

ORGANIC CHEMISTRY, PAPER - VII

1.

04/09/2020 DEGREE -III (H) By:-Dr.Rinky

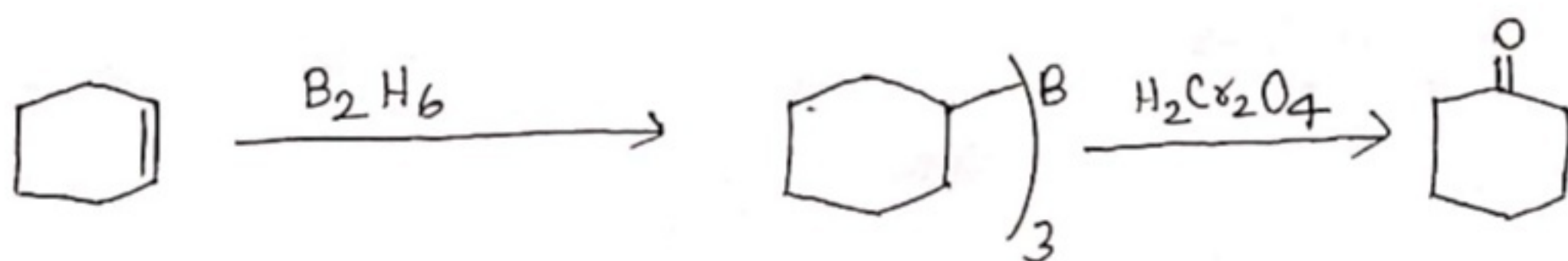
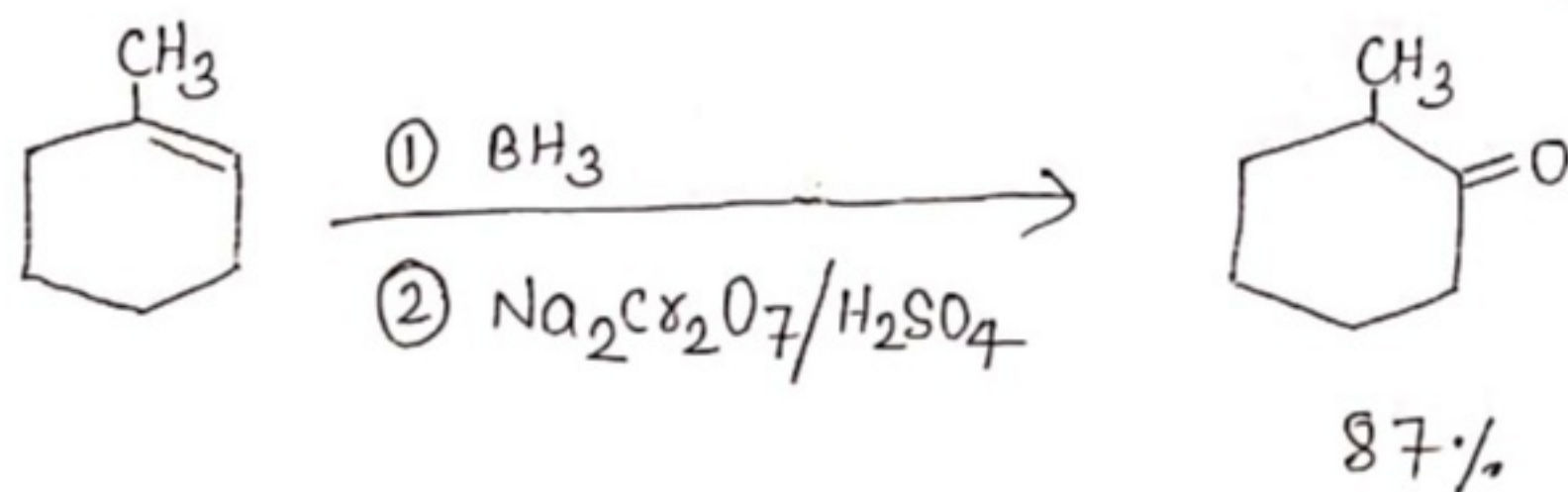
SYNTHETIC REAGENTS, LECTURE-18

