

1) Werner's Theory

Primary valency	Secondary valency
1. Oxidation State	Co-ordination number
2. Positive or zero	positive, -ive, neutral.
3. Non-directional	directional
Inner Sphere → Co-ordination Sphere	
Outer Sphere → Ionisation sphere	

2) V.B. Theory

- i) Ligand-metal (covalent nature)
- ii) Ligand → lone pair of electrons
- iii) metal → vacant orbital
- iv) Number of ligand → Co-ordination number
- v) (n-1)d orbital → inner orbital complex
nd orbital → outer orbital complex
- vi) Unpaired electron - paramagnetic
Paired electron - diamagnetic

3) Ionisation isomerism → gives different ions in solution
 $[Co(NH_3)_5Br]SO_4$
 $[Co(NH_3)_5SO_4]Br$

Linkage isomerism - Two different donor atom by ambidentate ligand
 EX: - NO_2, ONO

Solvate (or) Hydrate isomerism :- Exchange of solvent molecule in crystal lattice
 EX: - $[Cr(H_2O)_6]Cl_3$

4) Why colour & colourless?
 Colour - Presence of unpaired electron
 Colourless - Absence of unpaired electron.

1. Kohlrausch's law :-

$$(\Lambda^{\circ}_m)_{NaCl} = (\Lambda^{\circ}_m)_{Na^+} + (\Lambda^{\circ}_m)_{Cl^-}$$

