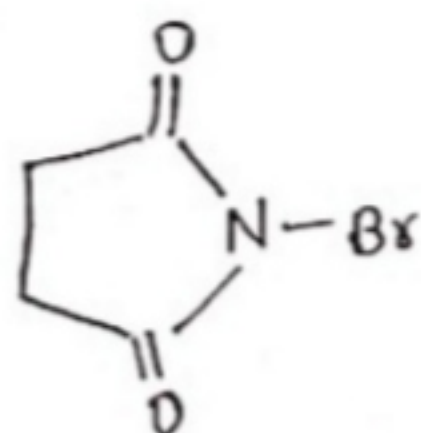


SYNTHETIC REAGENTS ^{1.}

LECTURE -6 , DATE : 22-02-2021

DEGREE -III(CHEMISTRY HONS.)

Topic :- N-Bromosuccinimide



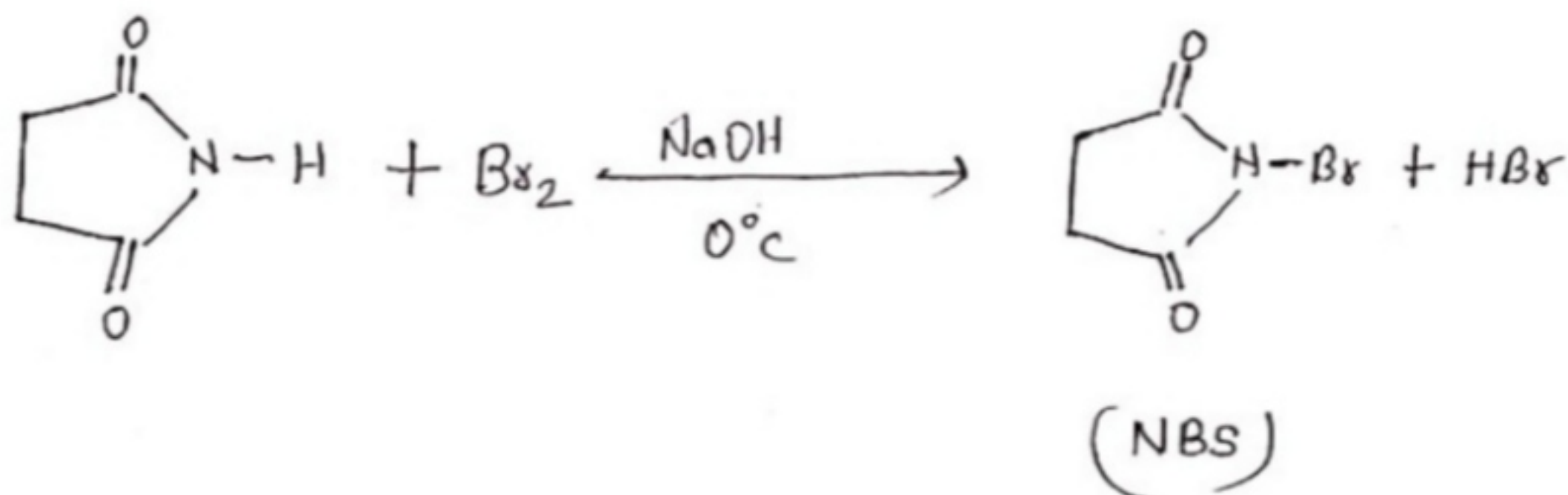
By:-Dr.Rinky

1-Bromo-2,5-pyrrolidenedione

(N-Bromosuccinimide, NBS)

Preparation

* NBS can be prepared by adding bromine to an ice cold solution of succinimide in alkali when the reagent precipitates immediately.



1-Bromo-2,5-pyrrolidenedione, commonly known as N-bromosuccinimide is a convenient source of bromine

for both radical substitution and electrophilic addition reaction.

Free radical substitution of allylic or benzylic hydrogen by bromine is accomplished with N-bromosuccinimide in non-polar solvents such as CCl_4 .

However the use of NBS in aqueous solvents (mixture of DMS with water) as a source of electrophilic bromine has found increasing importance in the formation of bromohydrins.

Allylic and benzylic bromination

Alkene are brominated at allylic position on refluxing a solution of the alkene and recrystallised NBS in anhydrous CCl_4 .

