BIOLOGY

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

CELL CYCLE AND CELL DIVISION

Exercise

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

A. Chromosomes will not condense

B. Chromosomes will be fragmented

C. Chromosomes will not segregate

D. Recombination of chromosome arms will occur

Answer: C

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

A. Condensation $\rightarrow$ nuclear membrane disassembly $\rightarrow$ crossing over $\rightarrow$ segregation $\rightarrow$ telophase

B. Condensation $\rightarrow$ nuclear membrane disassembly $\rightarrow$ arrangement at equator $\rightarrow$ centromere division $\rightarrow$ segregation $\rightarrow$ telophase

C. Condensation $\rightarrow$ crossing over $\rightarrow$ nuclear membrane disassembly $\rightarrow$ segregation $\rightarrow$ telophase

D. Condensation $\rightarrow$ arrangement at equator $\rightarrow$ centromere division $\rightarrow$ segregation $\rightarrow$ telophase

Answer: B

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3. In meiosis crossing over is initiated at

A. leptotene

B. zygotene

C. diplotene

D. pachytene

Answer: D

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

A. Disapearance of nucleolus

B. Chromosome movement

C. Synapsis

D. Spindle fibres

Answer: C

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5. Spindle fibers attach on to

A. kinetochore of the chromosome

B. centromere of the chromosome

C. kinetosome of the chromosome

D. telomere of the chromosome

Answer: A

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

A. G_1 / S

B. G_2 / M

C. M

D. Both G_2 / M and M

Answer: A

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7. Mathc the stages of meisos in Column I to their characteristic features in Column II and select the correct option using the codes given below

Column-I	Column-II
Pachytene	(i) Pairing of homologous chromosomes
Metaphase I	(ii) Terminalization of chiasmata
Diakinesis	(iii) Crossing-over takes place
Zygotene	(iv) Chromosomes align at aquatorial plate

A.

A	B	C	D
3	4	2	1

B.
A	B	C	D
1	4	2	3

C.
A	B	C	D
2	4	3	1

D.
A	B	C	D
4	3	2	1

Answer: A

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8. During cell growth, DNA synthesis takes place in

A. S-phase

B. G_1-phase

C. G_2-phase

D. M-phase

Answer: A

9. Arrange the following events of meiosis in correct sequence

(a) Crossing over

(b) Synapsis

(c) Terminalisation of chiasmata

(d) Disappearance of nucleolus.

A. II, I, IV, III

B. II, I, III, IV

C. I, II, III, IV

D. II, III, IV, I

Answer: B

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

A. G_0 and G_1

B. G_1 and S

C. Only G_2

D. G_2 and M

Answer: D

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11. In 'S' phase of the cell cycle

