



EmSAT Chemistry Achieve

Exam Duration: 90 minutes

EmSAT Chemistry Achieve is a computer-based test that includes two major parts: Matter and Energy.

Test sections, questions, and options are randomized. Sections and subsections of the test are timed by the computer. Test takers can see how much time they have throughout the test.

Matter and its properties

To understand, compare, and, apply concepts related to ...

- Meaning of what is chemistry and what its scope
- Scientific process
- Units of measurement and conversion between them
- Sources errors and uncertainty in measurements.
- Classification of matter
- Changes of matter
- Atomic theories
- Atomic structure
- Atomic spectra and their applications
- Atomic composition
- Periodic table and how elements properties determined based on their locations
- Periodicity
- Volume, temperature, pressure, and amount of a gas.
- Relationships among the four quantities of a gas and their calculations
- Characteristics of solutions
- Factors affecting solubility
- Properties of solutions (qualitatively and quantitatively)
- Electronic composition of the carbon atom



- Diversity of organic compounds in terms of shape, size and chemical and physical properties.
- Classifications of organic compounds in terms of functional groups.
- Types of organic reactions and their applications.

Energy, force and conservation

To understand, compare, and, apply concepts related to ...

- Ionic, polar, and nonpolar covalent bonds
- Shapes of molecules
- The concept of the mole and its applications (stoichiometry)
- Percent composition of a compound
- Empirical and molecular formulas of a compound
- Percent yield
- Acids and bases (strong and weak)
- The concept and use of pH scale
- The concept of neutralization (titration)
- Common ion effect, buffer solutions and solubility
- Meaning of oxidation and reduction, redox reactions and activity series
- Redox reactions to produce electricity and manufacture electrolytic and galvanic cells.
- Factors affecting the reaction rate.
- Chemical equilibrium.
- Energy change take place during the chemical reactions or/ and physical changes .
- Hess's law and how it can be used to predict the occurrence of the chemical reaction.