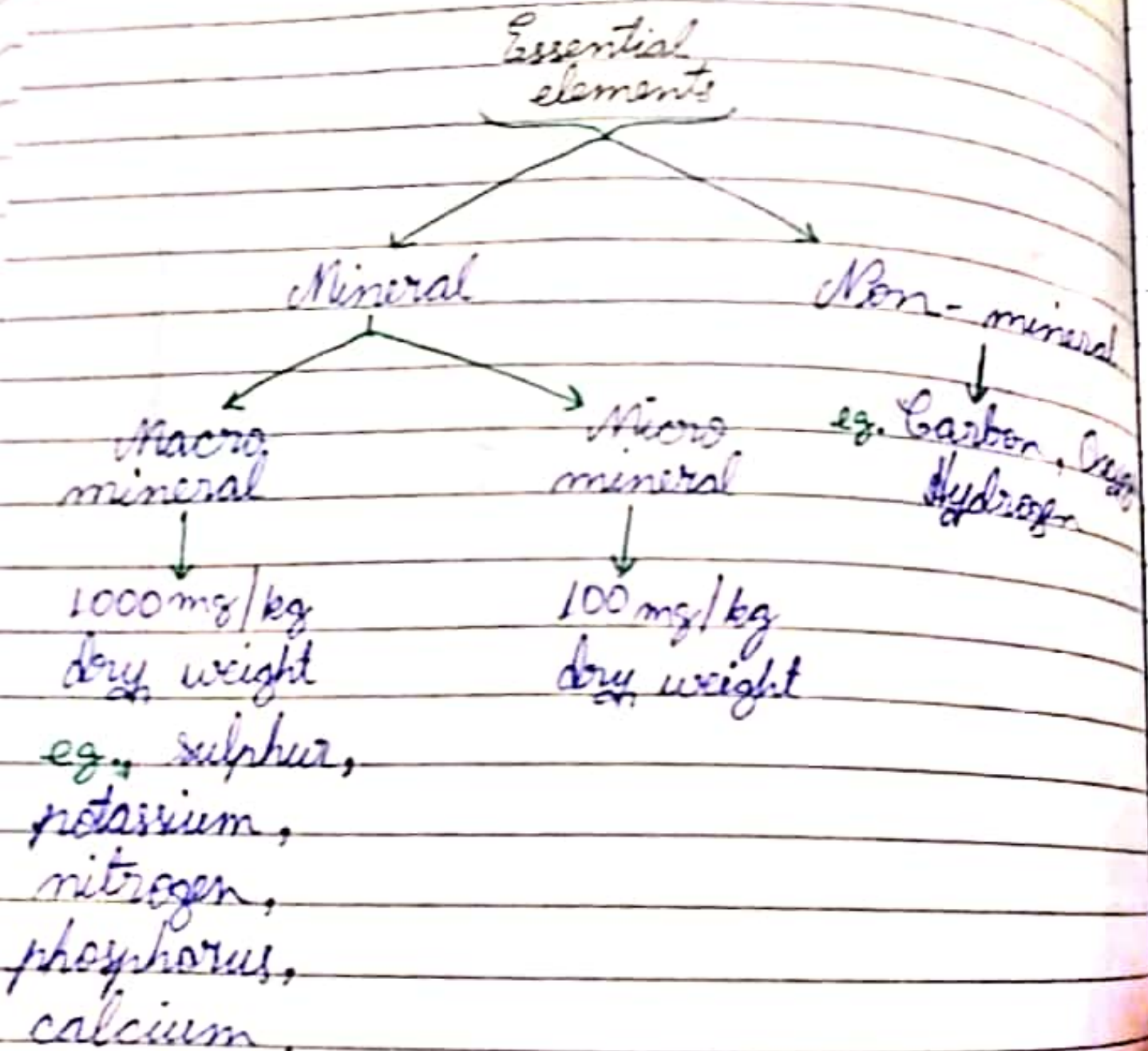


## \* Nitrogen Metabolism

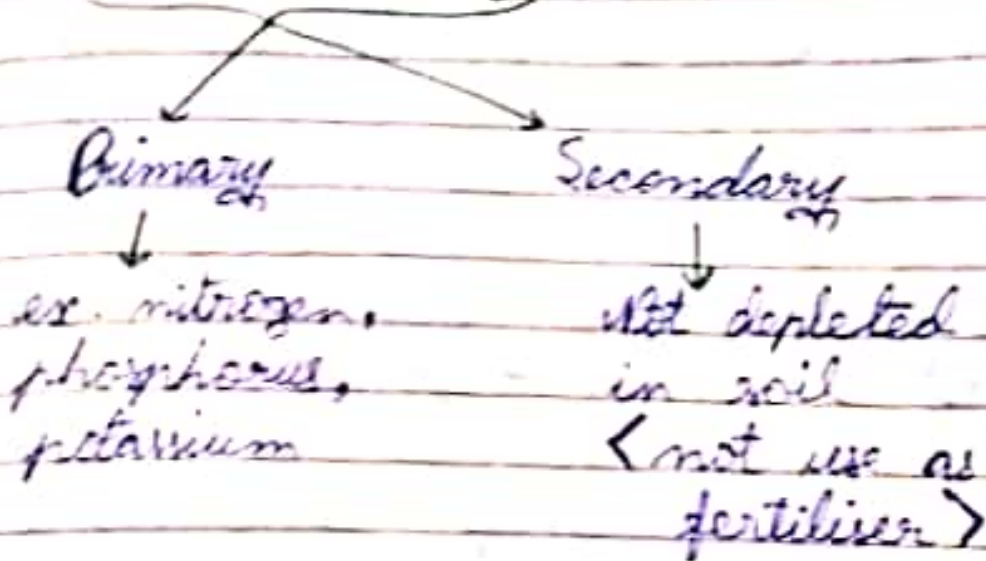
• Plant → Photoheterotrophic

→ angiosperm

→ Require approximately 70 essential elements.



## Macro mineral

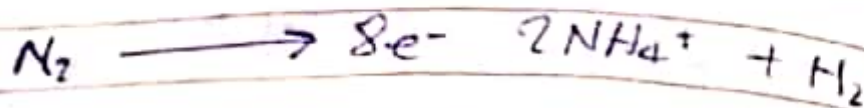
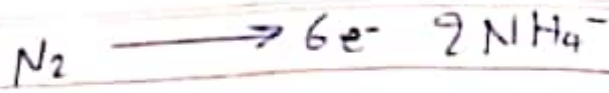


\* Criteria for essentiality is proposed by Arnon:

i) essential - element is essentially required for the growth and development of plants.

ii) it is non-replaceable.

iii) direct involvement.



→ It takes 8 electrons but 6 electrons to release  $H_2$ . use

→ Organism only, prokaryotic

→ Nitrogen fixing bacteria (Diazotrophs)

### \* Diazotrophs

→ Eubacteria and archaeobacteria.

→ aerobic and anaerobic.

→ Symbiotic as well as non-photosynthetic

→ Enzyme → dinitrogenase complex

Fe-Mo type  
(common protein)

Fe-V<sub>8</sub> type

# Nitrogen fixing Bacteria

