

科目：有機化學

適用：應化系

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

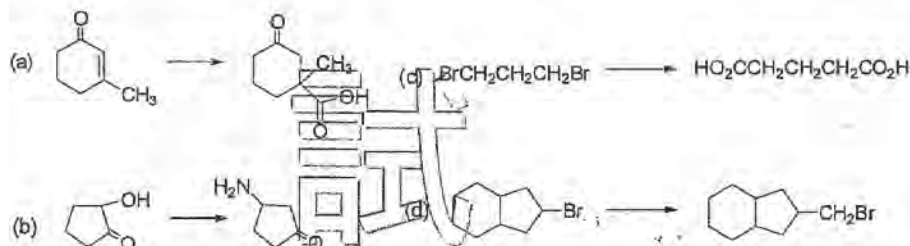
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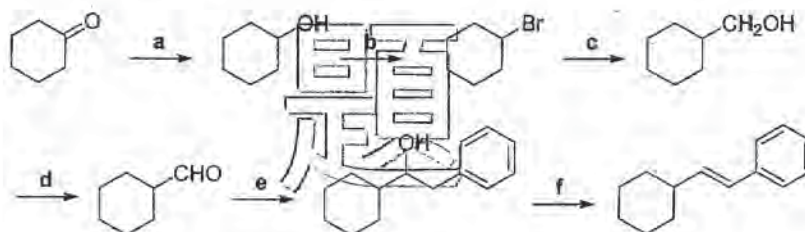
1. When a mixture of methane and chlorine is irradiated, reaction commences immediately. When irradiation is stopped, the reaction gradually slows down but does not stop immediately. Please explain. (10%)
2. Predict the products of the following reactions, showing both regiochemistry and stereochemistry where appropriate. (20%; each 5%)



3. Using flow equation, please show how the following conversion can be carried out, using any reagents necessary. (20%; each 5%)



4. Identify the reagents a-f in the following scheme: (18%; each 3%)



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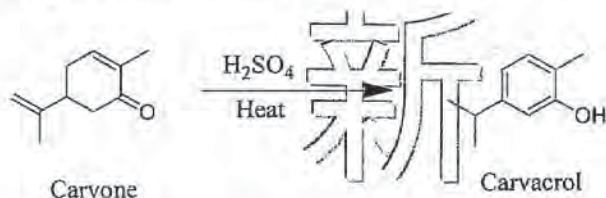
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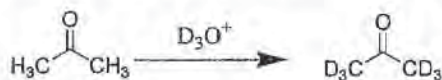
5. Heating carvone with aqueous sulfuric acid converts it into carvacrol.
Propose a mechanism for the isomerization. (12%)



6. Which one cycloaddition would you predict to proceed easily upon heating? Which one cycloaddition would you predict to proceed easily upon radiation? Please explain. (10%)

(a) [2+2] cycloaddition (b) [4+2] cycloaddition.

7. Reaction of acetone with D_2O yields hexadeuterioacetone. That is, all the hydrogens in acetone are exchanged for deuterium. Please propose a mechanism for this deuterium incorporation. (10%)



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