



# EXAMEN DE ADMISION QUIMICA ORGANICA

2017

Doctorado en Tecnología Avanzada / CICATA-IPN Unidad Legaria

## Temas:

### 1: Structure Determines Properties

Atoms, Electrons and Orbitals, Bond types: Ionic, Covalent, Polar Covalent, Electronegativity, Lewis Structures, Formal Charge, The Shapes of Molecules and Molecular dipoles, Constitutional Isomers, Drawing curly arrows, Resonance, Acids and Bases.

### 2: Hydrocarbon Frameworks. Alkanes

Hydrocarbons, Bonding, Alkanes, Cycloalkanes, Thermodynamics and Stability Heats of reaction (combustion, formation, hydrogenation etc) and Hess's Law, Oxidation and Reduction,

### 3: Alcohols and Alkyl Halides

Functional Groups, Alcohols, Alkyl halides, Nucleophilic Substitution Reactions, Radical Substitution Reactions, Preparations of Alkyl Halides.

### 4: Structure and Preparation of Alkenes.

#### Elimination Reactions

Alkenes, Preparation of Alkenes, 1,2 Elimination Reactions

### 5: Stereochemistry

Isomer types, Stereoisomers, The Chirality Centre, Optical Activity, Absolute Relative Configuration, Cahn-Ingold-Prelog R/S notation, Fischer projections. Nucleophilic Substitution.

## Bibliografía:

1. Organic Chemistry, Francis A. Carey. McGraw-Hill, 2009
2. Química orgánica, Norman L. Allinger et al, Editorial Reverté, S. A. Segunda edición. 1991
3. Química Raymond Chang Séptima edición Mcgraw-Hill, 2002.
4. Química Orgánica, Conceptos y Aplicaciones Quinta Edición (1998) Philip S. Bailey Jr. Christina A. Bailey Pearson Educación