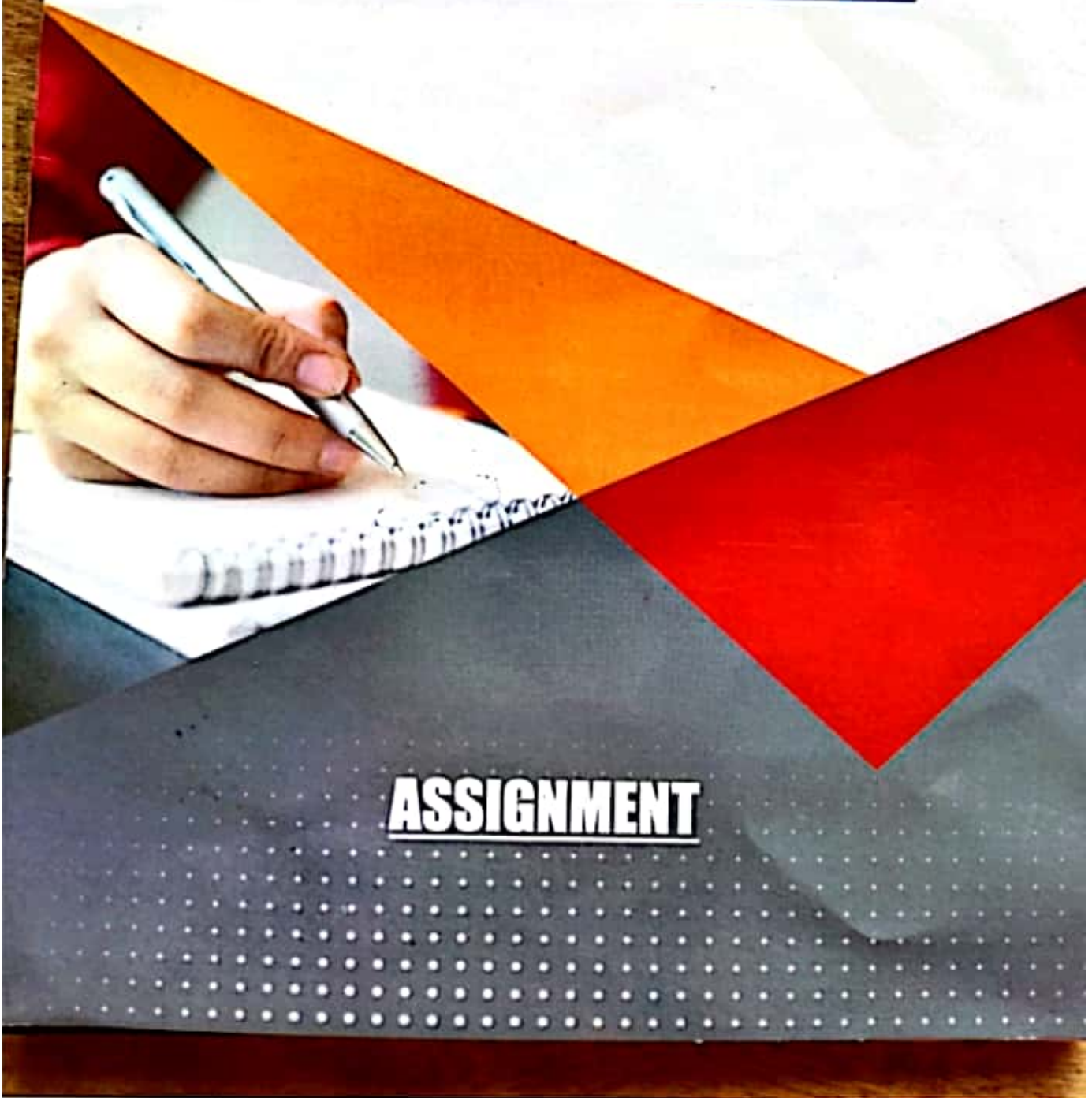




# R.K.

GROUP OF COLLEGE

Behind Kalwar Police Station, Kalwar, Jaipur (Raj.)