A. amount of DNA doubles in each cell

B. amount of DNA remains same in each cell

C. chromosome number is increased

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

Answer: A

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

A. Pachytene

B. Zygotene

C. Diplotene

D. Diakinesis

Answer: A

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

A. equatorial plate

B. kinetochore

C. bivalent

D. axoneme

Answer: C

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14. Meiosis takes place in

A. meiocyte

B. conidia

C. gemmule

D. megaspore

Answer: A

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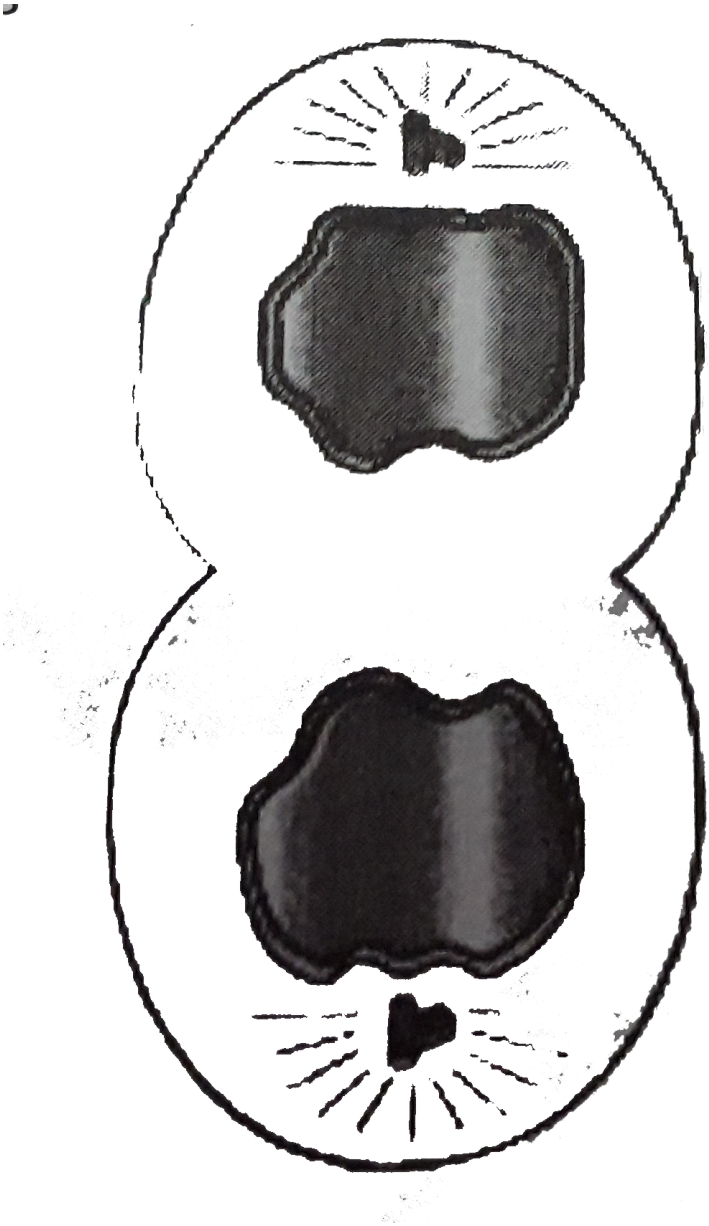
15. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the

stage with its chracteristics



A. Telophase - Nuclear envelope reforms, Golgi complex reforms

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

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

D. Telophase - Endoplasmic reticulum and nucleolus not reformed yet

Answer: A

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16. During gamete formation, the enzyme recombinate participates during

A. metaphase - I

B. anaphase - II

C. prophase -I

D. prophase - II

Answer: C

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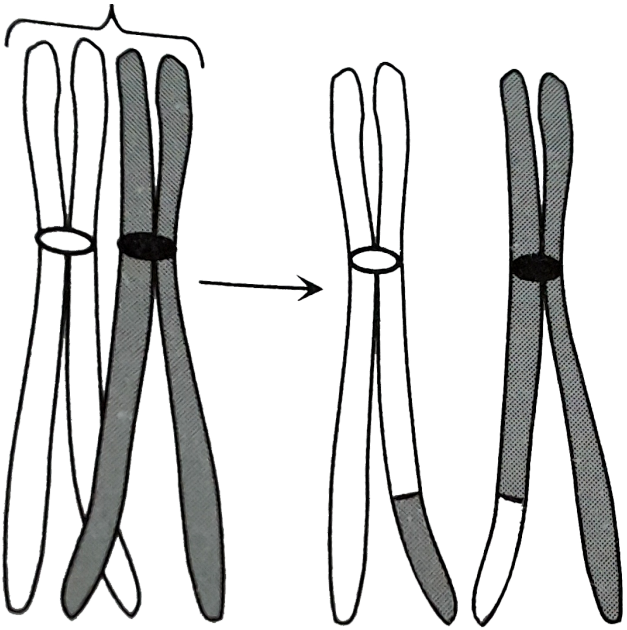
17. Given below is the representation of a certain event at a particular stage of a type of cell division. Which is

