

BIO III (CELL BIOLOGY)

Related Study Questions  
BY

Amoo Tojeb Abioye  
A.K.A

T.B "MISE"

Contact : 08149321462, 09076898478.

+ Note all spellings.  
+ Enme to read more on Cell Division

Guidelines to be followed while reading  
this work is the same with that  
of previous works.

Enme to provide German answers in the way  
or using the format in which answers have  
been given. i.e, if the options are given in  
lower case, provide your answers in lower  
case and vice versa for upper case.

GOODLUCK!!!

\_\_\_\_\_ is the series of events that occurs in the cell during its division OR duplication OR replication

Answer  $\Rightarrow$  Cell Cycle / Cell division cycle

\_\_\_\_\_ are those that lack nucleus / nuclear membrane

Answer  $\Rightarrow$  Prokaryotic cells.

The cell cycle in prokaryotic cells occur through \_\_\_\_\_

Answer  $\Rightarrow$  Binary fission.

In eukaryotes the cell cycle is divided into two brief periods which are \_\_\_\_\_ and \_\_\_\_\_

Answer  $\Rightarrow$  Interphase and Mitosis phase.

the phase of the cell cycle in which cell grows and accumulates nutrients needed for mitosis; duplicates its DNA is called \_\_\_\_\_

Answer  $\Rightarrow$  Interphase

The phase of the cell cycle in which the cell splits itself into two distinct daughter cells is known as \_\_\_\_\_

Answer  $\Rightarrow$  Mitosis phase

\_\_\_\_\_ is a vital process by which a single celled fertilized egg develops into a mature organism.

Answer  $\Rightarrow$  / Cell Cycle / ~~Division~~ / Cell Division Cycle  
Cell Division Cycle

The cell cycle consists of four distinct phases which are EXCEPT:

Answer  $\Rightarrow$  The four phases of cell cycle are

- \* G<sub>1</sub> phase
  - \* S phase (synthesis)
  - \* G<sub>2</sub> phase
  - \* M phase (Mitosis)
- } collectively known as Interphase

The mitosis phase of the cell cycle is tightly coupled with two processes which are 1 and 2

- Answer  $\Rightarrow$  (1) mitosis (chromosomes are divided) and  
(2) Cytokinesis (division of cell cytoplasm)

— is the process whereby the cell's cytoplasm divides in half forming distinct cells.

Answer  $\Rightarrow$  Cytokinesis

Cells that have temporarily or reversibly stop dividing are said to have enter a state of —

Answer  $\Rightarrow$  Quiescence (G<sub>0</sub> Phase).

The cells increase in size in Gap 1. True/False?

Answer  $\Rightarrow$  True.

The G<sub>2</sub> or Gap 1 checkpoint



DNA replication occurs at the \_\_\_\_\_ of the interphase?

Answer  $\Rightarrow$  Synthesis phase

The phase between DNA synthesis and mitosis where cell continue to grow is the \_\_\_\_\_

Answer  $\Rightarrow$  G<sub>2</sub> or Gap 2.

9. The G<sub>2</sub> or Gap 2 ~~check point~~ checkpoint control mechanism ensures that \_\_\_\_\_

Answer  $\Rightarrow$  Everything is ready to enter the mitosis (M phase) and divide.

7. The phase in which cell growth stops and cellular energy is focused on the orderly division is called \_\_\_\_\_

Answer  $\Rightarrow$  M phase (Mitosis)

8. \_\_\_\_\_ ensures that cell is ready to complete division.  
Answer  $\Rightarrow$  Metaphase checkpoint.

1. After cell division, each of the daughter cells begins \_\_\_\_\_ of a new cycle.

Answer  $\Rightarrow$  Interphase.

20. The term \_\_\_\_\_ is generally used to refer to both adult and senescent cells.

\_\_\_\_\_ cells in Eukaryotes generally enter the quiescent  $G_0$  state from  $G_1$  |

Answer  $\Rightarrow$  Non proliferative.

Neurons' cells are example of Non proliferative cells that have remain in quiescent  $G_0$  phase for long. True / False?

Answer  $\Rightarrow$  True

\_\_\_\_\_ is the state that occur in response to DNA damage or degradation that make cell's progeny non viable.

4. Answer  $\Rightarrow$  Cellular Senescence.

\_\_\_\_\_ is a biochemical alternative to the self-destruction of ~~some~~ damaged cells by apoptosis.

Answer  $\Rightarrow$  Cellular Senescence

6 \_\_\_\_\_ must be done before a cell can enter division

Answer  $\Rightarrow$  taking in of nutrients

7 Interphas proceeds in three stages which are \_\_\_\_\_ and \_\_\_\_\_

Answer  $\Rightarrow$   $G_1$ , S and  $G_2$ .

