

國立勤益科技大學 100 學年度研究所碩士班招生筆試試題卷

所別：化材

組別：

科目：有機化學

准考證號碼：□□□□□□□□ (考生自填)

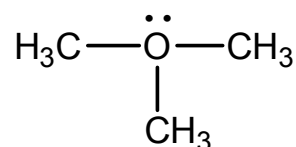
考生注意事項：

一、考試時間 100 分鐘。

二、

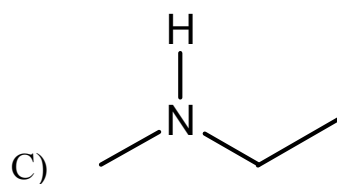
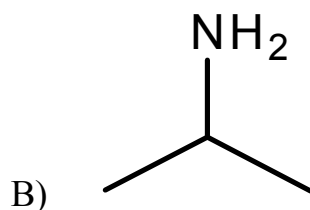
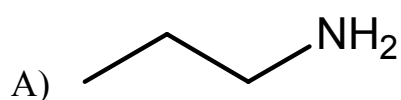
三、

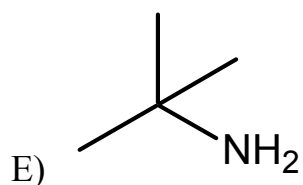
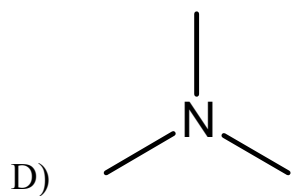
()1. What is the formal charge on oxygen in the following structure?(5 分)



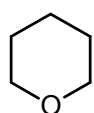
- A) +2
- B) +1
- C) 0
- D) -1
- E) -2

()2. Which compound would you expect to have the lowest boiling point? (5 分)

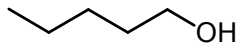




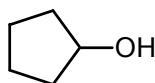
()3. Which compound would have the lowest boiling point? (5 分)



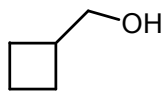
I



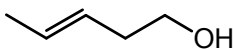
II



III



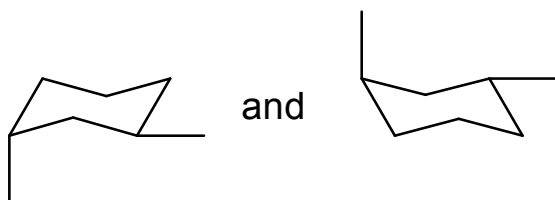
IV



V

A) I B) II C) III D) IV E) V

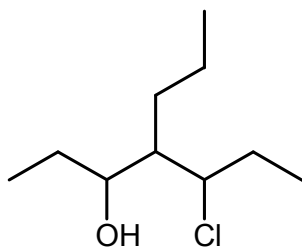
()4. The structures(5 分)



represent:

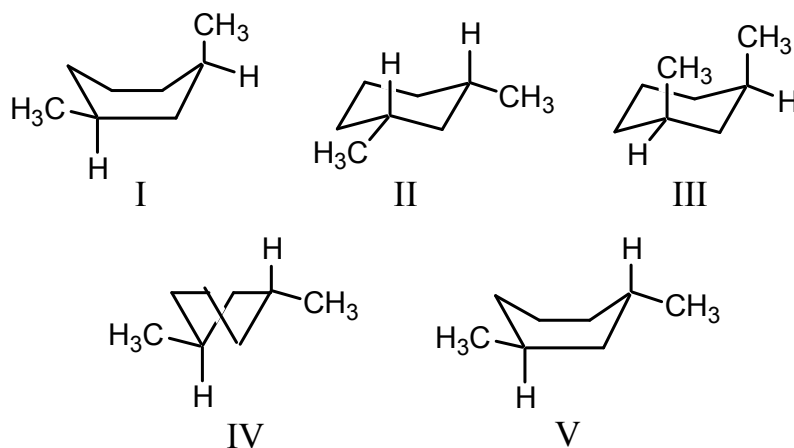
- A) a single compound.
- B) enantiomers.
- C) meso forms.
- D) diastereomers.
- E) conformational isomers.

