

## Chapter 3

**Put line under your answer! There is only one correct answer in the multiple choice questions**

1. **Which of the following is/are generally credited with developing the cell theory?**
  - a) R.J.H. Dutrochet
  - b) Nehemiah Grew
  - c) Robert Hooke
  - d) Rudolph Virchow
  - e) Schleiden and Schwann
2. **In a mature, functioning, healthy cell with a nucleus, which of the following is nonliving?**
  - a) endoplasmic reticulum
  - b) middle lamella
  - c) nucleolus
  - d) chromosomes
  - e) ribosomes
3. **Mitochondria**
  - a) are the sites of protein synthesis in the cell
  - b) are mainly found in vacuoles
  - c) are smaller than chloroplasts
  - d) are a part of Golgi bodies
  - e) have no internal structure
4. **The middle lamella**
  - a) appears after droplets of pectin accumulate in the equatorial region on spindle fibers
  - b) consists mainly of cellulose
  - c) appears during anaphase
  - d) is not formed if a spindle is present
  - e) is an important living portion of the cell
5. **In which phase of the cell cycle does replication (duplication) of the DNA take place?**
  - a) interphase
  - b) prophase
  - c) metaphase
  - d) anaphase
  - e) telophase

6. **Which of the following do NOT develop from proplastids?**
- a) chloroplasts
  - b) chromoplasts
  - c) endoplasmic reticulum
  - d) leucoplasts
  - e) amyloplasts
7. **Cell structures that apparently function in controlling the addition of cellulose to the cell wall, in steering vesicles from Golgi bodies to the cell wall, and in aiding movement within the cell are**
- a) thylakoids
  - b) ribosomes
  - c) mitochondria
  - d) microtubules
  - e) lysosomes
8. **The watery fluid found in vacuoles is called**
- a) chromatin
  - b) stroma
  - c) cristae
  - d) protoplasm
  - e) cell sap
9. **Which of the following are common to nearly all plant and animal cells?**
- a) plasmodesmata
  - b) nuclei
  - c) centrioles
  - d) plastids
  - e) cell walls
10. **Which of the following instruments is capable of magnifying opaque objects more than 3,000 times?**
- a) compound microscope
  - b) dissecting microscope
  - c) transmission electron microscope
  - d) scanning electron microscope
  - e) all of these answers are correct
11. **The souplike fluid of cells in which the nucleus and other objects are suspended is**
- a) protoplasm

- b) cytoplasm
  - c) cell sap
  - d) pectin
  - e) stroma
12. **Which of the following is NOT a component of plant cell wall?**
- a) bone
  - b) cellulose
  - c) lignin
  - d) sugars
  - e) pectin
13. **The outer boundary of living protoplasm in a plant cell is a**
- a) vacuolar membrane
  - b) primary cell wall
  - c) secondary cell wall
  - d) middle lamella
  - e) plasma membrane
14. **Which of the following objects found in living cells is not bound by a membrane or membranes?**
- a) Golgi bodies (dictyosomes)
  - b) plastids
  - c) ribosomes
  - d) endoplasmic reticulum
  - e) nucleus
15. **Many enzymes involved in the process of respiration are synthesized on**
- a) endoplasmic reticulum
  - b) chloroplast
  - c) Golgi bodies
  - d) the nucleus
  - e) microbodies
16. **The stacks of coin-shaped double membranes found in chloroplasts are**
- a) plasma membranes
  - b) vacuolar membranes
  - c) Golgi bodies
  - d) grana
  - e) smooth endoplasmic reticulum

17. **Which of the following do NOT usually occur within chloroplasts?**
- a) starch grains
  - b) DNA
  - c) ribosomes
  - d) oil droplets
  - e) red pigments
18. **Which of the following apparently play a significant role in cyclosis (cytoplasmic streaming)?**
- a) chromoplasts
  - b) leucoplasts
  - c) microfilaments
  - d) ribosomes
  - e) chloroplasts
19. **Which of the following may be found in plant cell vacuoles?**
- a) water-soluble pigments
  - b) crystals
  - c) salts
  - d) sugars
  - e) All of these answers are correct
20. **In mitosis the two chromatids of each chromosome separate and move to opposite poles during**
- a) prophase
  - b) metaphase
  - c) anaphase
  - d) telophase
  - e) interphase
21. **In plants such as ferns, conifers, and flowering plants, mitosis takes place mostly in**
- a) meristems
  - b) wood
  - c) the center of stems
  - d) the center of roots
  - e) leaves
22. **The constricted areas of chromosomes where the pairs of chromatids are held together are called**
- a) cambiums

