1. Spindle fibers attach to kinetochores of chromosomes during **(2024)**

(a) Metaphase (b) Anaphase

(c) Telophase (d) Prophase

2. Given below are two statements : **(2024)**

Statements I : Chromosomes becomes gradually visible under microscope during leptotene stage.

Statements II : The beginning of diplotene stage is recognized by dissolution of synaptonemal complex.

In the light of the above statements, choose the correct answer from the options given below :

(a) Both statement I and Statement II are false

(b) Statement I is true but statement II is false.

(c) Statement I is false but statement II is true

(d) Both statement I and statement II are true

3. Match List I with List II : **(2024)**

List I (Sub Phases of Prophase I)		List II (Specific characters)	
A.	Diakinesis	I.	Synaptonemal complex formation
B.	Pachytene	II.	Completion of terminalisation of chiasmata
C.	Zygotene	III.	Chromosomes look like thin threads
D.	Leptotene	IV.	Appearance of recombination nodules

Choose the correct answer from the options given below:

(a) A-I, B-II, C-IV, D-III

(b) A-II, B-IV, C-1, D-III

(c) A-IV, B-III, C-II, D-I

(d) A-IV, B-II, C-III, D-I

4. Following are the stages of cell division : **(2024)**

A. Gap 2 phase

B. Cytokinesis

C. Synthesis phase

D. Karyokinesis

E. Gap 1 phase

Choose the correct sequence of stages from the options given below :

(a) E-B-D-A-C (b) B-D-E-A-C

(c) E-C-A-D-B (d) C-E-D-A-B

5. The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis? **(2023)**

(a) Pachytene (b) Diplotene

(c) Diakinesis (d) Zygotene

6. Which of the following stages of meiosis involves division of centromere? **(2023)**

(a) Telophase (b) Metaphase I

(c) Metaphase II (d) Anaphase II

7. The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis? **(2023)**

(a) Diakinesis (b) Zygotene

(c) Pachytene (d) Diplotene

8. Among eukaryotes, replication of DNA takes place in: **(2023)**

(a) G_2 phase (b) M phase

(c) S phase (d) G_1 phase

9. Match List-l with List-II:

	List – I		LIst – II
A	M Phase	(i)	Proteins are synthesized
B	G_2 Phase	(ii)	Inactive phase
C	Quiescent stage	(iii)	Interval between mitosis and initiation of DNA replication
D	G_1 Phase	(iv)	Equational division

Choose the correct answer from the options given below : **(2023)**

(a) A-II, B-IV, C-I, D-III
(b) A-III, B-II, C-IV, D-I
(c) A-IV, B-II, C-I, D-III
(d) A-IV, B-I, C-II, D-III

10. Select the correct statements.

A. Tetrad formation is seen during Leptotene.
B. During Anaphase, the centromeres split and chromatids separate.
C. Terminalization takes place during Pachytene.
D. Nucleolus, Golgi complex and ER are reformed during Telophase.
E. Crossing over takes place between sister chromatids of homologous chromosome.

Choose the correct answer from the options given below: **(2023)**

(a) B and D only
(b) A. C and E only
(c) B and E only
(d) A and C only

11. Given below are two statements:

Statement I: During GO phase of cell cycle, the cell is metabolically inactive.

Statement II: The centrosome undergoes duplication during S phase of interphase.

In the light of the above statements, choose the most appropriate answer from the options given below: **(2023)**

(a) Both Statement i and Statement II are incorrect
(b) Statement I is correct but Statement Il is incorrect,
(c) Statement I is incorrect but Statement II is correct
(d) Both Statement and Statement II are Correct

12. Doubling of the number of chromosomes can be achieved by disrupting mitotic cell division soon after: **(2023)**

(a) Anaphase (b) Telophase
(c) Prophase (d) Metaphase

13. During which stages of mitosis and meiosis, respectively does the centromere of each chromosome split? **(2023)**

(a) Metaphase, Metaphase II
(b) Prophase, Telophase
(c) Telophase, Anaphase
(d) Anaphase, Anaphase II

