

CELL CYCLE & CELL DIVISION

CELL CYCLE & CELL DIVISION QUESTION BANK Question and answer based on strictly latest NCERT based pattern, and previous year NEET (AIPMT) question. chapter wise approach mcq is more useful for quick revision and increase speed for maintaining time period.

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MCQ:-

Q1) Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animals cells. If APC is defective in a human cells, which of the following is expected to occur? (NEET 2017)

Chromosomes will not condense
Chromosomes will be fragmented
Chromosomes will not segregate
Recombination of chromosome arms will occur

Answer- Chromosomes will not segregate

Q2) Which of the following options gives the correct sequences of events during mitosis? (NEET 2017)

Condensation → nuclear membrane disassembly → crossing over → segregation → telophase
Condensation → nuclear membrane disassembly → arrangement at equator → segregation → telophase
Condensation → crossing over → nuclear membrane disassembly → segregation → telophase
Condensation → arrangement at equator → centromere division → segregation → telophase

Answer- Condensation → nuclear membrane disassembly → arrangement at equator → segregation → telophase

Q3) In meiosis crossing over is initiated at (NEET 2016, PHASE I)

Leptotene
Zygotene
Diplotene
Pachytene

Answer- Pachytene

Q4) Which of the following is not a characteristic feature during mitosis in somatic cells? (NEET 2016, PHASE I)

Disappearance of nucleolus
Chromosome movement
Synapsis
Spindle fibres

Answer- Synapsis

Q5) Spindle fibres attach on to (NEET 2016, PHASE I)

Kinetochores of the chromosome
Centromeres of the chromosome
Kinetosomes of the chromosome
Telomeres of the chromosome

Answer- Kinetochores of the chromosome

Q6) When cell has stalled DNA replication fork, which checkpoint should be predominantly activated? (NEET 2016, PHASE II)

G₁/S
G₂/M
M
Both G₂/M & M

Answer- G₁/S

Q7) Match the stages of meiosis in column I to their characteristic features in column II &

select the correct option using the codes given below (NEET 2016, PHASE II)

Column I	Column II
Pachytene	1. Pairing of homologous Chromosomes
Metaphase-I	2. Terminalisation of chiasmata
Diakinesis	3. Crossing-over takes place
Zygotene	4. Chromosomes align at equatorial plate

Codes

A B C D

3 4 2 1
1 4 2 3
2 4 3 1
4 3 2 1

Answer- 3 4 2 1

Q8) During cell growth, DNA synthesis takes place in (NEET 2016, PHASE II)

S-phase
G-phase
G₂-phase
M-phase

Answer- S-phase

Q9) Arrange the following events of meiosis in correct sequences. (CBSE AIPMT 2015)

Crossing over

Synapsis

Terminalisation of chiasmata

Disappearance of nucleolus

II,I,IV,III
II,I,III,IV
I,II,III,IV
II,III,IV,I

Answer- II,I,III,IV

Q10) 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? (CBSE AIPMT 2014)

- G₀ & G₁
- G₁ & S
- Only G₂
- G₂ & M

Answer- G₂ & M

Q11) In S-phase of the cell cycle (CBSE AIPMT 2014, 2000, 1996)

- Amount of DNA doubles in each cell
- Amount of DNA remains same in each cell
- Chromosome number is increased
- Amount of DNA is reduced to half in each cell

Answer- Amount of DNA doubles in each cell

Q12) The enzyme recombinase is required at which stage of meiosis? (CBSE AIPMT 2014)

- Pachytene
- Zygotene
- Diplojene
- Diakinesis

Answer- Pachytene

Q13) The complex formed by a pair of synapsed homologous chromosomes is called (NEET 2013)

- Equatorial plate
- Kinetochore
- Bivalent
- Axoneme

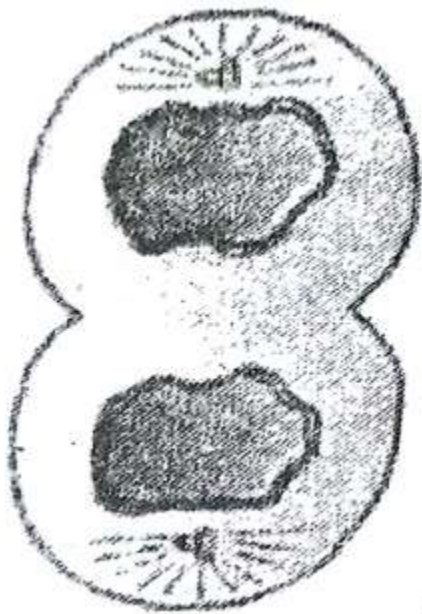
Answer- Bivalent

Q14) Meiosis takes place in (NEET 2013)

- Meiocyte
- Conidia
- Gemmule
- Megaspore

Answer- Meiocyte

Q15) A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its characteristic mentioned. (NEET 2013)



