

Names of all students (please print) \_\_\_\_\_

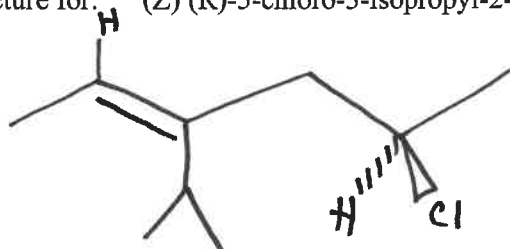
# Answer Key

CHEM 243 Organic Chemistry I

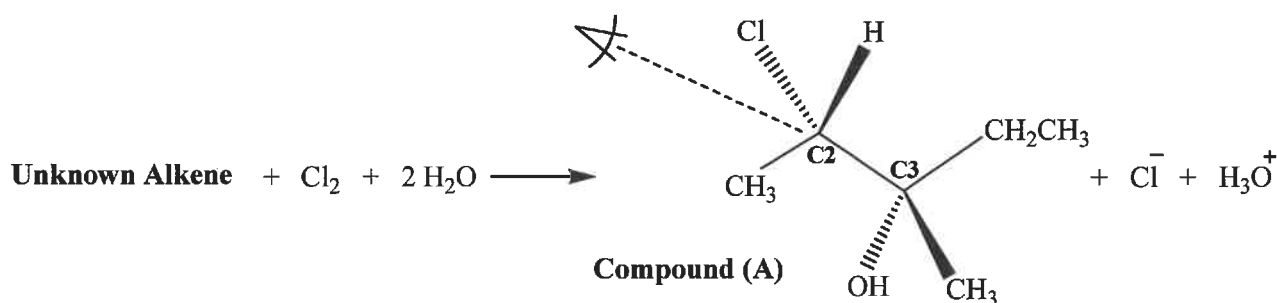
Points \_\_\_\_\_ (10 max)

**Worksheet #28: December 1, 2021 – Our LAST CHEM 243 Worksheet!** Complete the following worksheet by collaborating with a group of 3-4 students. You can use a text book or your lecture video notes. You must work together, with the names of all students included on **ONE** sheet and turned in for a group grade. **All the problems on this worksheet are Review Questions for Exam IV.**

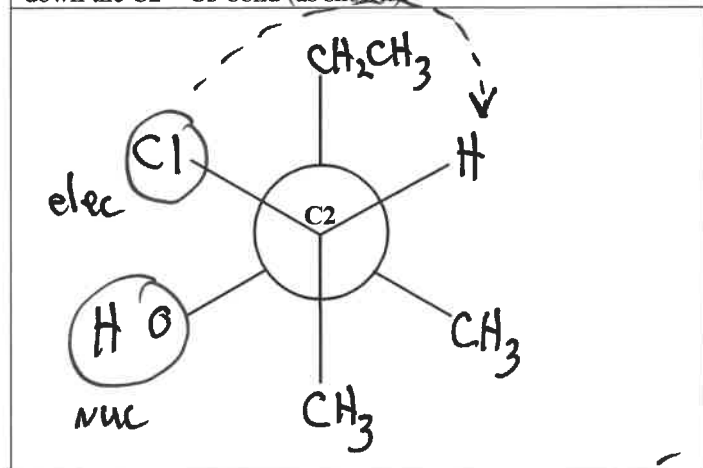
(1) **Nomenclature.** Draw an accurate structure for: (Z) (R)-5-chloro-3-isopropyl-2-hexene



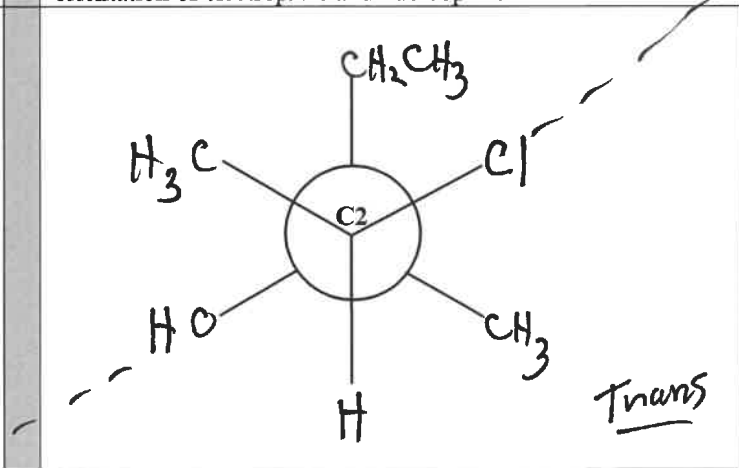
(2) **Electrophilic Addition Reaction Stereochemistry.** Electrophilic addition of  $\text{Cl}_2$  and  $\text{H}_2\text{O}$  to an **unknown alkene reactant** produces the following product (Compound A). **What is the structure of the unknown alkene reactant?**



