

PYQSide

NEET CELL CYCLE AND CELL DIVISION — MEIOSIS I (PROPHASE I SUBSTAGES, CROSSING OVER) — PYQS

Max. Marks: 112

Questions: 28

Section A (MCQ)

Q.1 Given below are two statements:

Statement-I: Chromosomes are fully condensed at the end of prophase I.

Statement-II: Meiosis I resembles mitosis.

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

[RE-NEET (UG) 2026]

- (1) Statement-I is incorrect, but Statement-II is true
 (2) Both Statement-I and Statement-II are true
 (3) Both Statement-I and Statement-II are false
 (4) Statement-I is correct, but Statement-II is false

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Q.2 Given below are two statements:

Statement-I: Chromosomes become gradually visible under light microscope during leptotene stage.

Statement-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:

[NEET (UG) 2024]

- (1) Both Statement-I and Statement-II are true
 (2) Both Statement-I and Statement-II are false
 (3) Statement-I is true but Statement-II is false
 (4) Statement-I is false but Statement-II is true

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Q.3 Match List I with List II :

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

List - I (Sub Phases of Prophase I)		List - II (Specific Characters)	
D.	Leptotene	IV.	Appearance of recombination nodules

Choose the correct answer from the options given below

[NEET (UG) 2024]

- (1) A-IV, B-II, C-III, D-I (2) A-I, B-II, C-IV, D-III
 (3) A-II, B-IV, C-I, D-III (4) A-IV, B-III, C-II, D-I

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Q.4 Recombination between homologous chromosomes is completed by the end of

[RE-NEET (UG) 2024]

- (1) Diakinesis (2) Zygotene
 (3) Diplotene (4) Pachytene

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Q.5 Match List-I with List-II.

List - I Event		List - II Stage of Prophase-I (Meiosis-I)	
A.	Chiasmata formation	I.	Pachytene
B.	Crossing over	II.	Diakinesis
C.	Synaptonemal complex formation	III.	Diplotene
D.	Terminalisation of chiasmata	IV.	Zygotene

Choose the correct answer from the options given below :

[RE-NEET (UG) 2024]

- (1) A-III, B-I, C-IV, D-II (2) A-II, B-I, C-III, D-IV
 (3) A-III, B-I, C-II, D-IV (4) A-II, B-III, C-IV, D-I

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Q.6 The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis?

[NEET (UG) 2023]

- (1) Pachytene (2) Diplotene
 (3) Diakinesis (4) Zygotene

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Q.7 Select the correct statements.
Choose the correct answer from the options given below:

- 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.

[NEET (UG) 2023]

- (1) B and D only (2) A, C and E only
- (3) B and E only (4) A and C only

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Q.8 The appearance of recombination nodules on homologous chromosomes during meiosis characterizes:

[NEET (UG) 2022]

- (1) Synaptonemal complex
- (2) Bivalent
- (3) Sites at which crossing over occurs
- (4) Terminalization

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Q.9 Which stage of meiosis can last for months or years in the oocytes of some vertebrates?

[NEET (UG) 2022 (Phase 2)]

- (1) Diakinesis (2) Leptotene
- (3) Pachytene (4) Diplotene

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Q.10 In meiosis, crossing over and exchange of genetic material between homologous chromosomes are catalyzed by the enzyme

[NEET (UG) 2022 (Phase 2)]

- (1) Polymerase (2) Phosphorylase
- (3) Recombinase (4) Transferase

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Q.11 Identify the correct sequence of events during Prophase I of meiosis:

Choose the correct answer from the options given below:

- 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

[NEET (UG) 2022 (Phase 2)]

- (1) A, C, D, E, B (2) A, B, C, D, E
- (3) B, C, D, E, A (4) B, A, C, E, D

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Q.12 Bivalent or Tetrad formation is a characteristic feature observed during

[NEET (UG) 2022 (Phase 2)]

- (1) Chiasmata in zygotene stage
- (2) Synaptonemal complex in zygotene stage
- (3) Chiasmata in Diplotene stage
- (4) Synaptonemal complex in Pachytene stage

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Q.13 Which stage of meiotic prophase shows terminalisation of chiasmata as its distinctive feature?