2. Faraday's first law

$$m \propto Q$$

m - mass of substance liberated at electrode
 Q - quantity of charge pass

Faraday's Second law

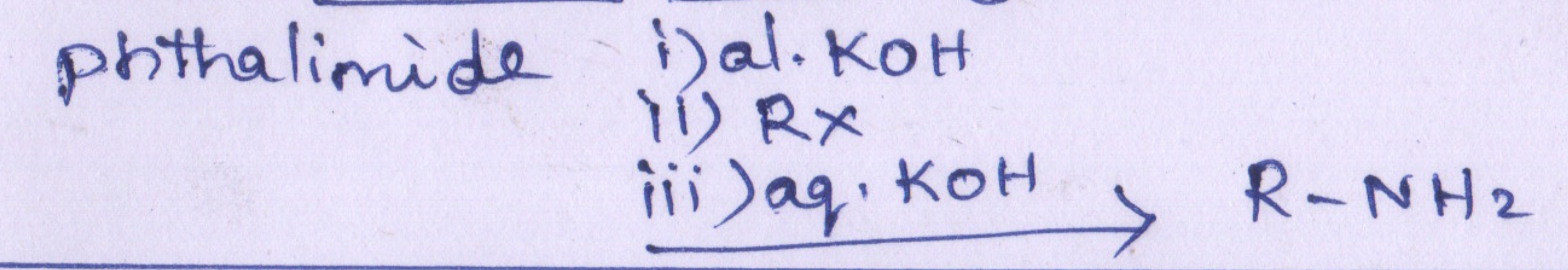
$$m \propto Z$$

m - mass of substance
 Z - Electrochemical equivalent of substance

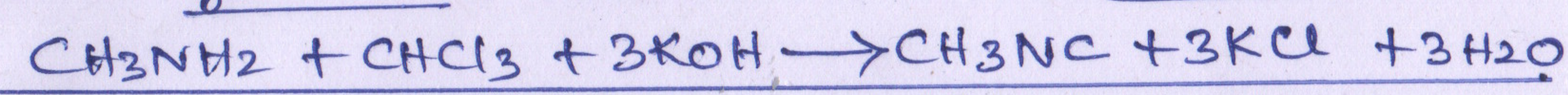
3. Nernst eqn :-

$$E = E^{\circ} - \frac{2.303 RT}{nF} \log \frac{[C]^l [D]^m}{[A]^x [B]^y}$$

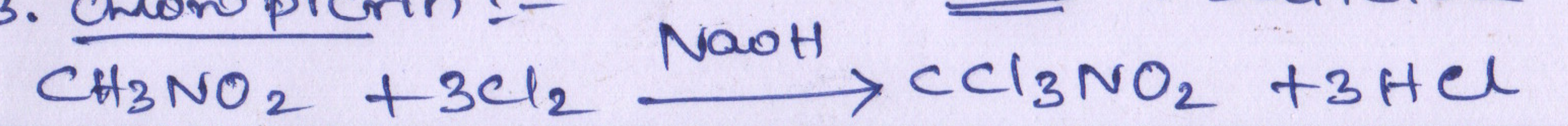
1. Cabriel phthalimide Synthesis



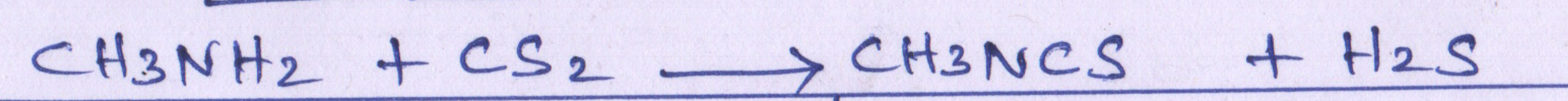
2. Carbyl amine reaction :- (Test for 1° amine)



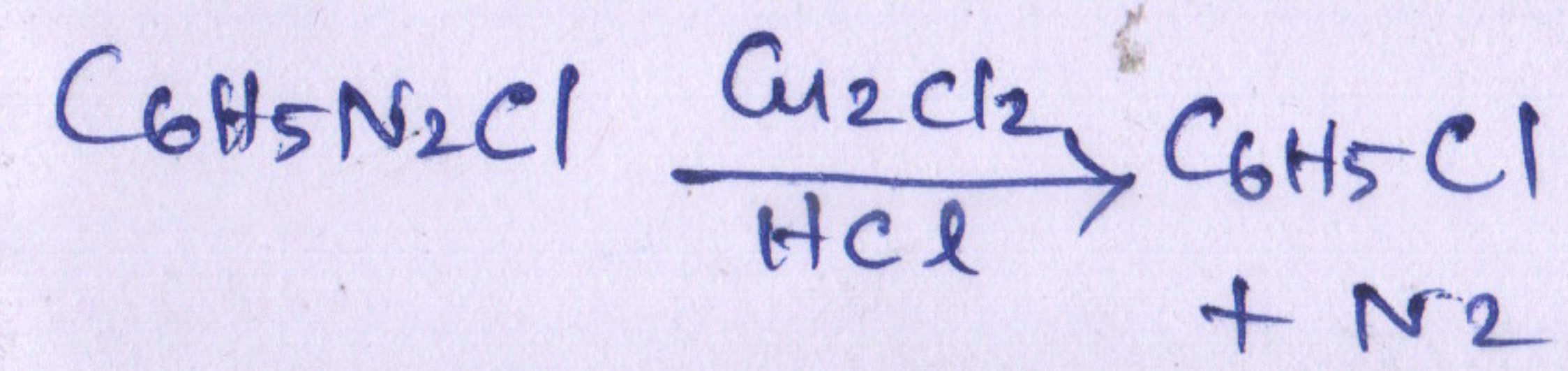
3. Chloropicrin :-



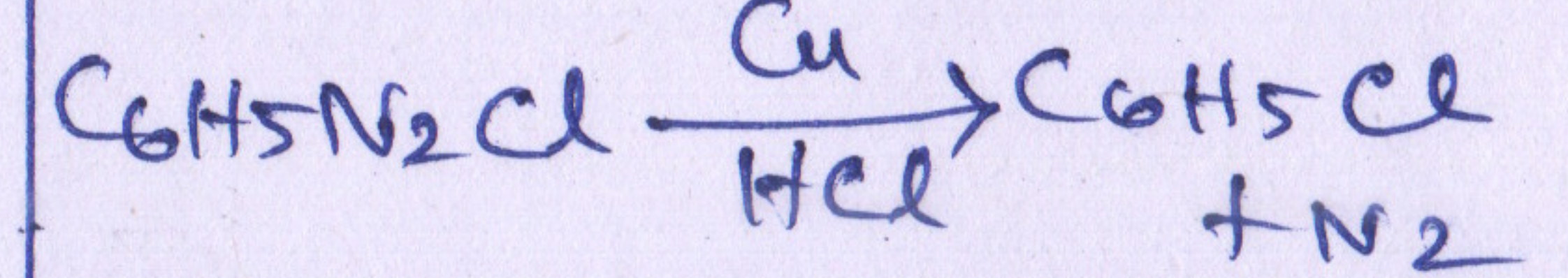
4. Mustard oil Reaction :-



5. Sandmeyer Reaction



Glattermann Reaction



All the Best