淡江大學 105 學年度轉學生招生考試試題

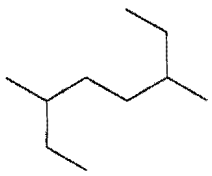
系別：化學學系三年級　　科目：有 機 化 學　　41-1

考試日期：7 月 22 日(星期二) 第 3 節　　本試題共　5 大題，5　頁

本試題雙面印刷

I. Multiple Choice (**30** pts)

1. What is the parent chain for the following compound?



A. octane　**B**. hexane　**C**. heptane　**D**. decane

2. Why is entropy negative for ring closures?

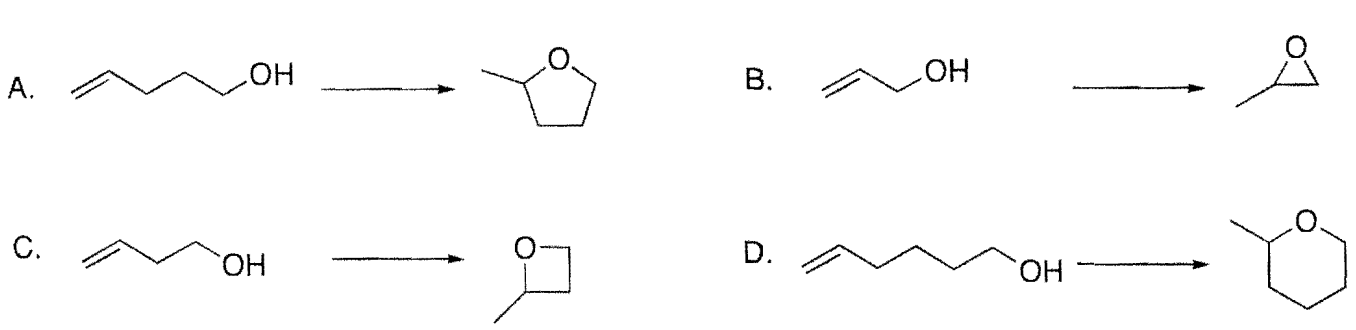
A. Closing a ring results in fewer molecules.

B. Closing a ring results in more molecules.

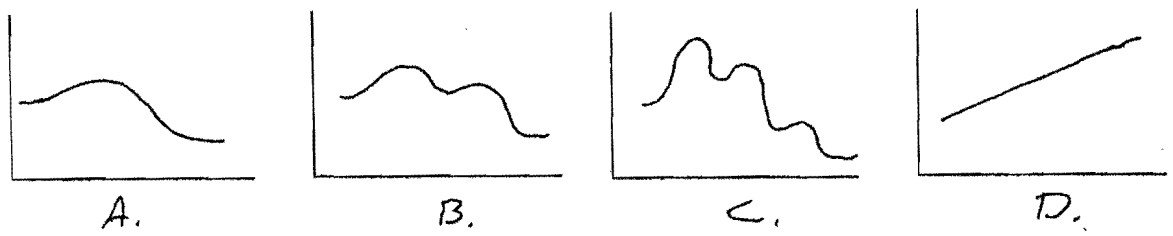
C. Closing a ring releases energy.

D. Closing a ring restricts the rotation around individual carbon-carbon bonds.

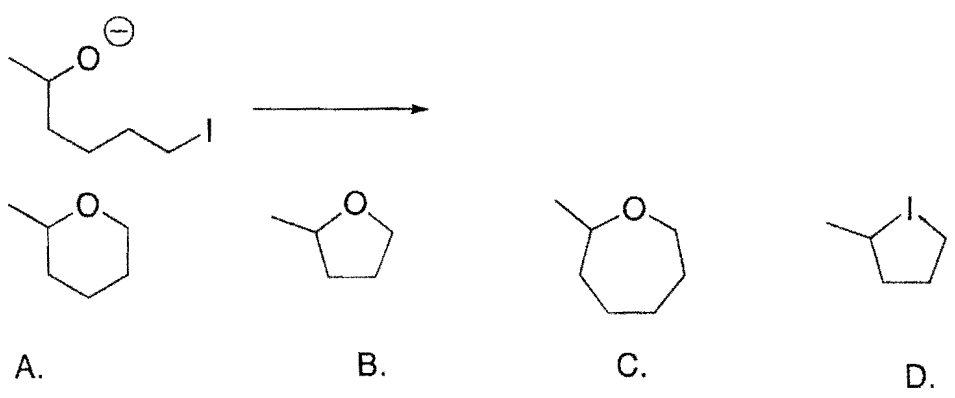
3. Which of the following would you expect to have the most negative ΔS?



