RAVI MATHS TUITION CENTRE , WHATSAPP - 8056206308

Time : 60 Mins **10 CELL CYCLE AND CELL DIVISION 1** **Marks : 240**

Instruction

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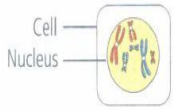
1. Divison of centromere occurs in;
   a) Prophase b) Metaphase c) Anaphase d) Telophase
2. The significance of Melosis is that it -
   a) $2n \overset{Mitosis}{\longrightarrow} n \overset{Fertilization}{\longrightarrow} 2n \overset{Meiosis}{\longrightarrow} 2n$ b) $2n \overset{Meiosis}{\longrightarrow} 2n \overset{Fertilization}{\longrightarrow} 2n \overset{Mitosis}{\longrightarrow} n$
   c) $2n \overset{Meiosis}{\longrightarrow} n \overset{Fertilization}{\longrightarrow} 2n \overset{Mitosis}{\longrightarrow} 2n$ d) $2n \overset{Fertilization}{\longrightarrow} (n) \overset{Mciosis}{\longrightarrow} 2n \overset{Meiosis}{\longrightarrow} n$
3. Match the column - I with column - II and select the correct answer :

	Column - I		**Column - II**
(A)	Pachytene	(i)	Bouguet stage
(B)	Zygotene	(ii)	Chiasma visible
(C)	Diplotene	(iii)	Terminalisation
(D)	Leptolene	(iv)	Gene exchange
(E)	Diakinesis	(v)	Synapis

   a) A - i, B - ii, C-iii, D-iv, E-v b) A - iv, B - v, C-ii, D-i, E-iii c) A - iii, B - iv, C-v, D-ii, E-i
   d) A - ii, B - iii, C-iv, D-i, E-v
4. Which of the following is correct regarding the given figure?



   a)

Number of pairs of homologous chromosomes	Number of chromatids	Number of centromeres
3	6	12

   b)

Number of pairs of homologus chromosomes	Number of chromatids	Number of centromeres
3	12	6

   c)

Number of pairs of homologus chromosomes	Number of chromatids	Number of centromeres
6	6	12

   d)

Number of pairs of homologus chromosomes	Number of chromatids	Number of centromeres
6	12	6

5. At anaphase - II of melosis each chromosome contains ;
   a) 4 DNA b) 3 - DNA c) 2 - DNA d) 1 - DNA

6. 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
7. Identify the different stages with respect to the above given features and select the correct option.
   (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

   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

8. Terminalization is related to
   a) Diakinesis b) Zygotene c) Leptotene d) Pachytene
9. Centrosome undergo duplication during (i) of (ii) and begin to move towards opposite poles of the cell during (iii) stage of (iv).

   a)

(i)	**(ii)**	**(iii)**	**(iv)**
s phase	Interphase	Prophase	Mitosis

   b)

(i)	**(ii)**	**(iii)**	**(iv)**
s phase	Interphase	Anaphase	Mitosis

   c)

(i)	**(ii)**	**(iii)**	**(iv)**
Prophase	Mitosis	Metaphase	Mitosis

   d)

(i)	**(ii)**	**(iii)**	**(iv)**
Prophase	Mitosis	Anaphase	Mitosis

10. Which phase of mitosis is essentially the reverse of prophase in terms of nuclear changes?
    a) S-phase b) Anaphase c) Telophase d) Interphase
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 consistsof 2 homologouschromosomes.
    (iv) Bivalents form in zygotene
    a) (i), (ii), (iii) and (iv) b) (iii) only c) (iii) and (iv) d) (iv) only
12. Best material to study meiosis is
    a) root tip b) ovary c) young anther d) pollen grain
13. 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) Formation of the contractile ring, and formation of the phragmoplast.
    d) Formation of the contractile ring, and transcription from chromosomes.
14. 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.
15. 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 is doubled, number of chromosomes also doubles
16. If a diploid cell is treated with colchicine then it becomes _____ .

