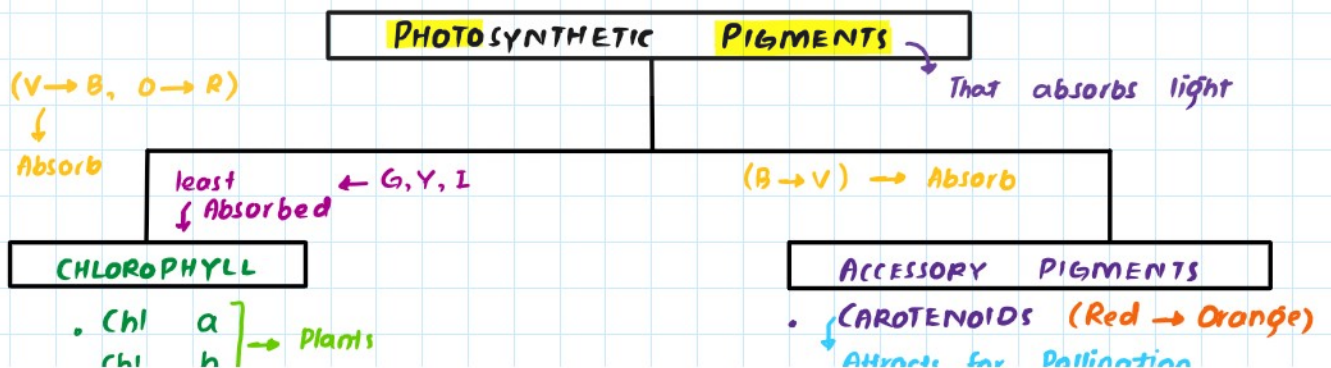
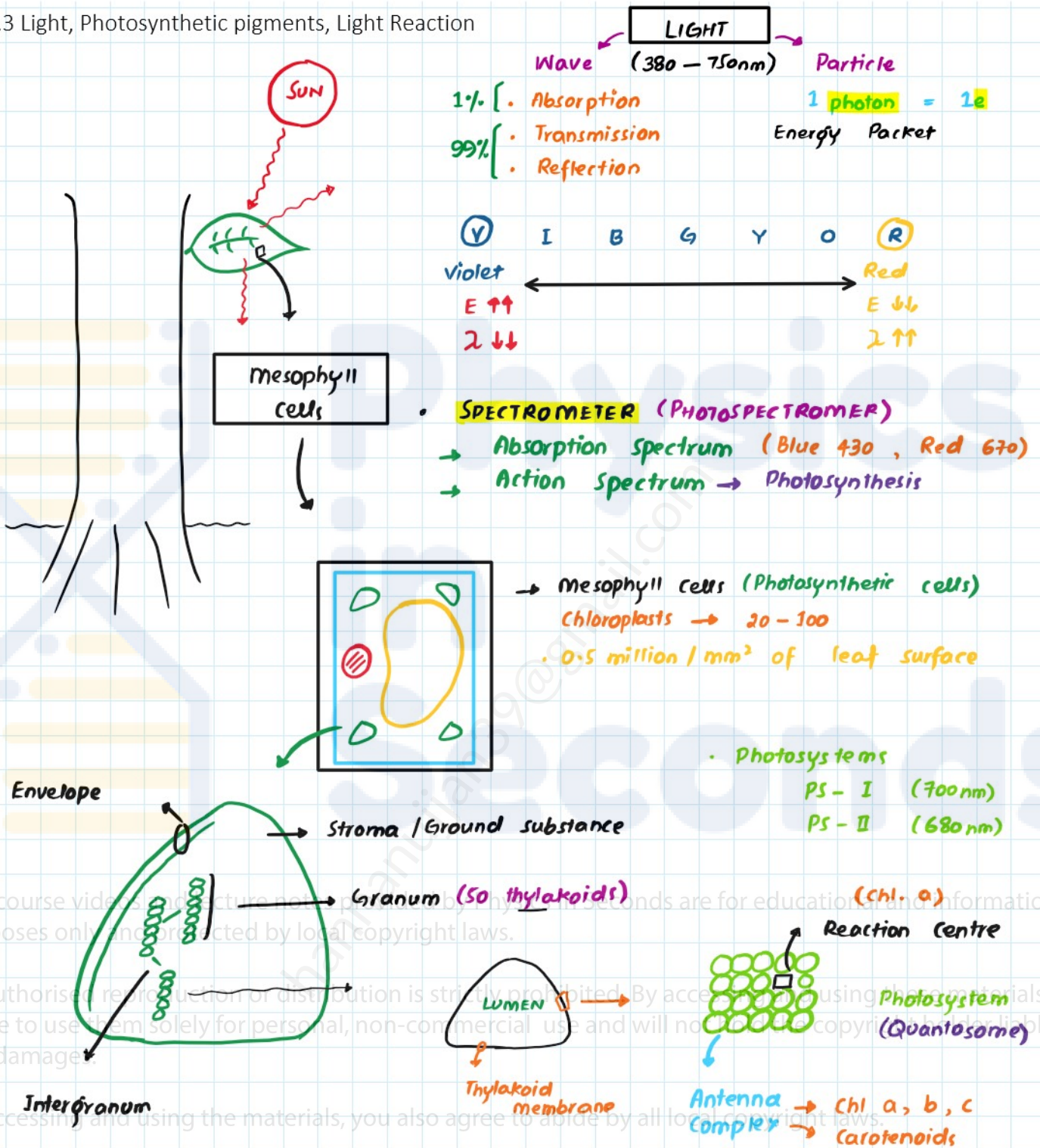