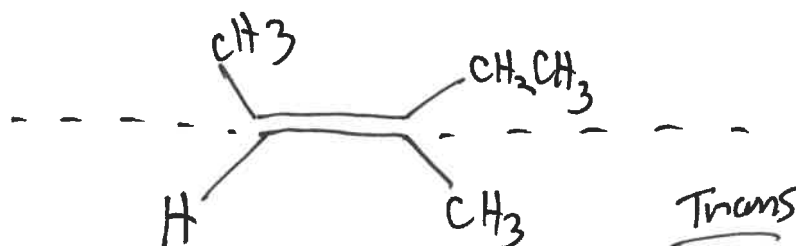
(a) Draw a Newman Projection of the **product** by looking down the C2 – C3 bond (as shown):



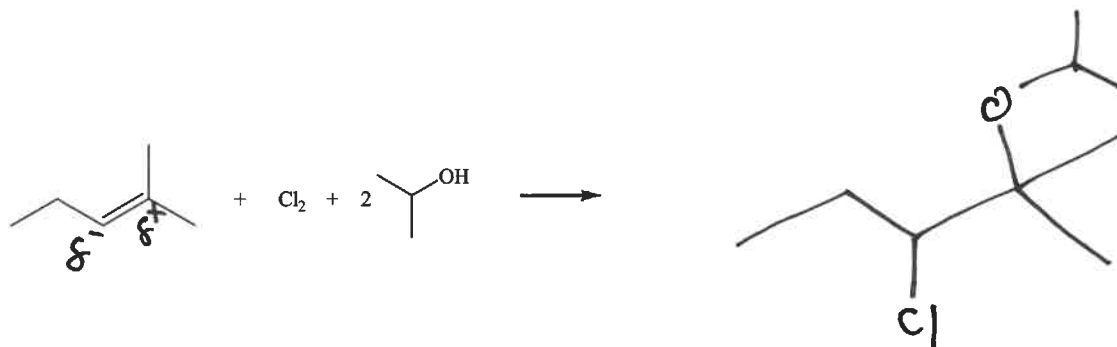
(b) Re-draw your Newman Projection to give the anti orientation of electrophile and nucleophile:



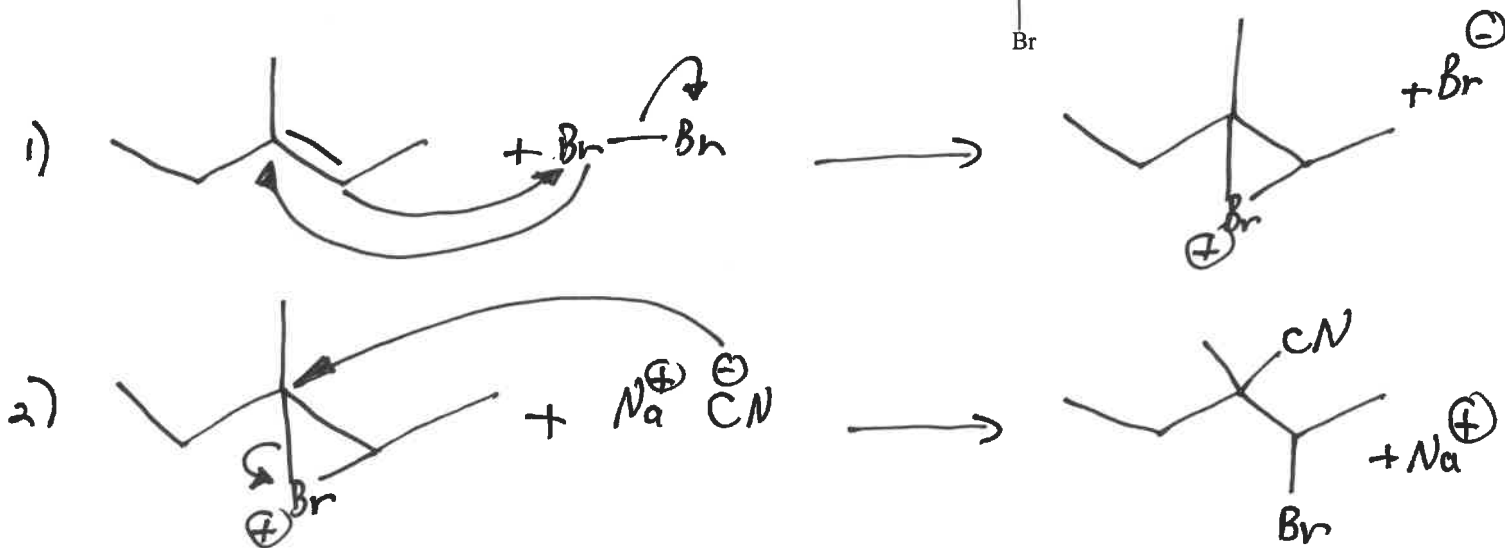
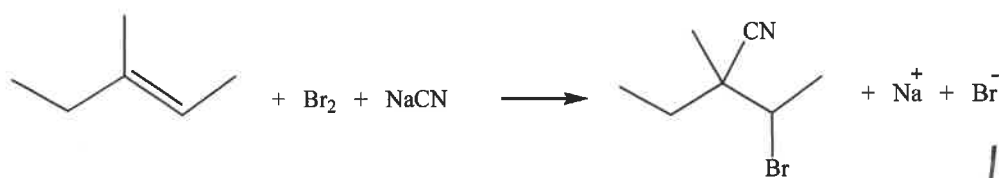
(c) Based on your Newman Projections, draw the structure of the **unknown reactant alkene**, with proper geometry, that will produce the product, Compound (A).



