Name_____ Date _____

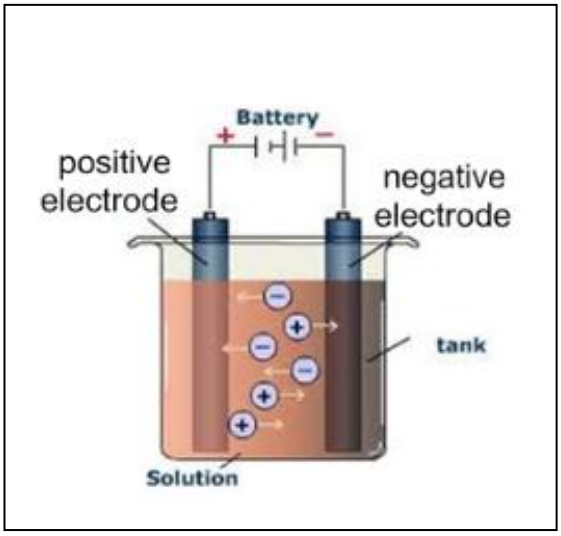
Mark: ___/65 = ____ %

PRETEST ON CHAPTER 2
"MOLECULES AND SOLUTIONS"

Part 1 – MULTIPLE CHOICES

Answer all the questions on the multiple choice sheet provided

1) Jamie is a very curious student. She has just learned about the electrical conductivity of aqueous solutions and wants to study the process. She takes a beaker that contains distilled water and dissolves a substance in it. Then, she connects 2 electrodes to an electrical battery and inserts the electrodes in the water. The water starts conducting electricity.



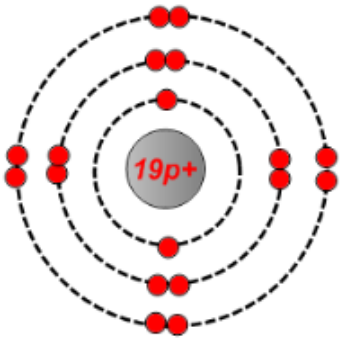
Which of the following statements could explain this process?

A) The dissolved substance was sugar.
B) The positive ions released protons in the solution.
C) The solution conducts electricity because it contains positive and negative ions.
D) The positive and negative ions were released by a nuclear reaction.

2) Which one of the following statements is TRUE?

A) Positive ions are atoms that have gained protons.
B) Negative ions are atoms that have gained protons.
C) Positive ions are atoms that have lost electrons.
D) Negative ions are atoms that have lost electrons.

3) What does the diagram below represent?



A) an atom
B) a molecule
C) an ion
D) a nucleus

4) Below are the observations from two tests done on four different solutions:

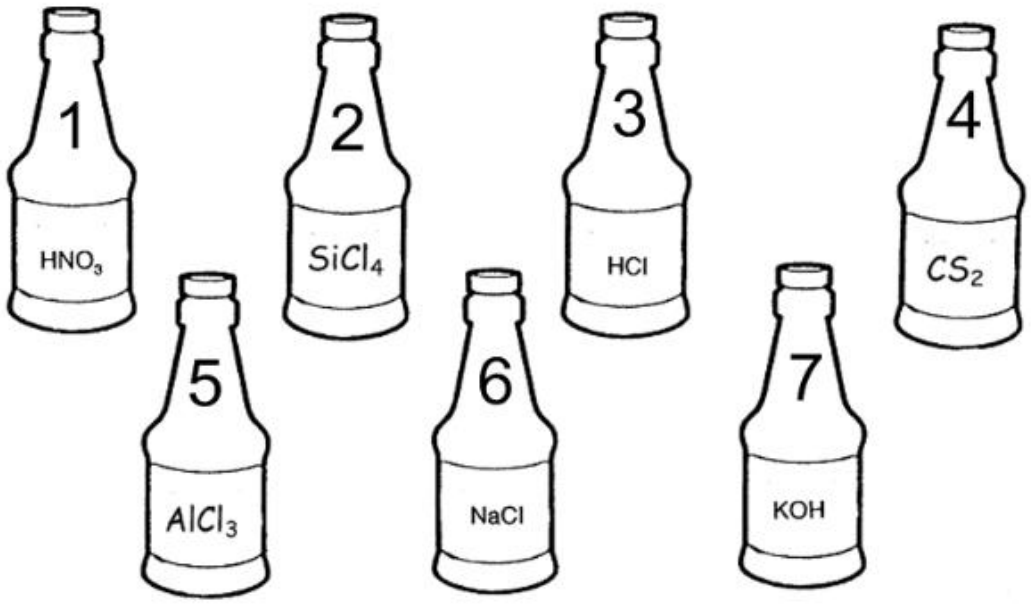
Solution	Reaction to litmus	Test for conductivity
a	red to blue	yes
b	blue to red	yes
c	no change	yes
d	no change	no

Which of the above solutions above could be glucose ($C_6H_{12}O_6$)?

