the phases and select the correct option.



A. $\begin{matrix} A & B & C & D \\ G_2 & G_1 & S & M \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ G_2 & S & G_1 & M \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ G_1 & S & G_2 & M \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ M & G_1 & S & G_2 \end{matrix}$

Answer: C

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48. A cell's division time is 1 minute. In 20 minutes, a culture tube (culture medium) is $1/8^{th}$ filled with cells. When the tube will be fully filled?

A. 21 minutes

B. 23 minutes

C. 60 minutes

D. 160 minutes

Answer: B

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49. Cytokinesis in an animal cell takes place by ___ method in ____ direction; while in a plant cell it occurs by _____method in ___

direction.

A. furrowing, centrifugal, cell plate, centripetal

B. furrowing, centripetal, cell plate, centrifugal

C. cell plate, centrigu,furrowing, centripetal

D. cell plate, centripetal, furrowing, centrifugal

Answer: B

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

A. 512

B. 10

C. 1024

D. 256

Answer: B

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51. Spindle usually persists in the form of ___ during ___ method of cytokinesis.

A. phragmoplast, cleavage

B. phragmoplast, cell plate

C. cell plate, cell plate

D. cell plate, cleavage

Answer: B

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52. Match column I with column II and select the correct option from the given codes.

Column I	Column II
Division of nucleus	(i)Interphase
Division of cytoplasm	(ii)Cytokinesis
DNA replication	(iii)Syncytium
Karyokinesis not followed by cytokinesis	(iv)Karyokinesis

A. ii,iv,i,iii

B. iv,ii,i,iii

C. iv,ii,iii,i

D. iii,ii,iv,i

Answer: B

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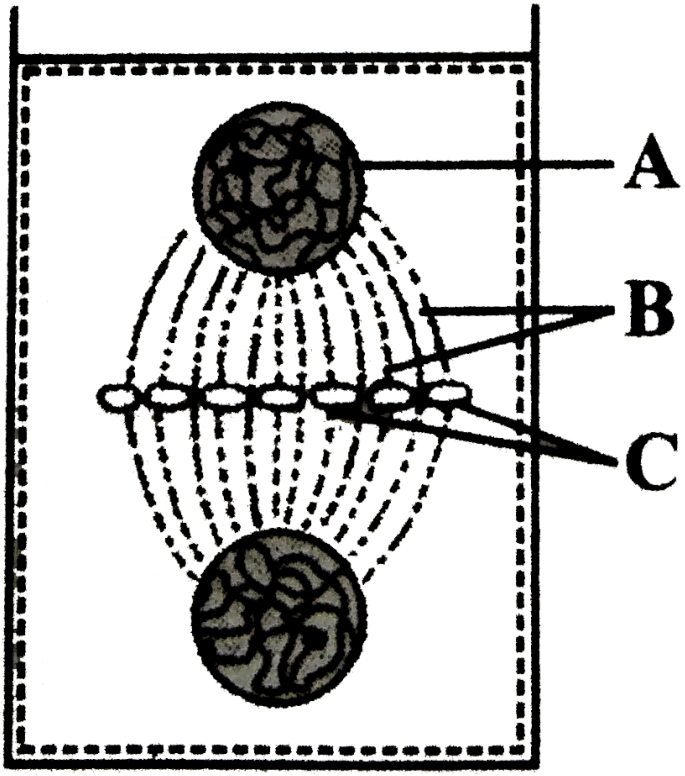
53. The given diagram depicts cell plate method of cytokinesis in plant cells. Identify A,B and C



A. A Daughter nucleus B Phramgmoplast C Vesicles

B. A Daughter nucleus B Vesicles C Phragmoplast

C. A Parent nucleus B Vesicles C Phragmoplast

D. A Parent nucleus B Phragmoplast C Vesicles

Answer: A

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54. Phragmoplast is related to

A. division of nucleolus

B. cell elongation

C. Cytokinesis

D. assemblage of chromonomes at metaphase.

Answer: C

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

A. formation of cells with new chromosomes

B. formation of two daughter cells

C. formation of two cells with identical DNA

D. halving the chromosome number between the two new cells.

Answer: C

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56. Chromosome duplication without nuclear division refers

A. meiosis

B. mitosis

C. androgenesis

D. endomitiosis.

Answer: D

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57. Meiosis consists of

A. two cell divisions without any DNA replication

B. two cell divisions in which chromosome number is reduced to half

C. two cell devisions with only two rounds of chromosome replication

D. a single cell division with chromosome replication.

Answer: B

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58. Which of the following is not the feature of meiosis?

A. Meiosis involves two sequenctial cycles of nuclear and cell division, meiosis I and meiosis II but only a single cycle of DNA replication.