a) Triploid b) Tetraploid c) Diploid d) Monoploid

17. Meiosis has evolutionary significance because it results in _____ .
    a) Genetically similar daughters b) Four daughter cells c) Eggs and sperms d) Recombinations
18. If the number of bivalents are 8 in metaphase - I, what shall be the number of chromosomes in daughter cells after meiosis - I and meiosis -II respectively;
    a) 8 and 4 b) 4 and 4 c) 8 and 8 d) 16 and 8
19. Which of the two events restore the normal number of chrmosomes in life cycle?
    a) Mitosis and Melosis b) Meiosis and fertilisation c) Fertilisation and mitosis d) Only melosis
20. The movement of homologous chromosomes towards opposite poles occur by diassembly of spindle fibres during
    a) Anaphase b) Anaphase-I c) Anaphase-II d) Metaphase
21. Which one of the following statements is correct?
    a) Cell divided by cytokinesis only in mitosis b) DNA is replaced before the start of meiosis only
    c) Spindles consisting of microtubules are formed only in mitosis
    d) Exchage ge genetic materials occurs only in meiosis
22. 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, cell plate
23. 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
24. 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.
25. 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.
26. To produce 102 pollen grains, how many meiotic divisions are required?
    a) 25 b) 25.5 c) 26 d) 27
27. Which of the following is longest phase of the cell cycle?
    a) prophase b) Interphase c) Telophase d) M - Phase
28. The correct sequence of prophase - I of melosis is;
    a) Leptotene, pachytene, zygotene, diplotene, diakinesis
    b) Leptotene, diplotene, pachytene, zygotene, diakinesis
    c) Leptotene, zygotene, pachytene, diplotene, diakinesis d) Leptotene, zygotene, diakinesis, diplotene
29. Meiosis occurs in organisms during:
    a) sexual reproduction b) vegetative reproduction c) both sexual and vegetative reproduction
    d) none of these.
30. Match column I with column II and select the correct option from the given codes.

	Column I		**Column II**
A.	Disintegration of nuclear membrane	(i)	Anaphase
B.	Appearance of nucleolus	(ii)	Prophase
C.	Division of centromere	(iii)	Telophase
D.	Replication of DNA	(iv)	S-phase

    a) A-(ii), B-(iii), C-(i), D-(iv) b) A-(ii), B-(iii), C-(iv), D-(i) c) A-(iii), B-(ii), C-(i), D-(iv)
    d) A-(iii), B-(ii), C-(iv), D-(i)

31. During cell division, spindle fibers attach to which part of chromosome ;
    a) Primary constriction b) Sec, constriction c) Chromomere d) Chromatid

32. Nuclear envelpoe disappears at
    a) Late metaphase b) Anaphase c) Early prophase d) Late prophase

33. 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

34. In meiosis , nuclear membrane and nucleolus disappear during ;
    a) Zygotene b) Pachytene c) Diakinesis d) Metaphase - I

35. During telophase
    a) Nuclear membrance is formed b) Nucleols appears c) Astral rays disappear d) All the above

36. During cell cycle, two molecules of DNA are present in chromosome during
    a) G_1 phase b) Beginning of S phase c) G_2 phase d) End of M-phase

37. _____is the best stage to count the number and study the morphology of chromosomes.
    a) Prophase b) Metaphase c) Anaphase d) Telophase

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

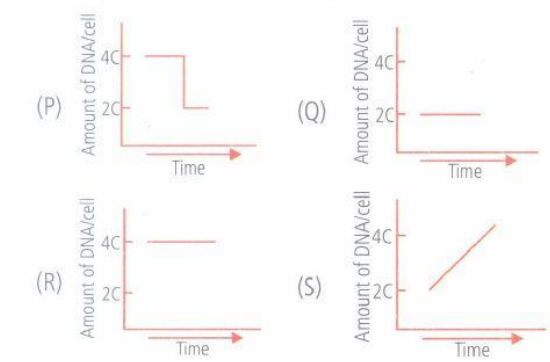
    Which of the options below shows the next stage in the process?