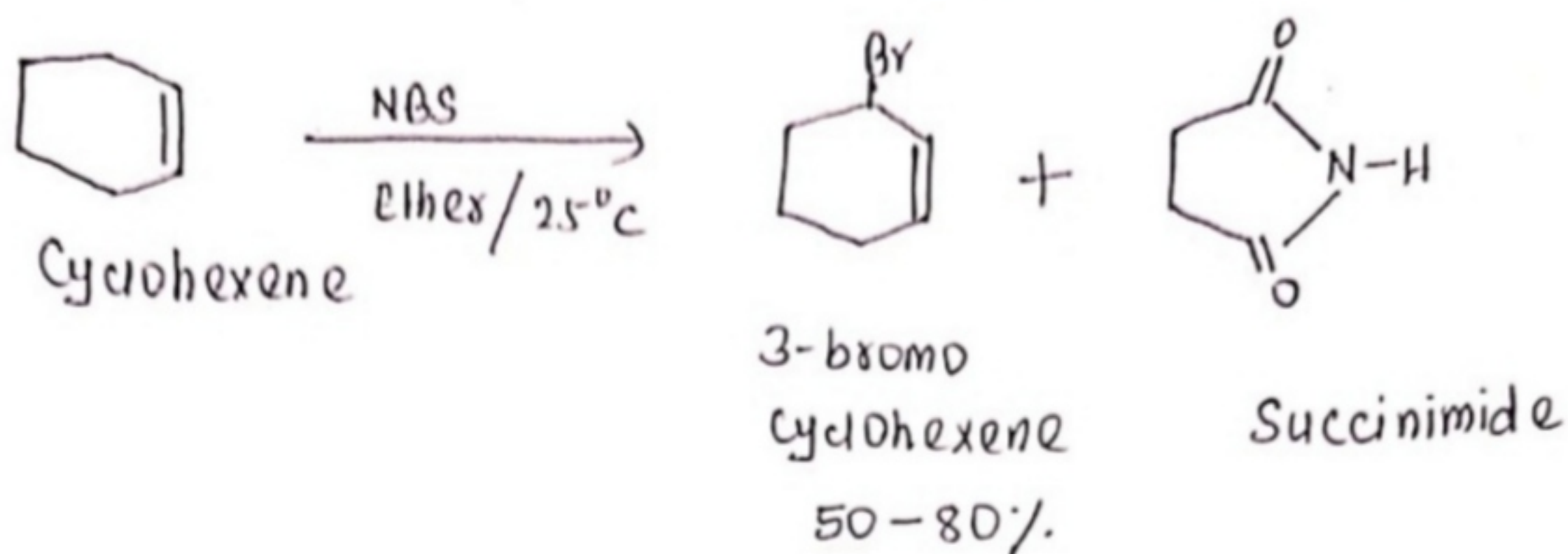
The reaction is initiated by peroxide or light.

For example: Reaction of NBS with cyclohexene gives 3-bromocyclohexene in the presence of catalytic amount of radical initiator such as benzoyl peroxide or AIBN.

* Alkene can be brominated in the allylic position by a number of reagents, but NBS is most common.

3

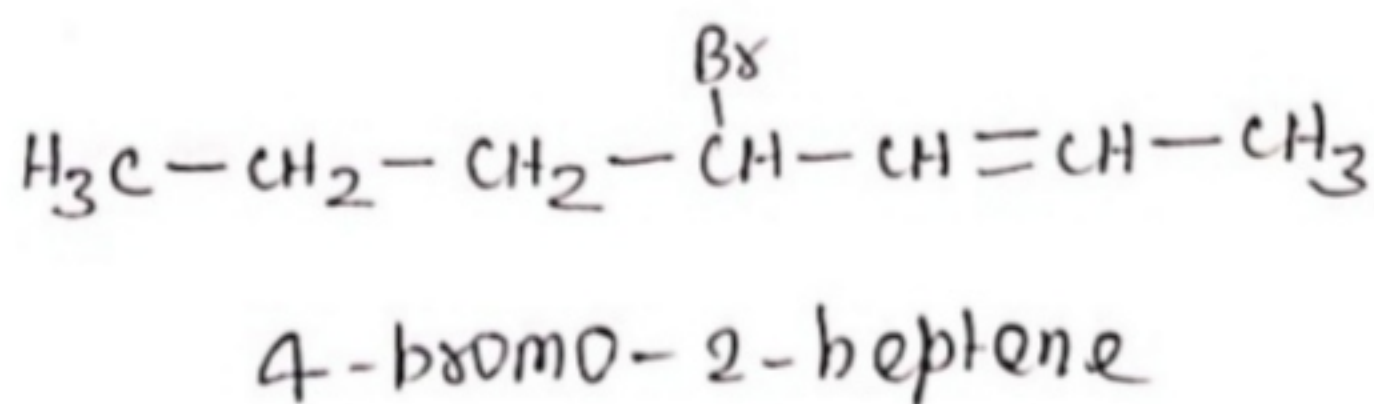
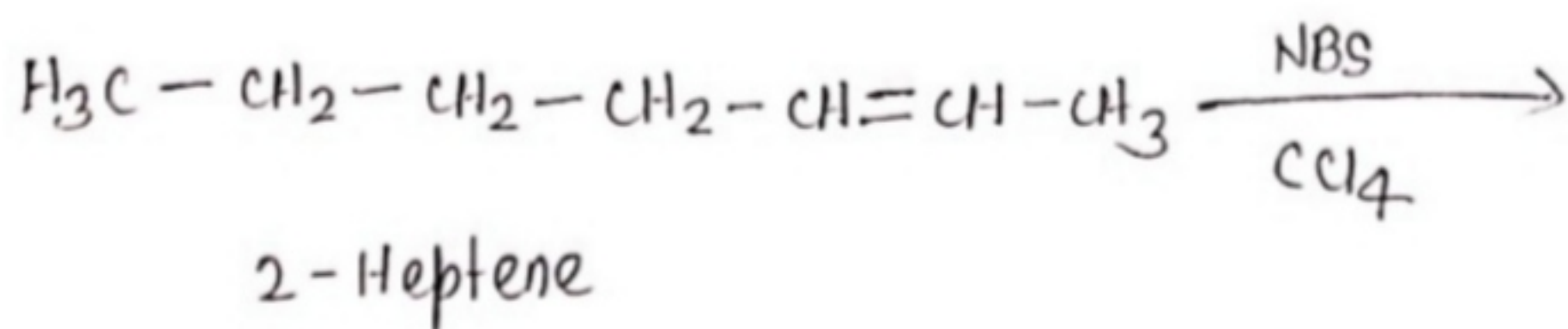
When NBS is used for allylic bromination of alkene then the reaction is known as Wohl-Zigler bromination.