B. Meiosis I is initiated after the parental chromosomes have replicated to produce identical sister chromatids at the S-

phase.

C. Meiosis involves pairing of non-homologous chromosomes and recombination between them.

D. Four haploid cells are formed at the end of meiosis II.

Answer: C

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59. Best material to study meiosis is

A. root tip

B. ovary

C. young anther

D. pollen grain.

Answer: C

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60. The term "meiosis" was given by

A. Johannsen

B. Knoll and Ruska

C. A. Flemming

D. Farmer and Moore.

Answer: D

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

A. Leptotene

B. Zygotene

C. Pachytene

D. Diplotene

Answer: A

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62. Zygotene of prophase-I is characterised by

A. chromomeres

B. synaptonemal complex

C. crossing over

D. terminalisation of chiasmata.

Answer: B

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63. Crossing over in diploid organisms is responsible for

A. dominance of genes

B. linkage between genes

C. segregation of alleles

D. recombination of alleles.

Answer: D

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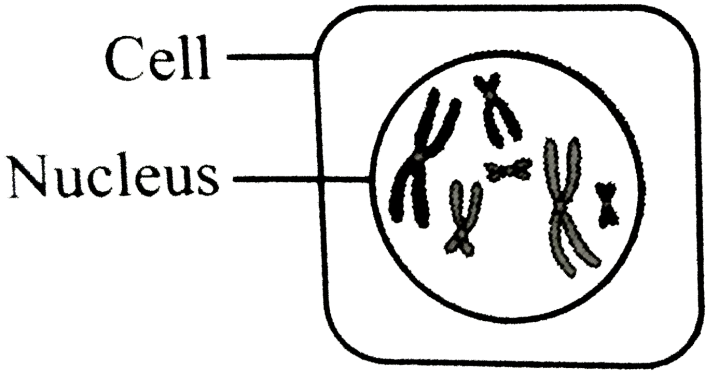
64. Which of the following is correct regarding the given figure?



A. 3 6 12

B. 3 6 12

C. 6 6 12

D. 6 12 6

Answer: B

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65. The members of a homologous pair of chromosomes

A. are identical in size and appearance

B. contain identical genetic information

C. seperation and move to opposite poles of the cell during mitosis

D. are found only in hploid cells.

Answer: A

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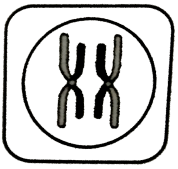
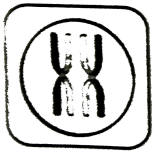
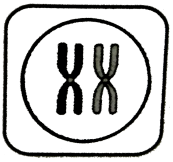
66. Which of the following correctly shows a pair of homologous chromosomes at the start of meiosis?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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67. Which of the following is correct about bivalent?

(i) Bivalents are tetrads.

(ii) A bivalent means 4 chromatids and 2 centromeres.

(iii) One bivalent consists of 2 homologous chromosomes.

(iv) Bivalents form in zygotene.

A. i,ii,iii and iv

B. iii only

C. iii and iv

D. iv only

Answer: A

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68. The process of crossing over is assisted by which of the following enzymes?

A. Endonuclease

B. Polymerase

C. Ligase

D. Both a and c

Answer: D

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69. To build up food reserves in the cytoplasm, chromosomes become unfolded to start transcription of mRNA and rRNA, during which phase of meiosis I ?

A. Diakinesis

B. Zygotene

C. Diplotene

D. Leptotene

Answer: C

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

A. Zygotene

B. Pachytene

C. Diplotene

D. Diakinesis

Answer: C

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71. Diplotene stage of prophase-I is characterised by

A. dissolution of synaptonemal complex

B. separation of synapsed homologous chromosomes except at the site of croosovers

C. formation of X-shpaed structures called chiasmata

D. all of these

Answer: D

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72. (i) Thin thread like chromosomes with a beaded appearance

(ii) Appearance of recombination nodules

(iii) Formation of bivalents/tetrads

(iv) Terminalisation of chiasmata

(v) Appearance of chiasmata

Identify the different stages with respect to the above given features and select the correct option.

A.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Zygotene	Pachytene	Diplotene	Diakinesis

B.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Zygotene	Pachytene	Diakinesis	Diplotene

C.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Pachytene	Zygotene	Diakinesis	Diplotene

D.

(i)	(ii)	(iii)	(iv)	(v)
Leptotene	Pachytene	Diplotene	Zygotene	Diakinesis

Answer: C

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73. (i) Thin thread like chromosomes with a beaded appearance

(ii) Appearance of recombination nodules

(iii) Formation of bivalents/tetrads

(iv) Terminalisation of chiasmata

(v) Appearance of chiasmata

Arrange the given statements in the correct sequence of their occurrence during prophase I.