4. Which of the following is an energy diagram for a two-step reaction?



5. Which of the following is the product of the following reaction?



背面尚有試題

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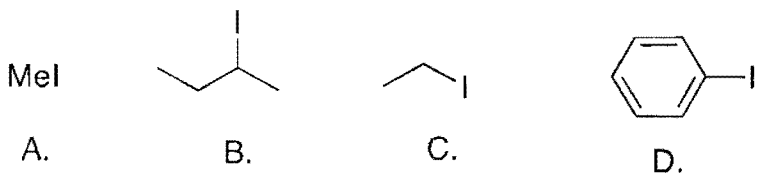
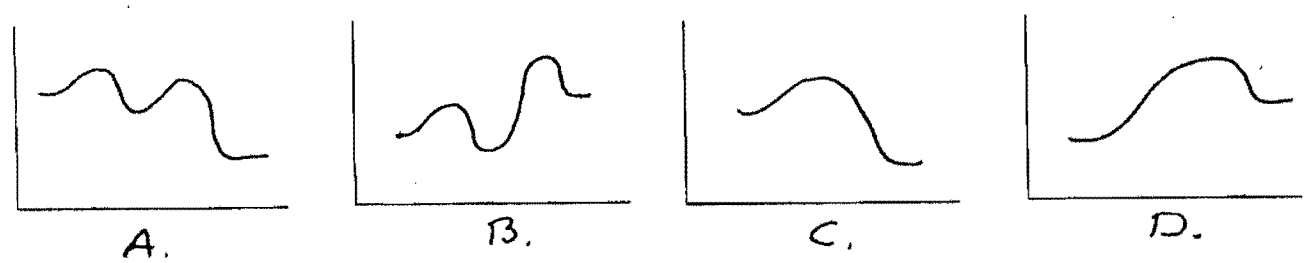
6. Rank the following substrates from most to least reactive in an S_N2 reaction.

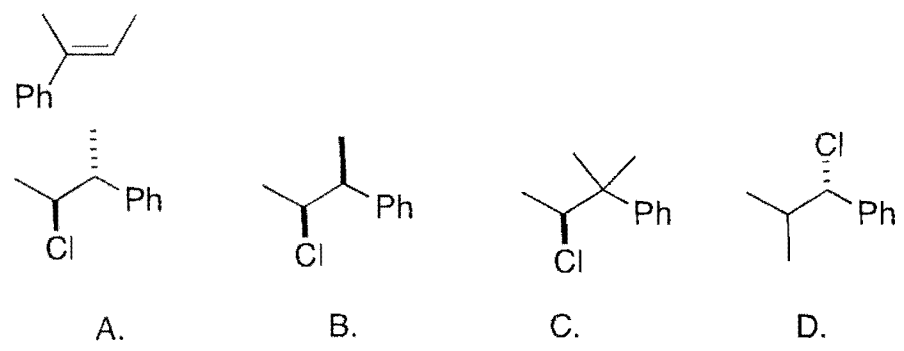


A. A>B>C>D　　**B**. D>C>B>A　　**C**. A>C>B>D　　**D**. D>C>B>A

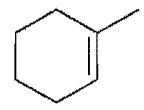
7. Which of the following is the reaction diagram for an exothermic, concerted reaction?

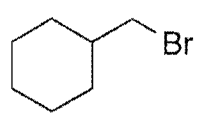


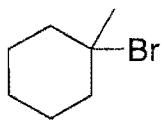
8. Which of the following alkyl halides would afford the indicated product upon reaction with sodium ethoxide?

