高雄醫學大學 105 學年度學士後醫學系招生考試試題

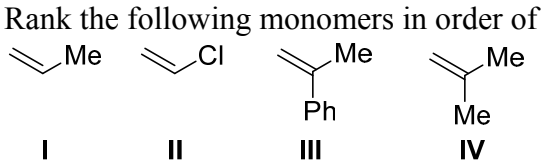
科目:有機化學　　考試時間: 80 分鐘

說明:一、選擇題用 2B 鉛筆在「答案卡」上作答，修正時應以橡皮擦擦拭，不得使用修正液(帶)，未遵照正確作答方法而致電腦無法判讀者，考生自行負責。
二、試題及答案卡必須繳回，不得攜出試場。

Choose one best answer for the following questions

【單選題】每題 1 分，共計 60 分，答錯 1 題倒扣 0.25 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。

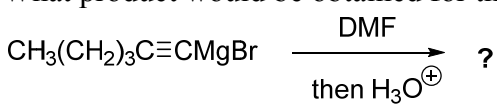
1. Rank the following monomers in order of **increasing** reactivity toward cationic polymerization (least reactive to most reactive).



I　**II**　**III**　**IV**

(A) **III**, **IV**, **I**, **II**　(B) **II**, **I**, **IV**, **III**　(C) **I**, **II**, **IV**, **III**　(D) **IV**, **III**, **I**, **II**　(E) **I**, **II**, **III**, **IV**

2. What product would be obtained for the following reaction?



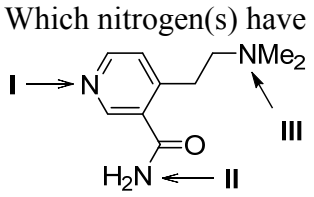
(A) $CH_3(CH_2)_3C{\equiv}CCH_2OH$　(B) $CH_3(CH_2)_3C{\equiv}CCHO$　(C) $CH_3(CH_2)_3C{\equiv}CH$
(D) $CH_3(CH_2)_3C{\equiv}CNMe_2$　(E) None of the above.

3. Which two have the **same** molecular geometry?

I. CO_2　**II**. $NO_2^{\ominus}$　**III**. PF_3　**IV**. $SO_4^{2\ominus}$　**V**. $NO_2^{\oplus}$

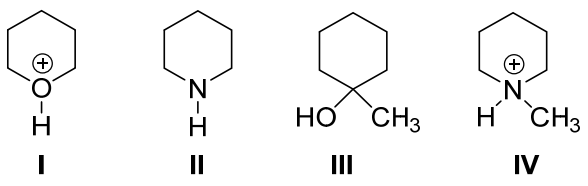
(A) **I**, **II**　(B) **III**, **IV**　(C) **I**, **V**　(D) **II**, **V**　(E) **IV**, **V**

4. Which nitrogen(s) have **more** basic?



(A) **I**　(B) **II**　(C) **III**　(D) **I**, **II**, and **III** are acidic　(E) None of the above.

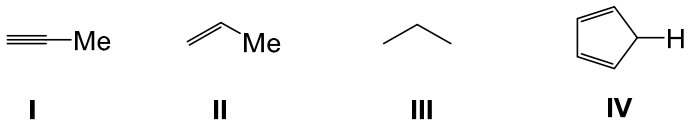
5. Rank the acidity of the following compounds.



I　**II**　**III**　**IV**

(A) **I** > **IV** > **III** > **II**　(B) **I** > **III** > **IV** > **II**　(C) **IV** > **II** > **I** > **III**　(D) **II** > **I** > **IV** > **III**　(E) None of the above.

6. What is the order of **increasing** acidity for the following compounds?



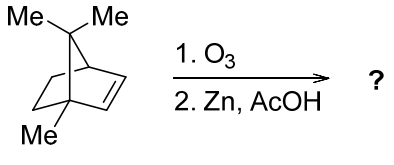
I　**II**　**III**　**IV**

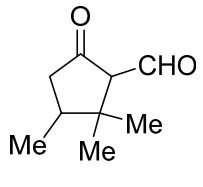
(A) **IV** < **I** < **II** < **III**　(B) **III** < **II** < **I** < **IV**　(C) **III** < **II** < **IV** < **I**　(D) **IV** < **II** < **I** < **III**　(E) **I** < **IV** < **II** < **III**

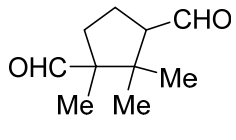
7. Which of these substances contains both covalent and ionic bonds?