()5. A correct IUPAC name for the following compound is: (5 分)



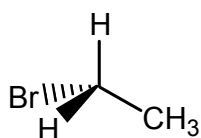
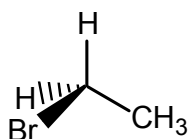
- A) 4-propyl-5-chloro-3-heptanol
- B) 4-propyl-3-chloro-5-heptanol
- C) 4-(1-chloropropyl)-3-heptanol
- D) 5-chloro-4-propyl-3-heptanol
- E) 3-hydroxy-4-propyl-5-chloroheptane

()6. What structure represents the most stable conformation of cis-1,3-dimethylcyclohexane? (5 分)

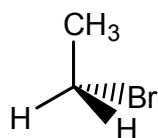


- A) I
- B) II
- C) III
- D) IV
- E) V

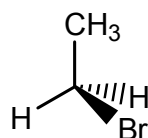
()7. Which of the following is the enantiomer of the following substance? (5分)



I



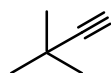
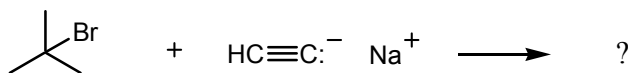
II



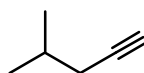
III

- A) I
 B) II
 C) III
 D) It does not have a non-superposable enantiomer.
 E) Both II and III

()8. What would you expect to be the chief organic product(s) when *tert*-butyl bromide reacts with sodium acetylide, i.e., (5分)



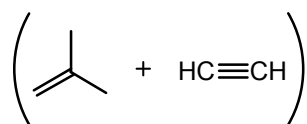
I



II



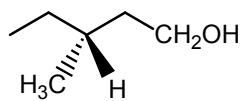
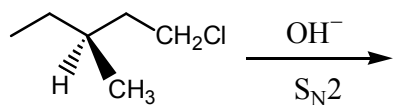
III



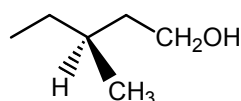
IV

- A) I
 B) II
 C) III
 D) IV
 E) None of these

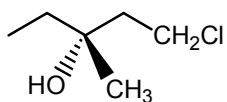
()9. What would be the major product of the following reaction? (5 分)



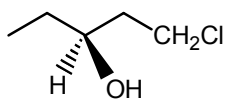
I



II



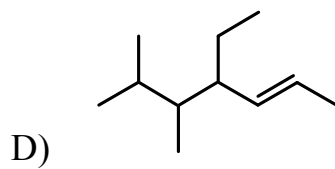
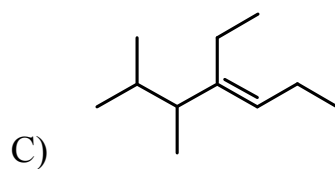
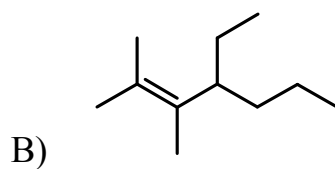
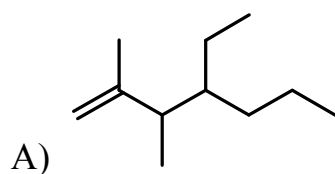
III

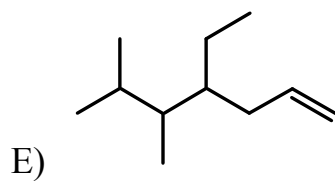


IV

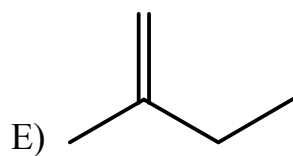
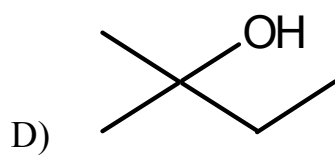
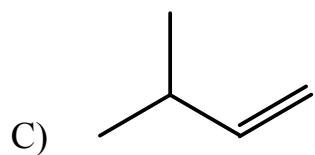
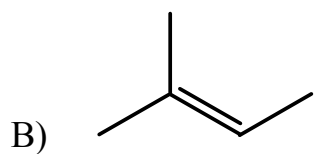
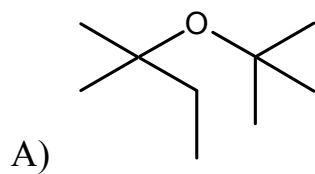
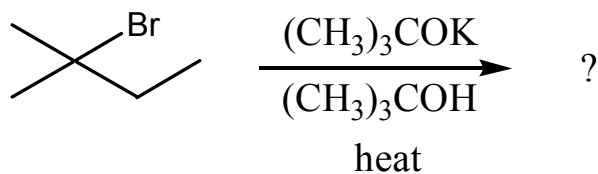
- A) I
 B) II
 C) III
 D) IV
 E) An equimolar mixture of I and II

