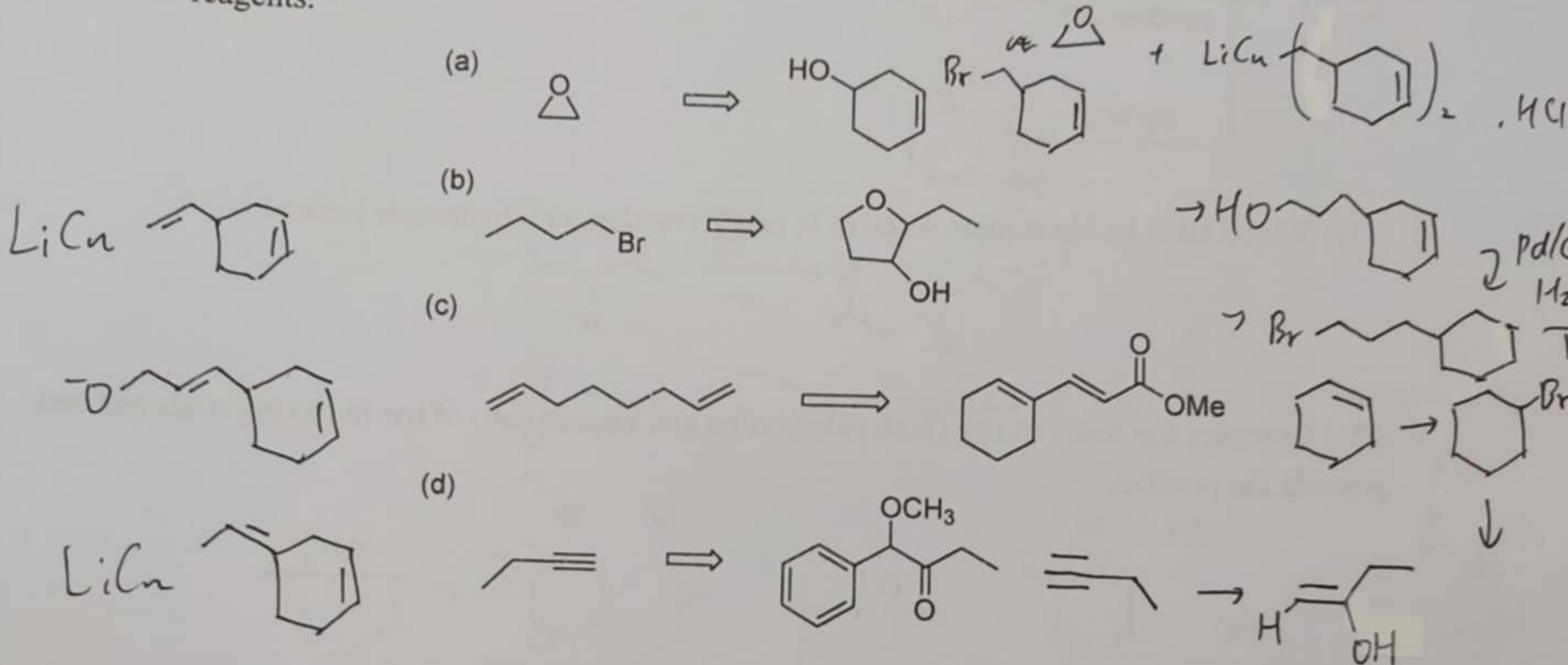


(B) Organic Chemistry (I); The Final Examination; 9 January 2024

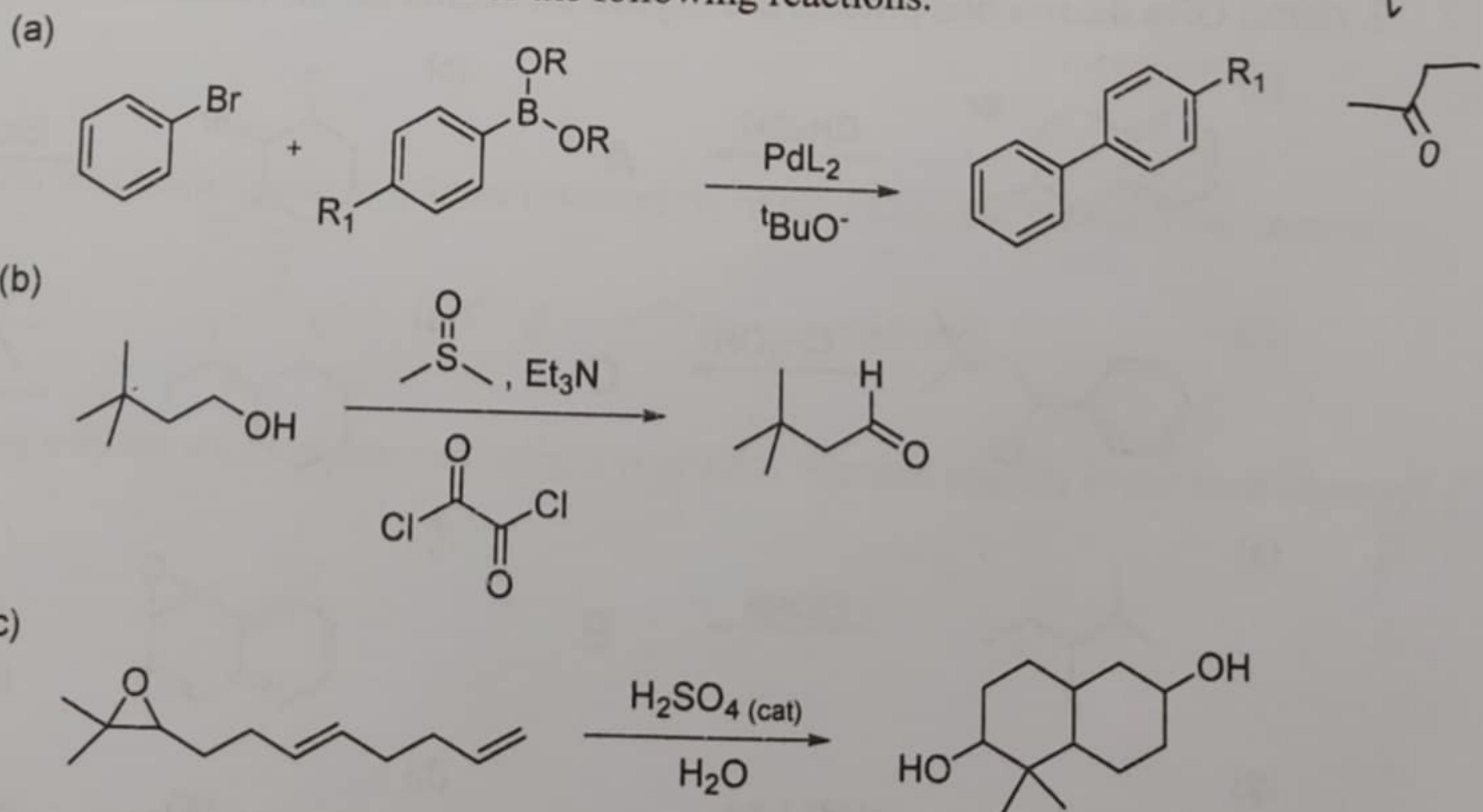
Total score: 113 points (total 4 pages)

Name: 黃子俊 Department: \_\_\_\_\_ NO. 111023066

1. (20%) Synthesis of the following compound by using the given starting material and available reagents.

