

**Multiple Choice Questions**

1. The cell was first described by:

- A. Brown
- B. Schleiden
- C. Hooke**
- D. Virchow

2. Chloroplasts function in:

- A. cell division
- B. mitosis
- C. photosynthesis**
- D. respiration

3. A major chemical component of primary cell walls is:

- A. protein
- B. starch
- C. cellulose**
- D. lipids

4. Each half of a doubled chromosome can be called a:

- A. chromatid**
- B. centromere
- C. gene
- D. locus

5. Chromosomes are first visible in a dividing cell during:

- A. anaphase
- B. metaphase
- C. telophase
- D.** prophase

6. During mitosis the actual separation of chromatids takes place during:

- A. metaphase
- B. prophase
- C.** anaphase
- D. telophase

7. Diffusion ONLY occurs:

- A. provided there is a liquid solution
- B. in living cells
- C.** in the presence of a concentration difference
- D. across a selectively permeable membrane

8. During telophase, the:

- A. chromosomes migrate
- B.** phragmoplast develops
- C. nuclear membrane breaks down
- D. spindle appears

9. Yellow flower petals are likely to contain which organelle?

- A.** chromoplasts
- B. leucoplasts
- C. amyloplasts
- D. chloroplasts

10. The control center that houses the genetic material of a eukaryotic cell is the:

- A. ER
- B. cell membrane
- C. amyloplasts
- D.** nucleus
- E. nucleolus

11. The organelle which is the site of respiration is the:

- A. chlorophyll
- B. chloroplast
- C. vacuole
- D.** mitochondrion

12. The organelle which modifies and packages proteins made by the ER is the:

- A. ribosome
- B. leucoplast
- C. vacuole
- D.** Golgi apparatus

13. The rigid boundary of a plant cell which supports and protects the protoplast is called the:

- A.** cell wall
- B. middle lamella
- C. cell membrane
- D. plasmodesmata

14. The genetic blueprint within cells is:

- A.** DNA
- B. RNA
- C. proteins
- D. ATP

15. If a cell with 12 chromosomes undergoes mitosis, how many daughter cells result and what is the chromosome number in each daughter cell?

- A. 2 cells, 6 chromosomes each
- B. 4 cells, 6 chromosomes each
- C. 2 cells, 12 chromosomes each**
- D. 4 cells, 12 chromosomes each

16. A cell which is not dividing is said to be in which stage?

- A. anaphase
- B. interphase**
- C. metaphase
- D. prophase

17. An organelle common in plant cells but not found in animal cells is the:

- A. ribosome
- B. large central vacuole**
- C. nucleus
- D. plasma membrane

18. The correct order of stages in mitosis is:

- A. prophase, metaphase, anaphase, telophase**
- B. metaphase, prophase, anaphase, telophase
- C. prophase, anaphase, telophase, metaphase
- D. anaphase, metaphase, prophase, telophase

19. It is difficult to observe individual chromosomes during interphase because:

- A. the DNA has not been doubled yet
- B. they uncoil to form long, thin strands**
- C. they leave the nucleus and are dispersed to other parts of the cell
- D. chromatids do not pair up until division starts

20. Mitosis results in:

- A.** identical cells
- B. cells with half the normal number of chromosomes
- C. four cells
- D. spores

21. Chromosomes line up at the equator of the cell during what stage of mitosis?

- A. telophase
- B.** metaphase
- C. anaphase
- D. prophase

22. Cytokinesis occurs during what stage of mitosis?

- A. prophase
- B.** telophase
- C. anaphase
- D. metaphase

23. The material which makes up the middle lamella and turns fruit juice into jelly is:

- A. cutin
- B.** pectin
- C. suberin
- D. lignin

24. An organelle found in all green plant cells is the:

- A.** chloroplast
- B. chromoplast
- C. leucoplast
- D. microbody

25. Cytoplasmic connections between adjacent plant cells are known as:

- A. microtubules
- B. endoplasmic reticulum
- C. plasmodesmata**
- D. pits

26. Chromatin condenses into chromosomes and the nucleus and nucleolus disappear during which stage of mitosis?

- A. telophase
- B. metaphase
- C. anaphase
- D. prophase**

27. Leucoplasts commonly store:

- A. chlorophyll
- B. water
- C. pigments
- D. starch**

28. A biochemist measured the amount of DNA in cells growing in the laboratory and found that the quantity of DNA in a cell doubled:

- A. between prophase and anaphase
- B. between anaphase and telophase
- C. during metaphase
- D. between G<sub>1</sub> and G<sub>2</sub> phases of interphase**

29. Which of the following phases of mitosis is essentially the opposite of prophase in terms of nuclear changes?

- A. telophase**
- B. metaphase
- C. anaphase
- D. S phase

30. Which of the following organelles is associated with protein synthesis?

- A. rough ER
- B. ribosomes
- C. nucleolus
- D. all of the above**

31. What cellular structure has been described as "protein icebergs in a sea of lipids?"

- A. primary cell wall
- B. plasma membrane**
- C. smooth ER
- D. cytoskeleton

32. The inner membrane of the mitochondrion has numerous infoldings called:

- A. cristae**
- B. grana
- C. stroma
- D. endoplasmic reticulum

33. Which of the following cell structures is correctly matched with its function?

- A. endoplasmic reticulum; waste disposal
- B. nucleolus; ribosome synthesis**
- C. mitochondrion; transport
- D. leucoplast; pigment storage

34. Which of the following cell structures is mismatched with its function?

- A. chloroplast; photosynthesis
- B. ribosome; secretion**
- C. chromoplast; pigments
- D. cell wall; support

35. Mitochondria:

- A. are green because of the chlorophyll they contain
- B.** are the sites of cellular respiration
- C. have an inner membrane folded into stacks called grana
- D. are an RNA-rich region in the nucleus

**True / False Questions**

36. If a plant cell is placed in a hypertonic solution, so much water enters the protoplast that it becomes turgid.

**FALSE**

37. Active transport of substances into a cell always requires the expenditure of energy.

**TRUE**

38. The quantity of water entering a cell in an isotonic solution is equal to the amount of water exiting.

**TRUE**

39. The cells of a wilted plant have lost so much water that they become plasmolyzed.

**TRUE**

40. The Endosymbiont Theory postulates that some organelles in cells were once independent organisms.

**TRUE**

41. If vincristine, a drug that disrupts microtubules, is applied to dividing cells, chromosomes will not form.

**FALSE**



42. According to the Cell Theory, DNA is the genetic material in all cells.

**FALSE**

43. The cell is the basic unit of life.

**TRUE**