

NAME (Print): _____

SIGNATURE: _____

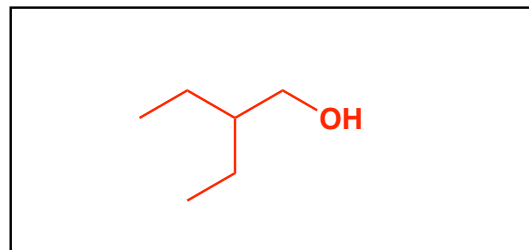
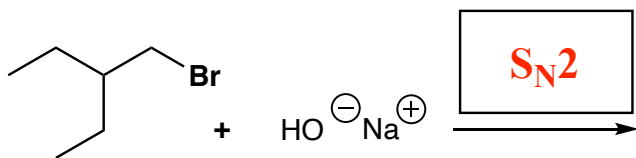
Chemistry 320M/328M
Dr. Brent Iverson
9th Homework
November 5, 2025

Please print the
first three letters
of your last name
in the three boxes

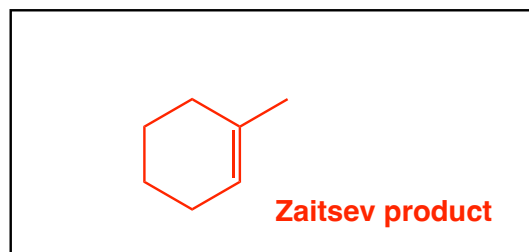
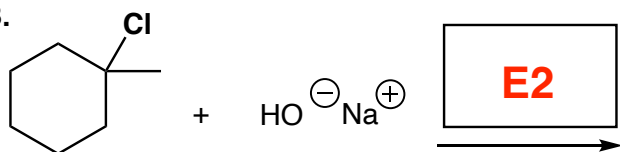
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1. (5 or 6 pts) The following reactions all involve chemistry of haloalkanes. **Fill in the box above the arrow with the mechanism that will be followed (S_N2 , E2, etc.). Then draw only the predominant product or products and please remember that you must draw the correct stereoisomers.** For $S_N1/E1$ reactions you must draw all significant products (including all stereoisomers).

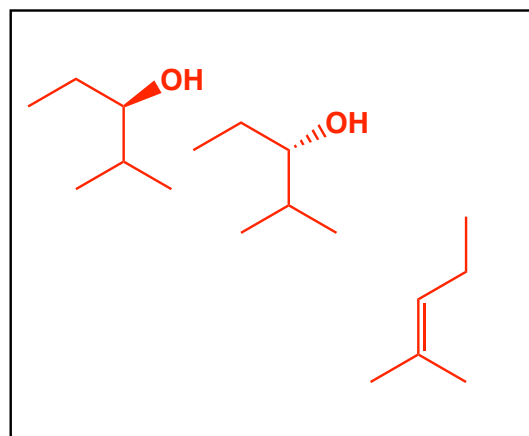
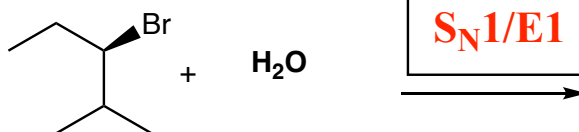
A.



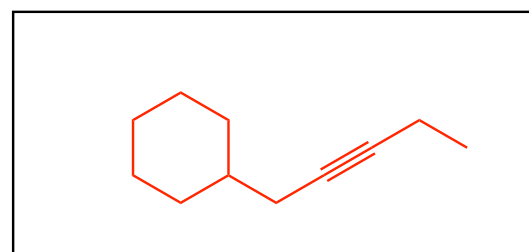
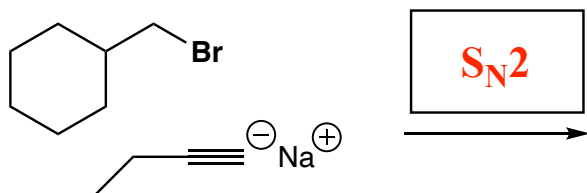
B.



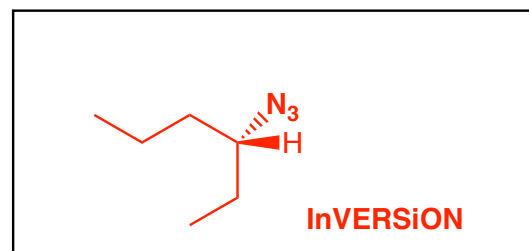
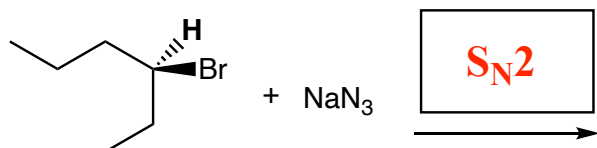
C.