A. $i \rightarrow ii \rightarrow ii \rightarrow v \rightarrow iv$

B. $i \rightarrow ii \rightarrow iii \rightarrow iv \rightarrow v$

C. $i \rightarrow iv \rightarrow v \rightarrow ii \rightarrow ii$

D. $i \rightarrow iii \rightarrow ii \rightarrow iv \rightarrow v$

Answer: A

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74. Match the column I with column II and select the option from given codes.

Column I	Column II
Synaptonemal complex	(i) Pachytene
Recombination nodule	(ii) Zygotene
Terminalisation of chiasmata	(iii) Telophase I
Formation of dyad cell	(iv) Diakinesis

A. ii,i,iv,iii

B. i,ii,iv,iii

C. iii,i,iv,ii

D. ii,i,iii,iv

Answer: A

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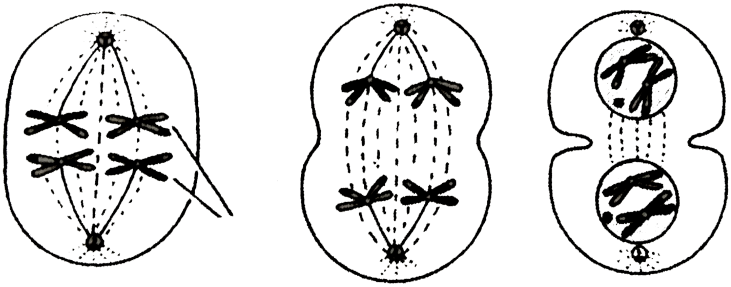
75. Identify the given figures showing meiotic phases and select the correct option.



A. $\underset{\text{Metaphase}}{A}$ $\underset{\text{Anaphase}}{B}$ $\underset{\text{Telophase}}{C}$

B. $\underset{\text{Methaphase I}}{A}$ $\underset{\text{Anaphase I}}{B}$ $\underset{\text{Telophase I}}{C}$

C. $\underset{\text{Metaphase II}}{A}$ $\underset{\text{Anaphase II}}{B}$ $\underset{\text{Telophase II}}{C}$

D. $\underset{\text{Anaphase I}}{A}$ $\underset{\text{Metaphase I}}{B}$ $\underset{\text{Telophase I}}{C}$

Answer: B

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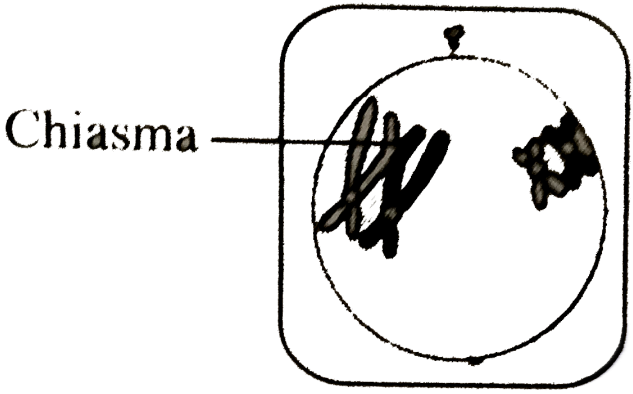
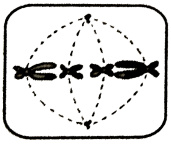
76. The figure given below shows a cell undergoing meiosis.

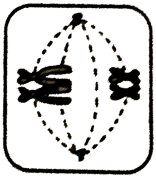


Which of the option below shows the next stage in the process?

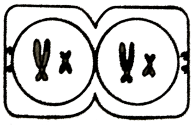
A. (a)



B. (b)



C. (c)

D. (d) 

Answer: B

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77. Disjunction refers to

A. the separation of homologous chromosomes at anaphase I

B. the type of chromosomal aberration in which there is loss of a part of a chromosome

C. incopatibility in fungi and other thallophytes

D. modification of gene action by a nonallelic gene.

Answer: A

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78. Lampbrush chromosomes are seen in which typical stage?

A. Mitotic anaphase

B. Mitotic prophase

C. Mitotic metaphase

D. Meiotic prophase

Answer: D

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79. Match column I with column II and select the correct option from the given codes.

