

IGS Acc Final Exam Topics List 2

IGS Acc Moles and Reactions Review

Concepts and Objective (be able to do all this correctly!):

- Know how many atoms are in a mole of any element
- Know how many atoms are in one molecule (for covalent compounds) or one unit (for ionic compounds)
- Calculate the molar mass of a compound
- Use the molar mass to convert from moles and mass (in grams) and from mass (in grams) to moles
 - Use dimensional analysis
 - Remember for the molar mass conversion factor: 1 mol = some number of grams (always 1 mole!!!)
 - Example: the molar mass of CaCl_2 : 1 mole = 110.98 g
- Describe the law of conservation of mass and explain how following it requires us to balance chemical equations
- Balance equations
 - Use coefficients and don't change the formulas
 - Identify the reactants and the products
 - Place the yield sign correctly
 - Write balanced equations from word equations
- Classify chemical equations
 - Synthesis (one product)
 - Decomposition (one reactant)
 - Single replacement (element + compound yields new element + new compound)
 - Double replacement (aqueous ionic solutions switch cations)
 - Combustion (oxygen is always a reactant and carbon dioxide and water are always products)
- Calculate the following type of stoichiometry problems
 - Determine mole conversions
 - a. Do simple mass and mole stoichiometry problems

IGS Acc Solutions Review

Topics

- Concentrations
 - Molarity
 - Mass percent
- Solubility Curves
 - Saturated, unsaturated, supersaturated
- Acids and bases
 - Stoichiometry

- o pH calculations
 - o Naming
- Like dissolves like
- Dilute and concentrated
 - o Dilution calculations

IGS Acc Biogeochemistry Review

Topics

- Carbon cycle
- Water cycle
- Nitrogen cycle
- Phosphorus cycle
- Sulfur cycle
- Oxygen cycle
- Sources and sinks of material
- Abiotic v. biotic impacts
- How the cycles interrelate

IGS Acc Atmosphere and Weather Review

Topics:

- Cause of weather
 - o Extreme weather
 - o High v. low pressure
 - o Fronts
 - o Wind
- Layers of atmosphere
 - o Facts
 - o Importance
- Coriolis effect
 - o Influence on global winds
- How atmosphere developed
 - o Important organisms and time periods
- Composition of atmosphere
- Energy transfer throughout the atmosphere

Acc IGS Climate Change and Human Impact Review

Topics:

- Anthropogenic impacts
 - Climate change
 - Forcings, feedback, the future
 - Evidence
 - Past, present, and future
 - Climate modeling
 - Prevention
 - Our responsibility
- Alternative energy
 - Green v. renewable energy sources
 - Impacts of implementation

IGS Acc Stars and Planets Review

Topics:

- Stellar evolution
 - Mass of stars
 - Path stars take
 - Fate of stars
- HR diagrams
- Nuclear reactions
 - Fission & fusion
- Planets
 - Terrestrial vs. Jovian
 - Dwarf planets
 - Other solar system objects
 - Asteroids, meteors, comets, etc.
 - Facts about each
 - Laws that govern planetary motion

IGS Acc Review The Universe

Topics:

- The formation of the universe
 - Big bang theory
 - Evidence
- The fate of the universe
 - Expansion
 - Determination of its fate
- Hubble's law
- Galactic nuclei
 - Quasars v. Black holes

- Galaxies
 - Information
 - Facts
 - Shapes
- Age of the universe and its development and change