## Unit - I

वर्णक प्रकाश द्वारा की जाने वाली वही समझाया

## Unit - II

निम्न पर संक्षिप्त टिप्पणी लिखिए -

- |                          |             |                         |
|--------------------------|-------------|-------------------------|
| (i) Auxochrome           | (परोपवर्धक) | (iv) Hypsochromic shift |
| (ii) Chromophore         | (वर्णमूलक)  | (v) Hyperchromic shift  |
| (iii) Bathochromic shift |             | (vi) Hypochromic shift  |

## Unit - III

०. निम्न पर संक्षिप्त टिप्पणी लिखिए।

- (i) Methyl orange (ii) Methyl orange (iii) Congo red  
(iv) Crystal violet

Unit - IV<sup>th</sup>

photochemistry क्या है? विभिन्न प्रकार के प्रकाश रसायन के नियमों की व्याख्या कीजिए।

wet - I

Explaining the applications of acid rigor mortis

Unit - II

Write a short note on the following:

ii) Canophore

(iii) Bathochromic shift

(iv) Hypsochromic shift

(v) Hyperchromic shift

(vi) Hypochromic shift

Unit - III

Write a short note on Nign.

(i) Methyl green (ii) Methyl orange (iii) Congo Red

(iv) Crystal violet

Unit - IV<sup>th</sup>

What is it? Explain the different types of photochemistry and the laws of photochemistry.

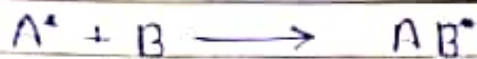
XA

Day 1 Photochemistry:- The chemical activity of Prakash was completed in his college. - The

photochemical reaction is carried out by

absorption of ketol - presence of light.

(hu) in the



law of photochemistry —

(1) Grothuss Dropper's Low : Photochemistry

This is the fundamental law of law. It was

first

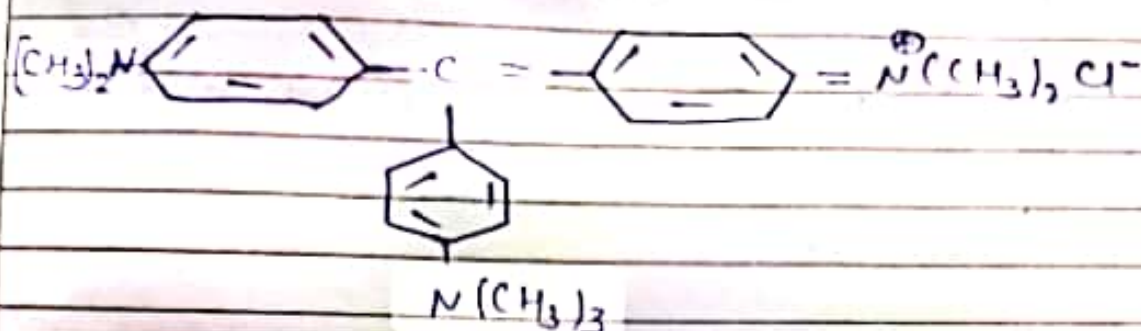
published by May.

Chemical Grothuss Drapers 311 B. For qualitative and quantitative study of.

"According to this, Abhi: transformation takes place only through those light radiations. Which are absorbed by the reactants.

XA

(1) Crystal violet: This water It dissolves in water and forms a deep purple colour. Its structure is as follows:

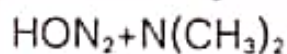


Uses: It imparts blue-purple colour to wool, silk, tannin, yarn etc.

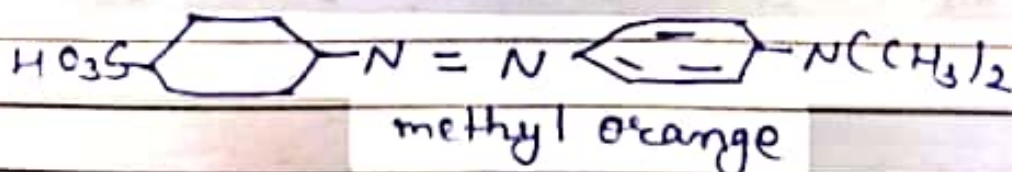
It is used in making stamps/ink.

