5. (15 pts) **Multistep Synthesis.** Provide reagents and the structures of all intermediates which are isolated.

![Diagram of a multistep synthesis involving a ketone and a compound with CH3 groups.]

6. (15 pts) Draw the structures of A-F. Hint: E is a cyclic compound.

![Diagram of a reaction involving bromoethanol, chromium(VI) oxide, and HOCH2CH2OH.]

1. H3C-CH=CHO
2. H^{+}cold

(next page)