

長庚大學108學年度研究所碩士班招生考試試題

系所：化工與材料工程學系碩士班

考試科目：有機化學

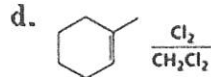
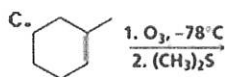
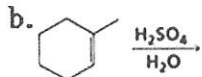
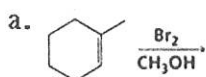
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1. Draw condensed or skeletal structure for each of the following compounds: (10%)

- 5-ethyl-2,5-dimethyloctane
- 2-methyl-N-propyl-1-propanamine
- 1,6-dichlorocyclohexene
- 1-bromo-5-methyl-3-hexyne

2. Draw four Fischer projections for 2,3-dichloro-3-pentanol and indicate two asymmetric centers. (10%)

3. What is the major product of each of the following reactions? (10%)



4. Describe the alkyne you shall start with and the reagents you shall use if you want to synthesize: (10%)

- pentane
- cis-2-butene
- trans-2-butene
- 1-hexene.

5. What product is formed when ethyl chloride reacts with each of the following nucleophiles? (10%)

- HO^-
- H_2O
- CH_3O^-
- CH_3S^-
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$

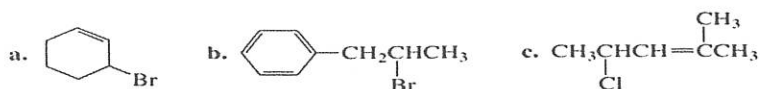
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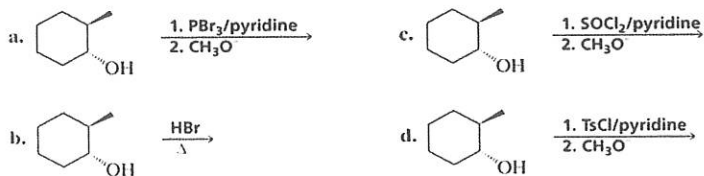
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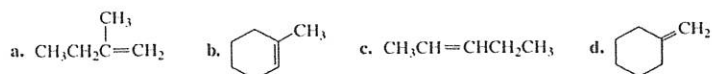
6. What products will be obtained from the E2 elimination of the following alkyl halides? (10%)



7. What stereoisomers do the following reactions form? (10%)



8. What alcohol will you treat with POCl₃ and pyridine to form the following alkene? (10%)



9. Write the initiation, propagation, and termination steps for the monobromination of ethane. (10%)

10. What is the product of the reaction of 2-methyl-2-butene with each of the following reagents? (10%)

- a. HBr b. HBr and peroxide c. HCl