This dye is useful in making eye ointment.

It is an acidic dye. It is used to colour fine red dyes. It is used as a sulphonic indicator in mild acid-base titrations. The dye is acid-oxidised to give a mild orange colour.



↓-on

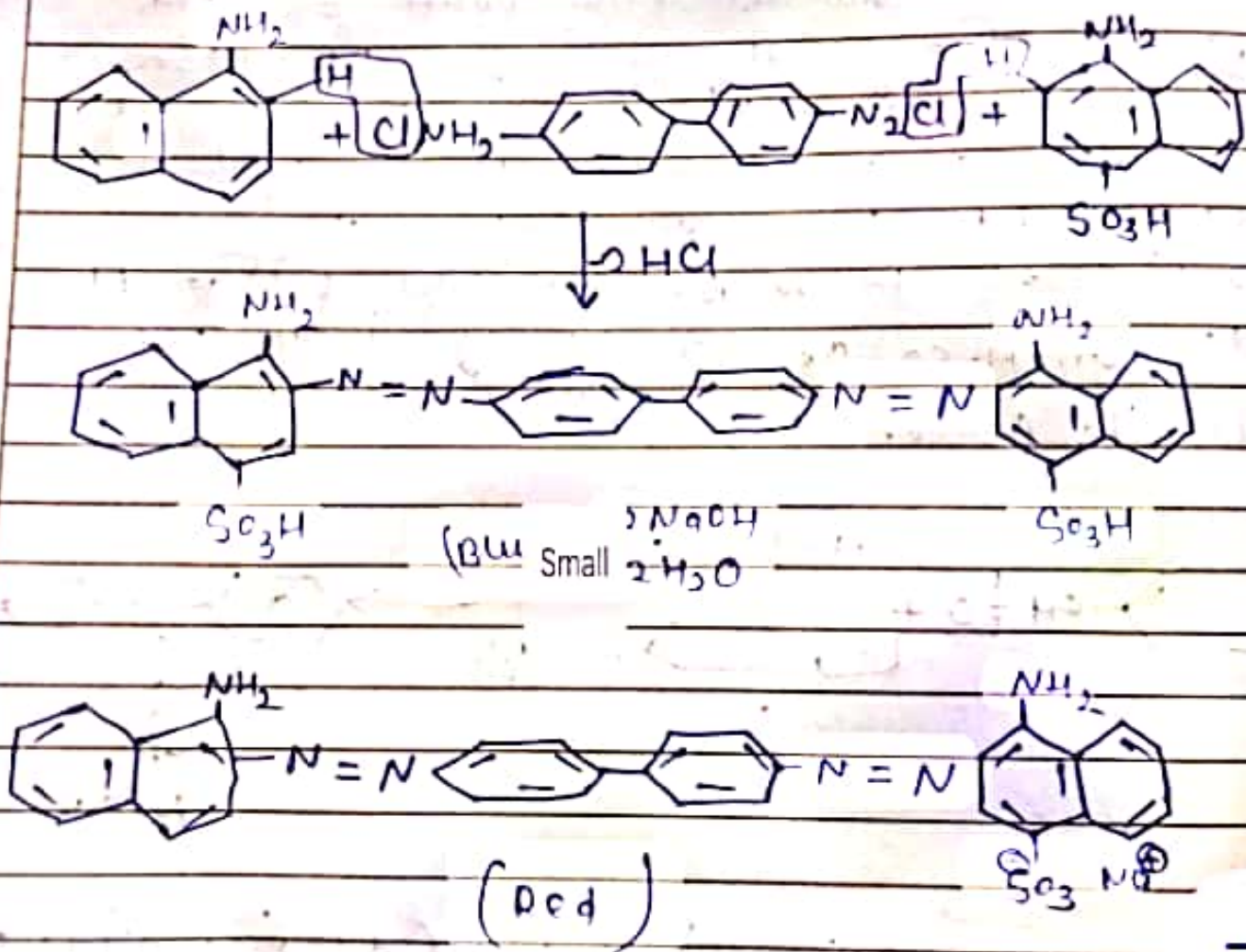


XA

napolionic acid (4) is obtained by coupling reaction of amine with pla lin sulphi ne aglo and pil dai agi nitrate and psi benzene.

