

LABORATORY TECHNIQUES

Guess which laboratory technique the descriptions below refer to, choosing among the following: chromatography, distillation, filtration, gravimetric analysis, Infra-Red spectroscopy, titration, volumetric analysis.

- a. This technique is used to separate compounds in mixtures of gases, liquids and volatile solids. It relies on differences in interaction of molecules with a solvent system (the mobile phase) and a solid or gel known as the stationary phase.
- b. This technique separates liquids on the basis of them having different boiling points. It is 'simple' when it is used to purify a liquid. It is called 'vacuum' when it is carried out by reducing the external pressure on some organic liquids until their boiling points are below their decomposition temperatures. It is called 'fractional' when it is used to separate compounds with similar boiling points.
- c. This technique is commonly carried out to separate a solid from a liquid. If the solid is to be discarded (such as in the removal of insoluble impurities), it is done by gravity. If the solid is to be collected, it is done under a reduced pressure using a Buchner Funnel and Buchner Flask.
- d. This technique can be used to identify functional groups. A sample of reaction product can be analyzed to confirm its composition by comparison to a pure sample, or to judge the extent of reaction by comparison with the starting material.
- e. This analysis uses the reaction between a solution of known concentration with a solution of unknown concentration. The most common reactions are between acids and bases. A standard solution is a solution of known concentration prepared from a primary standard that is weighed accurately and made up to a fixed volume.
- f. This technique is a method of volumetric analysis which consists in the addition of one reagent (the titrant) from a burette to another reagent until an end-point is reached. The volume added before the end point is reached is noted. If one of the solutions has a known concentration, that of the other one can be calculated.
- g. This analysis is a branch of analytical chemistry where precipitates are accurately weighed as a means to determine concentrations.