

## Chapter 3 Review - Filled Answers

### Chapter 4 Review

1. Active transport - movement of molecules across the cell membrane with the aid of ATP.
2. Cytoskeleton - cellular structure that provides support and overall cell shape.
3. Osmosis - net movement of water.
4. Hydrophilic - water-loving.
5. Phagocytosis - cell eating.
6. Golgi apparatus - packaging and shipping center of the cell.
7. Ribosomes - organelles associated with protein production.
8. Hypotonic - more water, less solute.
9. Eukaryotic cell - large, complex cell that contains organelles and a nucleus.
10. Cell - the basic structural and functional unit of living organisms.
11. Centrosome - responsible for organizing microtubules during cell division.
12. Cytoplasm - fluid portion of the cell that surrounds organelles.
13. Selective permeability - membrane property that allows some materials to pass through and not others.
14. Mitochondria - powerhouse of the cell, site of ATP production.
15. Plasma membrane - outer boundary of both prokaryotic and eukaryotic cells.
16. Prokaryotic cell - small, simple cell that lacks a nucleus and organelles.
17. Facilitated diffusion - movement of molecules into the cell via transport proteins without using ATP.
18. Fluid Mosaic Model: Describes the cell membrane as a mosaic of protein molecules floating in a fluid phospholipid bilayer. This model shows that membranes are dynamic and involved in various cellular processes like signaling and transport.

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19. Difference between diffusion and osmosis:

- Diffusion: Movement of molecules from high to low concentration.
- Osmosis: Movement of water across a selectively permeable membrane from a region of lower solute concentration to higher solute concentration.

20. Hypertonic, hypotonic, and isotonic:

- Hypertonic: Higher solute concentration outside the cell; water leaves the cell, causing it to shrink.
- Hypotonic: Lower solute concentration outside the cell; water enters the cell, causing it to swell.
- Isotonic: Equal solute concentration inside and outside the cell; no net water movement.

21. Polar vs. non-polar molecules and their effect on transport:

- Polar molecules need transport proteins to cross the hydrophobic membrane interior.
- Non-polar molecules can easily diffuse across the membrane.

22. Passive vs. Active Transport:

- Passive transport: No energy required; molecules move down their concentration gradient.
- Active transport: Requires energy (ATP) to move molecules against their concentration gradient.

23. Prokaryotic vs. Eukaryotic Cells:

- Prokaryotic cells are simpler, lack a nucleus and membrane-bound organelles (e.g., bacteria).
- Eukaryotic cells have a nucleus and various organelles (e.g., plant and animal cells).