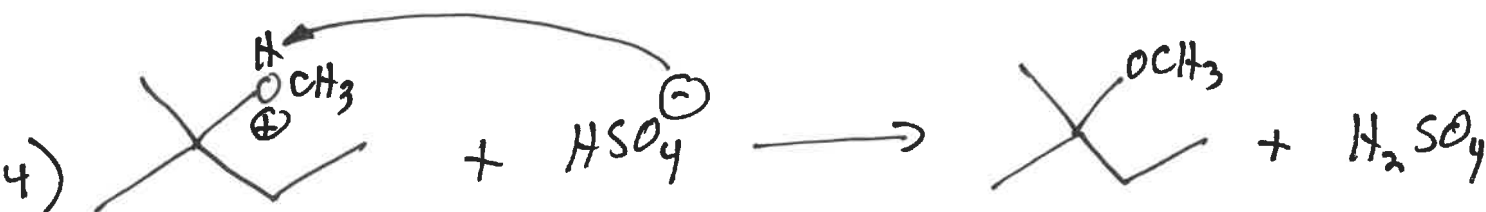
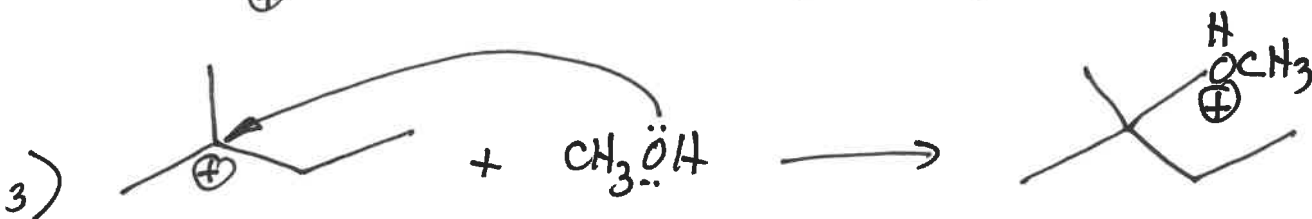
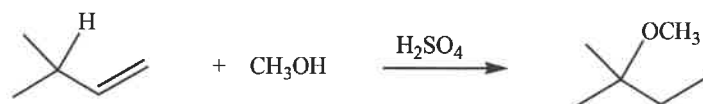
**(3) Electrophilic Addition Reactions.** Complete the **Electrophilic Addition Reactions** shown below by drawing the structure of the major, neutral organic products. It is NOT necessary to balance these reactions or write the mechanism. There are NO rearrangements and NO intramolecular reactions. Do Not worry about stereochemistry.



**(4) Electrophilic Addition of Br<sub>2</sub> and NaCN to an Alkene (2 steps).** Write a complete mechanism that explains the formation of all products in the balanced net reaction shown below. Your mechanism must consist of a series of individual, balanced chemical equations, and curved arrows to show electron pair movement.



(5) **Electrophilic Addition of an Alcohol to an Alkene with Rearrangement (4 steps).** Write a complete mechanism that explains the formation of all products in the balanced net reaction shown below. Your mechanism must consist of a series of individual, balanced chemical equations, and curved arrows to show electron pair movement.



(6) **Intramolecular SN2 Reaction (2 steps).** Write a complete mechanism that explains the formation of all products in the balanced net reaction shown below. Your mechanism must consist of a series of individual, balanced chemical equations, and curved arrows to show electron pair movement.