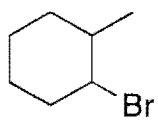


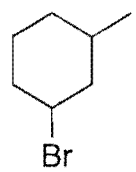
9. Which of the molecules below arises from anti-Markovnikov hydrohalogenation with HBr of the alkene shown?



A. 

B. 

C. 

D. 

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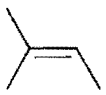
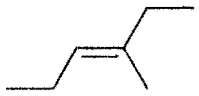
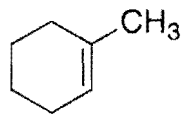
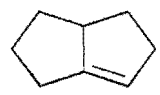
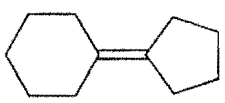
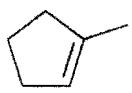
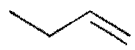
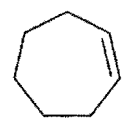
10. Which of the alkenes shown below would produce a chirality center upon hydrohalogenation?

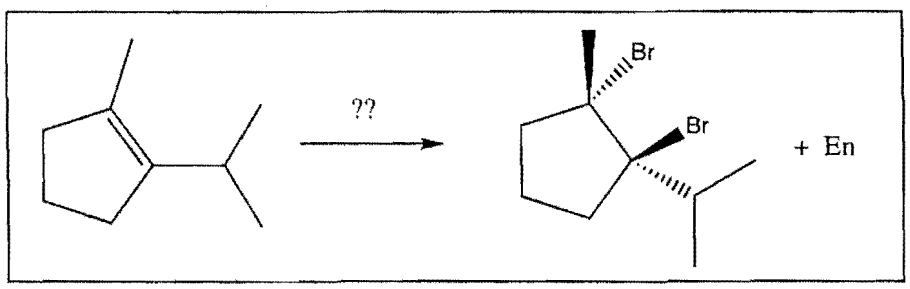
A.  　**B.**  　**C.** 

D. 

11. Which of the alkenes below would be expected to produce a chirality center upon hydrohalogenation in the presence of peroxide?