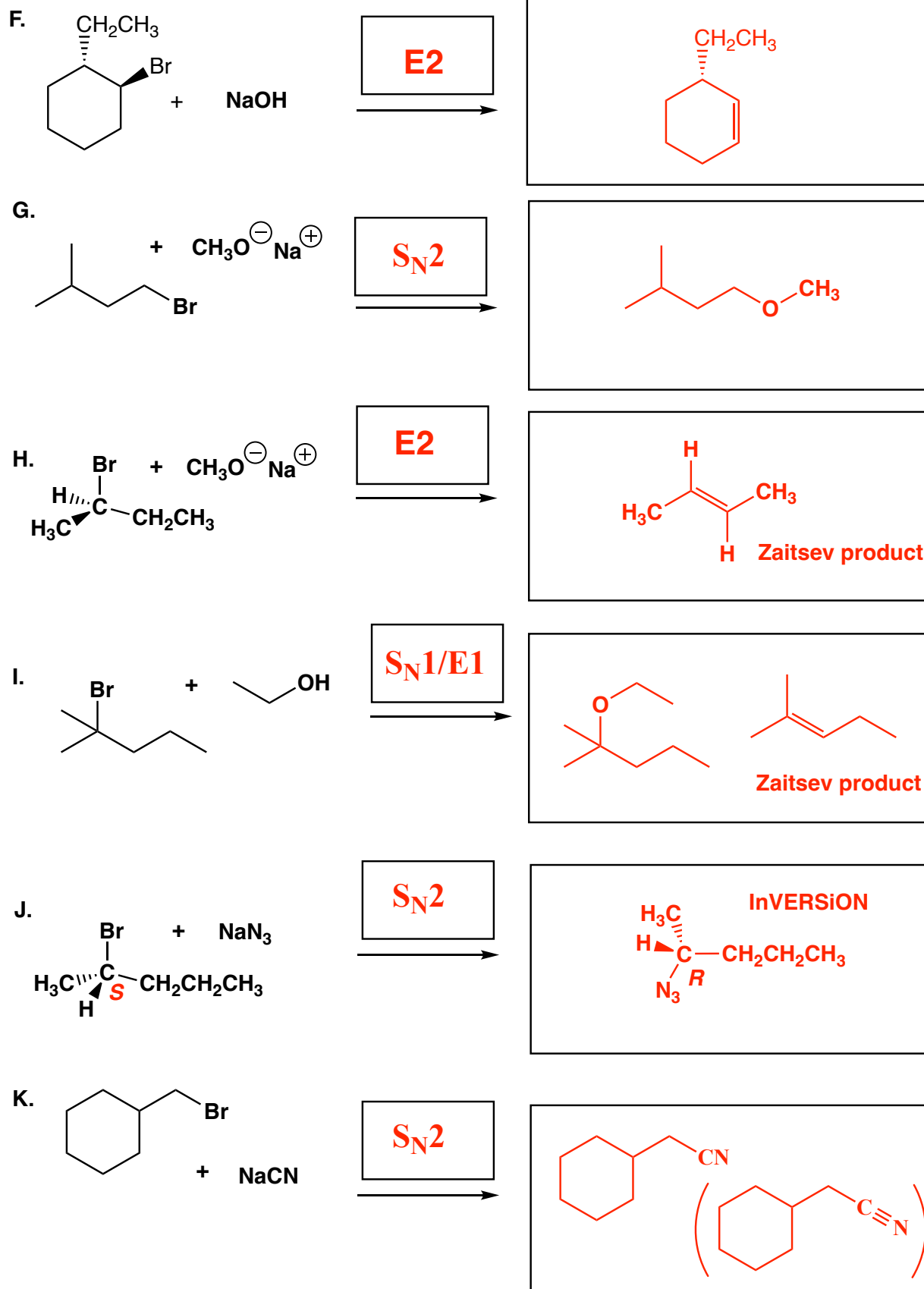


D.



E.





2. (20 pts) Consider the following statements that refer **S_N1**, **S_N2**, **E1**, **E2**, or a **radical chain reaction** mechanism. Fill in the circles to indicate to which mechanism(s) each statement applies.

- | | | | |
|---|---|--|---|
| A. A reaction in which the predominant product is predicted by Zaitsev's rule. | ☐ S _N 2
☐ S _N 1 | ☒ E2
☒ E1 | ☐ Radical chain reaction |
| B. A reaction observed when tertiary haloalkanes react with any nucleophile that is not a very weak base. | ☐ S _N 2
☐ S _N 1 | ☒ E2
☐ E1 | ☐ Radical chain reaction |
| C. A reaction that involves an anti-periplanar transition state. | ☐ S _N 2
☐ S _N 1 | ☒ E2
☐ E1 | ☐ Radical chain reaction |
| D. A reaction that involves initiation, propagation and termination steps. | ☐ S _N 2
☐ S _N 1 | ☐ E2
☐ E1 | ☒ Radical chain reaction |
| E. A reaction that is favored for secondary haloalkanes when a nucleophile that is NOT a strong base and is also NOT a very weak base is used | ☒ S _N 2
☐ S _N 1 | ☐ E2
☐ E1 | ☐ Radical chain reaction |
| F. A reaction mechanism that involves a carbocation intermediate. | ☐ S _N 2
☒ S _N 1 | ☐ E2
☒ E1 | ☐ Radical chain reaction |
| G. A reaction mechanism that involves only a transition state, no intermediate. | ☒ S _N 2
☐ S _N 1 | ☒ E2
☐ E1 | ☐ Radical chain reaction |
| H. A reaction that causes InVERSiON of stereochemistry at the site of reaction. | ☒ S _N 2
☐ S _N 1 | ☐ E2
☐ E1 | ☐ Radical chain reaction |
| I. A reaction that will occur when Br ₂ and light are used with an alkane. | ☐ S _N 2
☐ S _N 1 | ☐ E2
☐ E1 | ☒ Radical chain reaction |
| J. A reaction that involves initiation, propagation and termination steps. Yep, this one is here twice because it is important! | ☐ S _N 2
☐ S _N 1 | ☐ E2
☐ E1 | ☒ Radical chain reaction |
| K. A reaction observed when secondary haloalkanes react with a nucleophile that is a very weak base (as solvent). | ☐ S _N 2
☒ S _N 1 | ☐ E2
☒ E1 | ☐ Radical chain reaction |