LEARNING AS ONE NATION

Expanded Project

SHS LEARNING ACTIVITY

Name: _____ **Score/Mark:** _____

Grade and Section: _____ **Date:** _____

Strand: ☐ STEM ☐ ABM ☐ HUMSS ☐ ICT (*TVL Track*)

Subject: *Physical Science (Chemistry)*

Type of Activity: ☑ Concept Notes ☑ Skills: Exercise/Drill ☐ Illustration ☐ Performance Task ☐ Essay/Report ☐ Others: _____

Activity Title: **LA07: Bond Polarity**

Learning Target: To define bond polarity and enumerate its types.

References: *(Author, Title, Pages)*
1) Chang, R. (2010). *Chemistry*, 10th edition, pp. 367 & 420;
2) Sadudaquil, J. A. *CVIF–DLP Learning Activities*

Bond polarity – results from the **imbalance in the electric charge** (net movement of electrons) between atoms.

– net movement of electrons is from the less electronegative element to the more electronegative one. In the Lewis Electron Dot Structure (LEDS), the movement is designated by a crossed arrow (⟷).

– influences **molecular polarity** if there is any asymmetric distribution of electric charge.

Dipoles

– two 'poles' or ends in a bond, symbolized by the lowercase Greek letter delta, δ.

– the partial positive end (where the electron is from) is designated delta plus (δ+), while the partial negative end (where the electron is going to) is designated delta minus (δ−).

Types of bond polarity:

1) **Ionic** – absolute value of difference in electronegativity values is **greater than 2.0**.
2) **Polar covalent** – between different atoms of similar electronegativities.
   – absolute value of difference in electronegativity values is **less than 2.0**.
   – has a slight positive charge on one end and a negative charge on the other.

   Example: HF

3) **Nonpolar covalent** – between **identical non-metallic atoms**.
   – electrons are shared equally.

Exercises:

Enclosed in parenthesis are the electronegativity values of the elements:

N (3.0) F (4.0) C (2.5) Cl (3.0) Br (2.8) H (2.1) Li (1.0)

1) In the following bond pairs, **encircle** the bond that is **less polar** between the two. **Solve** for the absolute value of the difference in electronegativities per bond pair. Show your solutions.
   a) N–F vs. C–C b) C–Cl vs. C–Br c) H–Br vs. Li–F

2) Categorize the bonds above as ionic, polar covalent, or nonpolar covalent.

_____ a) N–F	_____ d) C–Br
_____ b) C–C	_____ e) H–Br
_____ c) C–Cl	_____ f) Li–F