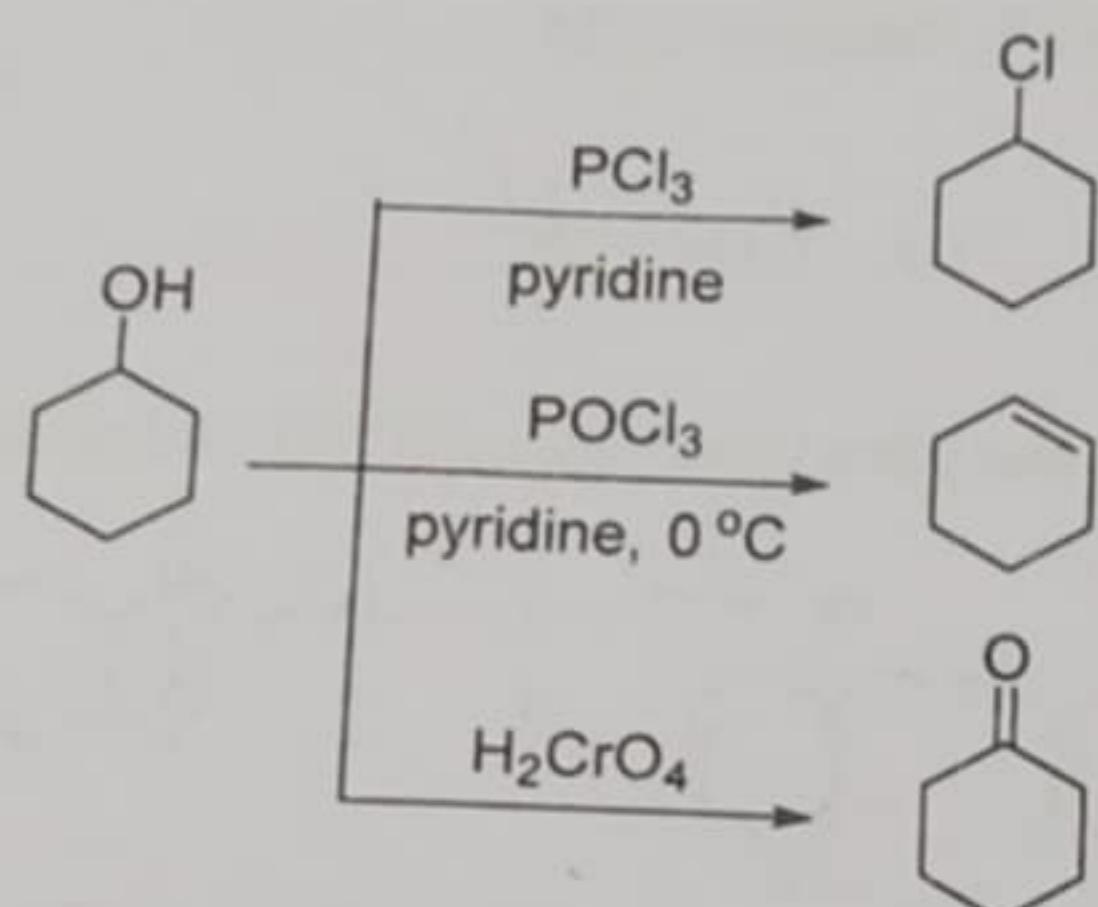


2. (12%) Propose a mechanism for each of the following reactions.

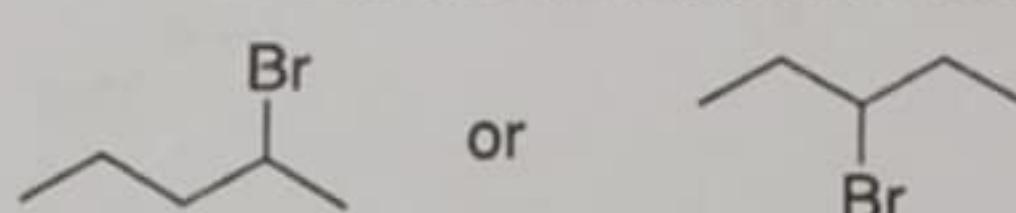


3. (3%) Draw the structure of the major elimination product: (2*R*,3*R*)-2-bromo-3-phenylbutane + high concentration of CH<sub>3</sub>O<sup>-</sup>

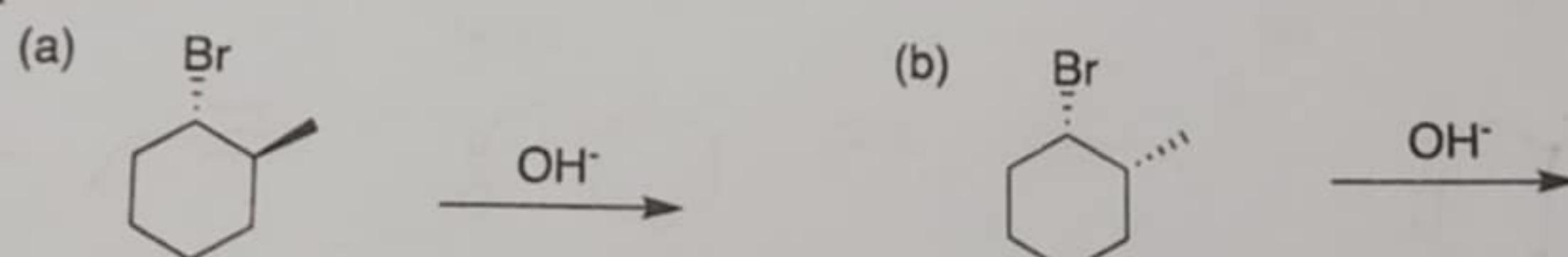
4. (6%) Please explain the reason for the different reaction mechanism (substitution vs subtract H and different H is subtracted).