Column I	Column II
Chromosomes move to equator	(i)Pachytene
Centromere splits and	(ii)Zygotene
Pairing between homologous chromosomes	(iii)Anaphase
Crossing over between homologous chromosomes	(iv)Metaphase

A. i,ii,iii,iv

B. ii,iii,iv,i

C. iv,iii,ii,i

D. iii,i,iv,ii

Answer: C

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80. During meiosis I,chromosome number

A. is reduced to half

B. doubles up

C. remains the same

D. either a or b

Answer: A

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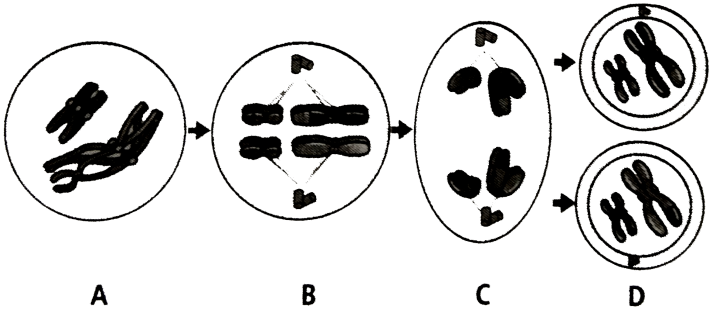
81. Refer to the given stages A,B,C and D of meiosis I and select the incorrect statement regarding them.



A. The last stage of A is diakinesis which is marked by terminalisation of chiasmata.

B. In stage B, mictrotublues from the opposite poles of the spindle attach to the pair of homologous chromosomes.

C. In stage C, homologous chromosomes separate. While sister chromatids remain associated at their centromeres.

D. In stage D, nuclear membrane and nucleolus disappear, cytokinesis follows and this is called as dyad of cells.

Answer: D

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82. During meiosis I in humans, one of the daughter cells receives

A. only material chromosomes

B. a mixture of maternal and paternal chromosomes

C. same number of chromosomes as percent in parent cell

D. none of these.

Answer: B

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83. The number of chromosomes is reduced to half during

A. mitosis

B. meiosis iII

C. Meiosis involves pairing of non-homologous chromosomes and recombination between them.

D. fertilisation.

Answer: C

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84. Four different steps that occur during meiosis are given in the following list.

(i) Complete separation of chromatids

(ii) Pairing of homologous chromosomes

(iii) Lining up of paired chromosomes on equator

(iv) Crossing over between chromatids

Select the correct sequential arrangement of the steps.

A. ii,iii,iv,i

B. iii,ii,iv,i

C. ii,iv,iii,i

D. iii,i,ii,iv

Answer: C

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85. Select the incorrectly matched pair.

A. Phragmoplast - Peristent spindle

B. Reductional division - Meiosis I

C. Equational division - Meiosis II

D. Crossing over - Non-homologous chromosomes

Answer: D

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86. Splitting of centromere and hence separation of chromatids occur during

A. anaphase of mitosis

B. anaphase of meiosis I

C. anaphase of meiosis II

D. Both a and c

Answer: D

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87. If gametes are produced after reduction division, they are termed as

A. coenogmates

B. mitogametes

C. pseudogametes

D. meiogametes.

Answer: D

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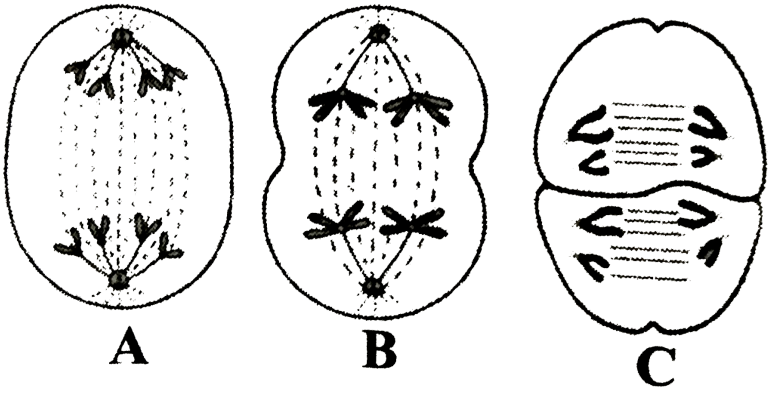
88. If 2n=4, then identify the figures A,B and C, as per the following codes and select the correct option



Anaphase of meiosis I=(i)

Anaphase of mitosis =(ii)

Anaphase meiosis II =(iii)

A. ii,i,iii

B. iii,ii,iv,i

C. i,ii,iii

D. iii,i,ii

Answer: A

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89. What does (I) and (II) represent in the given flowchart? Parent cell $\xrightarrow{M-I}$ 2 Daughter cells $\xrightarrow{M-II}$ 4 Daughter cells

A. (i)=2n

(ii)=n

B. (i)=n

(ii)=n

C. (i)=n

(ii) =2n

D. (i)=2n

(ii)=2n

Answer: B

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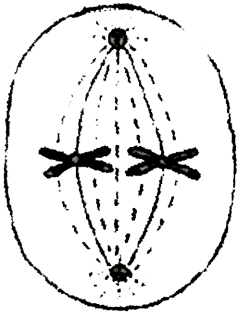
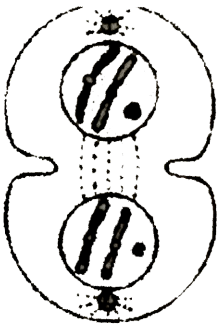
).