this stage



A. Prophase-I during meiosis

B. Prophase -II during meiosis

C. Prophase of mitosis

D. Both prophase and metaphase of mitosis

Answer: A

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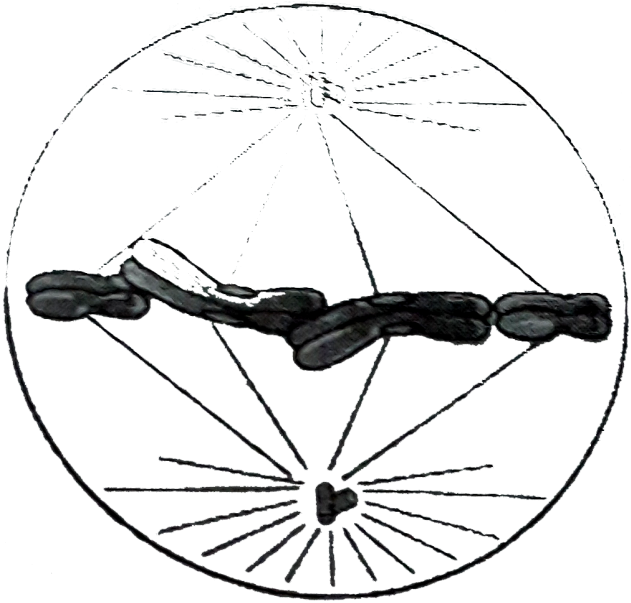
18. Select the correct option with respect to mitosis



A. Chromatids start moving towards opposite poles in telophase

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

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

D. Chromatids separate but remains in the centre of the cell in anaphase

Answer: C

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19. During mitosis ER and nucleolus begin to disappear at

A. late prophase

B. early metaphase

C. late metaphase

D. early prophase

Answer: D

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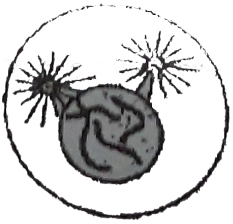
20. Which stages of cell division do the following figures

A and B represent respectively

A



B

A. Metaphase - Telophase

B. Telophase - Metaphase

C. Late anaphase - Prophase

D. Prophase - Anaphase

Answer: C

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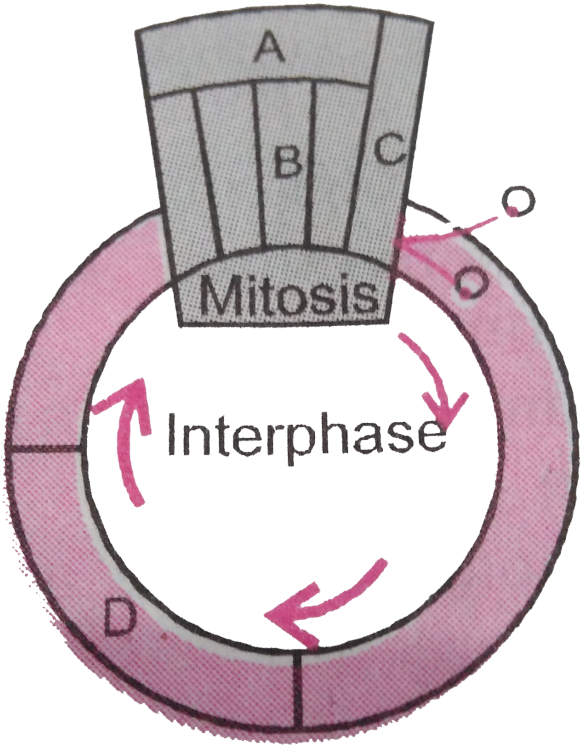
21. Given below is schematic break-up of phases of cell cycle. Which one is correct matching ?



A. B-metaphase

B. C-karyokinesis

C. D-synthetic phase

D. A-cytokinesis

Answer: C

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22. Synapsis occurs between

A. a male and a female gamete

B. mRNA and ribosomes

C. spindle fibres and centromere

D. two homologous chromosomes

Answer: D

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23. The salivary gland Chromosomes in the dipteran larvae, are useful in gene mappin because

A. these are much longer in size

B. these are easy to stain

C. these are fused

D. they have endoreduplicated chromosomes

Answer: D

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24. Centromere is rquired for

A. movement of chromosomes towards poles

B. cytoplasmic cleavage

C. crossing over

D. transcription

Answer: A

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

A. During G_2 - stage of prophase

B. During S-phase

C. During entire prophase

D. During telophase

Answer: B

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26. 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. Metaphase

B. Telophase

C. Anaphase

D. Prophase

Answer: A

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

A. Decondensation from chromosomes and reassembly of the nuclear lamina

B. Transcription from chromosomes and reassembly of the nuclear lamina

C. Fromation of the cntractile ring and formation of the phragmoplast

D. Formation of the contractile ring and transcription form chromosomes

Answer: A

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28. In the somatic cell cycle.

