

37. Analytical techniques

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

1. In TLC, the stationary and mobile phases are:

- ☐ the plate coating (stationary) and the solvent moving up it (mobile)
- ☐ two gases
- ☐ two solids
- ☐ a carrier gas and a liquid

2. In GLC, the mobile phase is:

- ☐ an unreactive carrier gas
- ☐ a solid plate
- ☐ a polar solvent
- ☐ water

3. In carbon-13 NMR, the number of peaks tells you:

- ☐ how many different carbon environments there are
- ☐ the number of hydrogen atoms
- ☐ the molar mass
- ☐ the boiling point

4. In proton NMR, the number of groups of peaks tells you:

- ☐ the number of different proton (hydrogen) environments
- ☐ the molar mass
- ☐ the number of carbons
- ☐ the boiling point

5. The R_f value is:

- ☐ distance moved by the spot ÷ distance moved by the solvent front
- ☐ distance moved by the solvent ÷ distance moved by the spot
- ☐ the retention time
- ☐ the peak area

6. Equivalent carbons (in the same environment) give a single shared peak.

- ☐ True ☐ False

7. In thin-layer chromatography, the ratio of distances moved by a spot and the solvent is the _____ value.

8. In gas chromatography, the time a component takes to pass through the column is its _____ time.

9. The number of peaks in a carbon-13 NMR spectrum shows the number of different carbon _____.

10. A more soluble component travels further up a TLC plate.

- ☐ True ☐ False

A-Level Chemistry**1. the plate coating (stationary) and the solvent moving up it (mobile)**

The plate coating stays still; the solvent (mobile phase) travels up, carrying the spots.

2. an unreactive carrier gas

A carrier gas moves the components past the liquid stationary phase.

3. how many different carbon environments there are

Each distinct carbon environment gives one peak; equivalent carbons share a peak.

4. the number of different proton (hydrogen) environments

Protons in different environments give peaks at different chemical shifts.

5. distance moved by the spot $\div$ distance moved by the solvent front

R_f = spot distance / solvent-front distance; it lies between 0 and 1.

6. True

Carbons in identical environments are not distinguished, so they appear as one peak.

7. R_f

Always between 0 and 1.

8. retention

Used to identify components.

9. environments

Equivalent carbons give one peak.

10. True

It spends more time in the moving solvent.