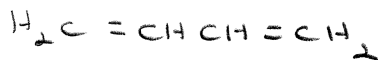


## Additional Chapter 11: "Dienes" Worksheet

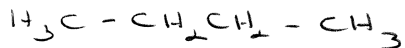
Give the structure of the chief organic product(s) expected from the reaction of 1,3-butadiene with:



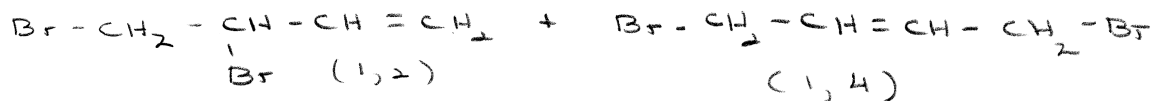
1 mol H<sub>2</sub>, Ni



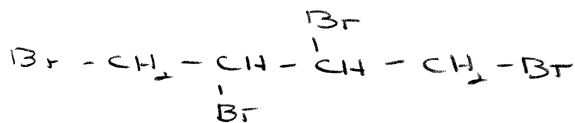
2 mol H<sub>2</sub>, Ni



1 mol Br<sub>2</sub>/CCl<sub>4</sub>



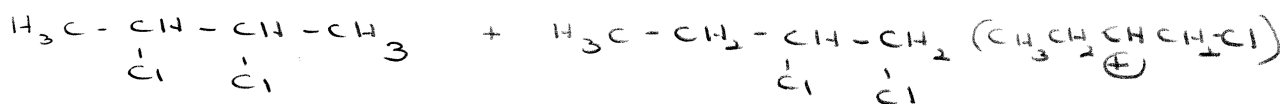
2 mol Br<sub>2</sub>/CCl<sub>4</sub>



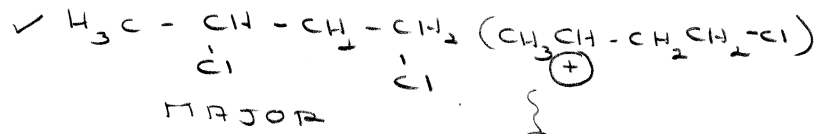
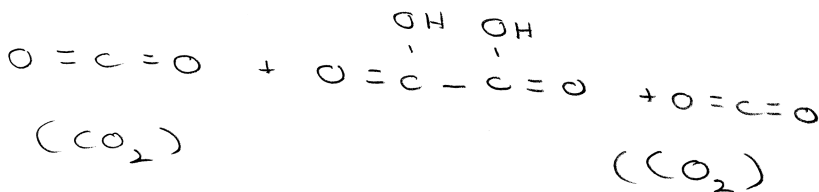
1 mol HCl



2 mol HCl



KMnO<sub>4</sub>/Δ



Carbocation is more stable as the ⊕ is further away from the electron withdrawing Cl