[NEET (UG) 2021]

- (1) Pachytene (2) Leptotene
- (3) Zygotene (4) Diakinesis

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Q.14 Match the following with respect to meiosis

List-I		List-II	
A.	Zygotene	i.	Terminalization
B.	Pachytene	ii.	Chiasmata
C.	Diplotene	iii.	Crossing over
D.	Diakinesis	iv.	Synapsis

Select the correct option from the following

[NEET (UG) 2020]

- (1) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)
- (2) (A)-(iii), (B)-(iv), (C)-(i), (D)-(ii)
- (3) (A)-(i), (B)-(ii), (C)-(iv), (D)-(iii)
- (4) (A)-(ii), (B)-(iv), (C)-(iii), (D)-(i)

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Q.15 Dissolution of the synaptonemal complex occurs during

[NEET (UG) 2020]

- (1) Diplotene (2) Zygotene
- (3) Pachytene (4) Leptotene

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Q.16 The stage during which separation of the paired homologous chromosomes begins is

[NEET 2018]

- (1) zygotene (2) pachytene
- (3) diplotene (4) diakinesis

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Q.17 Which of the following is not a characteristic feature during mitosis in somatic cells?

[NEET 2016 (Phase 1)]

- (1) Chromosome movement
- (2) Synapsis
- (3) Spindle fibres
- (4) Disappearance of nucleolus

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Q.18 In meiosis crossing over is initiated at

[NEET 2016 (Phase 1)]

- (1) zygotene (2) diplotene
- (3) pachytene (4) leptotene.

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Q.19 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.

[NEET 2016 (Phase 2)]

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

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

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Q.20 Arrange the following events of meiosis in correct sequence

[AIPMT 2015]

- (i) Crossing over
- (ii) Synapsis
- (iii) Terminalisation of chiasmata
- (iv) Disappearance of nucleolus
- (1) (i), (ii), (iii), (iv) (2) (ii), (iii), (iv), (i)
- (3) (ii), (i), (iv), (iii) (4) (ii), (i), (iii), (iv)

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Q.21 The enzyme recombinase is required at which stage of meiosis?

[AIPMT 2014]

- (1) Pachytene (2) Zygotene
- (3) Diplotene (4) Diakinesis

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Column I		Column II	
A.	Synapsis aligns homologous chromosomes	i.	Anaphase II
B.	Synthesis of RNA and protein	ii.	Zygotene
C.	Action of enzymes recombinase	iii.	G ₂ -phase
D.	Centromeres do not separate but chromatids move towards opposite poles	iv.	Anaphase I
		v.	Pachytene

Q.22 Select the correct option. [AIPMT 2015 (Cancelled)]

- (1) (A) - (i); (B) - (ii); (C) - (v); (D) - (iv)
- (2) (A) - (ii); (B) - (iii); (C) - (iv); (D) - (v)
- (3) (A) - (ii); (B) - (i); (C) - (iii); (D) - (iv)
- (4) (A) - (ii); (B) - (iii); (C) - (v); (D) - (iv)

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Q.23 The complex formed by a pair of synapsed homologous chromosomes is called [NEET 2013]

- (1) bivalent (2) axoneme
- (3) equatorial plate (4) kinetochore.

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Q.24 During meiosis I, the chromosomes start pairing at

[NEET 2013 (Karnataka)]

- (1) zygotene (2) pachytene
- (3) diplotene (4) leptotene.

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Q.25 Identify the meiotic stage in which the homologous chromosomes separate while the sister chromatids remain associated at their centromeres.

[AIPMT 2012 (Mains)]

- (1) Metaphase I (2) Metaphase II
- (3) Anaphase I (4) Anaphase II

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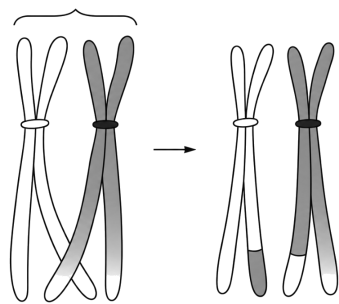
Q.26 During gamete formation, the enzyme recombinase participates during [AIPMT 2012 (Prelims)]

- (1) metaphase I (2) anaphase II
- (3) prophase I (4) prophase II.

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Q.27 Given below is the representation of a certain event at a particular stage of a type of cell division. Which is this stage? [AIPMT 2012 (Prelims)]



- (1) Prophase of Mitosis
- (2) Both prophase and metaphase of mitosis
- (3) Prophase I during meiosis
- (4) Prophase-II during meiosis

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Q.28 Synapsis occurs between

[AIPMT 2009]

- (1) mRNA and ribosomes
- (2) spindle fibres and centromere
- (3) two homologous chromosomes
- (4) a male and a female gamete

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	1	3	4	1	1	1	3	4	3	4
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	2	4	1	1	3	2	3	1	4	1	4
Ques.	23	24	25	26	27	28					
Ans.	1	1	3	3	3	3					