()10. Select the structure of 4-ethyl-2,3-dimethyl-2-heptene. (5 分)

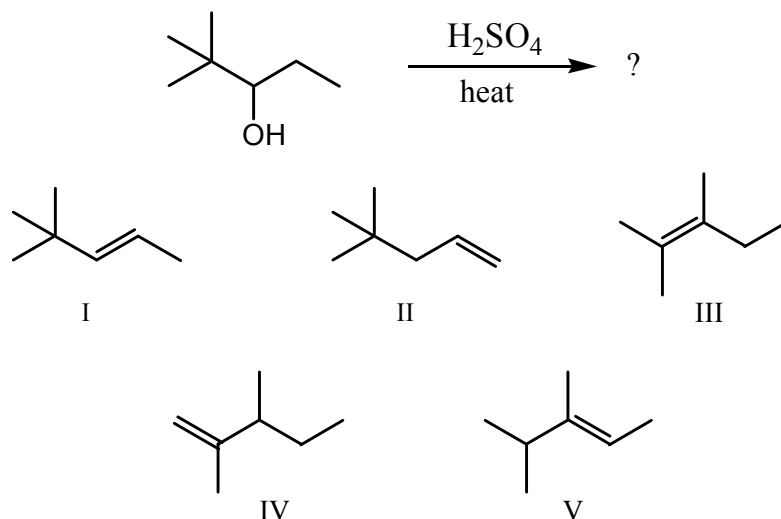




() 11. Which compound would be the major product? (5 分)

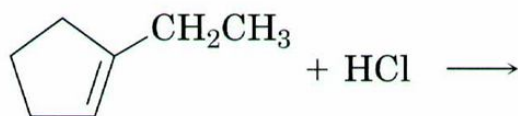


()12. Which alkene would you expect to be the major product of the following dehydration? (5 分)



- A) I
- B) II
- C) III
- D) IV
- E) V

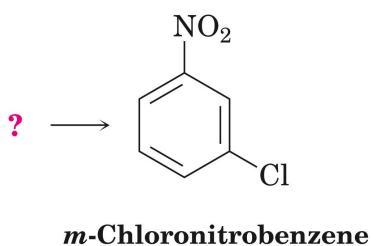
13. What product would you expect from the reaction of HCl with 1-ethylcyclopentene? (6 分)



14. What products would you expect to obtain from the reaction of benzene with the following reagents? (6 分)

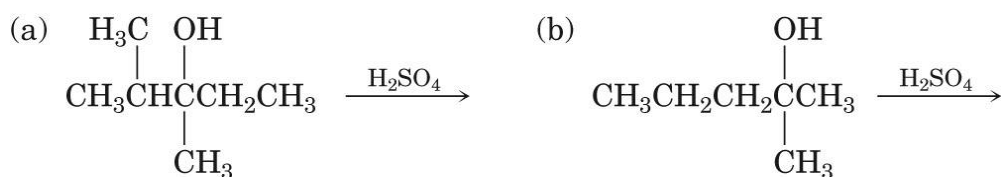
- (a) $(\text{CH}_3)_3\text{CCl}$, AlCl_3 (b) $\text{CH}_3\text{CH}_2\text{COCl}$, AlCl_3

15. Synthesize *m*-chloronitrobenzene starting from benzene. (7 分)



16. What products would you expect from reaction of
1-chloro-1-methylcyclohexane with KOH in ethanol? (7 分)

17. Predict the products you would expect from the following reactions. Indicate
the major product in each case. (7 分)



18. Show the products obtained from addition of CH_3MgBr to the following
compounds: (7 分)