

Name: _____

Blk: _____ Date: _____

Chemistry 12
ACIDS, BASES AND SALTS UNIT
Prescribed Learning Outcomes

Your weekly Wednesday "WAY BACK" Quizzes will be based on one of the following PLO's (that have been covered in the course.) It is advised that you should complete each corresponding PLO after the lesson that it is taught in, as part of your homework. At the end of each unit (and the course) the answered PLO's will serve as an excellent study guide.

PART II

N: Acids, Bases, and Salts (Hydrolysis of Salts)

It is expected that students will:

- N1. write a dissociation equation for a salt in water
- N2. write net ionic equations representing the hydrolysis of salts
- N3. predict qualitatively whether a salt solution would be acidic, basic, or neutral
- N4. determine whether an amphiprotic ion will act as a base or an acid in solution

O: Acids, Bases, and Salts (Indicators)

It is expected that students will:

- O1. describe an indicator as a mixture of a weak acid and its conjugate base, each with distinguishing colours
- O2. describe the term transition point of an indicator, including the conditions that exist in the equilibrium system
- O3. describe the shift in equilibrium and resulting colour changes as an acid or a base is added to an indicator
- O4. predict the approximate pH at the transition point using the K_a value of an indicator
- O5. predict the approximate K_a value for an indicator given the approximate pH range of the colour change

P: Acids, Bases, and Salts (Neutralizations of Acids and Bases)

It is expected that students will:

- P1. demonstrate an ability to design and perform a neutralization experiment involving the following:
 - * primary standards
 - * standardized solutions
 - * titration curves
 - * indicators selected so the end point coincides with the equivalence point
- P2. calculate from titration data the concentration of an acid or base
- P3. calculate the volume of an acid or base of known molarity needed to neutralize a known volume of a known molarity base or acid
- P4. write formula, complete ionic, and net ionic neutralization equations for:
 - * a strong acid by a strong base
 - * a weak acid by a strong base
 - * a strong acid by a weak base
- P5. calculate the pH of a solution formed when a strong acid is mixed with a strong base
- P6. contrast the equivalence point (stoichiometric point) of a strong acid-strong base titration with the equivalence point of a titration involving a weak acid-strong base or strong acid-weak base

Q: Acids, Bases, and Salts (Buffer Solutions)

It is expected that students will:

- Q1. describe the tendency of buffer solutions to resist changes in pH
- Q2. describe the composition of an acidic buffer and a basic buffer
- Q3. outline a procedure to prepare a buffer solution
- Q4. identify the limitations in buffering action
- Q5. describe qualitatively how the buffer equilibrium shifts as small quantities of acid or base are added to the buffer
- Q6. describe common buffer systems present in industrial, environmental, or biological systems

R: Acids, Bases, and Salts (Acid Rain)

It is expected that students will:

- R1. write equations representing the formation of acidic solutions or basic solutions from non-metal and metal oxides
- R2. describe the pH conditions required for rain to be called acid rain
- R3. relate the pH of normal rain water to the presence of dissolved CO_2
- R4. describe sources of NO_x and SO_x
- R5. discuss general environmental problems associated with acid rain