If there are two allylic positions, then two monobromoderivatives may be obtained.

* Allylic methylene groups are attacked much more rapidly, than allylic methyl groups.

eg. In 2-heptene, a secondary position is substituted more readily than a primary.

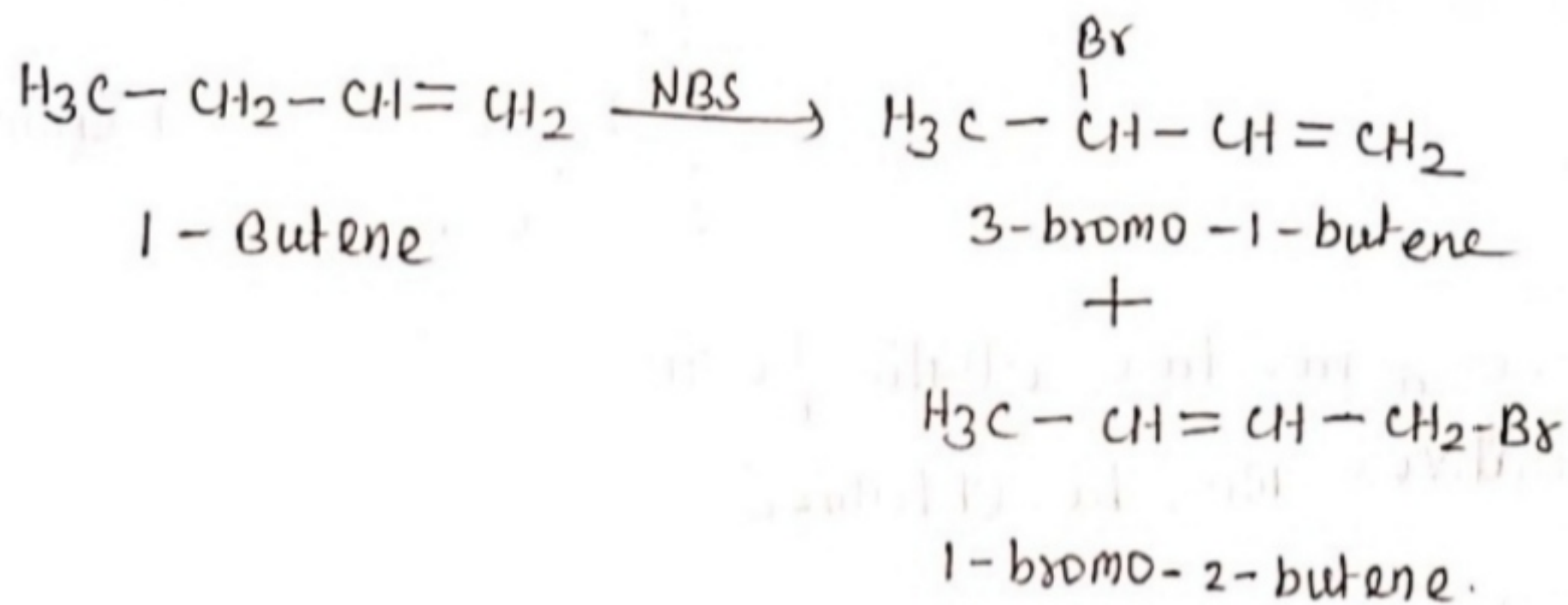


(64%)

4.

Whenever a structure permits, allylic bromination leads to allylic rearrangement.

1-Butene for example, on treatment with NBS gives mixture of both possible products.



* The action of NBS on di and poly olefins leads to abnormal products by allylic rearrangement.

To be continued in next lecture..

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