14. Which stage of meiosis can last for months or years in the oocytes of some vertebrates? **(2022)**

(a) Diakinesis (b) Leptotene
(c) Pachytene (d) Diplotene

15. Identify the correct sequence of events during Prophase I of meiosis:

(A) Synapsis of homologous chromosomes
(B) Chromosomes become gradually Visible under microscope
(C) Crossing over between non-sister chromatids of homologous chromosomes
(D) Terminalisation of chiasmata
(E) Dissolution of synaptonemal complex

Choose the correct answer from the options given below: **(2022)**

(a) (A), (C), (D), (E), (B)
(b) (A), (B), (C), (D), (E)
(c) (B), (C), (D), (E), (A)
(d) (B), (A), (C), (E), (D)

16. Bivalent or Tetrad formation is a characteristic feature observed during **(2022)**

(a) Chiasmata in zygotene stage
(b) Synaptonemal complex in zygotene stage
(c) Chiasmata in Diplotene stage
(d) Synaptonemal complex in Pachytene Stage

17. With respect to metaphase, which of the following statements is incorrect? **(2022)**
(a) Chromosomes lie at the equator of the cell
(b) Complete disintegration of nuclear envelope takes place
(c) Chromosomes are highly condensed
(d) Metaphase chromosomes are made up of four sister chromatids held together by centromere

18. Which one of the following never occurs during mitotic cell division **(2022)**
(a) Spindle fibres attach to kinetochores of chromosomes
(b) Movement of centrioles towards opposite poles
(c) Pairing of homologous chromosomes
(d) Coiling and condensation of the chromatids

19. The appearance of recombination nodules on homologous chromosomes during meiosis characterizes: **(2022)**
(a) Synaptonemal complex
(b) Bivalent
(c) Sites at which crossing over occurs
(d) Terminalization

20. Match List-l with List-II:

List – I		LIst – II	
A	Metacentric chromosome	(i)	Centromere situated close to the end forming one extremely short and one very long arms
B	Acrocentric chromosome	(ii)	Centromere at the terminal end
C	Submetacentric	(iii)	Centromere in the middle forming two equal arms of chromosomes
D	Telocentric chromosome	(iv)	Centromere slightly away from the middle forming one shorter arm and one longer arm

Choose the correct answer from the options given below: **(2022)**
(a) (A)-(iii), (B)-(i), (C)-(iv), (D)-(ii)
(b) (A)-(i), (B)-(iii), (C)-(ii), (D)-(iv)
(c) (A)-(i), (B)-(ii), (C)-(iv), (D)-(i)
(d) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)

21. Regarding Meiosis, which of the statements is incorrect? **(2022)**
(a) There are two stages in Meiosis, Meiosis-I and II
(b) DNA replication occurs in S phase of Meiosis-II
(c) Pairing of homologous chromosomes and recombination occurs in Meiosis-l
(d) Four haploid cells are formed at the end of Meiosis-II

22. Select the incorrect statement with reference to mitosis: **(2022)**
(a) All the chromosomes lie at the equator at metaphase
(b) Spindle fibres attach to centromere of chromosomes
(c) Chromosomes decondense at telophase
(d) Splitting of centromere occurs at Anaphase

23. Which of the following stages of meiosis involves division of centromere? **(2021)**
(a) Metaphase-II (b) Anaphase-II
(c) Telophase-II (d) Metaphase-I

24. Match List-1 with List-2 **(2021)**

List - I		List -II	
A.	S phase	(i)	Proteins are synthesized
B.	G_2 phase	(ii)	Inactive phase
C.	Quiescent Stage	(iii)	Interval between mitosis and initiation of DNA replication
D.	G_1 phase	(iv)	DNA replication

Choose the correct answer from the options given below.
(a) A-(iv) B-(ii) C-(iii) D-(i)
(b) A-(iv) B-(i) C-(ii) D-(iii)
(c) A-(ii) B-(iv) C-(iii) D-(i)
(d) A-(iii) B-(ii) C-(i) D-(iv)