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

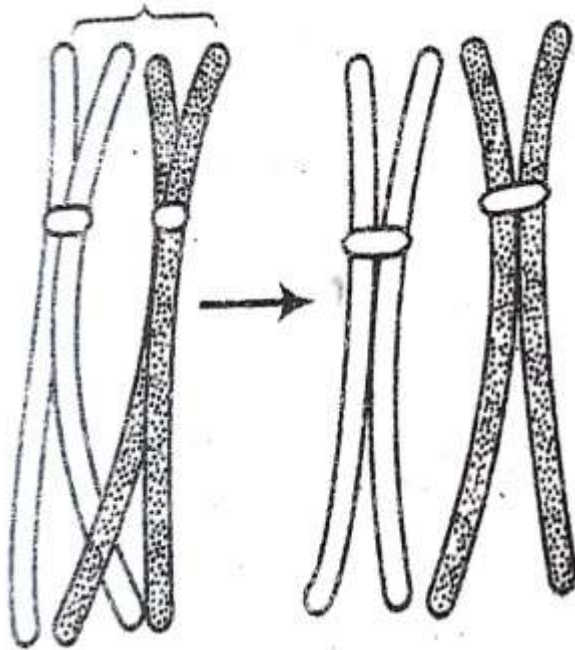
Answer- Telophase- Nuclear envelope reforms Golgi complex reforms

Q16) During gamete formation, the enzyme recombinase participates during (CBSE AIPMT 2012)

- Metaphase-I
- Anaphase-II
- Prophase-I
- Prophase-II

Answer- Prophase-I

Q17) Given below is the representation of a certain event at a particular stage of a type of cell division. Which is this stage? (CBSE AIPMT 2012)



- Prophase-I during meiosis
- Prophase-II during meiosis
- Prophase of mitosis
- Both prophase & metaphase of mitosis

Answer- Prophase-I during meiosis

Q18) Select the correct option with respect to mitosis (CBSE AIPMT 2011)

- Chromatids start moving towards opposite poles in telophase
- Golgi complex & endoplasmic reticulum are still visible at the end of prophase
- Chromosomes move to the spindle equator & get aligned along equatorial plate in metaphase
- Chromatids separate but remains in the centre of the cell in anaphase

Answer- Chromosomes move to the spindle equator & get aligned along equatorial plate in metaphase

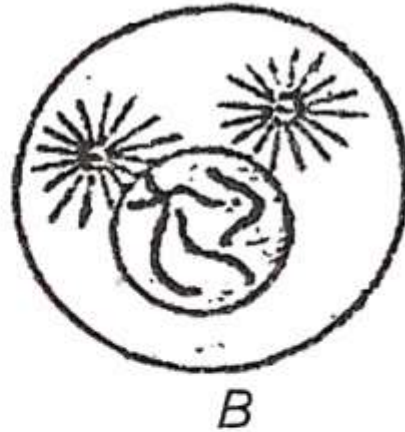
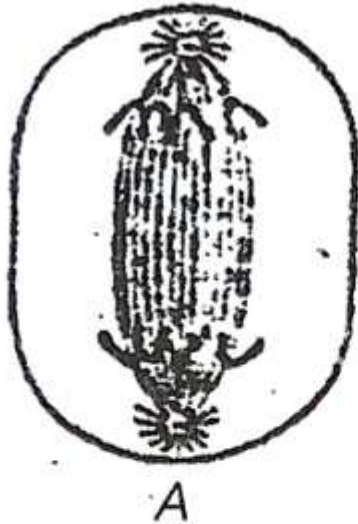
Q19) During mitosis ER & nucleolus begin to disappear at (CBSE AIPMT 2010)

- Late prophase
- Early metaphase

Late metaphase
Early prophase

Answer- Early prophase

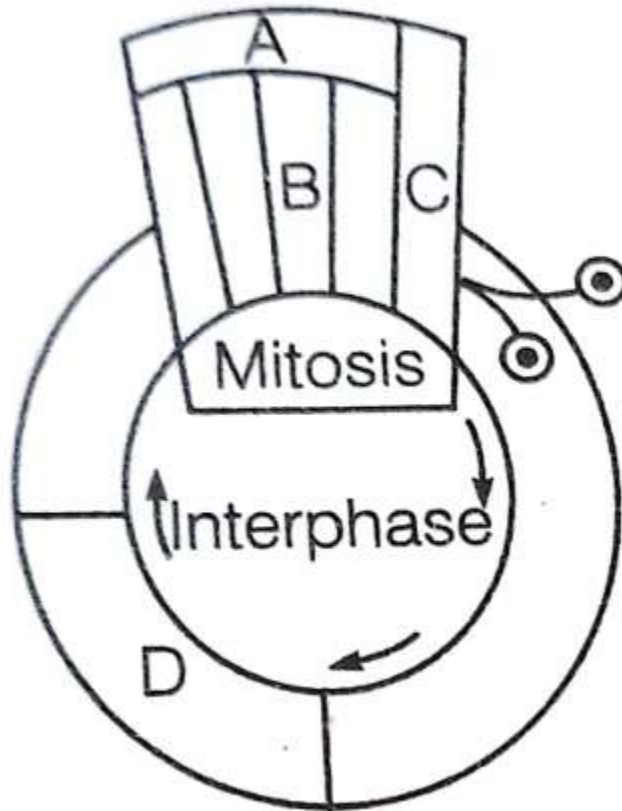
Q20) Which stages of cell division do the following figures A & B represent respectively? (CBSE AIPMT 2010)