— is the first phase within interphase, from the end of the previous M phase until the beginning of DNA synthesis.

Answer  $\Rightarrow$  G1 (Gap 1) / Growth Phase

The biosynthetic activities in the cell which has stopped during M phase resumes during —

Answer  $\Rightarrow$  G1 / Growth phase / Gap 1

The G1 (Gap 1) phase is marked by synthesis of — that are required in the S phase

Answer  $\Rightarrow$  various enzymes

The S phase is marked by —

Answer  $\Rightarrow$  DNA replication / DNA synthesis

The duration of G1 phase is — among different cells:

Answer  $\Rightarrow$  highly variable

The ensuing S phase starts when — commences.

Answer  $\Rightarrow$  DNA-synthesis

The completion or the end of S phase is marked by —

Answer  $\Rightarrow$  Chromosomes Replication



In which state or phase of a cell cycle will the amount of DNA present in the cell be doubled \_\_\_\_\_

Answer  $\Rightarrow$  S phase

The ploidy of the cell remains the same after S phase

True / False?

Answer  $\Rightarrow$  True (i.e. Ploidy means chromosome number, so the chromosome number remain the same after S phase but the DNA amount or number doubled).

The rates of RNA 1 and 2 are very low at S phase.

Answer  $\Rightarrow$  (1) Transcription and (2) Protein Synthesis  
Histone production occurs at the S phase. True/False?

Answer  $\Rightarrow$  True.

The G<sub>2</sub> phase last until the cell enters \_\_\_\_\_

Answer  $\Rightarrow$  Mitosis / M phase.

Protein synthesis do NOT occur at G<sub>2</sub> phase. True/False?

Answer  $\Rightarrow$  false.

Production of microtubules do NOT occur at G<sub>2</sub> phase

True / false?

Inhibition of protein synthesis at G<sub>2</sub> phase prevents the cell from undergoing mitosis. (i.e. from entering M phase).

True/False?

Answer ⇒ True.

The M phase or Mitosis consists of —

Answer ⇒ Nuclear division / karyokinesis

All of the following are phases of Mitosis / M phase.

EXCEPT?

Answer ⇒ The phases of M phase are

✓ Prophase

✓ Metaphase

✓ Anaphase

✓ Telophase.

\* Cytokinesis.

At times prometaphase is said to be a phase of mitosis

NOTE: It is important to know that if the question is rephrased, then the answer might change. For Example

⇒ ALL OF THE FOLLOWING ARE PHASES OF MITOSIS

EXCEPT?

(A) Anaphase (B) Prophase (C) Cytokinesis (D) Telophase

(E) Metaphase:



\_\_\_\_\_ is an event that directly follows mitosis in which cytoplasm is divided into two daughter cells.

Answer  $\Rightarrow$  Cytokinesis.

\_\_\_\_\_ separates chromosomes in its cell nucleus into two daughter nuclei.

Answer  $\Rightarrow$  Mitosis.

Animals undergo open mitosis. True / False?

Answer  $\Rightarrow$  True.

\_\_\_\_\_ is the phenomenon where nuclear envelope breaks down before the chromosomes separate.

Answer  $\Rightarrow$  Open mitosis.

Fungi undergo closed mitosis. True / False?

Answer  $\Rightarrow$  True.

\_\_\_\_\_ and \_\_\_\_\_ are examples of fungi that undergo closed mitosis.

Answer  $\Rightarrow$  *Aspergillus nidulans* and *Saccharomyces cerevisiae* (Yeast).

\_\_\_\_\_ is the phenomenon where chromosomes divide in an intact cell nucleus.

— is the detection and repair of genetic damage as well as the prevention of uncontrolled division.

Answer  $\Rightarrow$  Regulation of the Cell cycle.

The process of Cell cycle is non-reversible. True/False?

Answer  $\Rightarrow$  True.

— are used to monitor and regulate progress of cell cycle

Answer  $\Rightarrow$  Cell cycle checkpoints

The two main types of cell cycle checkpoints are —

Answer  $\Rightarrow$  G<sub>1</sub>S and G<sub>2</sub> checkpoints.

— discover an array of tiny ~~the~~ pore-like structures in a piece of cork in 1665.

Answer  $\Rightarrow$  Robert Hooke

— name living cells "animalcules" in the year 1676.

Answer  $\Rightarrow$  Antony Van Leeuwenhoek.

Nucleus was named by — in the year —

Answer  $\Rightarrow$  (1) Robert Brown (2) 1833

The two scientists that proposed the — are — & —

Cell theory states that, "Cells are structural and functional units of living cell". True/False?

∴ Answer ⇒ True

\* ——— proposed the theory that, "new cells are derived from pre-existing cells".

Answer ⇒ Rudolf Virchow.