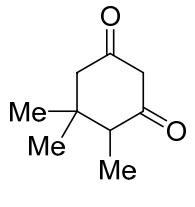
(A) HN_3　(B) NH_4Cl　(C) H_2O_2　(D) XeF_2　(E) PCl_5

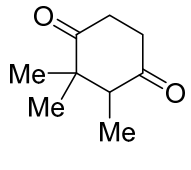
8. Choose the **correct** product of the following reaction?

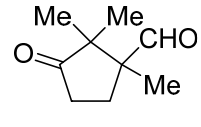


(A) 

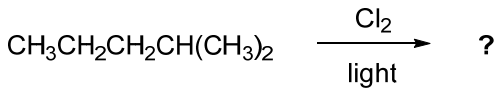
(B) 

(C) 

(D) 

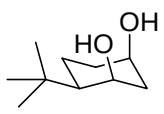
(E) 

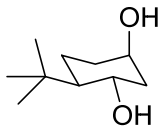
9. How many monochloro substituted products $C_6H_{13}Cl$ you might obtain by reaction of 2-methylpentane with Cl_2?

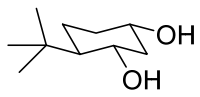


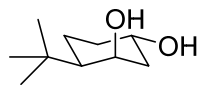
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

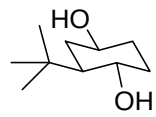
10. There are some isomers of 4-*t*-butylcyclhexane-1,3-diol. Which isomer reacts readily with acetone and an acid catalyst to form an acetal, but other stereoisomers do not react?

(A) 

(B) 

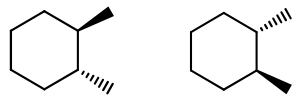
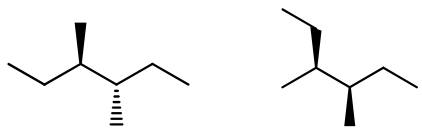
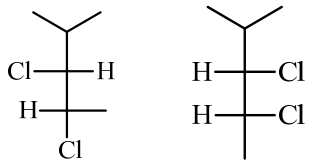
(C) 

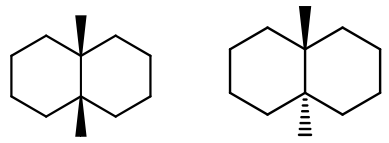
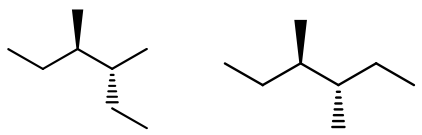
(D) 

(E) 

11. Which of the following **correctly** describes a molecule that is achiral?
(A) Non-superimposability of the molecule on its mirror image (B) Superimposability of the molecule on its mirror image
(C) Contains a carbon atom with four different substituents (D) Does not have a plane of symmetry
(E) Both (B) and (D).

12. Which of the following pairs are enantiomers?

I. 
II. 
III. 

IV. 
V. 

(A) **II**, **IV** (B) **I**, **III** (C) **I**, **II**, **III** (D) **I**, **II**, **V** (E) **I**, **III**, **V**

13. Consider the two energy diagrams Fig. **I** and Fig. **II** given below.

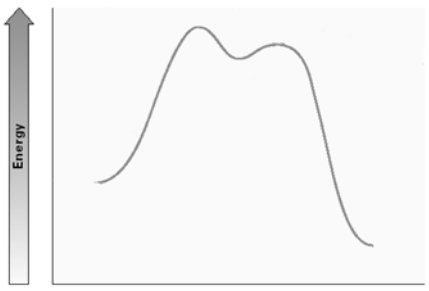
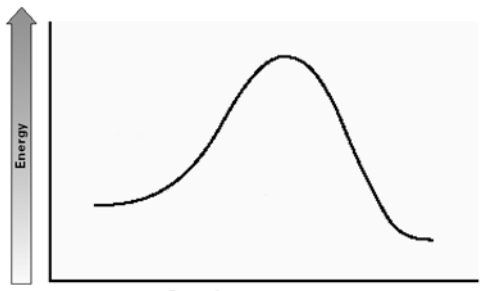
Fig. **I**


Fig. **II**


Which of the following is **correct** with respect to these diagrams?
(A) Fig. **I** represents an S_N2 reaction (B) Fig. **II** represents an S_N1 reaction (C) Fig. **II** represents an S_N2 reaction
(D) Fig. **I** represents an S_N1 reaction (E) Both (C) and (D).

