**Biology Semester Final Review: Fall Semester 2014 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Unit 1: Scientific Method & Microscope**

1. Define Biology:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The ( independent, dependent ) variable is the variable that **scientists change on purpose.**

3. The ( independent, dependent ) variable is the variable that **scientists observe, measure & record.**

4. The ( independent, dependent ) variable is on the **x-axis.**

5. The ( independent, dependent ) variable is on the **y-axis.**

6. Circle the independent variable and underline the dependent variable. Then make a graph below and place the variables on the correct axes.

 If I increase the amount of fertilizer, then my corn plants will grow taller.

7. T or F: In an experiment there is always a control group and an experimental group.

8. What is the purpose of having a control group?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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9. What is the purpose of the experimental group?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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10. In the following experiment label the control group and experimental group.

 In my corn experiment, one of my groups will have no fertilizer added to the soil.\_\_\_\_\_\_\_\_

 The remaining 4 groups will have 1 mg, 2mg, 3mg and 4 mg of fertilizer added.\_\_\_\_\_\_\_\_\_\_

11. In a controlled experiment there is only ( none, 1 , 2, many ) variable(s) changed. Why?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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12. T or F: The following is a controlled experiment: In my corn experiment I want to see if plants will grow taller if I add fertilizer and place them in a sunny location.

13. What two microscope parts are used to calculate total magnification: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Calculate the total magnification for each of the objective lenses:

 \_\_\_\_\_\_\_\_\_(eyepiece) x \_\_\_\_\_\_\_\_\_(low power) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_total magnification

 \_\_\_\_\_\_\_\_\_(eyepiece) x \_\_\_\_\_\_\_\_\_(med power) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_total magnification

 \_\_\_\_\_\_\_\_\_(eyepiece) x \_\_\_\_\_\_\_\_\_(high power) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_total magnification

15. Label microscope parts # 34- 41 with the correct microscope part.

 34.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 35.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 36.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 37.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 38.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 39.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 40.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 41.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Unit 2: Ecology**

1. The study of the interaction of living organisms with each other and their physical environment is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. T or F: Ecosystems have both abiotic and biotic factors.

3. Define abiotic\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Define biotic\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. List 3 biotic factors:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. List 3 abiotic factors:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Define the following terms:

 Producer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Consumer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Herbivore:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Carnivore:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Omnivore:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Decomposer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Autotroph:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Heterotroph:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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8. In the diagram above, label each organism with the appropriate term: producer, 10 consumer, 20 consumer, 30 consumer, 40 consumer.

9. In the diagram above, label each organism as a primary producer, herbivore or carnivore.

10. In the diagram above, label each organism as either an autotroph or heterotroph.

11. The squid above stalks kills and then eats the small fish. What terms from questions 8-10 describe the squid? It is a…

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. At the base of all ecological pyramids you will find ( producers, consumers, decomposers, scavengers )

13. Define food chain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Define food web:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Draw a food chain from the food web on the right that starts with tree:

Tree🡪

Draw a food chain from the food web on the right that starts with grass:

Grass🡪

Label each organism in the “tree” food chain above with a term from question # 8.

If mountain lions were removed from the ecosystem shown due to humans killing them off, what organisms would be affected?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain what would happen to those organisms\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What do the arrows in the food web represent?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

T or F: The arrows in a food web only go in one direction because energy in an ecosystem only flows in one direction.

T or F: The flow of energy in an ecosystem is always from a lower level organism to a higher level organism.

15. In an environment energy ( flows in one direction, is recycled ) and nutrients ( flow in one direction , are recycled ).

16. T or F : The water cycle, carbon cycle and nitrogen cycle all show that nutrients are recycled in the ecosystem.

17. T or F: Energy is NOT recycled in an ecosystem…it only flows in ONE direction and is usually lost as heat.

18. Circle the items that **ARE recycled** in an ecosystem. Underline the item that **IS NOT recycled** and is used up.

 Carbon Nitrogen Energy Water

19. What percentage of energy goes on to each trophic level in an ecosystem ( 0%, 10%, 50%, 100% )

20. Matter can recycle through the biosphere because

|  |  |
| --- | --- |
| a. | matter does not change into new compounds. |
| b. | matter can be changed into new compounds. |
| c. | biological systems do not use up matter, they transform it. |
| d. | Both b & c |

21. Circle the **biotic** factor(s) that can affect population size in an environment.

 Severe Drought Predators Limited Food Supply Disease Wildfire

22. Underline the **abiotic** factors that can affect population size in an environment.

 Severe Drought Predators Limited Food Supply Disease Wildfire



23. If the population of the bird species in the ecosystem to the right were to suddenly decrease, what would happen to the population size of :

The fish ( increase, decrease )

The grass ( increase, decrease )

T or F: The grass and fish populations would compete for resources.