Uses It is used to color wool, yarn, silk. The (ii) It is used to make permanent.

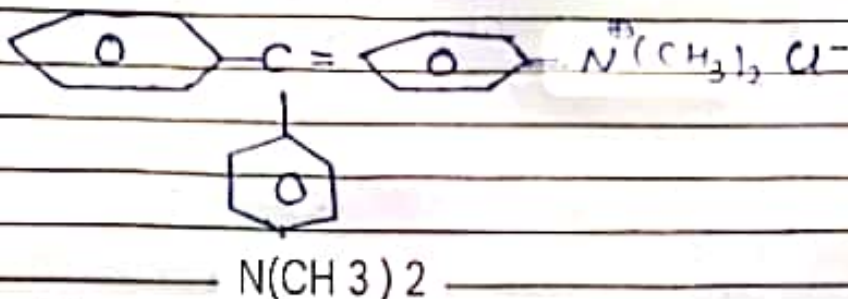
lila purple ere.



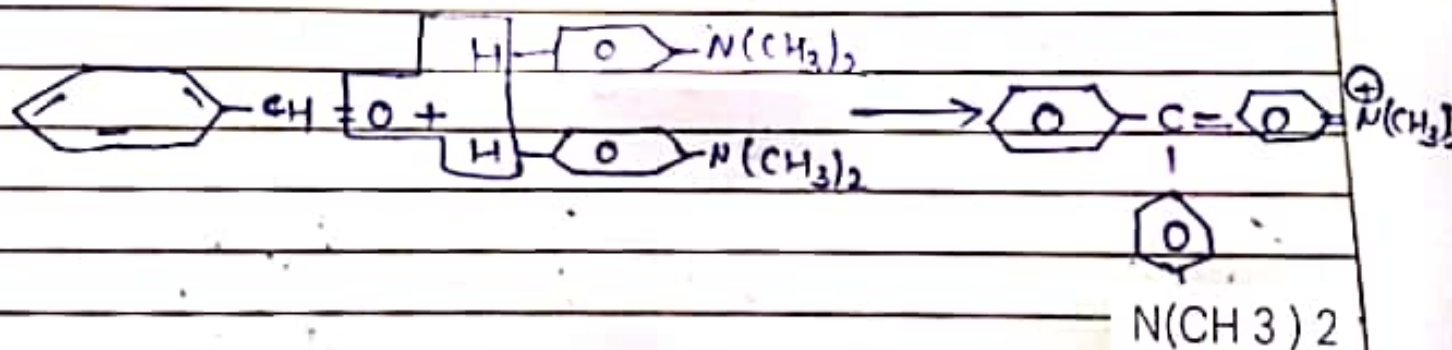
XA

Q.3 (i) Malachite Green -

Its structure is as follows-



It dyes silk and wool directly, whereas it is dyed after tanning or dyeing the cotton with soybean. Apart from seep water, it is used as an insecticide. Its synthesis is done in the following manner. - It is obtained by reacting benzaldehyde and N,N-dimethylaniline acid with  $Ca^{++}$ ,  $H_2SO_4$  or  $HCl$ . - Malachite Green



It is a dark red dye. (ii) Congo Red:

Its yarn can be dyed directly. It is a toxic dye.

✶A

If a substituent in a \_\_\_\_\_ compound \_\_\_\_\_ decreases the absorption intensity, it is said to have a hypochromic band shift. The band \_\_\_\_\_ shifts downward in the UV \_\_\_\_\_ band. \_\_\_\_\_ spectrum and decreases the absorption \_\_\_\_\_

Eg.  $C_6H_6$  has a \_\_\_\_\_ value of  $E_{max}$ . If \_\_\_\_\_  $E_{max}$  is \_\_\_\_\_ added to it, the resulting \_\_\_\_\_ value is 190mm.

