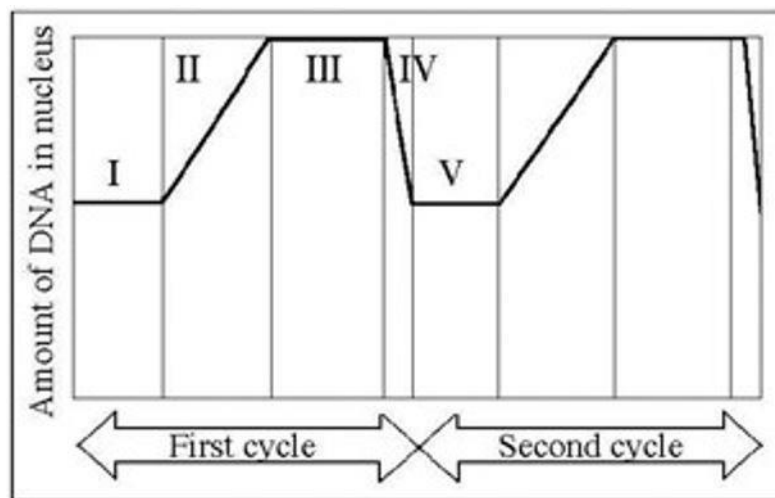


LECTURE 19 – The Cell Cycle**QUESTIONS TO TRY FOR PRACTICE**

- 1) A parent cell divides to form two genetically identical daughter cells in the process of mitosis. For mitosis to take place
- A) the parent cell must first be fertilized.
 - B) the parent cell must replicate its entire genome prior to mitosis.
 - C) the parent cell must reproduce its DNA during telophase.
 - D) the parent cell must divide its DNA in half, so each daughter cell gets only the genes needed to carry out its functions. In this way, differentiation occurs.

2)



In the figure provided, G₁ is represented by which numbered part(s) of the cycle?

- A) I or V
- B) II or IV
- C) III only
- D) IV only
- E) V only

3) DNA is composed of four nucleosides: adenosine, cytidine, thymidine, and guanosine. If scientists introduced radioactive thymidine into the growth medium of the cells, it would be incorporated into the DNA molecule

- A) at any point in the cell cycle.
- B) when centromeres split so the two chromosomes can be separated.
- C) during DNA replication.
- D) as the cell enters G₁ of interphase.

4) At the end of mitosis, each G₁ daughter cell has

- A) twice the DNA and half the cytoplasm of the G₁ parent cell.
- B) identical DNA to that of the G₁ parent cell.
- C) half the DNA and half the cytoplasm of the G₁ parent cell.
- D) twice the cytoplasm and the same amount of DNA as the G₁ parent cell.

5) Scientists isolate cells in various phases of the cell cycle. They find a group of cells that have 1½ times more DNA than G₁ phase cells. The cells of this group are in

- A) the process of cytokinesis.
- B) the G₂ phase of the cell cycle.
- C) M phase.
- D) S phase.

6) The first gap in the cell cycle (G₁) corresponds to

- A) normal growth and functioning.
- B) the phase in which DNA is being replicated.
- C) the beginning of mitosis.
- D) the phase between DNA replication and the M phase.

7) In a culture of cells, it is observed that the cell cycle has arrested (stopped) during the G₁ phase. The reason for this could be that

- A) not all chromosomes have been replicated.
- B) not all components needed for mitosis are present.
- C) not all components needed for DNA replication are present.
- D) not all chromosomes are attached to mitotic spindles.

8) In human and many other eukaryotic species' cells, the nuclear membrane has to disappear in order for what to take place?

- A) cytokinesis
- B) attachment of mitotic spindle to kinetochores
- C) splitting of the centrosomes
- D) disassembly of the nucleolus

9) Mitosis is the process of chromosome separation. Cytoplasm is divided between the two daughter cells in a process known as

- A) karyokinesis.
- B) cytokinesis.
- C) S phase.
- D) G₁ phase.

10) Nerve cells lose their ability to undergo mitosis. Instead, they are permanently stuck in

- A) G₀.
- B) G₂.
- C) S of interphase.
- D) meiosis.

11) The M-phase checkpoint is designed to make sure all chromosomes are attached to the mitotic spindle. If this fails to happen, in which stage of mitosis would the cells be most likely to arrest?

- A) telophase
- B) prophase
- C) prometaphase
- D) metaphase

12) If a cell has accumulated DNA damage, it is unlikely to

- A) pass the G₂ checkpoint.
- B) activate DNA repair mechanisms.
- C) enter G₁ from mitosis.
- D) synthesize cyclin-dependent kinases.

13) Masses of noninvasive cells that remain at their site of origin are known as _____ tumors.

- A) malignant
- B) benign
- C) metastatic
- D) secondary