?

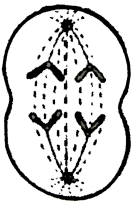


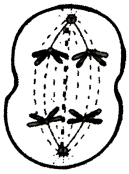
(i) (ii) (iii)

90.

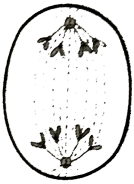
In above sequence of figures showing different stages of cell

division, the missing stage (ii) is

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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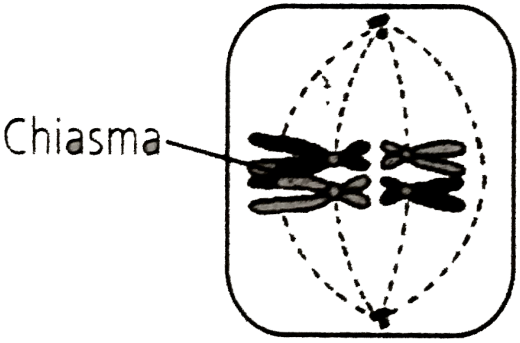
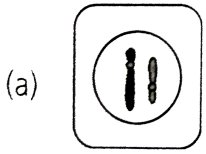
91. Consider the given cell at metaphase-I stage undergoing normal meiosis.

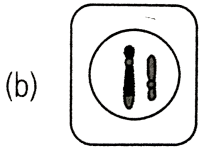


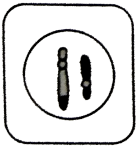
Which of the following gametes will not be formed from this cell?

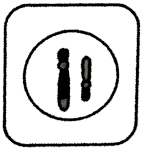
A.



B.



C. (c) 

D. (d) 

Answer: D

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92. While in mitosis, the daughter cells resemble each other and alos the parent cell, in meiosis they differ not only fom parent cell in having half the number of chromosomes. But also differ among themselves qualitatively in genetic consitution due to

A. segregation and crossing over only

B. independent assortment and segregation only

C. independent assortment and croosing over only

D. crossing over, idependent assortment and segregation.

Answer: D

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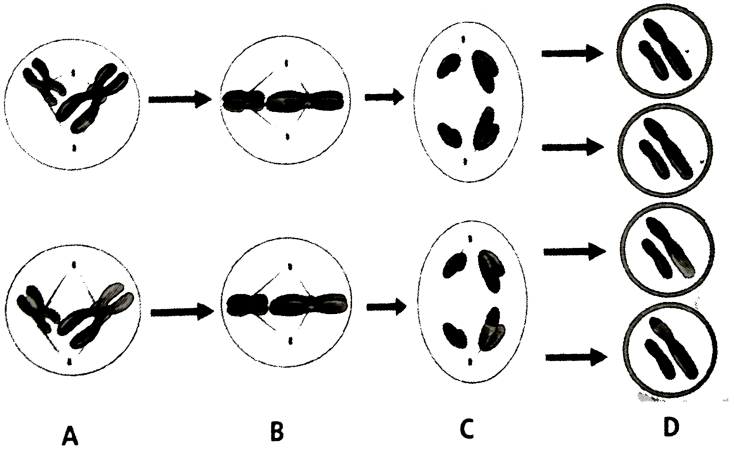
93. Refer to the the given and select the correct statement



A. In stage B homologous chromosomes are interconnected and chromosomes occurs in pairs.

B. Stage A is divisible into five substages

C. In stage D, chormosmes are not enclosed by a nuclear envelope.

D. In stage C centromeres divide and chromosomes are single stranded.

Answer: D

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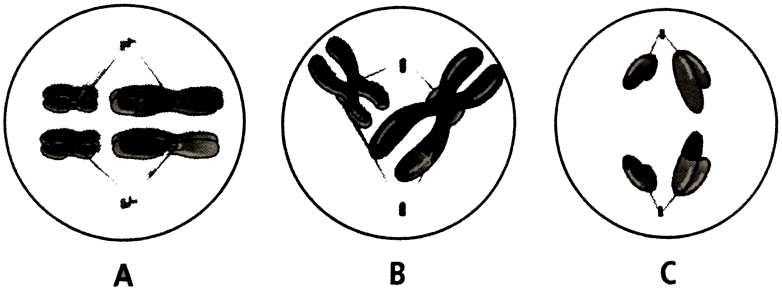
94. Refer to the given figure.