Compound microscope was invented in the year —

Answer ⇒ 1710

Ultra microscope was invented in the year (—

Answer ⇒ 1900

Electron microscope was invented in the year

—————  
Answer ⇒ 1932

Phase Contrast Microscope was invented in the year —

Answer ⇒ 1940

Reflecting Microscope was invented in the year —

Answer ⇒ 1943

Fluorescence Microscope was invented in the year —

Answer ⇒ 1945



Answer → Non-membrane cell organelles are Polysomes/Ribosomes, Centrioles/Centrosomes, Basal bodies, Microtubules, Microfilaments.

All of the following are example of membrane bound organelles EXCEPT.

Answer → Mitochondria (Double membrane)

Rough E.R

Smooth E.R

Lysosomes

Vacuoles

Peroxisomes

Single membrane Bound.

79 Each cell of human body consists of \_\_\_\_\_ bounded by a thin, delicate and selective permeable membrane.

Answer → Cytoplasm.

80 The first important common structural feature of cells is \_\_\_\_\_

Answer → most cells are relatively small.

81 The human red blood cell lacks \_\_\_\_\_

Answer → Nucleus.

82 \_\_\_\_\_ is a thin, delicate & flexible membrane that bounds the cytoplasm

Answer → Sarcolemma or Plasma membrane of Cell Membrane.

— envelopes the cell and serves as a semi-permeable membrane.

Answer  $\Rightarrow$  Cell membrane or Sarcolemma or Plasma membrane.

The cell membranes are primarily composed of — & —

Answer  $\Rightarrow$  Lipid and Proteins.

5 —<sup>1</sup> and —<sup>2</sup> proposed the model to explain the arrangement of lipids and protein in the year —<sup>3</sup>

Answer  $\Rightarrow$  (1) Danielli  $\Rightarrow$  (2) Davason (3) 1935

86 Danielli and Davason suggested that a cell membrane consists of —

Answer  $\Rightarrow$  3 layers.

an inner lipid bilayer and coated on either side with a layer of protein

87 The "unit membrane model" was proposed by —

Answer  $\Rightarrow$  Robertson.

88 — model proposed or states that, "all the biomembranes are composed of lipids and proteins and have common structural feature i.e. all biomembranes were found to be 3 layered."

Answer  $\Rightarrow$  Unit membrane.

89 The Hydrophilic polar head and Hydrophobic non-polar of the cell membrane, together known as \_\_\_\_\_

Answer  $\Rightarrow$  Electron-Lucent layer of lipid

90 The glycolipids are also known as \_\_\_\_\_

Answer  $\Rightarrow$  Sphingolipids.

91 The Glycolipids, Cerebrosides and Gangliosides are collectively known as \_\_\_\_\_

Answer  $\Rightarrow$  Conjugate Lipids.

92 \_\_\_\_\_ are important lipid components of animals but not of plant cells.

Answer  $\Rightarrow$  Cholesterol and its Esters.

93 The white & gray matters of brain are rich in \_\_\_\_\_ and \_\_\_\_\_

Answer  $\Rightarrow$  Cerebrosides & Gangliosides.

94 Membrane proteins can be broadly classified into \_\_\_\_\_ 1 \_\_\_\_\_ and \_\_\_\_\_ 2 \_\_\_\_\_

Answer  $\Rightarrow$  (1) Extrinsic or Peripheral

(2) Intrinsic or Integral

95 \_\_\_\_\_ are membrane proteins that are loosely bound to the membrane surface and can be easily removed.

Answer  $\Rightarrow$  Extrinsic or Peripheral.

(They are bound to surface by non-covalent ionic bond)

E.g. Spectrin, Ankyrin



— are membrane proteins that are tightly attached to the lipid portion of the membrane.

Answer ⇒ Intrinsic / Integral (about 70%)

The constant movement of phospholipid molecules give rise to membrane — and —

Answer ⇒ fluidity and flexibility.

8 — The plasma membrane bound G protein takes part in —

Answer ⇒ Signal Transduction

17 — helps to increase intestine's surface area and takes part in absorption of digested foods:

Answer ⇒ Microvilli.

100 — and — are two important functions of the plasma membrane.

Answer ⇒ Phagocytosis and Pinocytosis

1 — have antibodies immunoglobulins attached to the cell membrane

Answer ⇒ B lymphocytes.

2 Cell membrane takes part in excretion of products by —

Answer ⇒ Exocytosis.

103 The components of the cell bounded by plasma membrane are called \_\_\_\_\_ except Nucleus.

Answer  $\Rightarrow$  Protoplasm

104 \_\_\_\_\_ is the aqueous matrix in which various membrane and non-membrane bound cell organelles are dispersed.

Answer  $\Rightarrow$  Cytosol.