है जाता है।  $C_6H_5-Cl$

The value of  $\lambda_{max}$  is lower than that of the first frost.

If any compound has sub.

Hyperchromic shift The substituent group increases the intensity of the reduction so it is called hyperchromic shift. ~~and~~

This is called shift. The absorption intensity max intensity of

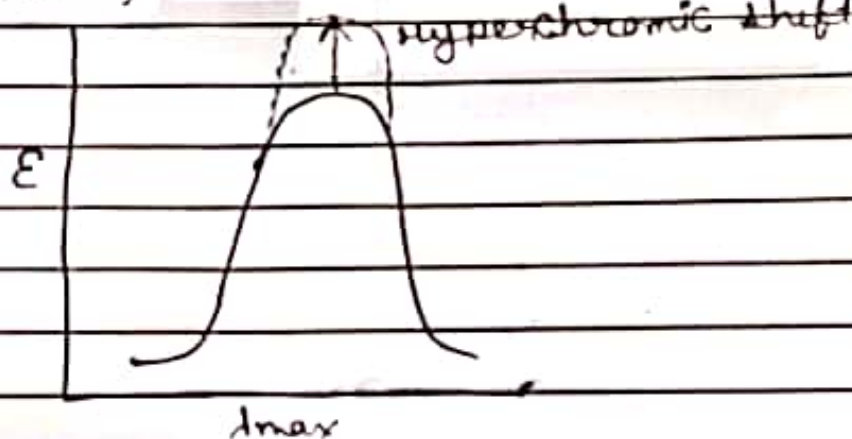
in the UV spectrum increases. For example, ~~C<sub>6</sub>H<sub>6</sub> - 9  $\epsilon_{max}$~~  becomes 204nm then the

