Unit 11: Ch 16 – Enthalpy and Phase Changes

ENTHALPY (ΔH):

- **DEFINITION:**

ENTHALPY (HEAT) OF REACTION (ΔH_{rxn}):

- **DEFINITION:**
    - **Formula:**

EXPRESSING ENTHALPY:

- **ENDOTHERMIC: ΔH = _____ → _____ → _____**
    - Ex: 1 CaO + 1 H_2O + _____ → 1 $Ca(OH)_2$
    - Ex: 1 CaO + 1 H_2O → 1 $Ca(OH)_2$ ΔH = _____
- **EXOTHERMIC: ΔH = _____ → _____ → _____**
    - Ex: 4 Fe + 3 O_2 → 2 Fe_2O_3 + _____
    - Ex: 4 Fe + 3 O_2 → 2 Fe_2O_3 ΔH = _____

LAWS OF THERMODYNAMICS:

- 1. **Law of Conservation of Energy (Thermodynamics) –**
- 2. Heat _____ by _____ = Heat _____ by _____
    - **Equation:** _____ = _____
- 3. Heat change of the _____ is _____.
    - ***Universe =*** _____ + _____
- 4. Heat energy _____ flows from _____ system to _____ system

ENTHALPY OF PHASE CHANGES:

- **Formula #1: _____**
  - **Heat of Fusion (ΔH_f):** _____ needed to _____ ***1 gram*** of a substance.
    - **ΔH_f of water = _____**
    - Occurs at the _____ point → _____
  - Ex #1: How many *kilojoules* are needed to convert 15.0 grams of ice to water at its melting point?

- **Formula #2: _____**
  - **Heat of Vaporization (ΔH_v):** _____ needed to _____ ***1 gram*** of a substance.
    - **ΔH_v of water = _____**
    - Occurs at the _____ point → _____
  - Ex #2: How much energy (kJ) is required when 25.0 grams of water at 100°C is converted into steam?