25. The fruit fly has 8 chromosomes (2n) in each cell. During interphase of Mitosis if the number of chromosomes at G_1 phase is 8, what would be the number of chromosomes after S phase? **(2021)**
(a) 16 (b) 4
(c) 32 (d) 8

26. Which stage of meiotic prophase shows terminalization of chiasmata as its distinctive feature? **(2021)**
(a) Zygotene (b) Diakinesis
(c) Pachytene (d) Leptotene

27. The centriole undergoes duplication during: **(2021)**
(a) Prophase (b) Metaphase
(c) G_2 phase (d) S-phase

28. Match the following with respect to meiosis: **(2020)**

Column -I		**Column -II**	
1.	Zygotene	(i)	Terminalization
2.	Pachytene	(ii)	Chiasmata
3.	Diplotene	(iii)	Crossing over
4.	Diakinesis	(iv)	Synapsis

Select the correct option from the following:
(1) (2) (3) (4)
(a) (iv) (iii) (ii) (i)
(b) (i) (ii) (iv) (iii)
(c) (ii) (iv) (iii) (i)
(d) (iii) (iv) (i) (ii)

29. Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of: **(2020)**
(a) G_1 phase
(b) S phase
(c) G_2 phase
(d) M phase

30. In a mitotic cycle, the correct sequence of phases is **(2020 Covid Re-NEET)**
(a) G_1, S, G_2, M
(b) M, G_1, G_2, S
(c) G_1, G_2, S, M
(d) S, G_1, G_2, M

31. Attachment of spindle fibers to kinetochores of chromosomes becomes evident in: **(2020 Covid Re-NEET)**
(a) Telophase (b) Prophase
(c) Metaphase (d) Anaphase

32. Match the following events that occur in their respective phases of cell cycle and select the correct option:
(2020 Covid Re-NEET)

1.	G_1 phase	(i)	Cell grows and organelle duplication
2.	S phase	(ii)	DNA replication and chromosome duplication
3.	G_2 phase	(iii)	Cytoplasmic growth
4.	Metaphase in M-phase	(iv)	Alignment of chromosomes

(1) (2) (3) (4)
(a) (iii) (iv) (i) (ii)
(b) (iv) (i) (ii) (iii)
(c) (i) (ii) (iii) (iv)
(d) (ii) (iii) (iv) (i)

33. Identify the correct statement with regard to G_1 phase (Gap 1) of interphase. **(2020)**
(a) Reorganisation of all cell components takes place.
(b) Cell is metabolically active, grows but does not replicate its DNA.
(c) Nuclear division takes place.
(d) DNA synthesis or replication takes place.

34. Dissolution of the synaptonemal complex occurs during: **(2020)**
(a) Zygotene (b) Diplotene
(c) Leptotene (d) Pachytene

35. During Meiosis-I, in which stage synapsis takes place? **(2020 Covid Re-NEET)**
(a) Zygotene (b) Diplotene
(c) Leptotene (d) Pachytene

36. The correct sequence of phases of cell cycle is **(2019)**
(a) M → G1→ G2→ S
(b) G1→ G2→ S → M
(c) S → G1→ G2→ M
(d) G1→ S → G2→ M

37. Cell in G_0 phase **(2019)**
(a) Exit the cell cycle
(b) Enter the cell cycle
(c) Suspend the cell cycle
(d) Terminate the cell cycle

38. The stage during which separation of the paired homologous chromosomes begins is **(2018)**
(a) Pachytene (b) Diplotene
(c) Diakinesis (d) Zygotene

39. Which of the following statements is correct with respect to cell cycle? **(2017)**
(a) DNA content of cell remains constant during entire cell cycle
(b) A cell in G_1 phase has double the amount of DNA than a cell in G_2 phase
(c) Each chromosome has two chromatids in G_1 phase
(d) Nerve cells in adult human are in G_0 State

