1. Hydrophobic reactions of phospholipids may produce clusters of their fatty acid tails, which form
   a. a lipid bilayer.
   b. hydrolysis of the fatty acids.
   c. a protein membrane.
   d. a cytoskeleton.
   e. a nonpolar membrane.

2. Unsaturated tails of lipids
   a. are hydrophilic.
   b. are unstable and tend to break apart.
   c. have kinks in them and lessen the interaction between adjacent fat
   d. will break whenever exposed to phosphate ions.
   e. all of these

3. The relative impermeability of membranes to water-soluble molecules is a result of the
   a. nonpolar nature of water molecules.
   b. presence of large proteins that extend through both sides of membranes.
   c. presence of inorganic salt crystals scattered through some membranes.
   d. presence of cellulose and chemicals such as cutin, lignin, pectin, and suberin in the membranes.
   e. presence of phospholipids in the lipid bilayer.

4. Four of the five answers listed below are characteristics of the plasma membrane. Select the exception.
   a. phospholipid
   b. fluid mosaic
   c. lipid bilayer
   d. inert and impermeable
   e. hydrophobic tails

5. Which affects the rate of diffusion through a semipermeable membrane?
   I.   steeper concentration gradients
   II. higher temperatures
   III. size of the molecule diffusing

   a. I only
   b. II only
   c. I and II
   d. II and III
   e. I, II, and III

6. In simple diffusion
   a. the rate of movement of molecules is controlled by temperature and pressure.
   b. the movement of individual molecules is random.
   c. the movement of molecules of one substance is independent of the movement of any other substance.
   d. the net movement is away from the region of highest concentration.
   e. all of these

7. Which of the following is a passive process?
   a. sodium-potassium pump
   b. endocytosis
   c. exocytosis
   d. diffusion
   e. none of these

8. Which of the following is a passive process that requires a protein for movement of a solute across a membrane?
   a. active transport
   b. endocytosis
   c. bulk flow
   d. facilitated diffusion
   e. none of these

9. The method of movement that requires the expenditure of ATP molecules is
   a. simple diffusion.
   b. facilitated diffusion.
   c. osmosis.
   d. active transport.
   e. passive transport.

10. The sodium-potassium pump is an example of
    a. simple diffusion.
    b. facilitated diffusion.
    c. osmosis.
    d. active transport.
    e. passive transport.

11. The carrier molecules used in active transport are
    a. calcium ions in the calcium pump.
    b. proteins.
    c. ATP molecules.
    d. carbohydrates.
    e. lipids.

12. A red blood cell will swell and burst when placed in which of the following kinds of solution?
    a. hypotonic
    b. hypertonic
    c. isotonic
    d. any of these
    e. none of these

13. Wilting of a plant occurs
    a. if the plant is placed in an isotonic solution.
    b. if there is a rise in turgor pressure.
    c. as a result of facilitated diffusion.
    d. when a plant with flexible cell walls is placed in a hypertonic solution.
    e. with any of these conditions.

14. All of the following are associated with the process of endocytosis except
    a. secretion of cell products.
    b. endocytic vesicles.
    c. "coated pits."
    d. surface receptors.
    e. phagocytosis.

The following four questions ask about membrane permeability. Answer them in reference to the four processes below:

    a. simple diffusion
    b. facilitated diffusion
    c. osmosis
    d. active transport

15. This process specifically moves water molecules across a differentially permeable membrane.

16. This phenomenon explains the movement of any kind of molecule from areas of higher concentration to ones of lower concentration.

17. This is the process whereby a protein assists in simple diffusion.

18. This process explains the movement of molecules against a concentration gradient.
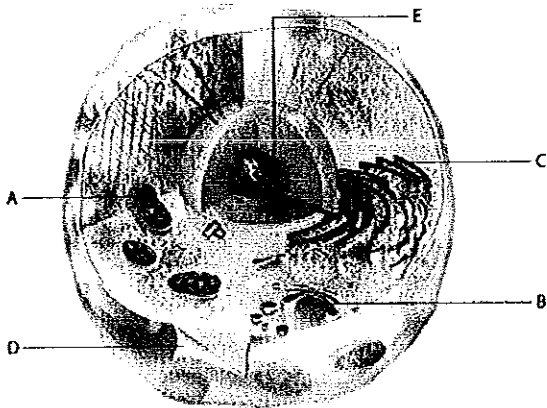
19. Choose the letter of the cell part in the diagram above that selectively controls the entry and exit of materials.

20. Membrane phospholipids
A often have "kinks" in their tails caused by the presence of a single rather than a double bond between carbons.
B have hydrophobic heads that face the center of the membrane and are shielded from water.
C remain fluid because they are tightly packed against one another.
D have hydrophilic tails that face outward and are exposed to water.
E None of the choices are correct.

21. The fluid mosaic model describes the plasma membrane as consisting of
A a phospholipid bilayer with embedded carbohydrates.
B individual proteins and phospholipids that can drift in a phospholipid bilayer.
C a protein bilayer with embedded phospholipids.
D two layers of phospholipids with protein sandwiched between them.
E carbohydrates, proteins, and phospholipids that can drift in the membrane.

22. The cholesterol associated with cell membranes
A helps to stabilize the cell membrane at body temperature.
B makes the cell membrane fluid at room temperature.
C is attached to membrane proteins and extends into the watery environment surrounding the cell.
D is an abnormality resulting from a diet high in cholesterol.

E None of the choices are correct.