105 The cell organelles free cell sap is called \_\_\_\_\_

Answer  $\Rightarrow$  Cytosol.

106 This is referred to the protoplasm as \_\_\_\_\_

Answer  $\Rightarrow$  Physical Basis of Life.

107 Cytosol serves to store the reserve fuel source in the form of \_\_\_\_\_ and \_\_\_\_\_

Answer  $\Rightarrow$  Glycogen granules and Fat droplet

108 The cytoplasm of muscle cells is otherwise called \_\_\_\_\_

Answer  $\Rightarrow$  Sarcoplasm.

109 The cytoplasmic surface of rough Endoplasmic Reticulum (RER) is studded with \_\_\_\_\_

Answer  $\Rightarrow$  80S ribosome

The (SER) smooth Endoplasmic Reticulum lacks \_\_\_\_\_

Answer  $\Rightarrow$  Ribosome

The RER takes part in synthesis, packaging, export of secretory 1 while the SER takes part in 2

Answer  $\Rightarrow$  (1) Proteins (2) Biosynthesis of Lipids  
— are also known as Dictyosomes

Answer  $\Rightarrow$  Golgi Bodies.

Golgi bodies were first discovered in brain cells by an Italian scientist 1 in the year 2

Answer  $\Rightarrow$  (1) Camillo Golgi (2) 1898

Golgi Bodies are collection of several membrane bound sacs called 1 and numerous membrane bound sacs called 2

Answer  $\Rightarrow$  Secretory Vesicles

15. Numbers of individual Golgi body close together to form 1

Answer  $\Rightarrow$  Golgi complex

16. The presence of Golgi Bodies is prominent in 1

Answer  $\Rightarrow$  Secretory cells.

17. Golgi bodies are suggested to be derived from 1

Answer  $\Rightarrow$  Endoplasmic Reticulum.

18. Golgi Bodies and RER take part in synthesis and secretion of enzymes in 1 and 2

Answer  $\Rightarrow$  Lysosomes and Peroxisomes



119 The centrosome of the sperm cell is said to be derived from \_\_\_\_\_

Answer  $\Rightarrow$  Golgi Body.

120 Lysosomes were discovered by Belgian biochemist known as \_\_\_\_\_

Answer  $\Rightarrow$  Christian de Duve (1955)

121 Lysosomes are single membrane bound small spherical vesicles filled with \_\_\_\_\_

Answer  $\Rightarrow$  Powerful Digestive Enzymes.

122 \_\_\_\_\_ is the action of lysosomes in which biomolecules are digested outside cells

Answer  $\Rightarrow$  Phagocytosis

123 ~~Peroxisomes~~ Peroxisome means \_\_\_\_\_

Answer  $\Rightarrow$  Peroxide Destroying Vesicles

124 Peroxisomes are also known as \_\_\_\_\_

Answer  $\Rightarrow$  Microbodies.

125 Mitochondria are sites for \_\_\_\_\_ in which various enzymes are released

Answer  $\Rightarrow$  Aerobic Oxidation

126 Oxidative phosphorylation occurs in the Mitochondria. True/False?

Answer  $\Rightarrow$  True

The space between membranes of Mitochondria is

Answer  $\Rightarrow$  Perimitchondrial Space.

The two types of division that occur in cells are

Answer  $\Rightarrow$  mitosis & Meiosis

The type of cell division that occurs in somatic cells is

Answer  $\Rightarrow$  Mitosis

The type of cell division that occurs in the sex cells or sex chromosomes (gametes) is

Answer  $\Rightarrow$  Meiosis

Formation of spindle fibers and actin rays during cell division is due to

Answer  $\Rightarrow$  Centriole.

During the metaphase stage of mitosis, the homologous chromosomes

Answer  $\Rightarrow$  moved to the equator

The most important phase in meiosis is

Answer  $\Rightarrow$  Prophase 1

Meiosis is divided into and

Answer  $\Rightarrow$  meiosis 1 and 2

During the prophase I stage of meiosis, it is grouped into 5 sub stages which are the following EXCEPT.

Answer  $\Rightarrow$  They are

- 1) Leptotene / Leptonema
- 2) Zygotene / Zygotenema
- 3) Pachytene
- 4) Diplotene
- 5) Diakinesis

137 The formation of chiasma/chiasmata occurs at —

Answer  $\Rightarrow$  ~~Pachytene~~ Diplotene

138 The crossing over during meiosis occur at —

Answer  $\Rightarrow$  Diplotene

139 The phase at which chromosome shortens and divide into four chromatids during prophase I is —

Answer  $\Rightarrow$  Pachytene

— ~~kinetochore~~ is the central region of chromosomes of Eukaryotes where kinetochore is assembled.

Answer  $\Rightarrow$  Centromere.

MAKE SURE TO READ