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

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 ( ).

Matching: Write in meddle column the number for the best answer.

<p>| 1. Lamarck | 12 | is conceded 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. Electron microscopes | 7 | lack a well-defined nucleus and many organelles. |
| 15. Stereo microscopes | 8 | have a well-defined nucleus and many organelles. |
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<thead>
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<tbody>
<tr>
<td>14. Middle lamella</td>
<td>23</td>
<td>which has ribosomes attached to it.</td>
</tr>
<tr>
<td>15. Pits</td>
<td>22</td>
<td>is a system of flattened sacs and tubes.</td>
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<td>17. Plasmodesmata</td>
<td>20</td>
<td>through the plasmodesmata.</td>
</tr>
<tr>
<td>18. The nucleus</td>
<td>19</td>
<td>through the cell wall.</td>
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<td>19. Apoplastic</td>
<td>18</td>
<td>is bounded by envelope (double membranes).</td>
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<td>20. Symplastic</td>
<td>17</td>
<td>contact with another via fine strands of cytoplasm.</td>
</tr>
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<td>21. Nuclear envelope</td>
<td>16</td>
<td>is phospholipid bilayers that contain proteins.</td>
</tr>
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<td>22. The ER</td>
<td>15</td>
<td>are areas no secondary wall material deposited.</td>
</tr>
<tr>
<td>23. Rough ER</td>
<td>14</td>
<td>is sandwiched between the primary walls cells.</td>
</tr>
<tr>
<td>24. Smooth ER</td>
<td>13</td>
<td>deposited after cell has stopped growing.</td>
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<td>25. Dictyosomes</td>
<td>35</td>
<td>is occurred in stroma.</td>
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<td>26. The golgi body</td>
<td>34</td>
<td>is occurred in grana.</td>
</tr>
<tr>
<td>27. The golgi apparatus</td>
<td>33</td>
<td>A stack of thylakoids forms.</td>
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<td>28. Ribosomes</td>
<td>32</td>
<td>a third system of membranes in chloroplast.</td>
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<td>29. Mitochondria</td>
<td>31</td>
<td>contain enzymes reactions of photosynthesis.</td>
</tr>
<tr>
<td>30. Chloroplast</td>
<td>30</td>
<td>separated from the cytosol by a double membrane.</td>
</tr>
<tr>
<td>31. Chloroplasts</td>
<td>29</td>
<td>are the cellular sites of respiration.</td>
</tr>
<tr>
<td>32. Thylakoids</td>
<td>28</td>
<td>are composed of r.RNA and proteins.</td>
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<td>33. A granum</td>
<td>27</td>
<td>that originate from the endoplasmic reticulum.</td>
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<td>34. The light reaction</td>
<td>26</td>
<td>is important in cell wall formation.</td>
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<td>35. The dark reaction</td>
<td>25</td>
<td>has been described as a carbohydrate factory.</td>
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<td>36. Chromoplasts</td>
<td>45</td>
<td>help to convert stored fatty acids into sugars.</td>
</tr>
<tr>
<td>37. Leucoplasts</td>
<td>44</td>
<td>is used to remove the harmful metabolic products.</td>
</tr>
<tr>
<td>38. Plastids</td>
<td>43</td>
<td>bounded by a single membrane.</td>
</tr>
<tr>
<td>39. Vacuoles</td>
<td>42</td>
<td>control the addition of cellulose to the cell wall.</td>
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<td>40. The cytoskeleton</td>
<td>41</td>
<td>may be responsible for cytoplasmic streaming.</td>
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<td>41. Microfilaments</td>
<td>40</td>
<td>is involved in the architecture of cells.</td>
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<td>42. Microtubules</td>
<td>39</td>
<td>are bounded by tonoplast and contain cell sap.</td>
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<td>43. The microbodies</td>
<td>38</td>
<td>of all types develop from proplastids.</td>
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<td>44. Peroxisomes</td>
<td>37</td>
<td>are essentially colorless.</td>
</tr>
<tr>
<td>45. Glyoxysomes</td>
<td>36</td>
<td>are yellow, orange, or red in color.</td>
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<tr>
<td>46. Lysosomes</td>
<td>46</td>
<td>contain powerful digestive enzymes.</td>
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