

Exercise 15

Fig. X15-1

Preparation of a Key for Reaction-Map of Organic Chemistry

(see Appendix C)

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Reaction-Map as a Study Aid

At the end of a two semester course in organic chemistry, a student should be able to perform the exercises below. (Note: In addition to the exercises below, a student of organic chemistry should be able to demonstrate competency with spectroscopic, stereochemical and multistep synthetic challenges.) Performing the exercises below should result in the preparation of three keys for the *Reaction-Map of Organic Chemistry*.

1. For each numbered reaction, classify the reaction by mechanism (e.g., substitution, nucleophilic) and list the reagents, conditions, regioselectivity, stereoselectivity and restrictions associated with the reaction.
2. List all methods of preparing each functional group.
3. List all reactions of each functional group.
4. Write mechanisms for reactions: 3 (D2), 10 (B13), 19 (C13), 32 (C11), 33 (E14), 39 (J3) +28 (K2), 42 (G7), 46 (B13), 47 (C11), 62 (K13), 72 (J17), 106 (K19).

The problems above should be attempted without reference to the keys but the keys can be used to help check for the correctness of answers for 1-3. The keys are available in the Instructor’s Manual and to subscribers of the *Journal of Chemical Education* at:

http://pubs.acs.org/doi/suppl/10.1021/ed084p1224/suppl_file/jce2007p1224w.pdf

For the answers to question #4, reference to an organic chemistry textbook may be required.