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

B. DNA replication takes place in S-phase

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

D. G_2- phase follows mitotic phase

Answer: B

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29. Crossing over that results in genetic recombination in higher organisms occurs between

A. sister chromatids of bivalent

B. non-sister chromatids of a bivalent

C. two daughter nuclei

D. two different bivalents

Answer: B

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30. Mitotic spindle is mainly composed of __ proteins.

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31. Best material to study meiosis is

A. anther

B. root tip

C. leaf tip

D. ovary

Answer: B

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32. Which of the following occurs more than one and less than five in a chromosome?

A. Chromatid

B. Chromosome

C. Centromere

D. Telomere

Answer: D

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33. If a diploid cell is treated with colchicine, then it becomes

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

A. chromocentre

B. kinetochore

C. centriole

D. chromomere

Answer: B

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35. Crossing over in diploid organism is responsible for

A. dominance of genes

B. linkage between genes

C. segregation of alleles

D. recombination of linked alleles

Answer: D

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36. A bacterium divides every 35 minutes. If a culture containing 10^5 cells/ml is grown for 175 minutes. What will be the cell concentration / ml after 175 minutes

A. 5×10^5 cells

B. 35×10^5 cells

C. 32×10^5 cells

D. 175×10^5 cells

Answer: C

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37. During cell division in apical meristem nuclear membrane reappears in

A. metaphase

B. anaphase

C. telophase

D. cytokinesis

Answer: C

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38. How many mitotic divisions are needed for a single cell to make 128cells

A. 7

B. 14

C. 28

D. 64

Answer: A

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39. Which of the folliwng structure will not be common to mitotic cell of a higher plant

A. Cell plate

B. Centriole

C. Centromere

D. Spindle fibres

Answer: B

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40. The exchange of genetic material between chromatids of paired homologous chromosomes during first meiotic division is called

A. transformation

B. chiasmata

C. crossing over

D. synapsis

Answer: C

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41. Lampbrush chromosomes are visible

A. prophase of mitosis

B. diplotene of meiosis

C. metaphase of meiosis

D. interphase

Answer: B

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42. The point at which the polytene chromosomes appeart to be attached togeher is known as

A. centriole

B. centromere

C. chromomere

D. chromocentre

Answer: D

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43. Meiosis is evolutionary significant because it results in

A. genetically similar daughters

B. four daughter cells

C. eggs and sperms

D. recombinations

Answer: D

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44. Best stage to observe shape, size and number of chromosome is

A. interphase

B. metaphase

C. prophase

D. telophase

Answer: B

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45. In salivary gland chromosomes/polytene chromosomes, pairing is

A. absent

B. occasional

C. formed between non-homologous chromosomes

D. formed between homologous chromosomes

Answer: D

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46. Meiosis II performs

A. separation of sex. Chromosomes

B. synthesis of DNA and centromeres

C. separation of homologous chromosomes

D. separation of chromatids

Answer: D

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47. Balbiani rings (puffs) are sites of

A. DNA replication

B. RNA and protein synthesis

C. synthesis of polysaccharides

D. synthesis of lipids

Answer: B

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48. Number of chromatids per chromosome at metaphase is

A. two each in mitosis and meiosis

B. two in mitosis and one in meiosis

C. two in mitosis and four meiosis

D. one in mitosis and two in meiosis

Answer: A

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

A. segregation, independent assortment and crossing over

B. segregation and crossing over

C. independent assortment and crossing over

D. segregation and independend assortment

Answer: B

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50. Mitotic anaphase differs from metaphase in possessing

A. same number of chromosomes and same number of chromatids

B. half number of chromosomes and half number of chromatids

C. half number of chromosomes and same number of chromatids

D. same number of chromosomes and half number of chromatids

Answer: D

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51. 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

52. Meiosis-I is reductional division. Meiosis-II is equational division due to

A. pairing of homologous chromosomes

B. crossing over

C. separation of chromatids

D. disjunction of homologous chromosomes

Answer: C

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