Identify A,B and C and select the correct option.

A. $\begin{matrix} A & B & C \\ \text{Prophase I} & \text{Methaphse I} & \text{Anaphase I} \end{matrix}$

B. $\begin{matrix} A & B & C \\ \text{Metaphase I} & \text{Prophase II} & \text{Anaphase II} \end{matrix}$

C. $\begin{matrix} A & B & C \\ \text{Metaphase I} & \text{Metaphase II} & \text{Anphase} \end{matrix}$

D. $\begin{matrix} A & B & C \\ \text{Prophase II} & \text{Metaphase II} & \text{Anaphase II} \end{matrix}$

Answer: B

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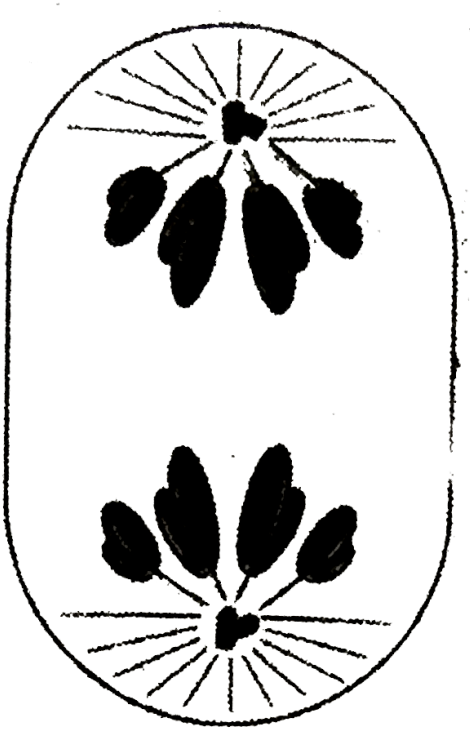
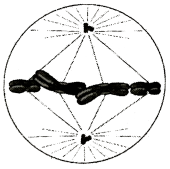
95. Refer to the given figure of cell division.

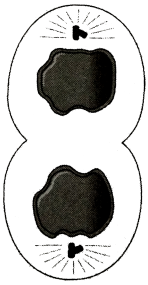


Which of the following options show previous stage of this process?

A. (a) 

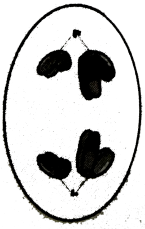
B.

(b)



C.

(c)



D.

(d)

Answer: A

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96. In which of the following ways are mitosis and meiosis similar?

A. Both have pairing of homologous chromosomes.

B. Both are preceded by DNA replication.

C. Both occur in all kinds of cells.

D. Both include separation of paired chromomes.

Answer: B

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97. At what phase of meiosis there are two cells, each with separated siter chromatids that have been moved to opposite spindle poles?

A. Anaphase II

B. Anaphase I

C. Telophase II

D. Telophase I

Answer: A

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98. An another has 1200 pollen grains. How many PMCs must have been there to produce them?

A. 1200

B. 300

C. 150

D. 2400

Answer: B

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99. Meiosis does not occur in

A. bacteria

B. cyanobacteria

C. plant cell

D. both a and b

Answer: D

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100. In animals meiotic division occurs during gamete formation. This gametic meiosis results in

A. haplontic life cycle

B. diplontic life cycle

C. diplohaplontic life cycle

D. none of these

Answer: B

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101. The durations of mitotic stages in two situations. (A and B) are tabulated below.

Phase	Duration of Mitotic Stages (in Minutes)	
	A	B
Interphase	1356(22.6 h)	870 (14.5 h)
Prophase	126	54
Metaphase	24	14
Anaphase	5	3
Telophase	22	11
Total	**1533(25.6 h)**	**952(15.9 h)**

Following are some interpretations:

1. 'A' and 'B' indicate the same plant tissue grown at higher and

lower temperature respectively.