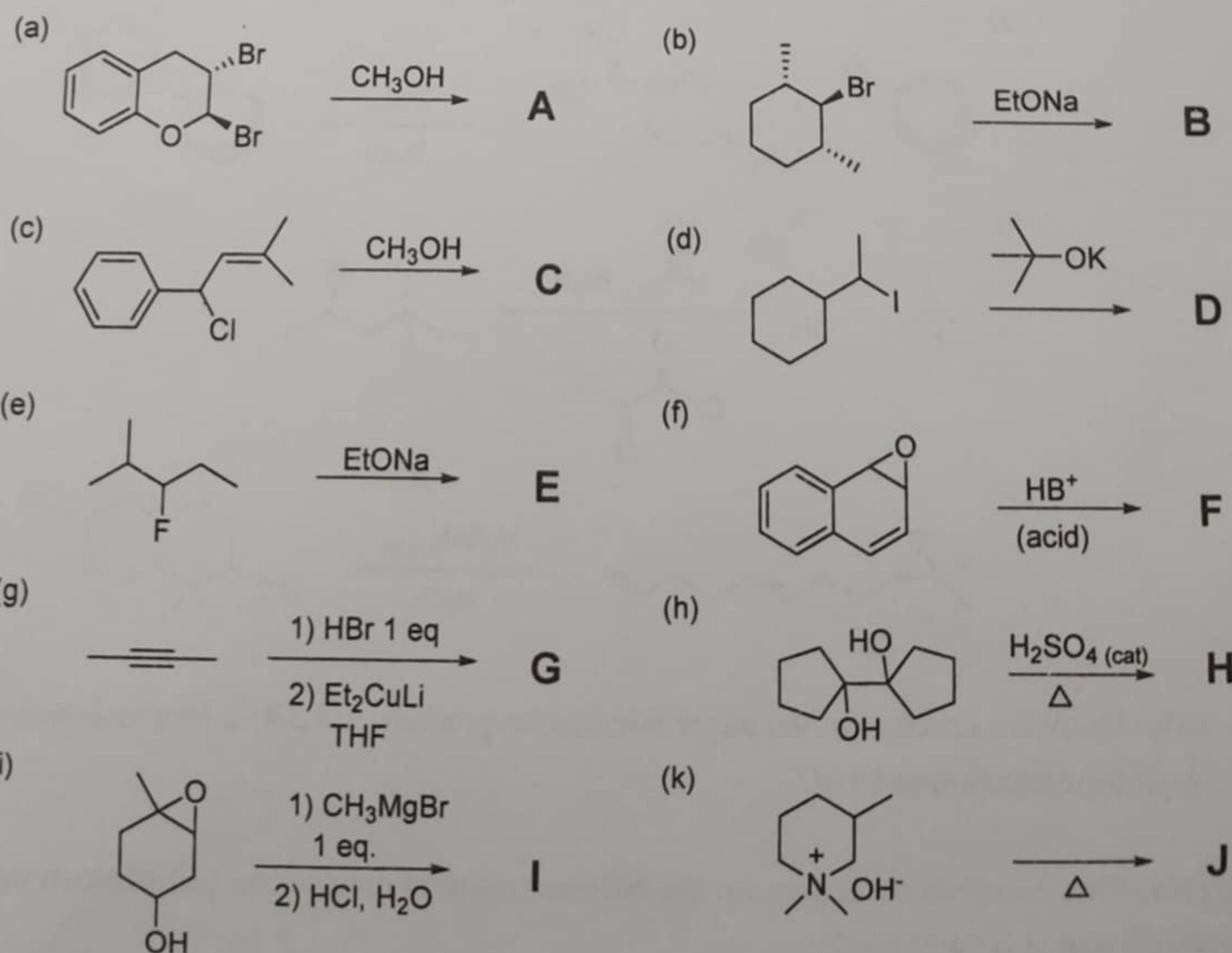
5. (3%) Which alkyl halide is more reactive in an E2 reaction with hydroxide ion and why?



