Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Increasing the pressure above the beaker is analogous to _____. 1) _____
A) a decrease in blood volume
B) an increase in blood pressure
C) an increase in heart rate
D) an increase in solutes found in the blood

Answer: B
Explanation: A)
B)
C)
D)

2) Which of the following would decrease the rate of facilitated diffusion? 2) _____
A) increasing the amount of ATP available
B) decreasing the amount of ATP available
C) decreasing the number of carrier proteins
D) increasing the number of carrier proteins

Answer: C
Explanation: A)
B)
C)
D)

3) Which of the following would result in NO change in osmotic pressure? 3) _____
A) Water is moving with its concentration gradient.
B) The solutes can diffuse through the pores and the concentration of solutes is the same.
C) The concentration of solutes is the same on both sides of the membrane.
D) The solutes can diffuse through the pores.

Answer: B
Explanation: A)
B)
C)
D)

4) Which of the following requires a membrane-bound carrier for transport? 4) _____
A) simple diffusion
B) filtration
C) osmosis
D) facilitated diffusion

Answer: D
Explanation: A)
B)
C)
D)

5) Which of the following would increase the rate of facilitated diffusion? 5) _____
A) increasing the amount of ATP available
B) decreasing the number of carrier proteins
C) increasing the steepness of the concentration gradient
D) decreasing the concentration of solutes

Answer: C
Explanation: A)
B)
C)
D)

6) Which of the following is NOT a passive process? 6) _____
A) filtration B) vesicular transport
C) facilitated diffusion D) osmosis

Answer: B
Explanation: A)
B)
C)
D)

7) Osmotic pressure is measured in units of _____. 7) _____
A) ml/min B) mM/sec C) mm Hg D) mM/min

Answer: C
Explanation: A)
B)
C)
D)

8) Which of the following describes the movement of ions by the sodium-potassium pump? 8) _____
A) Potassium is moved into the cell.
B) Potassium is moved out of the cell and sodium is moved into the cell.
C) Potassium is moved out of the cell.
D) Sodium is moved into the cell.

Answer: A
Explanation: A)
B)
C)
D)

9) What happens to facilitated diffusion when the protein carriers become saturated? 9) _____
A) The protein carriers fall apart.
B) The maximum rate of transport will occur.
C) The transport rate will increase.
D) ATP will be utilized for transport.

Answer: B
Explanation: A)
B)
C)
D)

10) In the kidneys, which solutes normally pass through the capillaries? 10) _____
A) proteins and glucose
B) proteins
C) red blood cells
D) glucose
E) white blood cells

Answer: D
Explanation: A)
B)
C)
D)
E)

11) With the experimental conditions set at the 200 MWCO membrane in place, 10 mM glucose and 9 mM albumin, which of the following is true? 11) _____
A) The net movement of water is away from the albumin.
B) The net movement of water is toward the albumin.
C) Albumin and glucose diffuse through the membrane.
D) The net movement of water is toward the glucose.

Answer: B
Explanation: A)
B)
C)
D)

12) Which of the following describes the concentration of ions when the cell is at rest? 12) _____
A) The concentration of potassium and sodium is equal inside and outside the cell.
B) The concentration of potassium is higher inside the cell.
C) The concentration of potassium is higher outside the cell.
D) The concentration of sodium is higher inside the cell.

Answer: B
Explanation: A)
B)
C)
D)

13) Coupled transporters that move solutes in the same direction are called _____. 13) _____
A) antiporters B) isoporters C) symporters D) uniporters

Answer: C
Explanation: A)
B)
C)
D)

14) Simple diffusion and facilitated diffusion both _____. 14) _____

A) move solutes against their concentration gradient
B) require ATP
C) utilize a membrane-embedded carrier protein
D) move solutes with their concentration gradient

Answer: D
Explanation: A)
B)
C)
D)

15) If a membrane is impermeable to solutes, which of the following is true? 15) _____

A) Water will move toward the more concentrated solutes.
B) Water will move away from the concentrated solutes.
C) Osmosis will not occur.
D) Water and solutes will move until equilibrium is reached.