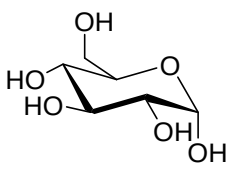
14. Find the energy cost of a 1,3-diaxial interaction for the following compounds, which has most 1,3-diaxial interaction energy? Assume the following 1,3-diaxial strains.

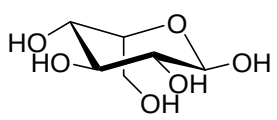
$CH(CH_3)_2$: 4.2 kJ/mol	F: 1.0 kJ/mol
CN: 0.8 kJ/mol	Cl: 1.0 kJ/mol
CH_3: 3.8 kJ/mol	

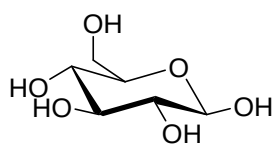
(A) Isopropylcyclohexane (B) Fluorocyclohexane (C) Cyclohexanecarbonitrile
(D) *cis*-1-Chloro-2-methylcyclohexane (E) *trans*-1-Chloro-2-methylcyclohexane.

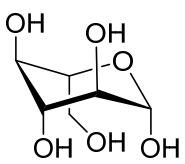
15. Which of the following species is the **least** nucleophilic?
(A) $Me_3CO^{\ominus}$ (B) H_2O (C) Me_3N (D) BF_3 (E) $^{\ominus}CN$

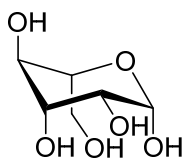
16. What is the **correct** structure for α-D-glucopyranose?

(A) 

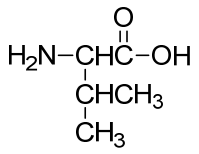
(B) 

(C) 

(D) 

(E) 

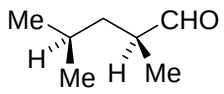
17. Which of the following is a correct representation of the amino acid below?



(A) Isoleucine (B) Ile (C) I
(D) All of these represent this amino acid (E) Either (A), (B), or (C) represent this amino acid.

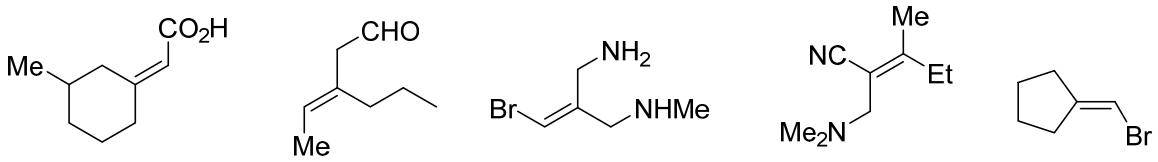
18. In humans, most steroids function as:
(A) Enzymes (B) Hormones (C) Nucleic acids (D) Proteins (E) Saccharides.

19. What is the IUPAC name of the following compound?



(A) (2*S*,4*R*)-Dimethylpentanal (B) (2*S*,4*S*)-Dimethylpentanal (C) (*R*)-2,4-Dimethylpentanal
(D) (*S*)-2,4-Dimethylpentanal (E) (2*R*,4*R*)-Dimethlypentanal.

20. How many *E* configuration are there in the following compounds?



(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

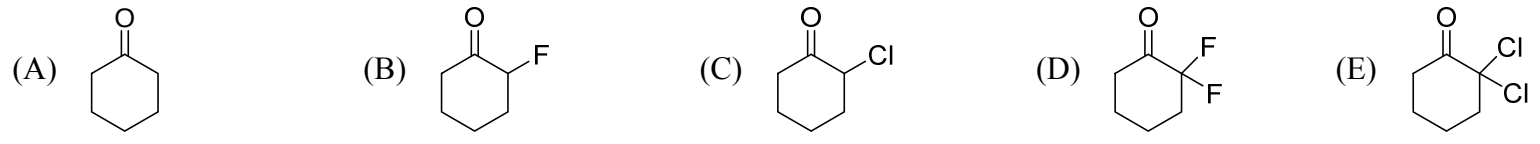
21. If silver nitrate is converted into silver nanoparticles, the **most** possible process for such a conversion is?
(A) Exposure to oxygen (B) Exposure to heat (C) Exposure to water
(D) Exposure to alcohol compound (E) Exposure to acid compound.