15.3 Light, Photosynthetic pigments, Light Reaction



- chl a } → Plants
 - chl b }
 - chl c } → Algae
 - chl d }
 - chl e, f
- (Bacteriochlorophyll)

- CAROTENOIDS (Red \rightarrow Orange)
 - ↳ Attracts for Pollination
- XANTHOPHYLLS (Yellow - Orange)
 - \rightarrow Fucoxanthine ($C_{40}H_{56}O_6$)
 - \rightarrow Lutein, Zeaxanthin ($C_{40}H_{56}O_2$)
- Carotenes ($C_{40}H_{56}$)
- β -carotene \rightarrow vitamin A

LIGHT ABSORPTION PATTERN

CAROTENOIDS \rightarrow chl b \rightarrow chl a \rightarrow Most Sensitive pigment

CHLOROPHYLLS

→ Organic molecules
↳ Soluble in organic solvents

HEAD

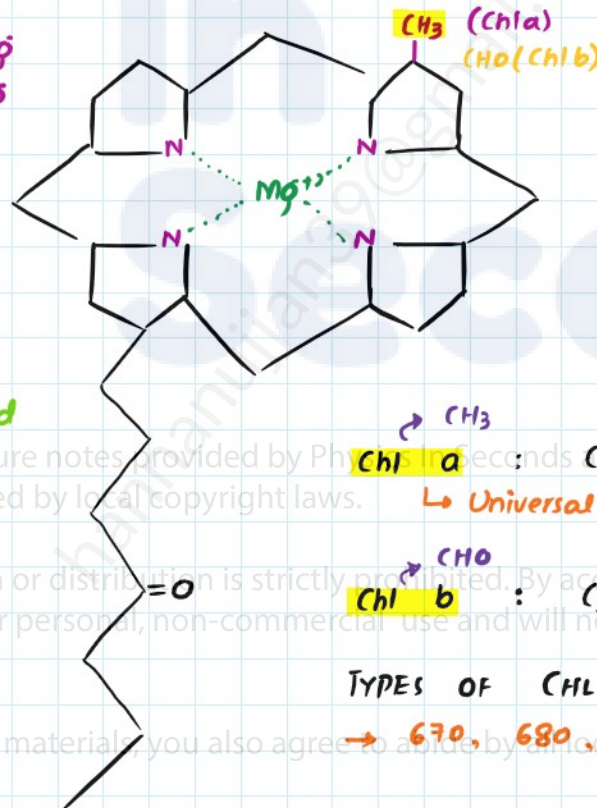
- Tetrapyrrole Ring
- Porphyrin Ring
- Hydrophilic
- Flat, Square
- Light Absorbing

- Pyrrole Ring
- Five cornered ring, unsaturated

- Haem of Hb is also a porphyrin ring

TAIL

- Phytol chain (Main)
 - Methyl ester
- Hydrophobic
- Long, Anchoring
- Hydrocarbon
- ↳ Phytol ($C_{20}H_{39}$)
- Consists of four isoprene units



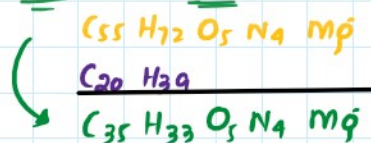
Chl a: $C_{55}H_{72}O_5N_4Mg$ (66)
↳ Universal Photosynthetic Pigment.