Answer: A
Explanation: A)
B)
C)
D)

16) Which of the following statements about facilitated diffusion is FALSE? 16) _____

A) The movement of the solute is passive.
B) The movement requires a carrier protein.
C) The movement of the solute is with its concentration gradient.
D) The movement of a given solute usually occurs in both directions (into and out of the cell).

Answer: D
Explanation: A)
B)
C)
D)

17) Which of the following was NOT observed during this activity? 17) _____

A) Some solutes were too large to pass through the membrane.
B) A residue of solutes remained on the membrane after filtration.
C) Increasing the rate of filtration increased the concentration of solutes in the filtrate.
D) The 200 MWCO membrane was the largest pore size used.

Answer: C
Explanation: A)
B)
C)
D)

18) Which of the following resulted in an increase in the filtration rate? 18) _____
A) increasing the pressure above the beaker
B) increasing the concentration of the solutes
C) increasing the pore size
D) Both increasing the pore size and increasing the pressure above the beaker are correct.
E) Both increasing the pressure above the beaker and increasing the concentration of solutes are correct.

Answer: D
Explanation: A)
B)
C)
D)
E)

19) Which of the following statements about osmosis is FALSE? 19) _____
A) It is a type of diffusion.
B) It is passive.
C) Water moves toward the solution with the lowest concentration of solutes.
D) It is specific for the movement of water.

Answer: C
Explanation: A)
B)
C)
D)

20) Which of the following increased the rate of sodium-potassium transport? 20) _____
A) increasing the number of membrane pumps
B) decreasing the amount of ATP
C) adding glucose to the right beaker
D) increasing the amount of ATP

Answer: A
Explanation: A)
B)
C)
D)

21) Which solute did NOT appear in the filtrate using the 200 MWCO membrane? 21) _____
A) glucose
B) sodium chloride
C) urea
D) charcoal
E) Glucose, charcoal, sodium chloride and urea appeared in the filtrate.

Answer: D
Explanation: A)
B)
C)
D)
E)

22) What is the type of transport supplied by the glucose carriers in the activity? 22) _____

A) facilitated diffusion
B) active transport
C) coupled transport
D) endocytosis
E) exocytosis

Answer: A
Explanation: A)
B)
C)
D)
E)

23) Which of the following is NOT a reason why a solute would require facilitated diffusion? 23) _____

A) The solute is lipid insoluble.
B) The solute is too large to pass on its own.
C) The solute is hydrophilic.
D) The solute directly requires ATP for its transport.

Answer: D
Explanation: A)
B)
C)
D)

24) The presence or absence of a solute in the filtrate depends on _____. 24) _____

A) the MWCO of the membrane
B) the pore size of the membrane
C) the size of the solute
D) the molecular weight of the solute
E) the molecular weight and size of the solute as well as the MWCO and pore size of the membrane

Answer: E
Explanation: A)
B)
C)
D)
E)

25) Which of the following does NOT describe the plasma membrane? 25) _____

A) selectively permeable
B) differentially permeable
C) semipermeable
D) impermeable

Answer: D
Explanation: A)
B)
C)
D)

26) Which of the following is required for filtration? 26) _____
A) ATP
B) osmotic pressure
C) a hydrostatic pressure gradient
D) a membrane-embedded protein carrier
E) Both a membrane-embedded protein carrier and a hydrostatic pressure gradient are required.