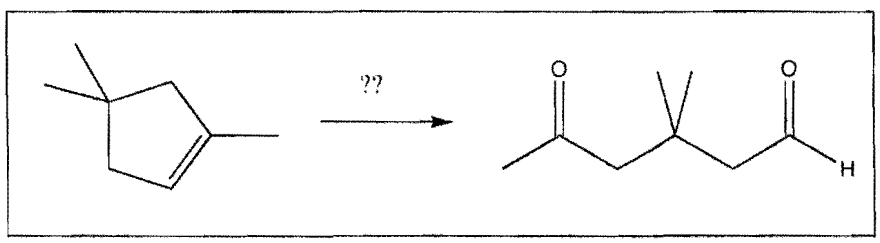
A.  　**B.**  　**C.**  　**D.** 

12. Provide the reagent(s) required to complete the following transformation:
(En = enantiomer)



A. HBr　　**B.** $Br_2/h\nu$　　**C.** Br_2　　**D.** HBr/ROOR

13. Predict the reagent(s) required to complete the following transformation:



A. 1) OsO_4; 2) $NaHSO_3$, H_2O　　**B.** 1) $Hg(OAc)_2$, H_2O;　2) $NaBH_4$
C. 1) RCO_3H;　2) H_3O^+　　**D.** 1) O_3;　2) DMS

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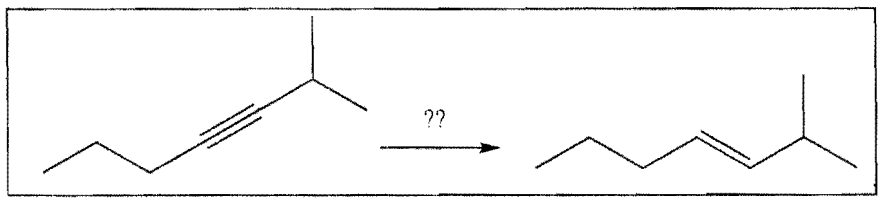
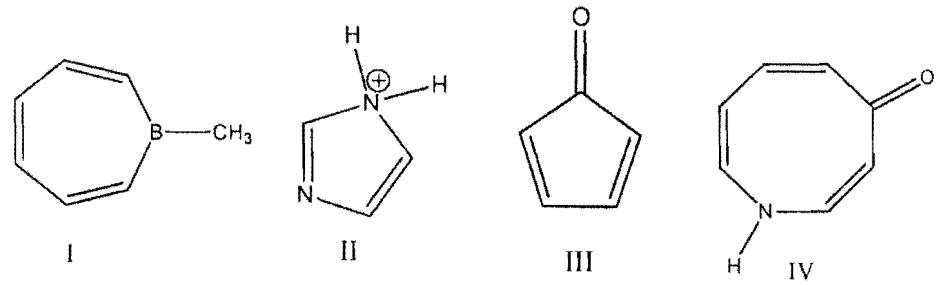
14. Predict the reagent(s) required to complete the following transformation:



A. 1) OsO_4; 2) $NaHSO_3$, H_2O　　**B**. $NaNH_2$　　**C**. H_2, Pt　　**D**. Na, NH_3(l)

15. Which one of the following compound is nonaromatic?

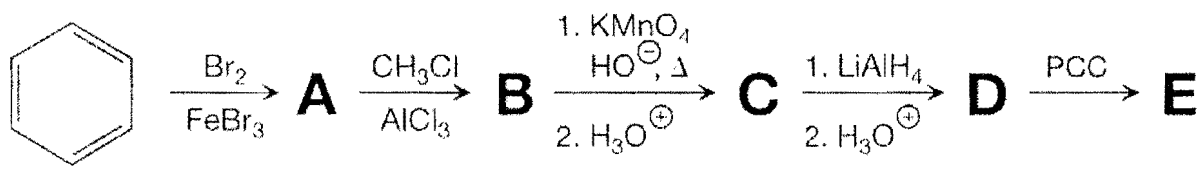


I　　II　　III　　IV

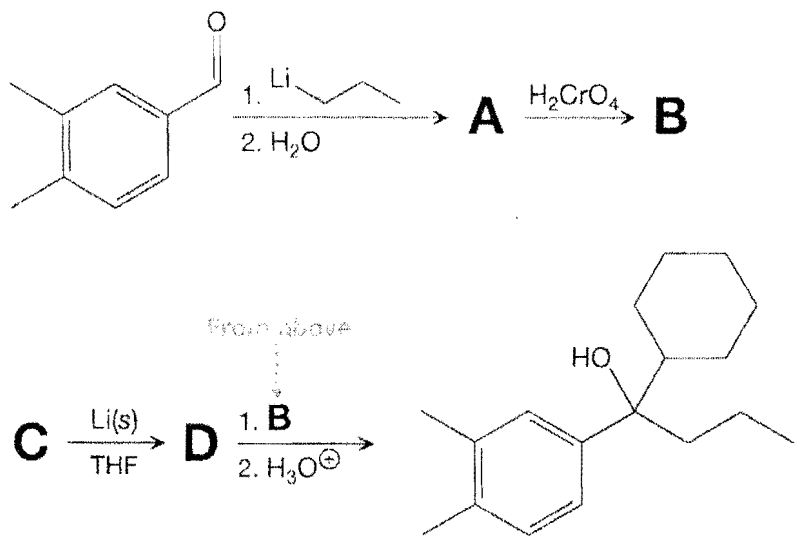
A. I　　**B**. II　　**C**. III　　**D**. IV

II Provide the major product(s) of each of the following reactions.

(**a**) Draw the structures of compounds **A-E** in the following synthesis scheme. (**15** pts)



(**b**) Provide the missing intermediates and reagents in the following synthesis. (**10** pts)