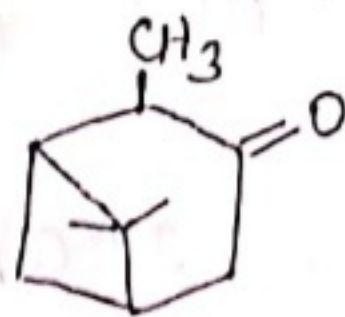
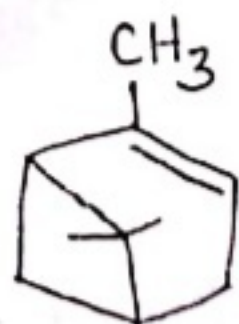
TOPIC :- DIBORANE CONTINUED...

Reactions of Organoboranes

C. Transformation of Organoboranes to ketones

- * The 1° alcohols and the secondary alcohols obtained from organoboranes on further oxidation with $H_2O_2/NaOH$, yield aldehydes or ketones, respectively.
- * It is possible, however to convert organoboranes to ketones if acidic dichromate is used as the oxidant without isolation of the corresponding alcohols.

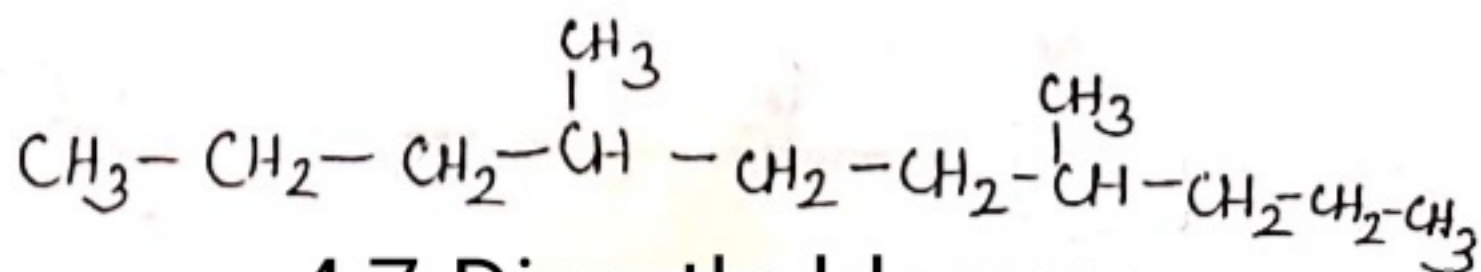
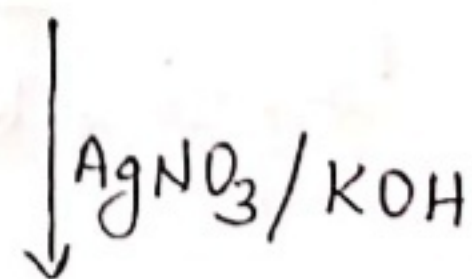
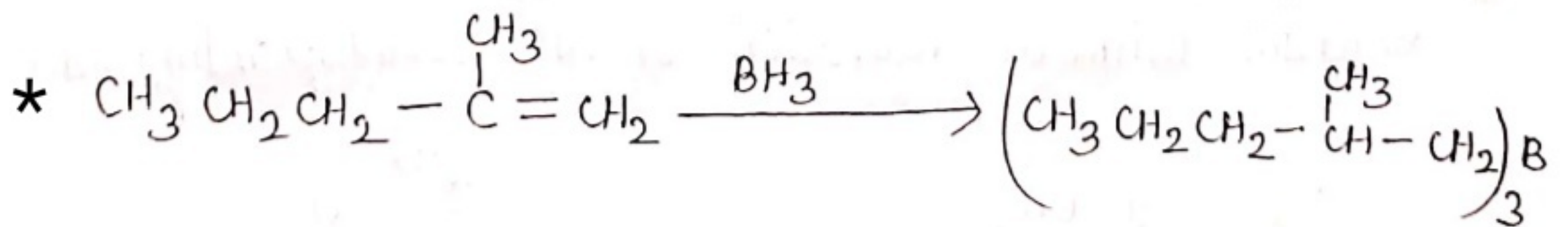