40. Which of the following options gives the correct sequence of events during mitosis? **(2017)**
(a) Condensation → Nuclear membrane disassembly → Crossing over → Segregation → Telophase
(b) Condensation → Nuclear membrane disassembly → Arrangement at equator → Centromere division →Segregation → Telophase
(c) Condensation → Crossing over → Nuclear membrane disassembly → Segregation → Telophase
(d) Condensation → Arrangement at equator → Centromere division → Segregation → Telophase

41. DNA replication in bacteria occurs: **(2017)**
(a) During S-phase
(b) Within nucleolus
(c) Prior to fission
(d) Just before transcription

42. At what phase of meiosis homologous chromosomes are separated? **(2017)**
(a) Anaphase-II (b) Prophase-I
(c) Prophase-II (d) Anaphase-I

43. During cell growth, DNA synthesis takes place in: **(2016 - II)**
(a) G_2 phase (b) M phase
(c) S phase (d) G_1 phase

44. Which of the following is not a characteristic feature during mitosis in somatic cells? **(2016 - I)**
(a) Spindle fibres
(b) Disappearance of nucleolus
(c) Chromosome movement
(d) Synapsis

45. Match the stages of meiosis in Column–I to their characteristic features in Column–II and select the correct option using the codes given below: **(2016 - II)**

Column I		Column II	
A.	Pachytene	(i)	Pairing of homologous chromosomes
B.	Metaphase-I	(ii)	Terminalisation of chiasmata
C.	Diakinesis	(iii)	Crossing over takes place
D.	Zygotene	(iv)	Chromosomes align at equatorial plate

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

46. In meiosis, crossing over is initiated at: **(2016 - I)**
(a) Pachytene
(b) Leptotene
(c) Zygotene
(d) Diplotene

47. Select the correct option: **(2015)**

Column I		Column II	
A.	Synapsis aligns the homologous chromosomes	(i)	Anaphase-II
B.	Synthesis of RNA and protein	(ii)	Zygotene
C.	Action of enzyme recombinase	(iii)	G_2-phase
D.	Centromeres do not separate but chromatids move towards opposite poles	(iv)	Anaphase-I
		(v)	Pachytene

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

48. A somatic cell that has just completed the S phase of its cell cycle, as compared to gamete of the same species, has: **(2015 Re)**
(a) Twice the number of chromosomes and four times the amount of DNA
(b) Four times the number of chromosomes and twice the amount of DNA
(c) Twice the number of chromosomes and twice the amount of DNA
(d) Same number of chromosomes but twice the amount of DNA

49. Arrange the following events of meiosis in correct sequence: **(2015 Re)**
A. Crossing over
B. Synapsis
C. Terminalisation of chiasmata
D. Disappearance of nucleolus
(a) (B), (A), (C), (D) (b) (A), (B), (C), (D)
(c) (B), (C), (D), (A) (d) (B), (A), (D), (C)

50. During which phase(s) of cell cycle, amount of DNA in a cell remains at 4C level if the initial amount is denoted as 2C? **(2014)**
(a) G_2 and M (b) G_0 and G_1
(c) G_1 and S (d) Only G_2

51. In 'S' phase of the cell cycle: **(2014)**
(a) Amount of DNA is reduced to half in each cell
(b) Amount of DNA doubles in each cell
(c) Amount of DNA remains same in each cell
(d) Chromosome number is increased

52. The enzyme recombinase is required at which stage of meiosis? **(2014)**
(a) Diakinesis (b) Pachytene
(c) Zygotene (d) Diplotene

53. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its characteristics: **(2013)**

(a)	Telophase	Endoplasmic reticulum and nucleolus not reformed yet.
(b)	Telophase	Nuclear envelope reforms, Golgi complex reforms.
(c)	Late Anaphase	Chromosomes move away from equatorial plate, Golgi complex not present.
(d)	Cytokinesis	Cell plate formed

54. The complex formed by a pair of synapsed homologous chromosomes is called: **(2013)**
(a) Axoneme (b) Equatorial plate
(c) Kinetochores (d) Bivalent