Answer: C
Explanation: A)
B)
C)
D)
E)

27) *Hypertonic* refers to _____. 27) _____
A) the concentration of solutes inside a cell
B) the concentration of solutes that a cell is bathed in
C) a concentration of solutes that is less than the solutes inside the cell
D) a solution that will cause a cell to swell

Answer: B
Explanation: A)
B)
C)
D)

28) Which of the following is the driving force for the sodium-potassium pump? 28) _____
A) ATP hydrolysis
B) a hydrostatic pressure gradient
C) a concentration gradient
D) an electrical gradient

Answer: A
Explanation: A)
B)
C)
D)

29) A cell is immersed in a beaker of solution. The cell membrane is permeable to water but impermeable to solutes. If the intracellular concentration is 10 mM and the solution is 20 mM, which of the following is true? 29) _____
A) There is no net change in the movement of water into the cell.
B) The solution is hypotonic.
C) The net movement of water is into the cell.
D) The cell will shrink.

Answer: D
Explanation: A)
B)
C)
D)

30) In this activity, the solutes were transported through the dialysis membrane by _____. 30) _____

A) active transport B) facilitated diffusion
C) osmosis D) simple diffusion

Answer: D
Explanation: A)
B)
C)
D)

31) When the solutes are evenly distributed throughout a solution, we say the solution has reached _____. 31) _____

A) equilibrium B) velocity C) permeability D) diffusion

Answer: A
Explanation: A)
B)
C)
D)

32) The sodium-potassium pump can transport _____. 32) _____

A) only if sodium and potassium are available
B) potassium even if sodium is not available
C) sodium even if potassium is not available
D) sodium even if potassium is not available and potassium even if sodium is not available

Answer: A
Explanation: A)
B)
C)
D)

33) Which of the following generated osmotic pressure? 33) _____

A) glucose
B) albumin
C) sodium chloride
D) Sodium chloride, glucose and albumin generated osmotic pressure.

Answer: D
Explanation: A)
B)
C)
D)

34) Which of the following does NOT affect the rate of diffusion through a membrane? 34) _____

A) the kinetic energy of the solute B) the size of the solute
C) the membrane pore size D) the concentration of the solute

Answer: C
Explanation: A)
B)
C)
D)

35) Through which membrane(s) would sodium chloride diffuse? 35) _____

A) 100 MWCO and 200 MWCO
B) 200 MWCO only
C) 50 MWCO, 100 MWCO, and 200 MWCO
D) 20 MWCO, 50 MWCO, 100 MWCO, and 200 MWCO

Answer: C
Explanation: A)
B)
C)
D)

36) Which of the following solutes would move the fastest? 36) _____

A) urea B) glucose C) albumin D) sodium

Answer: D
Explanation: A)
B)
C)
D)

37) Which of the following statements about carrier proteins is FALSE? 37) _____

A) They are found integrated into the plasma membrane.
B) They can become saturated if the maximum transport rate is exceeded.
C) They might have to change shape slightly to accommodate a solute.
D) They assist in simple diffusion.

Answer: D
Explanation: A)
B)
C)
D)

38) Which of the following can be true of both active transport and facilitated diffusion? 38) _____

A) A carrier protein is required.
B) Lipid-insoluble solutes can be transported.
C) Lipid-insoluble solutes can be transported and a carrier protein is required.
D) Cellular energy is required for the transport.
E) Solutes can move against their concentration gradient.

Answer: C
Explanation: A)
B)
C)
D)
E)

39) What happened when sodium chloride was added as a solute in the left beaker? 39) _____

A) Sodium was cotransported with the glucose.
B) The transport rate of glucose decreased.
C) There was no change in the transport rate of glucose.
D) The transport rate of glucose increased.

Answer: C
Explanation: A)
B)
C)
D)

Answer Key
Testname: EX1

1) B
2) C
3) B
4) D
5) C
6) B
7) C
8) A
9) B
10) D
11) B
12) B
13) C
14) D
15) A
16) D
17) C
18) D
19) C
20) A
21) D
22) A
23) D
24) E
25) D
26) C
27) B
28) A
29) D
30) D
31) A
32) A
33) D
34) C
35) C
36) D
37) D
38) C
39) C