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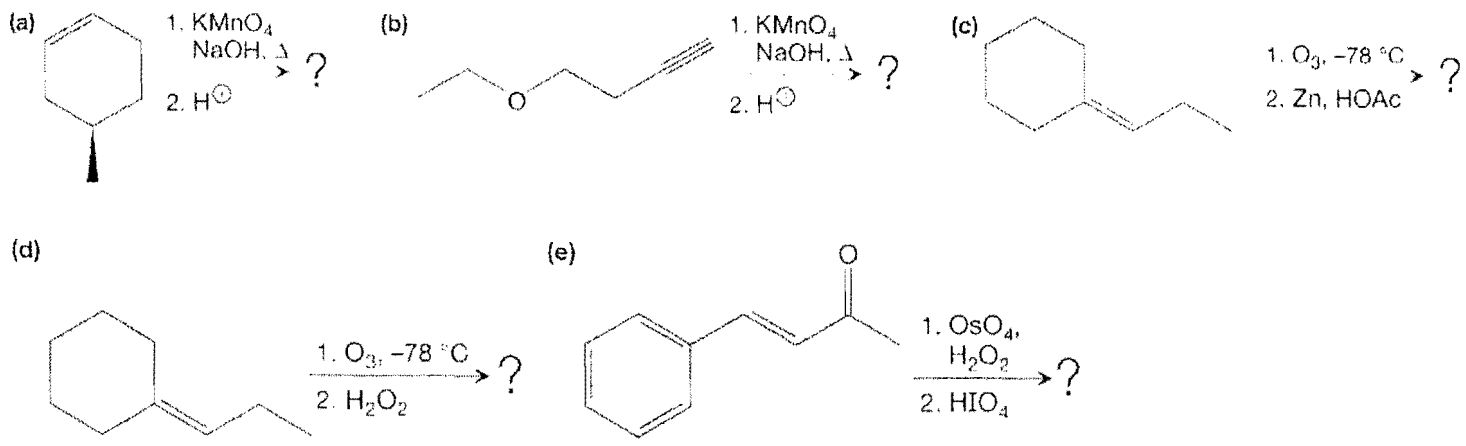
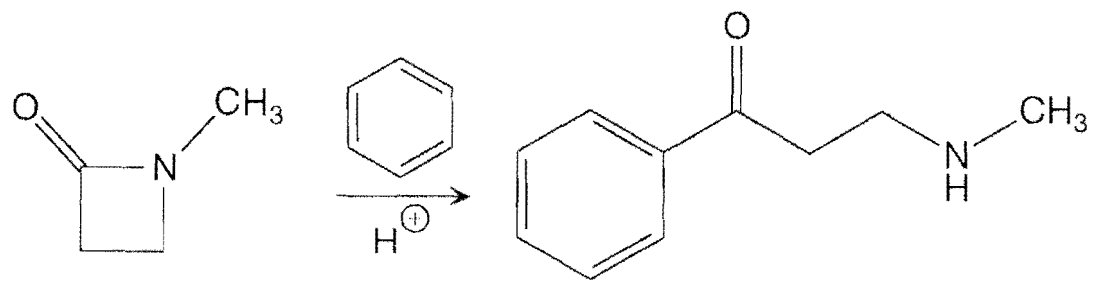
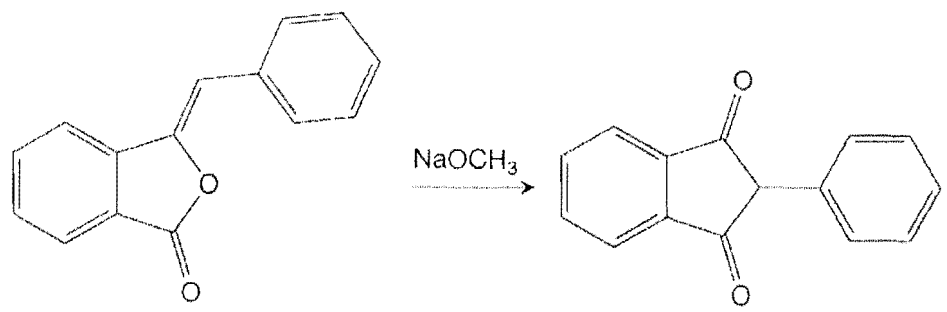
(**c**) Draw the product of each of the following reactions. (**15** pts)



III. Draw the complete, detailed mechanism for the following reaction. (**10** pts)



IV. Draw a complete, detailed mechanism for the following reaction. (**10** pts)



V. Propose a plausible synthesis for the following transformation: (**10** pts)