22. A compound with the following molecular formula contains two double bonds. What is the correct subscript for H in the formula? $C_{10}H_?ClN_2O$
(A) 19 (B) 22 (C) 18 (D) 20 (E) 21

23. When butane undergoes free radical bromination, the product mixture contains 98% 2-bromobutane and 2% 1-bromobutane. How many times more susceptible to hydrogen atom abstraction is a secondary hydrogen in butane than is a primary hydrogen?
(A) 100 (B) 73.5 (C) 50 (D) 8.7 (E) 1.5

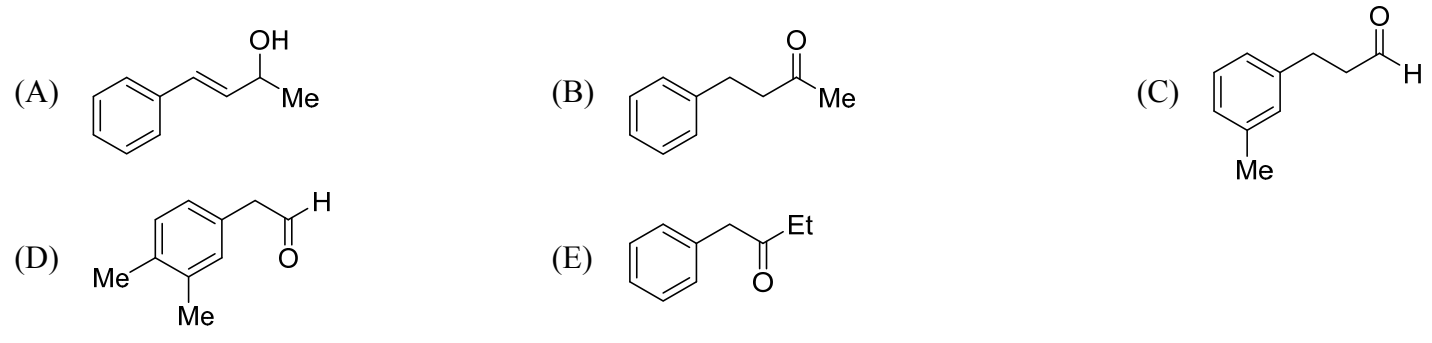
24. Which of the following is **not** a property of a protecting group?
(A) Change the reactivity of a functional group (B) Inert to reaction conditions
(C) Becomes a permanent part of the product (D) Alters the mechanism of the desired reaction
(E) All of these are properties of a protecting group.

25. Which of the following carbonyl groups exhibits the **highest** wavenumber in infrared spectroscopy?



(A) (B) (C) (D) (E)

26. Compound **X** has the molecular formula $C_{10}H_{12}O$. The IR spectrum of **X** has a strong band near 1710 cm^{-1}. Compound **X** forms a phenylhydrazone, but gives a **negative** Tollens' test and a **positive** iodoform test. What is the structure of the compound **X**?

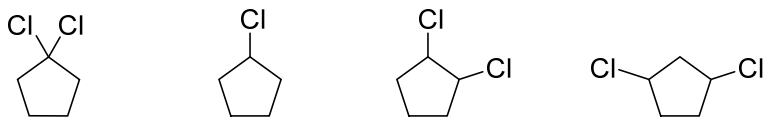


(A) (B) (C) (D) (E)

27. For the mass spectrum of compound **Y**, we found 3 lines in the molecular ion region (M^+, M^++2, M^++4), shows the peak heights in the ratio of 9 : 6 : 1. What would the compound **Y** be?
(A) *cis*-1,2-Dichlorocyclohexane (B) 2-Chloropentane (C) *cis*-1,2-Dibromocyclohexane
(D) Bromobenzene (E) 1,2-Dibromopentane.

28. Which of the following would **not** produce nuclear magnetic resonance?
(A) ^{2}H (B) ^{14}N (C) ^{16}O (D) ^{19}F (E) ^{11}B

29. Which compounds have 3 signals in the ^{13}C NMR spectrum?



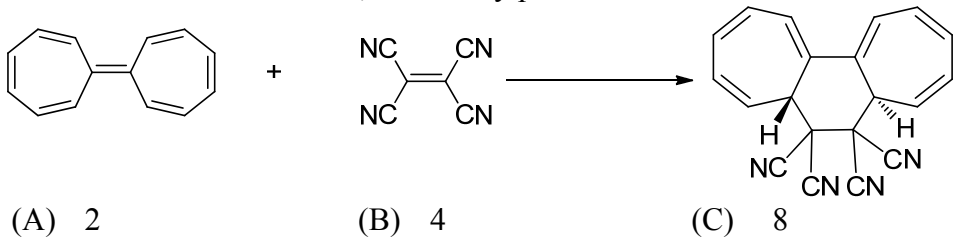
I **II** **III** **IV**

(A) **I**, **II** (B) **III**, **IV** (C) **I**, **II**, **III** (D) **I**, **III**, **IV** (E) **I**, **II**, **III**, **IV**

30. Using a 300 MHz ^{1}H NMR instrument, if a H shows a triplet at δ 4.02, 4.00, 3.98 ppm, please calculate it's coupling constant. And where will this triplet peak shows up at a 600 MHz ^{1}H NMR instrument?