II. 'A' indicates a slow growing plant species and 'B' indicates a fast growing plant species.

III. Both 'A' and 'B' indicate dormant plant tissues with excessively long interphase.

The correct interpretations is/are

A. i and iii only

B. II and III

C. III only

D. II only

Answer: D

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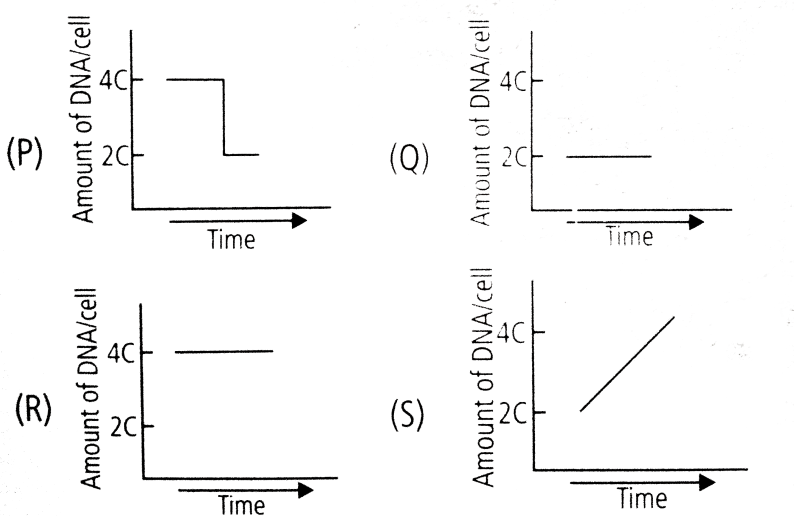
102. Given graphs P,Q,R and S show four stages of cell cycle i.e., G_1,S,G_2 and M, but in random order. Identify the stages and match with the activites of the cell.

I. Taxol treatment, which prevent microtubule depolymerization, arrests the cell at this tage .

II. With a mitogen treatment , such as an epidermal growth factor, and arrested cell at this stage proceeds to the next stage of the cell cycle.

III. The cell cycle check point at this stage confirms. that DNA duplication is complete before the cell proceeds to the next

stage



A. I-R,II-Q,III-R

B. I-Q,II-S,III-R

C. I-R,II-Q,III-S

D. I-P,II-S,III-Q

Answer: A

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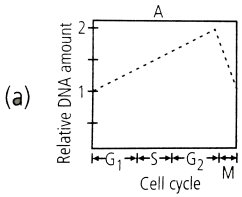
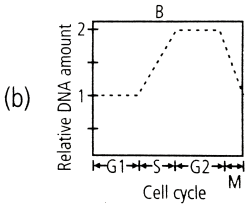
103. Which of the following graphs shows the relative change in the amount of mitochondrial DNA of a cell undergoing mitosis?

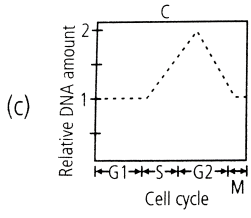
A.



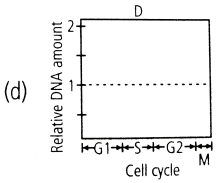
B.



C.



D.



Answer: A

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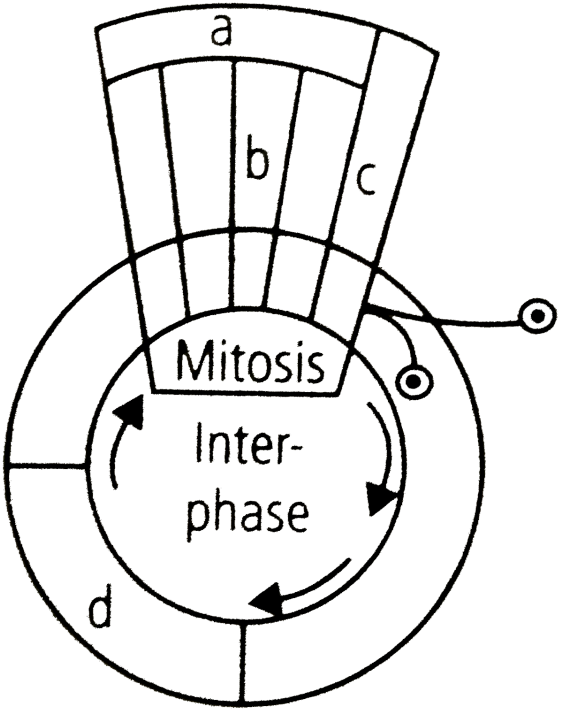
104. The given figure is a schematic breadk-up of the phases/stages of cell cycle. Select the correct option regarding it.



