

NEET CELL CYCLE AND CELL DIVISION — M PHASE: PROPHASE, METAPHASE, ANAPHASE, TELOPHASE — PYQS

Max. Marks: 72

Questions: 18

Section A (MCQ) — 18 questions

Q.1 What is the main function of the spindle fibers during mitosis? [NEET (UG) 2025]

- (1) To repair damaged DNA
- (2) To regulate cell growth
- (3) To separate the chromosomes
- (4) To synthesize new DNA

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Q.2 Spindle fibers attach to kinetochores of chromosomes during [NEET (UG) 2024]

- (1) Prophase
- (2) Metaphase
- (3) Anaphase
- (4) Telophase

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Q.3 Which one of the following never occurs during mitotic cell division? [NEET (UG) 2022]

- (1) Spindle fibres attach to kinetochores of chromosomes
- (2) Movement of centrioles towards opposite poles
- (3) Pairing of homologous chromosomes
- (4) Coiling and condensation of the chromatids

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Q.4 Select the incorrect statement with reference to mitosis : [NEET (UG) 2022]

- (1) All the chromosomes lie at the equator at metaphase
- (2) Spindle fibres attach to centromere of chromosomes
- (3) Chromosomes decondense at telophase
- (4) Splitting of centromere occurs at anaphase

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Q.5 With respect to metaphase, which of the following statements is incorrect? [NEET (UG) 2022 (Phase 2)]

- (1) Chromosomes lie at the equator of the cell
- (2) Complete disintegration of nuclear envelope takes place
- (3) Chromosomes are highly condensed
- (4) Metaphase chromosomes are made up of four sister chromatids held together by centromere

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Q.6 Which of the following options gives the correct sequence of events during mitosis? [NEET 2017]

- (1) Condensation → Nuclear membrane disassembly → Arrangement at equator → Centromere division → Segregation → Telophase
- (2) Condensation → Crossing over → Nuclear membrane disassembly → Segregation → Telophase
- (3) Condensation → Arrangement at equator → Centromere division → Segregation → Telophase
- (4) Condensation → Nuclear membrane disassembly → Crossing over → Segregation → Telophase

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Q.7 Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animal cell. If APC is defective in a human cell, which of the following is expected to occur? [NEET 2017]

- (1) Chromosomes will be fragmented.
- (2) Chromosomes will not segregate.
- (3) Recombination of chromosome arms will occur.
- (4) Chromosomes will not condense.

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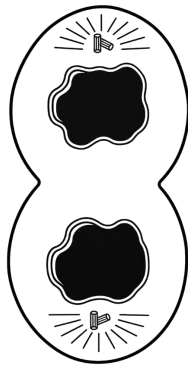
Q.8 Spindle fibres attach on to [NEET 2016 (Phase 1)]

- (1) centromere of the chromosome
- (2) kinetosome of the chromosome
- (3) telomere of the chromosome
- (4) kinetochore of the chromosome.

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- Q.9** A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its characteristics. [NEET 2013]



- (1) Telophase Endoplasmic reticulum and nucleolus not reformed yet.
- (2) Telophase Nuclear envelope reforms, Golgi complex reforms.
- (3) Late anaphase Chromosomes move away from equatorial plate, Golgi complex not present.
- (4) Cytokinesis Cell plate formed, mitochondria distributed between two daughter cells.

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- Q.10** During the metaphase stage of mitosis, spindle fibres attach to chromosomes at

[NEET 2013 (Karnataka)]

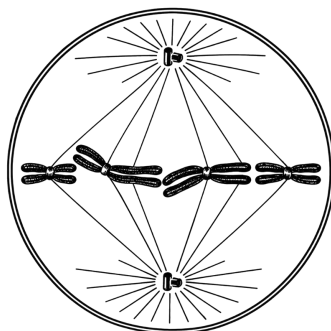
- (1) kinetochore
- (2) both centromere and kinetochore
- (3) centromere, kinetochore and areas adjoining centromere
- (4) centromere.

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- Q.11** A stage of mitosis is shown in the diagram. Which stage is it and what are its characteristics?

[NEET 2013 (Karnataka)]



- (1) Anaphase - Centromeres split and chromatids separate and start moving away.
- (2) Late prophase - Chromosomes move to spindle equator.
- (3) Metaphase - Spindle fibers attached to kinetochores, centromeres split and chromatids separate.
- (4) Metaphase - Chromosomes moved to spindle equator, chromosomes made up of two sister chromatids.

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- Q.12** At metaphase, chromosomes are attached to the spindle fibres by their [AIPMT 2011 (Mains)]

- (1) satellites
- (2) secondary constrictions
- (3) kinetochores
- (4) centromeres.

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- Q.13** Select the correct option with respect to mitosis.

[AIPMT 2011 (Prelims)]

- (1) Chromatids separate but remain in the centre of the cell in anaphase
- (2) Chromatids start moving towards opposite poles in telophase
- (3) Golgi complex and endoplasmic reticulum are still visible at the end of prophase
- (4) Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase

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- Q.14** During mitosis, ER and nucleolus begin to disappear at [AIPMT 2010 (Prelims)]

- (1) late prophase
- (2) early metaphase
- (3) late metaphase
- (4) early prophase

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- Q.15** Which stages of cell division do the following figures A and B represent respectively? [AIPMT 2010 (Prelims)]

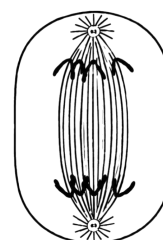


Fig. A

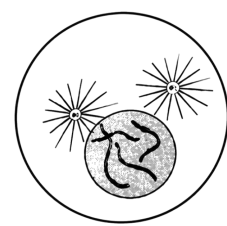


Fig. B

- (1) A $\rightarrow$ Prophase, B $\rightarrow$ Anaphase
 (2) A $\rightarrow$ Metaphase, B $\rightarrow$ Telophase
 (3) A $\rightarrow$ Telophase, B $\rightarrow$ Metaphase
 (4) A $\rightarrow$ Late anaphase, B $\rightarrow$ Prophase

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Q.16 Centromere is required for - [AIPMT 2005]

- (1) Crossing over
 (2) Movement of chromosomes towards poles
 (3) Transcription
 (4) Cytoplasmic cleavage

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Q.17 If you are provided with root-tips of onion in your class and are asked to count the chromosomes, which of the following stages can you most conveniently look into? [AIPMT 2004]

- (1) Metaphase (2) Telophase
 (3) Anaphase (4) Prophase

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Q.18 Mitotic spindle is mainly composed of which protein? [AIPMT 2002]

- (1) Actin (2) Myosin
 (3) Tubulin (4) Myoglobin

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	2	3	2	4	1	2	4	2	1	4
Ques.	12	13	14	15	16	17	18				
Ans.	3	4	1	4	2	1	3				