

淡江大學 96 學年度碩士班招生考試試題

系別：化學學系

科目：有機化學

准帶項目請打「V」
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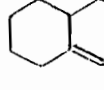
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一. Choose the most appropriate answers for the following questions (30%)

- Which of the following correctly ranks the cycloalkanes in order of increasing ring strain per methylene (CH_2)?
 - cyclopropane < cyclobutane < cyclohexane < cyclopentane
 - cyclohexane < cyclopentane < cyclobutane < cyclopropane
 - cyclopropane < cyclobutane < cyclopentane < cyclohexane
 - cyclopentane < cyclopropane < cyclobutane < cyclohexane
- Which of the following intermediates can best be described as most electrophilic?
 - radical
 - carbene
 - carbocation
 - carbanion
- The major monobrominated product which results when 2-methylbutane is subjected to free radical bromination is:
 - a secondary bromide
 - a tertiary bromide
 - a primary bromide
 - none of the above
- A mixture of equal amounts of enantiomers _____.
 - is called a racemic mixture
 - is optically active
 - both a and b
 - none of the above
- The major product of the reaction of 2-chloro-2-methylpentane with sodium methoxide (NaOCH_3) in methanol results from which of the following mechanistic pathway?
 - $\text{S}_{\text{N}}1$
 - $\text{S}_{\text{N}}2$
 - E1
 - E2
- Which of the following statements correctly describe(s) $\text{S}_{\text{N}}1$ reactions of alkyl halide?

I: Rate = $k_{\text{r}}[\text{base}][\text{RX}]$ II: Rearrangements are sometimes seen

III: The reactions occur in one step IV: Rate = $k_{\text{r}}[\text{RX}]$

 - III and IV
 - I, II and III
 - I and III
 - II and IV
- Which of the following compounds violates the Bredt's rule?
 - 
 - 
 - 
 - 
- Which of the following alkyl halides would be suitable to use when forming a Grignard reagent?
 - $\text{BrCH}_2\text{CH}_2\text{CH}_2\text{CN}$
 - $\text{CH}_3\text{COCH}_2\text{CH}_2\text{Br}$
 - $\text{CH}_3\text{OCH}_2\text{CH}_2\text{Br}$
 - $\text{H}_2\text{NCH}_2\text{CH}_2\text{CH}_2\text{Br}$
- Which of the following closely matches the $\text{C}=\text{C}$ stretching (cm^{-1}) of a simple alkene?
 - 1650
 - 1715
 - 1735
 - 2150
- How many electrons are present in the nonbonding π molecular orbital of the allyl anion?
 - 0
 - 1
 - 2
 - 4

本試題雙面印製

系列：化學學系

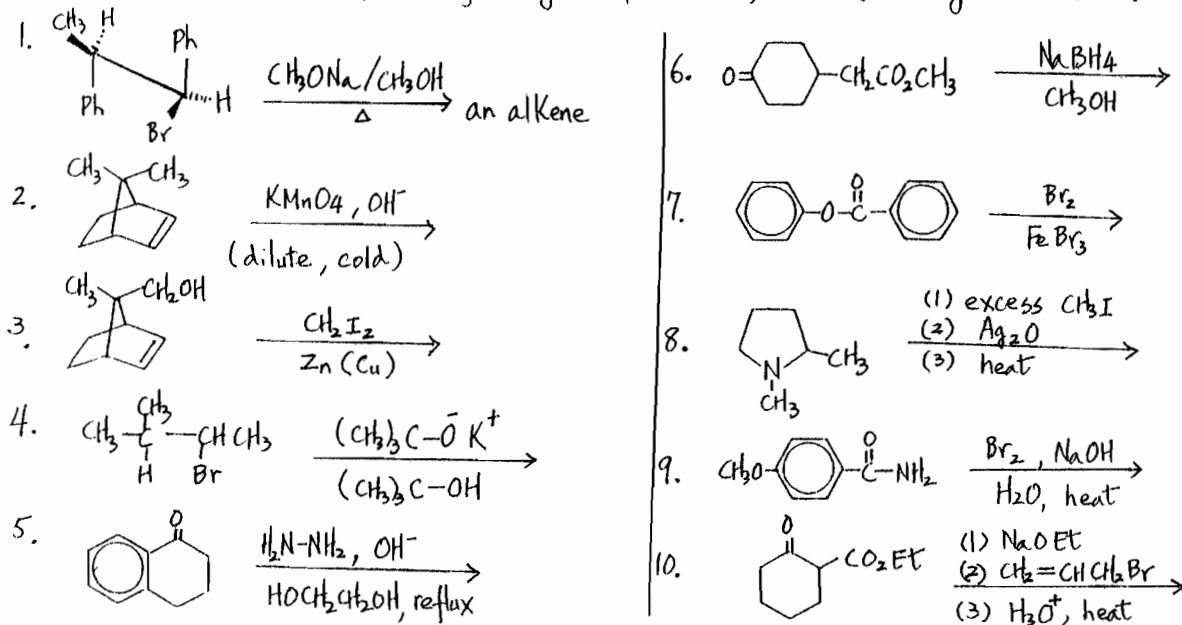
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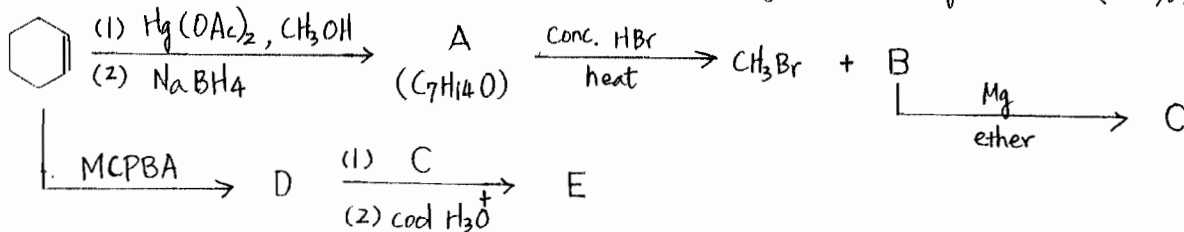
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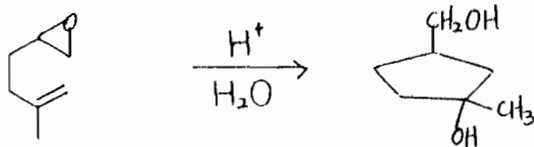
二. Give the structures of the major organic products for the following reactions (30%)



三. Give structure of the compounds A - E in the following reaction sequence (20%)



四. Suggest a mechanism for the following reaction: (10%)



五. Propose a series of reactions for the following synthesis: (10%)