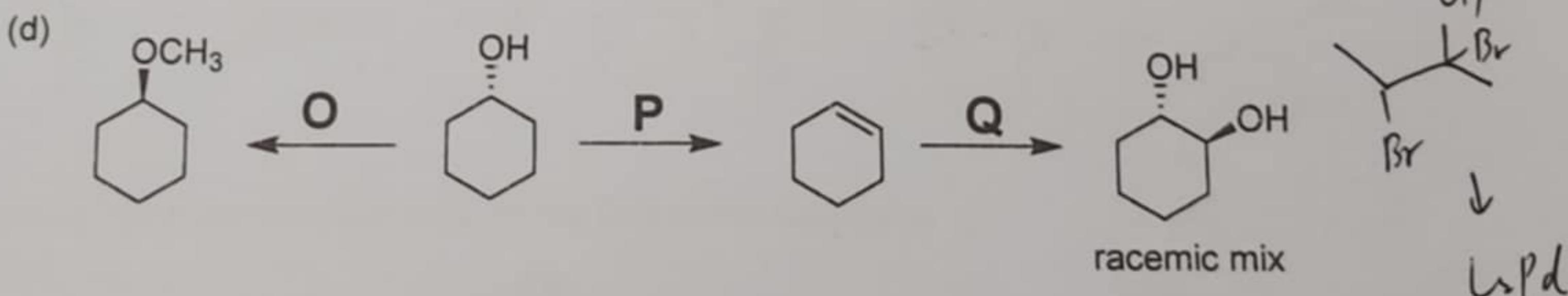
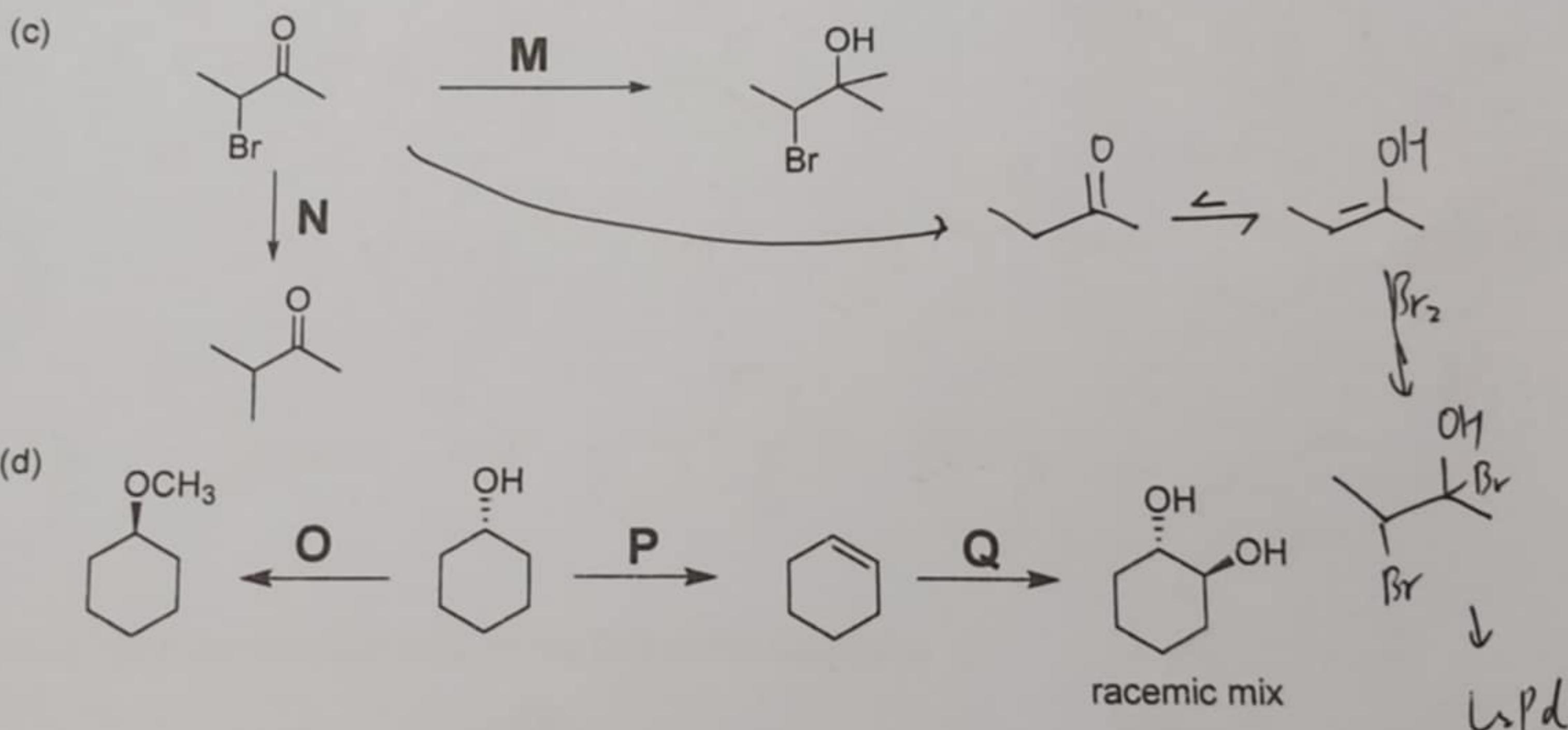
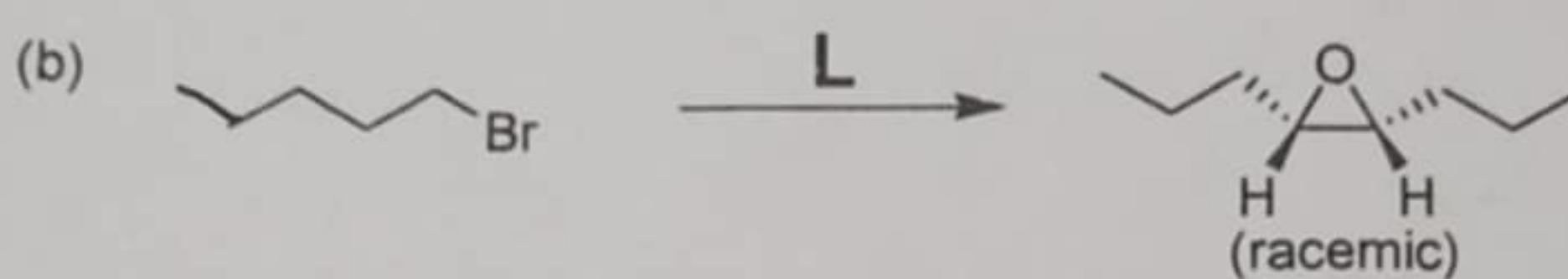
6. (8%) Compare the reaction rate (both substitution and elimination) of the following reactions and provide the product.