if the value of

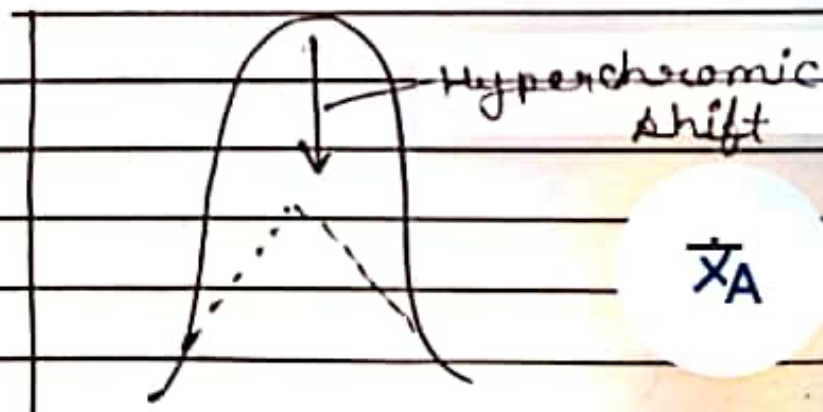
value of

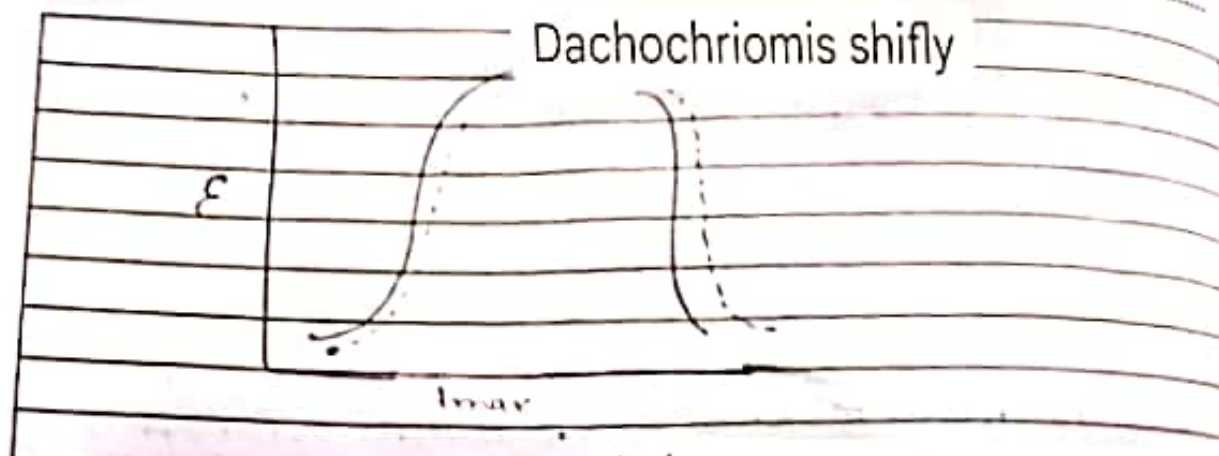
absorption intensity

~~C<sub>6</sub>H<sub>5</sub>-CH<sub>3</sub>~~ is 1/2 nm.



Hypochromic shift :-

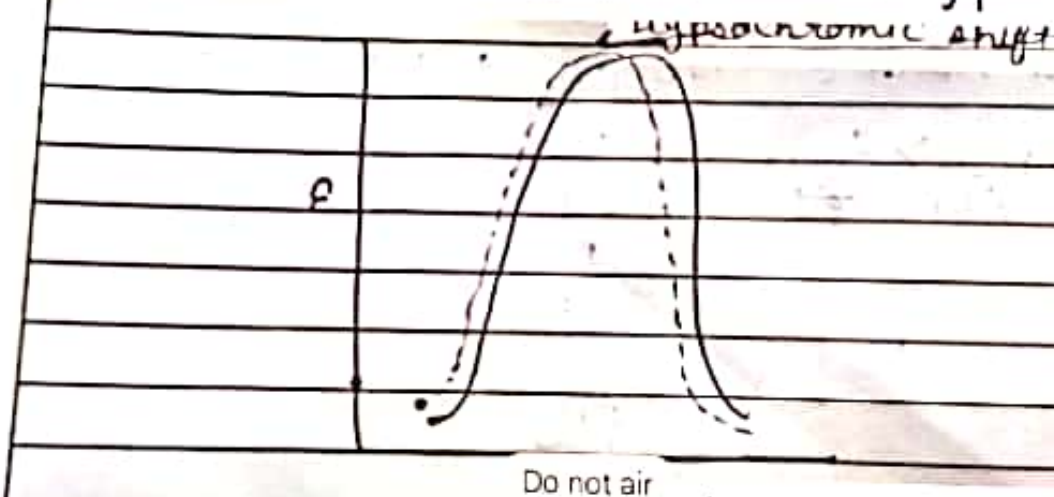




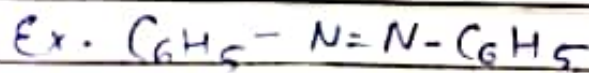
A decrease in the absorbance value of a compound is called a hypsochromic shift. In this case, the absorbance shifts toward shorter wavelengths, and the maximum value is lower.

shift.

This is called a hypochromic



Do not air

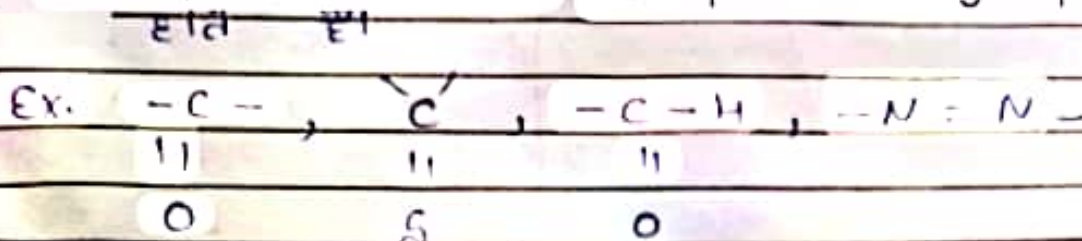


The phenyl group in this compound is the same, if  $\text{Cl}$  is added to it then the compound formed is  $\text{C}_6\text{H}_5 - \text{N} = \text{N} -$

A

Teacher's Signature.....