a) (a)  b) (b)  c)  d) (d) 

39. In cell Cycle. whioch stage is misnomerly called resting during ;
    a) S - Phase b) Telophase c) Cytokinesis d) Interphase

40. Given graphs P, Q, R and S show four stages of cell cycle i.e., G1, S, G2 and M, but in random order. Identify the stages and match with the activities of the cell.
    I. Taxol treatment, which prevents microtubule depolymerization, arrests the cell at this stage.
    II. With a mitogen treatment, such as an epidermal growth factor, an 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.



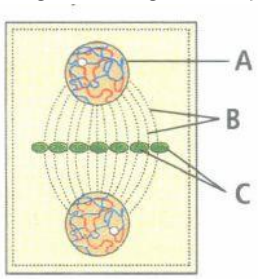
a) I - P, II - Q, III - R b) I - Q, II - S, III - R c) I - R, II - Q, III - S d) I - P, II - S, III - Q

41. Chromosome exhibit high level of coiling at which phase of karyokinesis;
    a) Prophase b) Metaphase c) Telophase d) Interphase
42. 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.
43. At which of the given stages of mitosis, chromosomes appear in V. L, J and I shapes.
    a) A b) B c) C d) D
44. Which of the following not occurs in Anaphase - I
    a) Segreation of homologous chromosomes b) Shortening in spindle
    c) Poleward movement of chromosomes d) Division of centromere
45. In the meiotic cell division, 56 daughter cels are produced by two successive divisions in which
    a) First division is equational, second is reductional b) First division is reductional, and second is equational
    c) Both divisions are reductional d) Both divisions are equational
46. After meiosis - I the two chromatids of a chromosome are ;
    a) Gnetically similar b) Gnetically different c) There occurs only one chromatld in each chrmosome
    d) None of the above
47. Chromosomal morphology (Structure) is best observed at;
    a) Prophase b) Metaphase c) Interphase d) Anaphase
48. Cells which are not dividing are likely to be at
    a) G_1 b) G_2 c) G_0 d) S phase
49. 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
50. Which stage DNA replication takes place?
    a) Metaphase b) G_1-phase c) S-phase d) G_2-phase
51. At which of the following stages, the chromosomes appear single, thin and thread like?
    a) Leptotene b) Zygotene c) Pachytene d) Diplotene
52. Lampbrush chromosomes are seen in which typical stage?
    a) Mitotic anaphase b) Mitotic prophase c) Mitotic metaphase d) Meiotic prophase
53. The concept of "Omnis cellula-e cellula" regarding cell division was first proposed by _____ .
    a) Theodore Schwann b) Schleiden c) Aristotle d) Rudolf Virchow
54. After karyogamy followed by meiosis, spores are produced exogenously in _____ .
    a) Agaricus b) Alternaria c) Neurospora d) Saccharomyces

55. Chiasmata appears during;
    a) Diakinesis b) Synaptotene c) Diplotene d) Leptotene

56. 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 chromatidsat 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.

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



a)

A	B	C
Daughter nucleus	Phargmoplast	Vesicles

b)

A	B	C
Daughter nucleus	Vesicles	Phargmoplast

c)

A	B	C
Parent nucleus	Vesicles	Phargmoplast

d)

A	B	C
Parent nucleus	Phargmoplast	Vesicles

58. 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

59. **Assertion:** The final stage of meiotic prophase I is diplotene.
    Reason: Diplotene is marked by terminalisation of chiasmata.
    a) If both assertion and reason are true and reason is the correct explanation of assertion
    b) If both assertion and reason are true but reason is not the correct explanation of assertion
    c) If assertion is true but reason is false d) If both assertion and reason are false

60. Microtubules are absent in
    a) mitochondria b) flagella c) spindle fibres d) centriole