- b) centromeres
  - c) plasmodesmata
  - d) cytokinesis buttons
  - e) satellites
23. **The set shorter fibers (fibrils) that develop at the equator during telophase of mitosis are the**
- a) cell plate
  - b) spindle fibers
  - c) phragmoplast
  - d) polar meridians
  - e) vesicles
24. **Doughnut-shaped "blisters" through which fine strands of cytoplasm may extend between cells are called**
- a) plasmodesmata
  - b) centrioles
  - c) meristems
  - d) pits
  - e) kinetochores
25. **Which of the following functions as an organic catalyst?**
- a) stroma
  - b) granum
  - c) thylakoid
  - d) microfilament
  - e) enzyme

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**Put (True) or (False) with each following sentences.**

26. Leeuwenhoek is credited with applying the term cell to the boxlike compartments he saw in whittled cork ( ).
27. Pasteur discovered that alcoholic fermentation involved the activity of yeast ( ).
28. A plasma membrane consists primarily of carbohydrate molecules ( ).
29. The region of a chromosomes to which a spindle fiber may be attached is called a chromatid ( ).
30. Golgi bodies (dictyosomes) appear as branches of chloroplasts in the cell ( ).

31. Cell vacuoles usually contain water and dissolved substances ( ).
32. Pyrenoids and thylakoids have similar functions ( ).
33. The nuclear envelope is porous ( ).
34. Protein synthesis takes place in the mitochondria ( ).
35. Cell sap is the fluid part of the cytoplasm in which the organelles are found ( ).
36. Cyclosis is another name for the cell cycle ( ).
37. Very primitive organisms do not have eukaryotic cells ( ).
38. Vacuoles function in regulating the movement of RNA out of the nucleus ( ).
39. Anthocyanins are water-soluble pigments found in cell sap ( ).
40. Leucoplasts contain yellow to orange pigments ( ).
41. Phragmoplasts are produced during prophase of mitosis ( ).
42. Replication (duplication) of DNA takes place during the S period of interphase ( ).
43. Strictly speaking, mitosis refers only to division of nuclei-not cells ( ).
44. Material to be viewed with a transmission electron microscope must be nonliving ( ).
45. The majority of cells have five walls ( ).

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**Matching: Write in middle column the number for the best answer.**

1. Lamarck	12	is concenter as a nonliving part of the cell.
2. Brown	11	are laid down as the cell mature
3. Virchow	10	which surround young actively growing cells.
4. Light microscopes	9	is the main structural component of the cell wall.
5. stereo microscopes	8	have a well-defined nucleus and many organelles
6. Electron microscopes	7	lack a well-defined nucleus and many organelles.
7. Prokaryotic cells	6	have electromagnetic lenses and a beam of electrons
8. Eukaryotic cells	5	most magnify up to 30 times.
9. Cellulose	4	magnify up to 1,500 times
10. Primary walls	3	no spontaneous generation of cells.
11. Secondary walls	2	all cells contain a nucleus.
12. The cell wall	1	all living tissue is composed of cells.
13. Secondary wall	24	is involved in the synthesis of steroid hormones

14. Middle lamella	23	which has ribosomes attached to it.
15. Pits	22	is a system of flattened sacs and tubes.
16. Plasma membrane	21	controls what substances may exit/enter.
17. Plasmodesmata	20	through the plasmodesmata.
18. The nucleus	19	through the cell wall.
19. Apoplastic	18	is bounded by envelope (double membranes).
20. Symplastic	17	contact with another via fine strands of cytoplasm.
21. Nuclear envelope	16	is phospholipid bilayers that contain proteins.
22. The ER	15	are areas no secondary wall material deposited.
23. Rough ER	14	is sandwiched between the primary walls cells.
24. Smooth ER	13	deposited after cell has stopped growing.
25. Dictyosomes	35	is occurred in stroma.
26. The golgi body	34	is occurred in grana.
27. The golgi apparatus	33	A stack of thylakoids forms.
28. Ribosomes	32	a third system of membranes in chloroplast.
29. Mitochondria	31	contain enzymes reactions of photosynthesis.
30. Chloroplast	30	separated from the cytosol by a double membrane.
31. Chloroplasts	29	are the cellular sites of respiration.
32. Thylakoids	28	are composed of r.RNA and proteins.
33. A granum	27	that originate from the endoplasmic reticulum.
34. The light reaction	26	is important in cell wall formation.
35. The dark reaction	25	has been described as a carbohydrate factory.
36. Chromoplasts	45	help to convert stored fatty acids into sugars.
37. Leucoplasts	44	is used to remove the harmful metabolic products.
38. Plastids	43	bounded by a single membrane.
39. Vacuoles	42	control the addition of cellulose to the cell wall.
40. The cytoskeleton	41	may be responsible for cytoplasmic streaming.
41. Microfilaments	40	is involved in the architecture of cells.
42. Microtubules	39	are bounded by tonoplast and contain cell sap.
43. The microbodies	38	of all types develop from proplastids.
44. Peroxisomes	37	are essentially colorless.
45. Glyoxsomes	36	are yellow, orange, or red in color.
46. Lysosomes	46	contain powerful digestive enzymes.