24. T or F: Everything in a food web is connected in some way, so when any one organism is changed, it affects everything in the food web.

25. Define Limiting Factor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26. Define Carrying Capacity:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27. The things that can affect population size are known as ( limiting factors, carrying capacity)

28. The maximum amount of any one organism an ecosystem can sustain is known as ( limiting factors, carrying capacity )



29. Which graph shows a population that is maintaining its carrying capacity?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

30. Which graph shows a population that has exceeded carrying capacity and has been affected by limiting factors?\_\_\_\_\_\_\_\_\_\_\_\_\_

31. Which graph represent human population growth?\_\_\_\_\_\_\_\_\_\_\_\_ What is that curve called?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

32. What do you predict will happen to graph B in the next few years (go up a bit, continue going down, go way up fast ). Explain your answer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33. What do you predict will happen to graph C in the future? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

34. Approximately how long do we have before humans reach carrying capacity? ( 5 years, 50 years, 100 years, never will )

35. What can we (humans) do before we reach carrying capacity in order to make sure we don’t run out of resources?

 1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 3: Macromolecules and Enzymes**

1. The 3 macromolecules we studied are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Which elements (from the periodic table) do carbs, proteins and lipids all have?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What is the building block of lipid:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, carb:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ protein:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What foods will you find the following macromolecules in:

 Protein:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Complex Carbohydrates:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Simple Carbohydrates:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Lipids:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. ( Simple sugar, complex sugar, lipids, proteins ) provide quick energy…eat /drink them right before an athletic event.

6. ( Simple sugar, complex sugar, lipids, proteins ) provide energy storage.

7. ( Simple sugar, complex sugar, lipids, proteins ) provide long-lasting energy…eat them the night before an athletic event.

8. ( Simple sugar, complex sugar, lipids, proteins ) are necessary for growth and repair of body cells, muscles etc.

9. What does an enzyme do?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. The enzyme catalase found in the saliva in your mouth breaks down crackers (complex sugars) into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. T or F: Simple sugars taste sweeter than complex sugars.

12. T or F: In a chemical reaction, enzymes can never be used up or permanently changed.

13. What can affect an enzymes ability to function? (Think back to the liver enzyme lab)

 1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 4: Cell Transport:** (Passive Transport—Diffusion & Osmosis & Active Transport)

1. Define Diffusion:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Define Osmosis:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Define Active Transport:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**In the diagram below, the X’s stand for particles that are dissolved in water. For example, X = salt particles dissolved in water. The “blank” space stands for the water the particles are in. The line dividing container A & B is a semi-permeable membrane.**

|  |  |
| --- | --- |
| **X X X X X X X X X X X X**  | **X****X X** **X** |

3. In the diagram, which direction will the **particles X** move if the membrane **DOES** allow them to move through:

A 🡪B or A 🡨 B

Explain why:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This movement is an example of (osmosis, diffusion, active transport) **A B**

4. In the diagram, which direction will the **water molecules** move if the membrane does not allow the large salt molecules through:

 A 🡪B or A 🡨 B

Explain why:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This movement is an example of (osmosis, diffusion, active transport)

5. Which type of transport DOES NOT require energy ( passive transport, active transport )

6. T or F: The purpose of diffusion is for substances to have the equal amounts on each side of a membrane.

**In the diagrams below, Solutions A, B & C have differing amounts of salt and water. The circles represent cells with membranes through which WATER can pass. Remember the goal of diffusion (in this case osmosis ) is have equal amounts on both sides of the membrane.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A.  10% salt\_\_\_\_% water  50% salt\_\_% water |  | B. 50% salt\_\_\_\_% water  50% salt\_\_% water  |  | C. 90% salt\_\_\_\_% water  50% salt\_\_% water  |

7. Write in the amount of water

In each solution and cell.

8. Which cell will shrivel

because water is leaving the

inside and going to the outside?

\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Which cell will swell because water is coming inside the cell?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. In which cell will there be no movement of water because it is already equal on both sides of the membrane?\_\_\_\_\_\_\_

11. When a solution has **more** dissolved particles (like salt) than the inside of the cell does, it is called: ( hypertonic, hypotonic, isotonic.)

12. When a solution has **less** dissolved particles (like salt) than the inside of the cell does, it is called: ( hypertonic, hypotonic, isotonic)

13. When a solution has an **equal** amount of dissolved particles as the inside of the cell does, it is called: ( hypertonic, hypotonic, isotonic)

14. Underneath each solution, label it as: hypertonic, hypotonic, or isotonic as compared to the inside of the cell.