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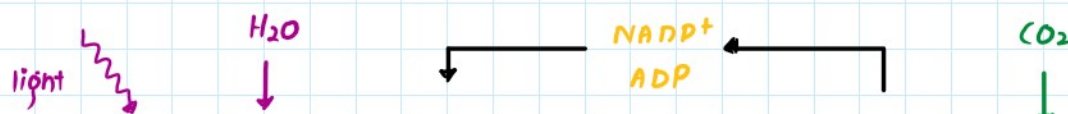
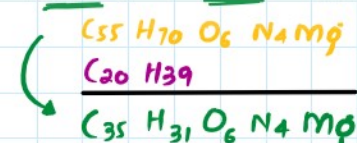
TYPES OF CHL. A.

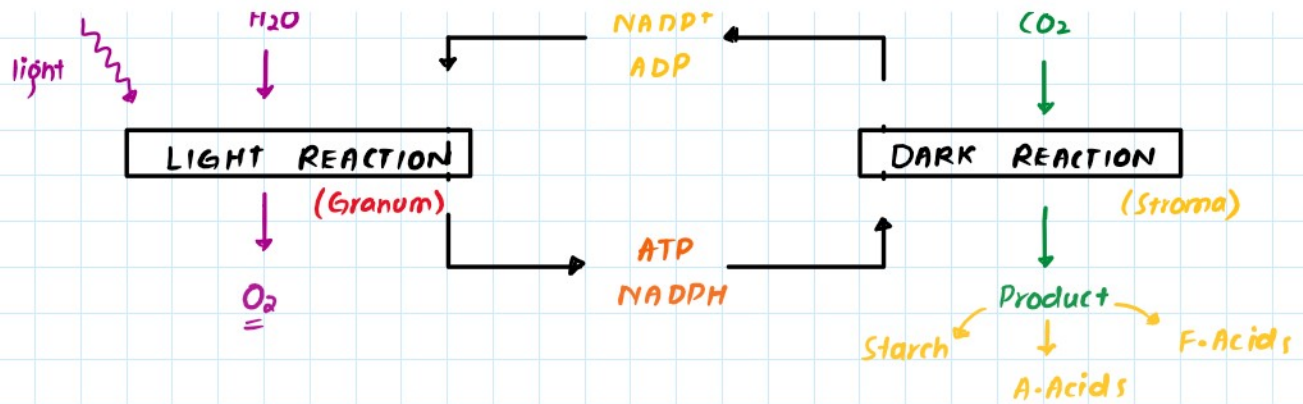
→ 670, 680, 690, 700 nm

Ch1. a Head Formula.