(72%)

d. Coupling

- * Organoboranes on treatment with basic silver nitrate (AgNO_3) lead to coupling of the alkyl groups.
- * This reaction provides a useful method for the formation of carbon-carbon bond.
- * A typical example is synthesis of 4,7-dimethyldecane from 2-methyl-1-pentene upon treatment with BH_3 , followed by reaction with silver nitrate and NaOH .



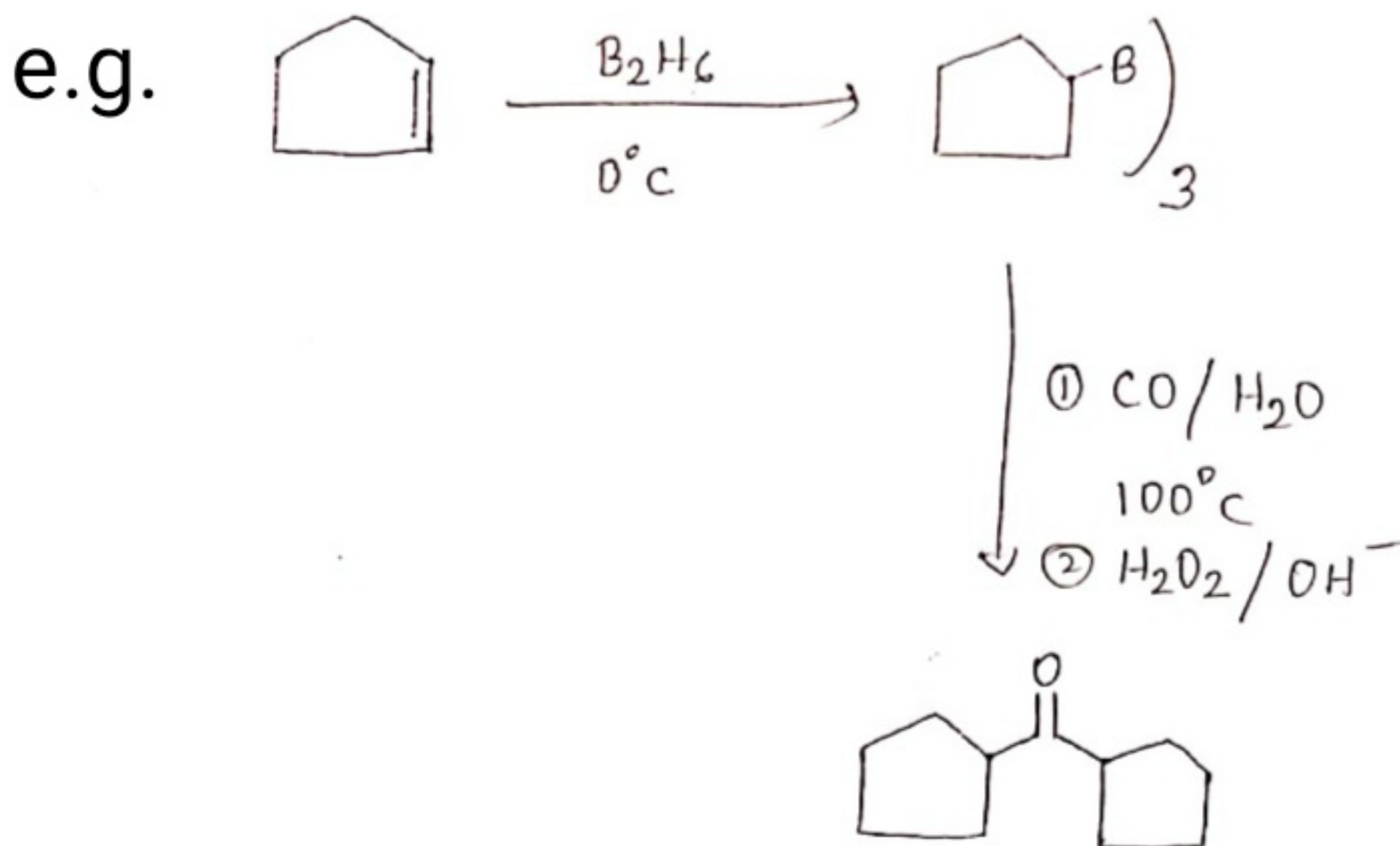
4,7-Dimethyldecane

e. Carbonylation

3.

(Transformation of organoboranes to alcohols and carbonyl derivatives.)

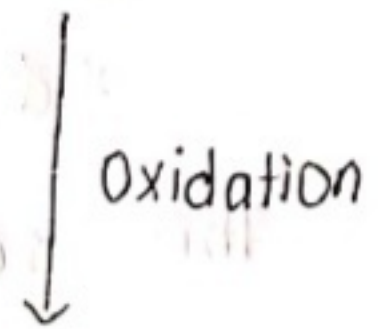
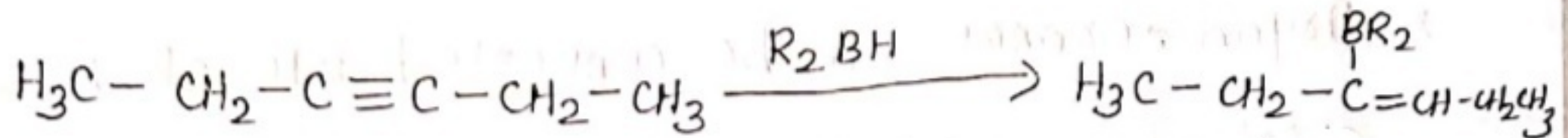