A B   B A
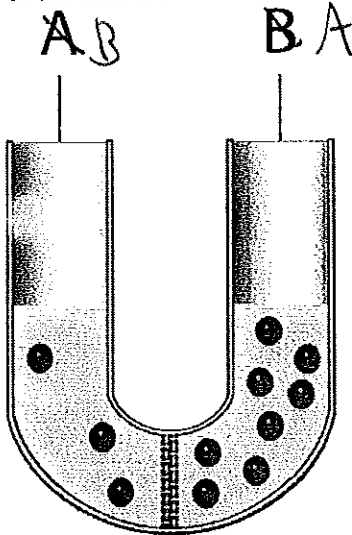
In the diagram above, side A has a 30% sucrose solution and side B has a 10% sucrose solution. The membrane separating the sides is permeable to water but impermeable to sucrose

23. Side A is _____ to side B.
   a. hypertonic
   b. hypotonic
   c. isotonic
   d. either isotonic or hypertonic
   e. either isotonic or hypotonic

24. A major function of glycoproteins and glycolipids in the cell membrane is to
A help the cell retain its shape.
B allow the cells of an embryo to sort themselves into tissues and organs.
C attach the cell membrane to the cytoskeleton.
D glue cells together to form tissues.
E help the cell resist swelling.

25. Which one of the following is not a function of membrane proteins? Membrane proteins 11) _____
A attach the membrane to the cytoskeleton.
B provide cellular identification tags.
C form junctions between cells.
D serve as enzymes.
E All of the choices are membrane protein functions.

26. Relaying a message from a membrane receptor to a molecule that performs a specific function within a cell is called
A signal transduction.
B selective permeability.
C inhibition.
D self-recognition.
E competition.

27. Which of the following is not a true statement about diffusion? Diffusion

A requires no input of energy into the system.

B occurs when particles spread from areas where they are less concentrated to areas where they are more concentrated.

C proceeds until equilibrium is reached.

D is driven by entropy.

E is a result of the kinetic energy of atoms and molecules.

28. Diffusion does not require the cell to expend ATP. Therefore, diffusion is considered a type of

A phagocytosis.

B endocytosis.

C active transport.

D exocytosis.

E passive transport.

29. The molecules responsible for membrane transport are

A carbohydrates.

B steroids.

C ATP.

D phospholipids.

E proteins.

30. In lab, you use a special balloon that is permeable to water but not sucrose to make an "artificial cell." The balloon is filled with a solution of 20% sucrose and 80% water and is immersed in a beaker containing a solution of 40% sucrose and 60% water. The solution in the balloon is _____ relative to the solution in the beaker.

A hypotonic

B hypertonic

C isotonic

D hydrophobic

E hydrophilic

31. A plant cell in a hypotonic solution

A wilts.

B is turgid.

C lyses.

D shrivels.

E is flaccid.

32. You are adrift in the Atlantic Ocean, and, being thirsty, drink the surrounding seawater. As a result,

A your cells lyse, due to the excessive intake of salt.

B your cells become turgid.

C you dehydrate yourself.

D you quench your thirst.

E None of the choices are correct.

F You Die

33. Active transport

A is necessary to allow nerves to function properly.

B uses ATP as an energy source.

C can move solutes up a concentration gradient.

D requires the cell to expend energy.

34. All of the choices are correct.

34. Which one of the following processes could result in the net movement of a substance into a cell, if the substance is more concentrated in the cell than in the surroundings?

A diffusion

B osmosis

C facilitated diffusion

D active transport

E None of the choices are correct.

35. Which one of the following is a typical feature of an ATP-driven active transport mechanism?

A The transport protein is irreversibly phosphorylated as transport takes place.

B The solute must be phosphorylated before it can bind to the transport protein.

C The transport protein must cross to the correct side of the membrane before the solute can bind to it.

D The transport protein catalyzes the conversion of ADP to ATP.

E None of the choices are correct.

36. Certain cells that line the stomach synthesize a digestive enzyme and secrete it into the stomach. This enzyme is a protein. Which of the following processes could be responsible for its secretion?

A endocytosis

B pinocytosis

C diffusion

D passive transport

E exocytosis

37. The act of a white blood cell engulfing a bacterium is

A receptor-mediated endocytosis.

B pinocytosis.

C diffusion.

D osmosis.

E phagocytosis.

38. Cells acquire LDLs by

A diffusion.

B receptor-mediated endocytosis.

C phagocytosis.

D pinocytosis.

E osmosis.

Name: _____ Test: _____ Date: _____

ID Number

mark only one bubble in each digit group

		0	1	2	3	4
1st	digit	0	1	2	3	4
		5	6	7	8	9
2nd	digit	0	1	2	3	4
		5	6	7	8	9
3rd	digit	0	1	2	3	4
		5	6	7	8	9
4th	digit	0	1	2	3	4
		5	6	7	8	9
5th	digit	0	1	2	3	4
		5	6	7	8	9
6th	digit	0	1	2	3	4
		5	6	7	8	9

1 — A● — B○ — C○ — D○ — E○ — F○
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4 — A○ — B○ — C○ — D● — E○ — F○
5 — A○ — B○ — C○ — D○ — E● — F○
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37 — A○ — B○ — C○ — D○ — E● — F○
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39 — A○ — B○ — C○ — D○ — E○ — F○
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42 — A○ — B○ — C○ — D○ — E○ — F○
43 — A○ — B○ — C○ — D○ — E○ — F○
44 — A○ — B○ — C○ — D○ — E○ — F○
45 — A○ — B○ — C○ — D○ — E○ — F○
46 — A○ — B○ — C○ — D○ — E○ — F○
47 — A○ — B○ — C○ — D○ — E○ — F○
48 — A○ — B○ — C○ — D○ — E○ — F○
49 — A○ — B○ — C○ — D○ — E○ — F○