(b) Such alphabets which have ne-9 periods ne-group.



iii) Bathochromic shift:- in absorption spectrum The increase in the value of  $\lambda_{\text{max}}$  is called bathochromic shift/lethal Amar displacement.

In this, the absorber is displaced towards higher wavelengths, increasing its brightness. This displacement of light absorption towards higher wavelengths is called the ionotropic redshift. A band

of vinyl sulfide  $\text{CH}_2$  Ex value

11

228 nm >  $\lambda_{\text{max}}$  is 280nm.

CH

|

:S:

|

CH<sub>3</sub>

$\lambda_A$

Such groups — do not impart colour to any compound by themselves but by combining with any chromate they enhance its colour imparting capacity. Such groups are called chromomers. Ex. OH, NH<sub>2</sub>, NR<sub>2</sub>, -NHR, -NH<sub>3</sub>, OR, -CH<sub>3</sub>

Term-end groups that have at least one non-binding —  
 - The combination is called oxycream.

(ii) — Groups  
 — Chromophore

groups than a compound — containing more unsaturated are called chromophores. Isolated

unsaturated groups are those in which at least one of these groups — exhibit color is refractive. They — by absorbing energy from the visible light field.

They  $\pi \rightarrow \pi^*$  have two transitions: 1 transition

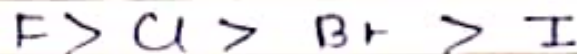
There are two types of pigments—

(i) Such alphabets which — contain Ae—

Ex.  $H_2C = CH_2$ ,  $CH_3 - CH_2 = CH_2$ ,  $CH_3 -$   
 $HC \equiv CH$   $\pi \rightarrow \pi^*$

(VI) Specific strength of halogens relative to halogen acids  
strength can be explained on the basis of H.S.A.B. theory. The hardness

of Hallaud's fire is as decreasing order of follows -



Hence, the ability of proton  $H^+$  to form bond with an acid will also decrease in the same order and the ability to dissociate in aqueous medium will increase in the same order.

Hence, the order of acid strength of halogen acids will be as follows:



It is already stable enough to not react with anything and be insoluble. If it does, it - will



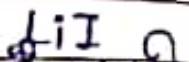
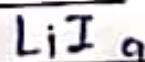
ESPECIALLY  $\text{SASB}$

Hydrolysis can be easily divided into two groups based on the -

acid-base theory.

IF does not occur easily. This is

Decomposition of



because Heard-Küger acid (LII) is a

mild alkali

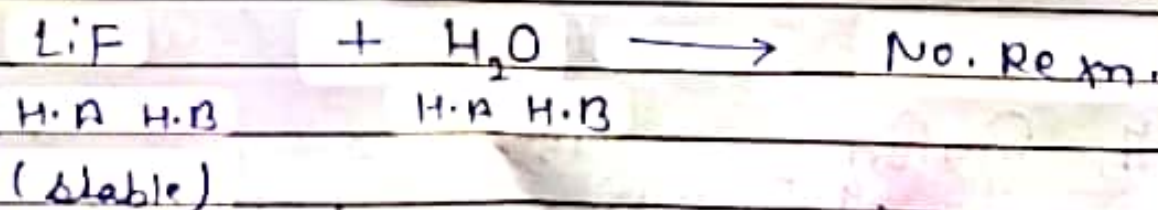
which gets decomposed into  $\text{LiI}$  which is a salt acid whereas  $\text{LiI}$  salt which is - unstable

$\text{LiF}$  is a hard

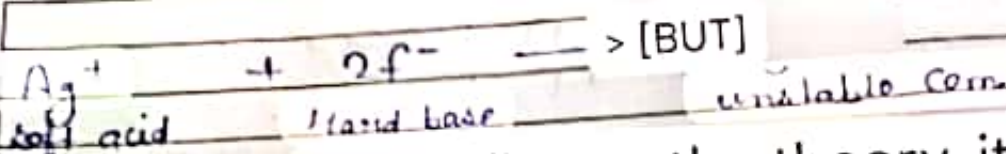
already

and hence does not

react with water.