- * Organoboranes can be converted into alcohols, aldehydes and ketones on reaction with carbon monoxide at $100 - 125^{\circ}\text{C}$.
- * This reaction requires high pressure and is known as carbonylation.



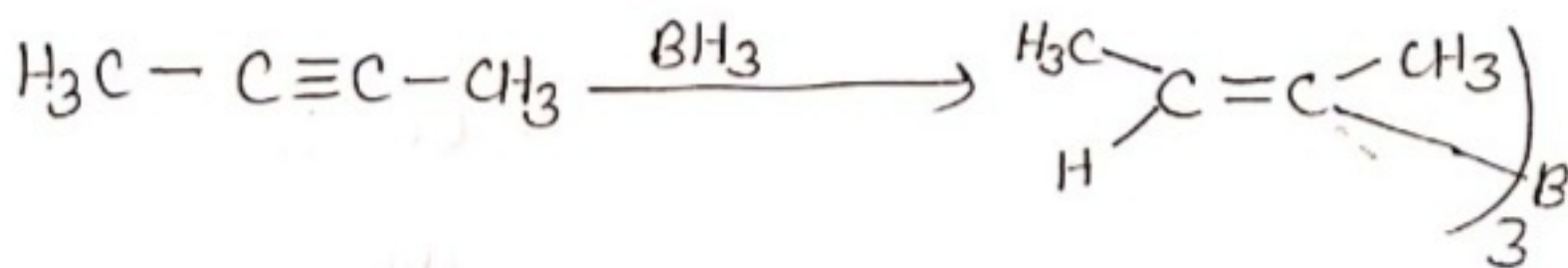
Dicyclopentyl ketone

Hydroboration of acetylenes and reactions of alkenylboranes :-

- * Oxidation of olefinic borane with alkaline hydrogen peroxide affords ketone.



- * However, high yield of cis olefin is obtained by reaction of vinylic boranes with acetic acid.



- * Terminal alkyne on hydroboration give predominantly the dihydro-borated products plus unreacted alkyne.

