

FRONT

Unit 3: Cell Energetics Practice Test

- 1) The _____ portion of the cell membrane is responsible for the isolating functions of the membrane, while the _____ portion regulates exchange and communication with the environment.
 - A) lipid; protein
 - B) cholesterol; lipid
 - C) protein; cholesterol
 - D) carbohydrate; lipid
 - E) nucleic acid; lipid

- 2) How are plasma membranes BEST described?
 - A) a double layer of phospholipid molecules with hydrophobic tails directed toward cytoplasm of cell
 - B) a single layer of phospholipid molecules with water molecules attached along one side
 - C) a double layer of phospholipid molecules with hydrophilic heads directed toward each other
 - D) a double layer of phospholipid molecules with hydrophobic tails oriented toward each other
 - E) a single layer of phospholipids with tails pointed to the inside of the cell

- 3) The net movement of molecules from a high concentration to a low concentration is BEST described by which of the following?
 - A) diffusion
 - B) active transport
 - C) osmosis
 - D) facilitated diffusion

- 4) For diffusion to occur, there must be
 - A) a membrane
 - B) a gradient
 - C) water
 - D) ATP
 - E) All of these

- 5) In reference to diffusion, “passive” really means
 - A) without a membrane
 - B) in the air
 - C) no gradient
 - D) very slowly
 - E) no energy required

- 6) You fill a shallow tray with water and place a drop of red ink in one end of the tray and a drop of green ink in the other end. Which of the following is TRUE at equilibrium?
 - A) The red and green inks are both uniformly distributed throughout the tray
 - B) Each ink is moving down its concentration gradient
 - C) The concentration of each ink is higher at one end of the tray than at the other end
 - D) No predictions can be made without knowing the size of the ink molecules

- 7) What is active transport?
 - A) diffusion of molecules within a cell
 - B) movement of molecules into or out of a cell against a concentration gradient
 - C) movement of molecules into or out of a cell down a concentration gradient
 - D) the movement of molecules into or out of a cell using special proteins and not requiring any energy

- 8) To say a cell is *selectively permeable* means
 - A) it has different sized perforations in the membrane
 - B) it is permeable to different substances than other cells
 - C) only certain molecules can pass through
 - D) sometimes water passes through, and sometimes it can't

- 9) The diffusion of water molecules across a differentially permeable membrane is termed
- A) facilitated diffusion
 - B) hydrolysis
 - C) active transport
 - D. exocytosis
 - E. osmosis
- 10) If red blood cells are taken from the body and placed in salt solution with a higher [conc.], what happens to the cells?
- A) The cells swell and burst because water moves into the cells
 - B) The cells shrivel up because water leaves the cells
 - C) The cells remain unchanged due to equal solute concentration inside and outside the cells
 - D) The cells remain unchanged due to equal water concentrations inside and outside the cells
- 11) Inside a “cell” you construct, you place a 1 M sugar solution. You place the cell in a 2 M sugar solution. What happens?
- A) Water enters the cell because there is more water outside than inside
 - B) Water leaves the cell because there is more water inside than outside the cell
 - C) Water leaves and enters at the same rate
 - D) Sugar diffuses in and water diffuses out until equilibrium is reached.
- 12) Two aqueous solutions are separated by a semipermeable membrane. Solution A is 10% starch and solution B is 5% starch. What will occur?
- A) Water will diffuse from solution A to solution B
 - B) Water will diffuse from solution B to solution A
 - C) Starch will diffuse from solution A to solution B
 - D) Starch will diffuse from solution B to solution A
 - E) Both B and D will occur.
- 13) Osmosis moves water from a region of
- A) high concentration of dissolved material to a region of low concentration
 - B) low concentration of dissolved material to a region of high concentration
 - C) hypertonic solution to a region of hypotonic solution
 - D) negative osmotic potential to a region of positive osmotic potential
 - E) low concentration of water to a region of high concentration of water
- 14) O₂ and CO₂ enter or leave a plant cell by
- A) osmosis
 - B) diffusion
 - C) facilitated diffusion
 - D. active transport
 - E. facilitated transport
- 15) Active transport requires
- A) transport proteins
 - B) ATP
 - C) a membrane
 - D. a gradient
 - E. All of these
- 16) If you forget to water your favorite plant, all of the following will occur at a cellular level except
- A) water moves out of the cytosol by osmosis
 - B) water moves out of the vacuole by osmosis
 - C) turgor pressure builds up in the cells
 - D) the plasma membrane shrinks away from the cell walls

BACK

Practice Test

- 17) The products of photosynthesis are
A) glucose and water
B) carbon dioxide, water, and energy
C) glucose and carbon dioxide
D) glucose and oxygen
- 18) What structural feature of a leaf allows a leaf to obtain CO₂ from the air?
A) stomata
B) epidermis
C) cuticle
D) mesophyll
E) chloroplast
- 19) The vast majority of chloroplasts found in a leaf are located where?
A) vascular bundles
B) cuticle
C) epidermis
D) mesophyll
- 20) What factors influence the rate of photosynthesis?
A) light intensity
B) temperature
C) CO₂
D) water availability
E) all of these
- 21) The cellular organelle of eukaryotic organisms which is responsible for photosynthetic activity is the
A) nucleus
B) mitochondrion
C) chloroplast
D) ribosome
- 22) Imagine a scientist discovers a mutant plant seedling that appears to lack stomata. What would be the effect of this?
A) CO₂ would not be able to enter as a reactant for photosynthesis
B) Water would not be able to enter the plant cells
C) Visible wavelengths of light would be unable to reach the chloroplasts
D) Additional ATP would be produced by the cells of the plant seedling and the plant would grow
- 23) The energy source in photosynthesis is
A) glucose
B) ultraviolet light
C) visible light
D) air
E) oxygen
- 24) Which of the following is NOT true of chlorophyll?
A) It is green in color
B) It absorbs light at the red and blue ends of the spectrum
C) It is the main photosynthetic pigment in plants
D) It is found in mitochondria
E) It doesn't absorb green light
- 25) During the process of photosynthesis, solar energy is converted into
A) chemical energy
B) heat energy
C) thermal energy
D) mechanical energy
- 26) The cellular organelle of eukaryotic organisms which is responsible for cellular respiration activity is the
A) nucleus
B) mitochondrion
C) chloroplast
D) ribosome

Name: _____

Period: _____

- 27) The anaerobic breakdown of glucose is called
- A) fermentation
 - B) respiration
 - C) phosphorylation
 - D) chemiosmosis
- 28) ATP is
- A) a short-term, energy-storage compound
 - B) the cell's principle compound for energy transfers
 - C) synthesized within mitochondria
 - D) molecule living cells rely on to do work
 - E) all of the above
- 29) The main function of cell respiration is to produce
- A) CO_2
 - B) glucose
 - C) ATP
 - D) NADH and FADH_2
- 30) In human cells (muscle cells) the fermentation process produces
- A) lactic acid
 - B) 12 molecules of ATP
 - C) pyruvic acid
 - D) an excessive amount of energy
- 31) Products of the fermentation process can include
- A) carbon dioxide
 - B) ethanol
 - C) lactic acid
 - D) all of the above
- 32) Why do you breathe more heavily during exercise?
- A) because your cells need more O_2
 - B) because your cells are producing more CO_2
 - C) because your cells need more glucose
 - D) A and B