- | | | |
|-------------------|---|-----------|
| (a) Metaphase | – | Telophase |
| (b) Telophase | – | Metaphase |
| (c) Late anaphase | – | Prophase |
| (d) Prophase | – | Anaphase |

Answer- Late anaphase – Prophase

Q21) Given below is a schematic break-up of the phases/stages of cell cycle



Which one of the following is the correct indication of the stage/phase in the cell cycle? (CBSE AIPMT 2009)

- B-metaphase
- C-karyokinesis
- D-synthetic phase
- A-cytokinesis

Answer- D-synthetic phase

Q22) Synapsis occurs between (CBSE AIPMT 2009)

- A male & a female gamete
- mRNA & ribosomes
- Spindle fibres & centromere
- Two homologous chromosomes

Answer- Two homologous chromosomes

Q23) The salivary gland chromosomes in the dpteran larvae are useful in gene mapping because (CBSE AIPMT 2005)

These are much longer in size

These are easy to stain
These are fused
They have endoreduplicated chromosomes

Answer- They have endoreduplicated chromosomes

Q24) Centromere is required for (CBSE AIPMT 2005)

Movement of chromosomes towards poles
Cytoplasmic cleavage
Crossing over
Transcription

Answer- Movement of chromosomes towards poles

Q25) At what stage of the cell cycle are histone proteins synthesised in a eukaryotic cell? (CBSE AIPMT 2005)

During G₂-stage of prophase
During S-phase
During entire prophase
During telophase

Answer- During S-phase

Q26) If you are provided with root tips of onion in your class & are asked to count the chromosomes which of the following stages can you most conveniently look into? (CBSE AIPMT 2004)

Metaphase
Telophase
Anaphase
Prophase

Answer- Metaphase

Q27) Which one of the following precedes reformation of the nuclear envelope during M-phase of the cell cycle? (CBSE AIPMT 2004)

Decondensation from chromosomes & reassembly of the nuclear lamina
Transcription from chromosomes & reassembly of the nuclear lamina
Formation of the contractile ring & formation of the phragmoplast

Formation of the contractile ring & transcription from chromosomes

Answer- Decondensation from chromosomes & reassembly of the nuclear lamina

Q28) In the somatic cell cycle (CBSE AIPMT 2004)

In G₁-phase DNA content is double the amount of DNA present in the original cell
DNA replication takes place in S-phase
A short interphase is followed by a long mitotic phase
G₂-Phase follows mitotic phase

Answer- DNA replication takes place in S-phase

Q29) Crossing over that results in genetic recombination in higher organisms occur between (CBSE AIPMT 2004)

Sister chromatids of bivalent
Non-sister chromatids of a bivalent
Two daughter nuclei
Two different bivalents

Answer- Non-sister chromatids of a bivalent

Q30) Mitotic spindle is mainly composed of which protein? (CBSE AIPMT 2002)

Actin
Myosin
Actomycin
Myoglobin

Answer- Actin

Q31) Best material for the study of mitosis in laboratory is (CBSE AIPMT 2002)

Anther
Root tip
Leaf tip
Ovary

Answer- Root tip

Q32) Which of the following occurs more than one & less than five in a chromosome? (CBSE AIPMT 2002)

Chromatid
Chromosome
Centromere
Telomere

Answer- Telomere

Q33) If diploid cell is treated with colchicine then it becomes (CBSE AIPMT 2002)

Triploid
Tetraploid
Diploid
Monoploid

Answer- Tetraploid

Q34) During cell division, the spindle fibres attach to the chromosome at a region called (CBSE AIPMT 2000)

Chromocentre
Kinetochore
Centriole
Chromomere

Answer- Kinetochore

Q35) Crossing over in diploid organism is responsible for (CBSE AIPMT 1998)

Dominance of genes
Linkage between genes
Segregation of alleles
Recombination of linked alleles

Answer- Recombination of linked alleles

Q36) Bacterium divides every 35minutes. If a culture containing 10^5 cells per mL is grown

for 175 minutes, what will be the cell concentration per mL after 175 minutes? (CBSE AIPMT 1998)

- 5×10⁵cells
- 35×10⁵cells
- 32×10⁵cells
- 175×10⁵cells

Answer- 32×10⁵cells

Q37) During cell division in apical meristem the nuclear membrane appears in (CBSE AIPMT 1997)

- Metaphase
- Anaphase
- Telophase
- Cytokinesis

Answer- Telophase

Q38) How many mitotic divisions are needed for a single cell to make 128 cells? (CBSE AIPMT 1997)

- 7
- 14
- 28
- 64

Answer- 7

Q39) Which one of the following structures will not be common to mitotic cells of higher plants? (CBSE AIPMT 1997)

- Cell plate
- Centriole
- Centromere
- Spindle fibres

Answer- Centriole

Q40) The exchange of genetic material between chromatids of paired homologous chromosomes during first meiotic division (CBSE AIPMT 1996)

Transformation
Chiasmata
Crossing over
Synapsis

Answer- crossing over

END