

系別：化學學系三年級

科目：有機化學

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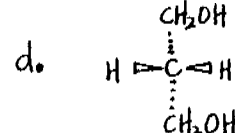
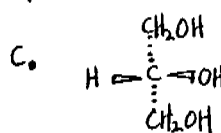
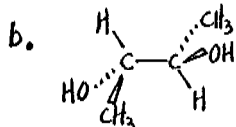
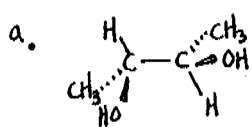
節次：7月14日第4節

本試題共 2 頁

本試題雙面印刷

一. 選擇題 (共40分)

1. Which of the following is a meso compound?



2. Ketals are formed from a ketone and two molecules of _____.

a. alcohol

b. amine

c. acid chloride

d. hydrogen chloride

3. Which of the following would be the strongest acid?

a. p-nitrobenzoic acid

b. m-nitrobenzoic acid

c. m-methylbenzoic acid

d. m-methoxybenzoic acid

4. What type of amine is t-butylamine?

a. quaternary

b. tertiary

c. secondary

d. primary

5. Which of the following compounds would be most reactive toward ring nitration ($\text{HNO}_3 / \text{H}_2\text{SO}_4$)?

a. benzene

b. aniline

c. nitrobenzene

d. toluene

6. Which of the following ethers could not be prepared by a Williamson ether synthesis?

a. $\text{C}_6\text{H}_5\text{OCH}_3$

b. $\text{CH}_3\text{CH}_2\text{OC}(\text{CH}_3)_3$

c. $(\text{CH}_3)_3\text{C-O-C}(\text{CH}_3)_3$

d. $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

7. Which of the following alkyl halides would be suitable for formation of a Grignard reagent?

a. $\text{H}_2\text{N-CH}_2\text{CH}_2\text{Br}$

b. $\text{CH}_3\text{-C(=O)-CH}_2\text{CH}_2\text{Br}$

c. $(\text{CH}_3)_2\text{N-CH}_2\text{CH}_2\text{Br}$

d. $\text{BrCH}_2\text{CH}_2\text{-CN}$

8. Which of the following dienes would undergo a Diels-Alder reaction?

a. 3-methylene cyclohexene

b. 3-methyl-1,4-cyclohexadiene

c. 1,4-cyclohexadiene

d. 2-methyl-1,3-cyclohexadiene

9. Sodium borohydride is useful for the reduction of

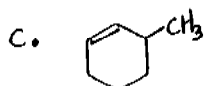
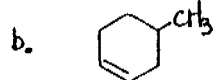
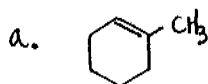
a. ester

b. nitrile

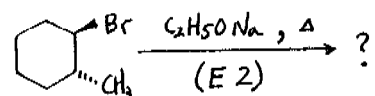
c. amide

d. aldehyde

10. Predict the major product for the reaction:



d. equal amount of a and b



◀ 注意背面尚有試題 ▶

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系別：化學學系三年級

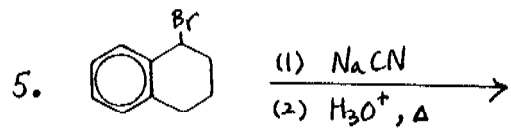
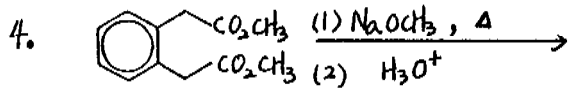
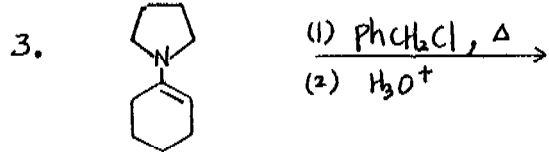
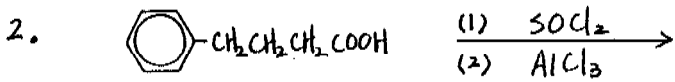
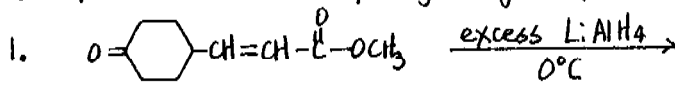
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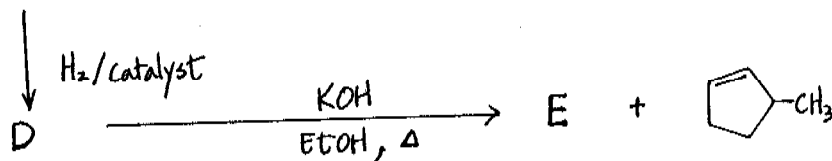
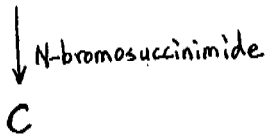
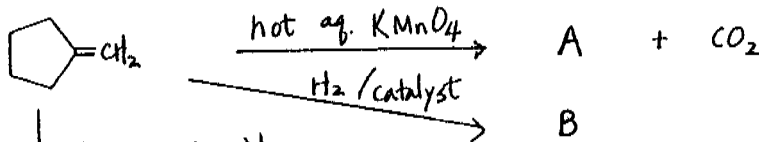
節次：7 月 14 日第 4 節

本試題共 2 頁

二. Give the structures of major organic products for the following reactions (20分)



三. Give the structures of compounds A - E (20分)



四. Devise a synthetic sequence for the following transformation:



五. Give a detailed and stepwise mechanism for the following reaction:

