

Mechanism Quiz 1

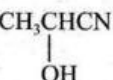
1. Identify electrophile and nucleophile

SO ₃		NO ₂ ⁺	
NH ₃		AlH ₄ ⁻	
OH ⁻		H ⁺	
CN ⁻		CH ₃ ⁺	

2. Complete the table below to differ nucleophile and electrophile:

Nucleophile	Electrophile
May be either neutral or positively / negatively charged particle	May be either neutral or positively / negatively charged particle
An electron-poor / electron-rich atom	An electron-poor / electron-rich atom
Can form a bond by accepting / donating a pair of electrons to an electron-poor / electron-rich atom	Can form a bond by accepting / donating a pair of electrons from electron-poor / electron-rich atom
Lewis acid / base	Lewis acid / base

3. Classify types of mechanism for the following reactions:

 -CH ₂ Cl + NH ₃ →  -CH ₂ NH ₂ + HCl	
 -CH ₃ + Cl ₂ $\xrightarrow{\text{FeCl}_3}$ Cl-  -CH ₃ + HCl	
CH ₂ =CH ₂ + HBr → CH ₃ CH ₂ Br	
 -Cl $\xrightarrow[\text{AlCl}_3]{\text{Cl}_2}$  -Cl	
CH ₃ CHO + HCN → 	
 -CH=CH ₂ $\xrightarrow[\text{CCl}_4]{\text{Br}_2}$  -CH ₂ BrCH ₂ Br	
 -N ₂ Cl +  -OH $\xrightarrow{\text{NaOH}}$  -N=N-  -ONa	
CH ₃ COCH ₃ $\xrightarrow{\text{HCN}}$ CH ₃ C(OH)(CN)CH ₃	
CH ₃ CH ₂ I $\xrightarrow{\text{KOH(aq)}}$ CH ₃ CH ₂ OH	
 + HNO ₃ $\xrightarrow[55^\circ\text{C}]{\text{H}_2\text{SO}_4}$  + H ₂ O	

4. For each of the given equations, identify type of species (nucleophile or electrophile) for the underlined species.

