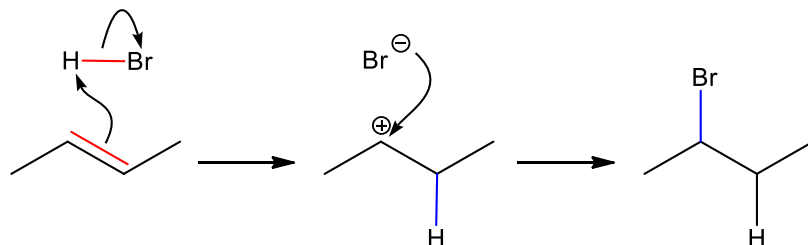


CHEM1611 Worksheet 6 – Answers to Critical Thinking Questions

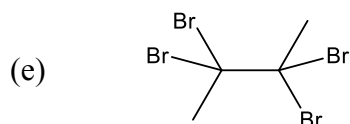
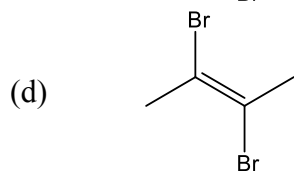
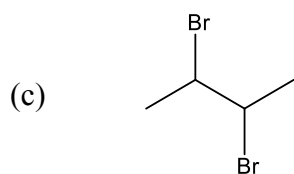
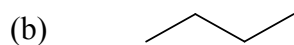
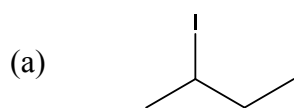
The worksheets are available in the tutorials and form an integral part of the learning outcomes and experience for this unit.

Model 1: Addition to Symmetrical Alkenes and Alkynes

1. Nucleophile
2. Broken = red. Formed = blue.

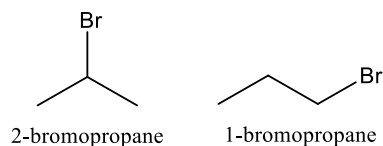


3.

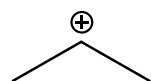


Model 2: Addition to Unsymmetrical Alkenes and Alkynes

1.



2.



3.

2-bromopropane.

4.

H₂O

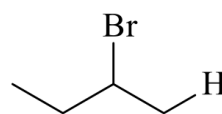
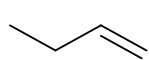
5.

Catalyst. First step of the reaction involves protonation of π bond.

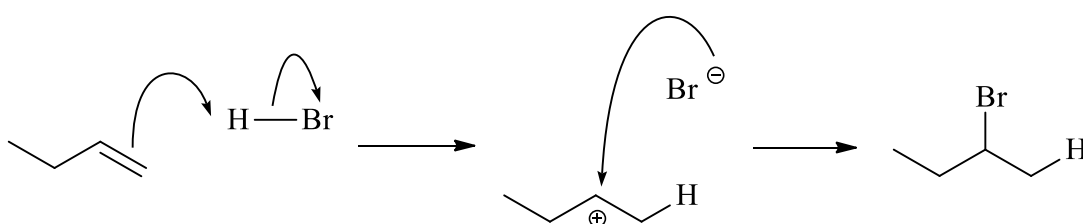
Past Exam Paper Questions on this Topic:

- Give the major product from the following reaction.

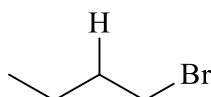
Marks
6



Show the mechanism of the reaction. Make sure you show structural formulas for all relevant intermediate species and the final product, as well as using curly arrows to indicate the movement of electrons (*i.e.* the breaking and formation of bonds).



Give the structure of the minor product of this reaction and explain why very little of it forms.



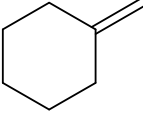
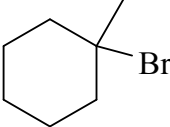
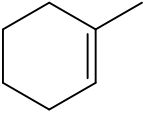
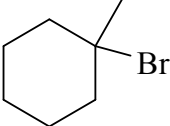
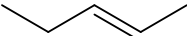
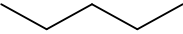
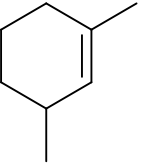
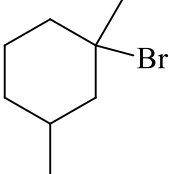
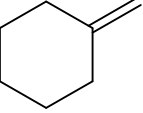
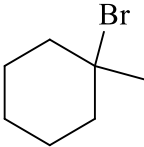
This product is derived from the primary carbocation intermediate. Secondary carbocations are more stable than primary carbocations, so little of this product forms.

Give the names of the major and minor products.

Major product:	2-bromobutane
Minor product:	1-bromobutane

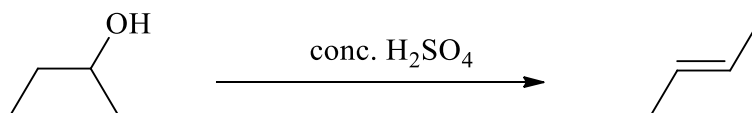
- Complete the following table. Make sure you complete the name of the starting material where indicated.

Marks
6

STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	HBr / CCl ₄ (solvent)	
	HBr / CCl ₄ (solvent)	
 Name: (E)-2-pentene	H ₂ /Pd	
	HBr / CCl ₄ (solvent)	
	HBr	

- Consider the following dehydration reaction.

Marks
7



Use curly arrows to show the mechanism of this reaction.