5) Anna often uses a white powder when cleaning the house. She is curious and wonders if this powder is an electrolyte. ***What must she do FIRST to find out?***

A) put a piece of blue litmus paper on the solid
B) put a piece of red litmus paper on the solid
C) check to see if the solid conducts electricity
D) dissolve a small amount of the solid in water

6) The lab technician asks you to help out by putting your knowledge of chemistry to work. She shows you some bottles in which she keeps different chemicals and asks you to select the ones that ***conduct electricity***.



Which of the above solutions would you chose?

A) 1, 3, 4, 6 and 7
B) 2, 3, 4, 5 and 6
C) 3, 4, 5, 6 and 7
D) 1, 3, 5, 6 and 7

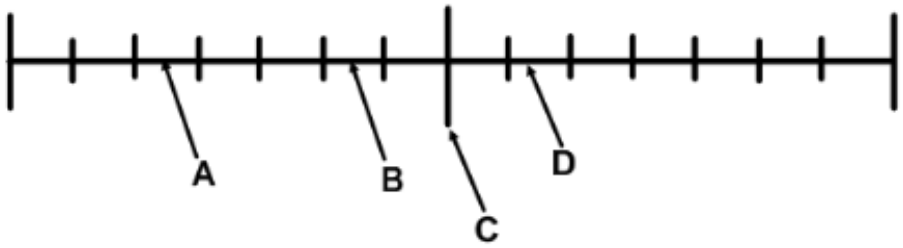
7) The following represents a list of substances and their pH:

a) pH 2 b) pH 11 c) pH 4 d) pH 7 e) pH 10 f) pH 9

Which of the sentences describing the above solutions is false?

A) Solution f) is 100 times more acidic that solution b).
B) Red litmus paper will turn blue in solution e).
C) Solution d) could be distilled water.
D) Solution c) could be used for cleaning purposes.

8) Which of the following shows the pH of rainwater?



9) Which one of the statements below is TRUE?

A) The human body does not contain acids or bases.
B) Pure water has a pH of 7.
C) A pH of 2 is 30 times more acidic than a pH of 5.
D) As the pH increases, the solutions become more acidic.

10) Which of the following substances could be used to clean the grease accumulated in your kitchen oven?

A) NaCl
B) HCl
C) NaOH
D) CH_4

11) "The concentration in g/l of an aqueous solution" represents:

A) the quantity of solute, in grams, dissolved in one litre of solvent.
B) the quantity of solvent, in grams, dissolved in one litre of solution.
C) the quantity of solvent, in grams, dissolved in one litre of solute.
D) the quantity of solute, in grams, dissolved in one litre of solution.

12) What is the best concentration unit to use when measuring the amount of sugar in 100 mL of fruit juice?

A) g/L
B) ppm
C) mg/100 mL
D) %m/V

13) What is the volume of a 10 g/L solution that contains 500 mg of salt?

A) 50 mL
B) 5000 mL
C) 250 mL
D) 25 mL

14) The lab technician used 0.003 kg of lead nitrate to produce 6 L of solution. ***Which of the following represents the correct concentration value of her solution?***

A) 2 g/L
B) 500 ppm
C) 5g/L
D) 0.5%m/V

15) How much solute there is in 2 L of a 15%m/V concentration solution?

A) 150 g
B) 300 g
C) 7.5 g
D) 30 g

Mark: ___ /20

Part 2 – EXTENDED ANSWERS

Answer all the questions in the space provided below. Show all your work

1) ***Draw a Rutherford-Bohr Diagram for the following atom and ion. Also indicate the electronic charge of each.***

(___/4)

Magnesium Atom	***Magnesium Ion***
Model (1.5 p) :	Model (1.5 p) :
Overall electrical charge (0.5 p) :	Overall electrical charge (0.5p) :

2) Mr. Woody is mixing solutions in the lab (because that's what he does for fun on the weekends). He decides to mix 7 grams of Sodium Hydroxide NaOH (pH 14) into lemon juice (pH 2) just for kicks. The resulting solution had a volume of 1570 mL and a pH of 6. **(___/9)**

a. ***Is Sodium Hydroxide and acid, base, salt or neither? (give two reasons) (2 p)***

_____

_____

_____

b. ***Will this solution conduct electricity? (1 p)***

_____

_____

c. ***After mixing NaOH into the lemon juice how many more times acidic or basic is the new solution compared to the original lemon juice? (2 p)***

Show work:

Answer_____

d. What is the concentration of NaOH in the resulting solution?

i. In g/L (2 p)

Show work:

Answer_____

ii. In % m/V (2 p)

Show work:

Answer_____

3) The table below shows the salinity of four different bodies of water.

Body of water	***Salinity***
Baltic Sea	7000 ppm
Black Sea	18 g/L
Dead Sea	27.5% (m/V)
Mediterranean Sea	39 g/L

Compare the given salinities and list the bodies of water in ascending order (from least salty to saltiest) **(___/7)**

Show all your work

BALTIC SEA (1.5 p)*:*

BLACK SEA (1.5 p) **:**

DEAD SEA (1.5p) *:*

MEDITERRANEAN SEA (1.5 p)*:*

Answer: The **increasing** order of salinities is (1 p)**:**

_____ < _____ < _____ < _____