A. a' represents karyokinesis which is the division of cytoplasm.

B. b' is telophase which is just reverse of prophase.

C. c' is the best phase to count total number of chromosomes in any species.

D. in 'd' stage, replication of DNA takes place on the template of the existing DNA.

Answer: D

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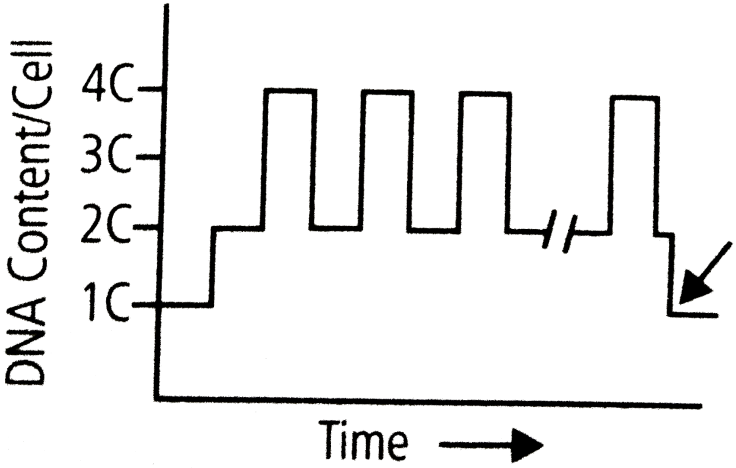
105. Given diagram shows variations in the amount of DNA of a developing eukaryote. What the arrow denotes?



A. First meiotic anaphase

B. Second meiotic anaphase

C. Mitotic anaphase

D. Mitotic telophase

Answer: B

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106. Meiosis in diploid organisms results in

A. production of gametes

B. reduction in the number of chromosomes

C. introduction of variation

D. all of the above

Answer: D

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

A. Metaphase I

B. Anaphase II

C. Metahphase II

D. Anaphase I

Answer: D

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108. Meiosis occurs in organisms during

A. sexual reproduction

B. vegetative reproduction

C. both sexual and vegetative reproduction

D. none of these

Answer: A

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109. During anaphase I of meiosis

A. homologous chromosomes separate

B. non-homologous chromosomes separate

C. sister chromatids chromosomes separate

D. non-sister chromatids chromosomes separate.

Answer: A

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110. Mitosis is characterised by

A. reduction division

B. equal division

C. both reduction and equal division

D. paring of homologous chromosomes.

Answer: B

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111. 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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112. Cells which are not dividing are likely to be at

A. G_1 phase

B. G_2 stage

C. G_0

D. S phase.

Answer: C

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

A. chromatic condensation

B. Movement of centrioles to opposite poles

C. Appearance of chromosomes with two chromatids joined together at the centromere

D. Crossing over

Answer: D

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114. Identify the wrong statement about meiosis.

A. Pairing of homologous chromosomes.

B. Four haploid cells are formed.

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

D. Two cycles of DNA replication occur

Answer: D

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115. Select the correct statement about G_1 phase.

A. Cell is metabolically inactive.

B. DNA in the cell does not replicate.

C. It is not a phase of synthesis of macromolecules.

D. Cell stops growing.

Answer: B

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116. Assertion : Interphase occupies 75-95% of the total generation time.

Reason: Interphase (I-phase) is the long non-dividing phase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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117. Assertion: Some cells enter G_0 phase leasding to inactivation of cell cycle.

Reason: G_0 phase occurs due to non-availability of mitogen and enrgy rich compounds.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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118. Assertion: G_1 phase is the interval between mitosis and initiation of DNA replication.

Reason: The cell is metabolically inactive druing G_1 phase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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119. Assertion: Prophase is the first stage of mitosis which follows S and G_1 phases of interphase.

Reason: Prophase is marked by the intiation of clusters of chromocomes.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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120. Assertion: Small disc-shaped structures at the surface of the centromeres are called kinetiochores.

Reason: Kinetochores serve as the sites of attachement of spindle fibres to the centreomeres.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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121. Assertion: During anaphase, centromere of each chromosome splites and chromatids separate.

Reason: During anaphase, chromatids move to opposte poles.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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122. Assertion: Karyokinesis follows cytokinesis.

Reason: Karyokinesis is the division of cytoplasm into two daughter cells.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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123. Assertion: Cell growth results in disturbing the ratio between the nucleus and cytoplasm.

Reason: Mitosis helps the cell to restore the nucleocytoplasmic ratio:

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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124. Assertion: The process of pairing of the chromosomes is called synapsis.

Reason: Synapsis occurs during leptotene stage.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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125. Assertion: Crossing over leads to recombination of genetic material on the two chromosomes.

Reason: Crossing over is the exchange of genetic material between two homologous chromosomes.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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126. Assertion: The crossing over is an enzyme-mediated process.

Reason: The enzyme involved in crossing over is lyase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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127. Assertion: The final stage of meiotic prophase I is diplotene.

Reason: Diplotene is marked by terminalisation of chaisamata.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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128. Assertion: The stage between the two meiotic divisions is called interkinesis.

Reason: Interkinesis is generally short lived.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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129. Assertion: Metaphase II begins with splitting of centromere of each chromosome into two.

Reason: In Anaphase II chromosomes align at the equator.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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130. Assertion: Variations are important for the process of evolution.

Reason: Meiosis increases the genetic variability in the population of organisms from one generation ot the next.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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