$\bar{X}_A$



According to the theory, it is predicted which complex H.S. A. B

compound will be stable or non-stable.

The complexes formed by the combination of hard acid and hard base are stable whereas the complexes formed by the combination of soft acid and hard base or hard acid and soft base are unstable.

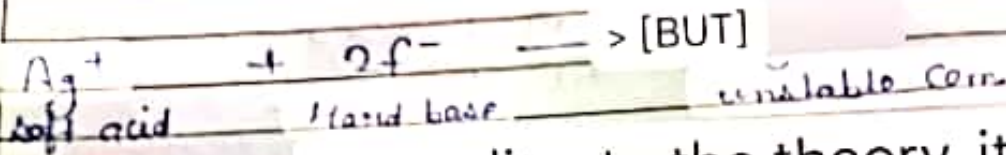
[AgF<sub>2</sub>] is stable whereas it can be understood by  $\text{AgF}_2$  theory.

F<sup>-</sup> ion is a mild acid while Ag<sup>+</sup> is a soft base, hence the compound formed by combining them will be stable, whereas it combines with Ag<sup>+</sup> to form  $\text{AgF}_2$ .

(iii) toxicity of metal catalysts :-

Metals which act as catalysts get dissolved. Now their catalytic properties are known.

XA



According to the theory, it is predicted which complex H.S. A. B

compound will be stable or non-stable.

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[AgF<sub>2</sub>] is stable whereas it can be understood by  $AgF_2$  theory.

F<sup>-</sup> ion is a mild acid while Ag<sup>+</sup> is a hard acid, hence the compound formed by combining them will be stable, whereas it combines with Ag<sup>+</sup> to form  $AgF_2$ .

(iii) toxicity of metal catalysts :-

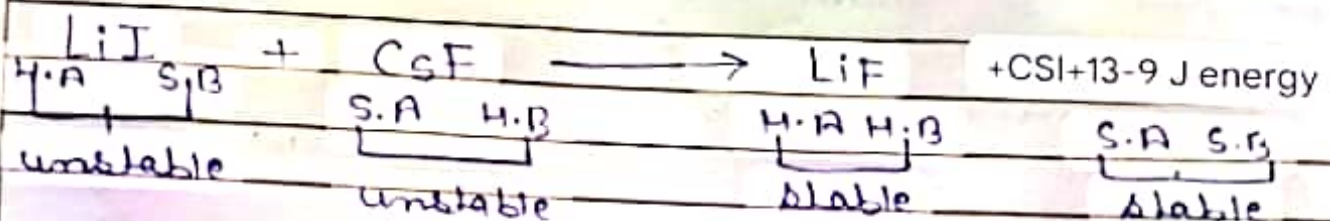
Metals which act as catalysts get dissolved. Now their catalytic properties are known.

XA

## Applications of hard mild acid ions - Ay.

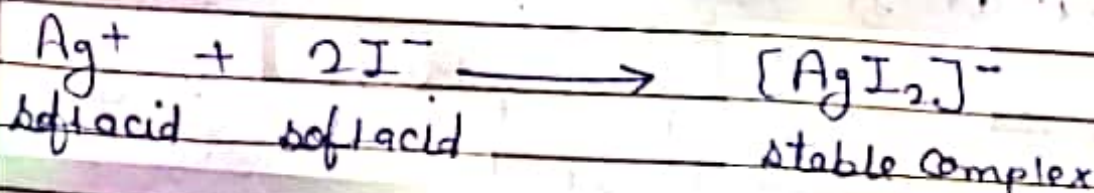
### Possibility of formation of compound:-

According to Nimmi, the bond between the most electronegative and the most electropositive + ions should be strong and their formation should liberate heat and this reaction is called exothermic.



Here, the soft iodide prefers to combine with the soft ~~2~~ hard lithium ion. Therefore, this reaction is in the forward direction, and stable compounds will be formed.

### ii) Stability of complex compounds -



XA