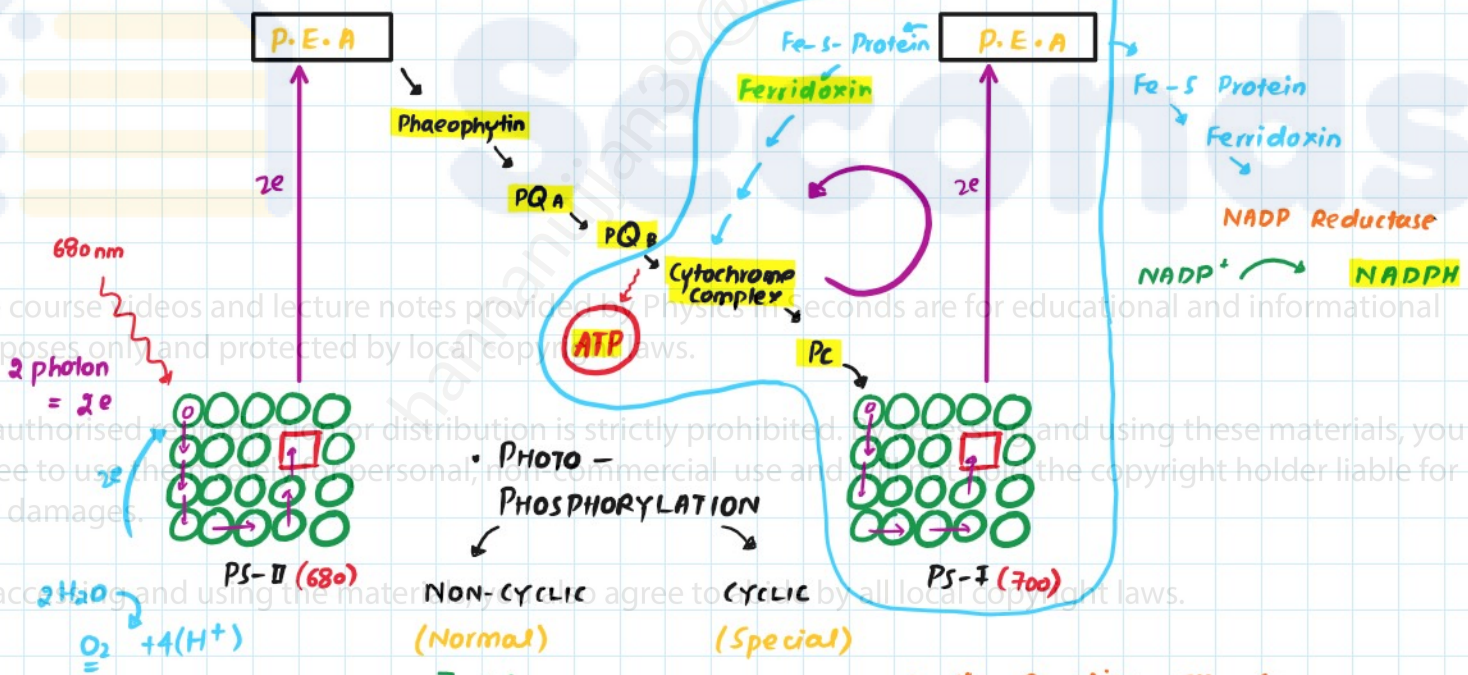
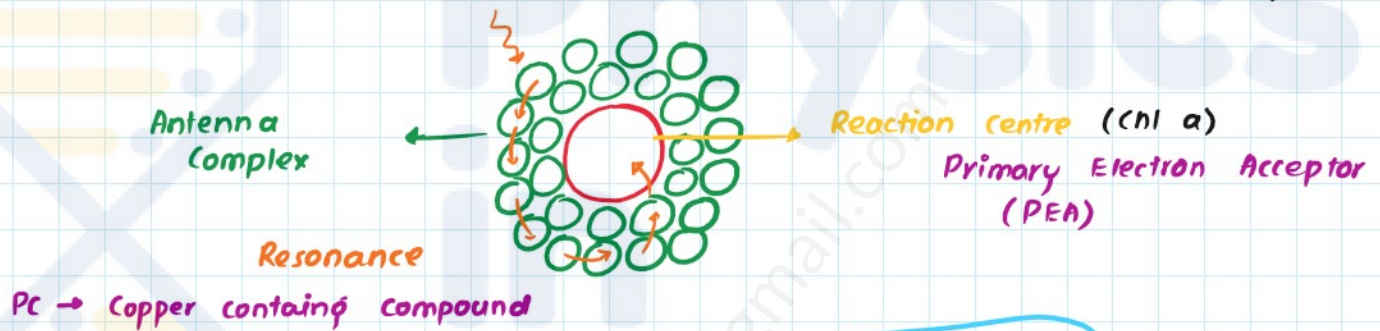
Chl. b Head Formula.





PHOTOSYSTEMS → **Quantasome**

- PS - I (700 nm)
- PS - II (680 nm)



	NON-CYCLIC (Normal)	CYCLIC (Special)
→ Z-scheme		
Photosystems	• PS I, II	PS - I
Products	• ATP + NADPH	ATP
O_2 - release	✓	×

cyclic Reaction Stimulus	
ATP	(↓↓)
NADPH	(↑↑)