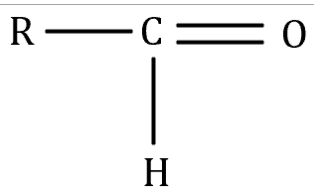
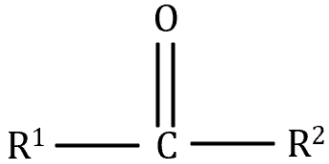
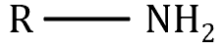
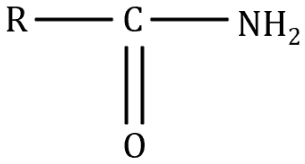
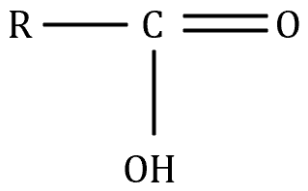
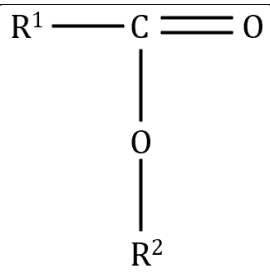
Solubility:

1. [Molecule 1] (solute-solute) intermolecular forces are: ...
2. [Molecule 2] (solvent-solvent) intermolecular forces are: ...
3. The solute-solvent forces of attraction are: ...
4. These are (not) strong enough to overcome the solute-solute and solvent-solvent intermolecular forces so [Molecule 1] dissolves in [Molecule 2].

Functional groups:

Functional group:	General formula:	Suffix:	Intermolecular forces present:
Alcohol		–ol	• Hydrogen bonding • Dipole-dipole forces • Dispersion forces
Aldehyde		–al	• Dipole-dipole forces • Dispersion forces
Ketone		–one	• Dipole-dipole forces • Dispersion forces
Amine		–amine	• Hydrogen bonding • Dipole-dipole forces • Dispersion forces
Amide		–amide	• Hydrogen bonding • Dipole-dipole forces • Dispersion forces
Carboxylic acid		–oic	• Hydrogen bonding • Dipole-dipole forces • Dispersion forces

Ester		–(alkyl group attached to single bonded oxygen)– ... –oate	• Dipole-dipole forces • Dispersion forces

Priority:

1. Carboxylic acid
2. Ester
3. Amide
4. Aldehyde
5. Ketone
6. Alcohol
7. Amine
8. Alkyl groups + halogens

Can't Eat An Ant, Keto Life is My Life

	Intermolecular forces present:
Molecule 1	Hydrogen bonding, dipole-dipole forces and dispersion forces
Molecule 2	Dipole-dipole forces and dispersion forces
Molecule 3	Dispersion forces

Q: Will Molecule 1 be soluble in Molecule 2? Explain.

Yes. Molecule 1 attracts most strongly by hydrogen bonding and dipole-dipole forces whilst Molecule 2 attracts most strongly by dipole-dipole forces. Thus, Molecule 1 is soluble in Molecule 2 due to the similar strengths of hydrogen bonding or dipole-dipole forces in Molecule 1 (solute-solute intermolecular forces) and dipole-dipole forces in Molecule 2 (solvent-solvent intermolecular forces), resulting in the molecules being able to mix and attract one another by dipole-dipole forces.

Q: Will Molecule 2 be soluble in Molecule 3? Explain.

No. Molecule 2 attracts most strongly by dipole-dipole forces whilst Molecule 3 attracts most strongly by dispersion forces. Thus, Molecule 2 is not soluble in Molecule 3 since the strengths of the dipole-dipole forces in Molecule 2 (solute-solute intermolecular forces) and the dispersion forces in Molecule 3 (solvent-solvent intermolecular forces) are not similar.

Q: Will Molecule 1 be soluble in Molecule 3? Explain.

No. Molecule 1 attracts most strongly by hydrogen bonding and dipole-dipole forces whilst Molecule 3 attracts most strongly by dispersion forces. Thus, Molecule 1 is not soluble in Molecule 3 since the strengths of the hydrogen bonding or dipole-dipole forces in Molecule 1 (solute-solute intermolecular forces) and the dispersion forces in Molecule 3 (solvent-solvent intermolecular forces) are not similar.