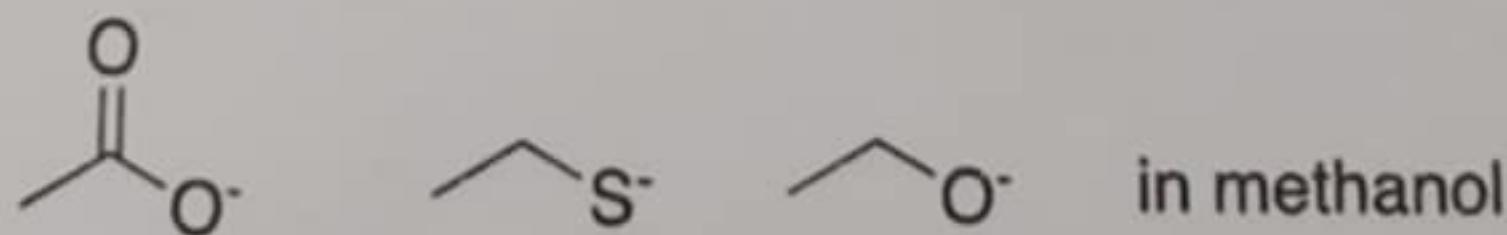
7. (30%) Give the reaction product and explain the reason for the reaction.



8. (25%) Provide suitable reagents for the product formation. (K and L is 5%, respectively)



9. (3%) Rank the best nucleophile to poorest nucleophile in methanol and provide your reason(s).



10. (3%) Explain why tetrahydropyran can solve a positively charged species better than dipropyl ether can.