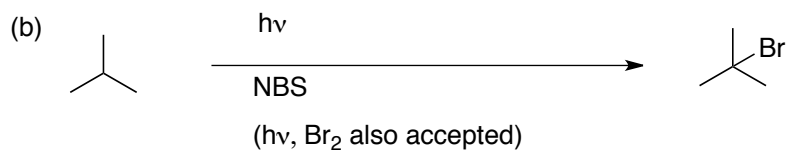


closed book, closed notes, model kits allowed

1. Provide the reagents for each transformation over the arrows. These transformations can be accomplished in a single step
3 points each



2. Provide the reagents for each two-step synthesis. A complete answer will require you to make an intermediate.

- Draw the structure of the intermediate in the box.
- Over the arrows, indicate conditions for synthesizing the intermediate and the final product.

7 points each