(A) 6 Hz; δ: 4.01, 4.00, 3.99 ppm (B) 6 Hz; δ: 4.02, 4.00, 3.98 ppm (C) 6 Hz; δ: δ: 4.00, 3.98, 3.96 ppm
(D) 2 Hz; δ: 4.02, 4.00, 3.98 ppm (E) 2 Hz; δ: 4.00, 3.98, 3.96 ppm.

31. Consider the reaction below, how many pairs of electrons are involved in this pericyclic reaction?

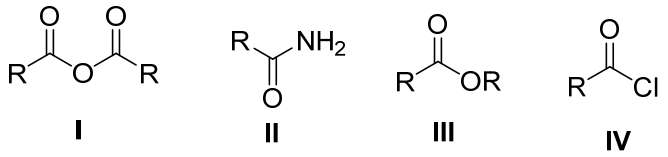


(A) 2 (B) 4 (C) 8 (D) 16 (E) 10

32. Which of the following reaction types are pericyclic reactions?

(A) Diels-Alder reaction (B) Cope rearrangement (C) Claisen rearrangement
(D) Stork reaction (E) All except (D) are pericyclic reactions.

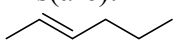
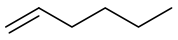
33. What is the order of **decreasing** reactivity towards nucleophilic acyl substitution for the carboxylic acid derivatives? (most reactive first)



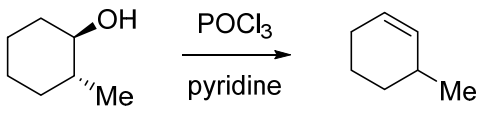
I **II** **III** **IV**

(A) **I**, **III**, **II**, **IV** (B) **II**, **III**, **I**, **IV** (C) **III**, **II**, **I**, **IV** (D) **IV**, **I**, **III**, **II** (E) **IV**, **III**, **I**, **II**

34. Consider the elimination reaction: 2-bromohexane was treated with sodium methoxide in methanol. The product(s) of the reaction is(are):

(A)  (B) 
(C) An equimolar mixture of (A) and (B) (D) A mixture of the major product (A) with the minor product (B)
(E) A mixture of the major product (B) with the minor product (A).

35. To answer the following question, consider the reaction below:

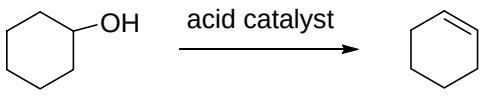


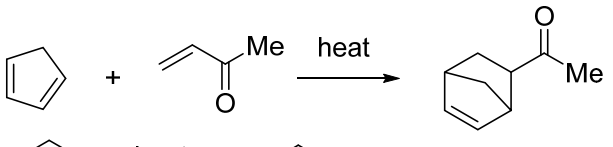
The dehydration of alcohol by reaction with $POCl_3$ in pyridine is an example of:

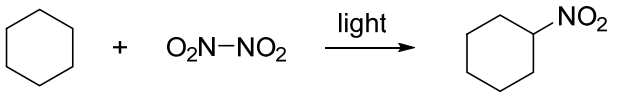
(A) E1 process (B) S_N1 process (C) E2 process (D) S_N2 process (E) None of above.

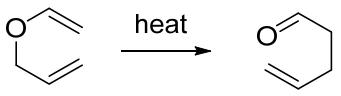
36. Which is addition reaction in the following reactions?

(A) $CH_3CH_2Br + NaCN \longrightarrow CH_3CH_2CN$

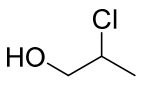
(B) 

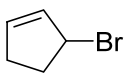
(C) 

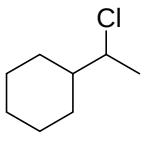
(D 

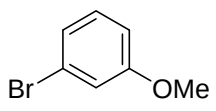
(E) 

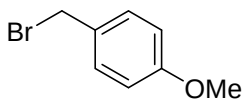
37. Which of the following substrates will **not** form a Grignard reagent when treated with Mg/diethyl ether?

(A) 

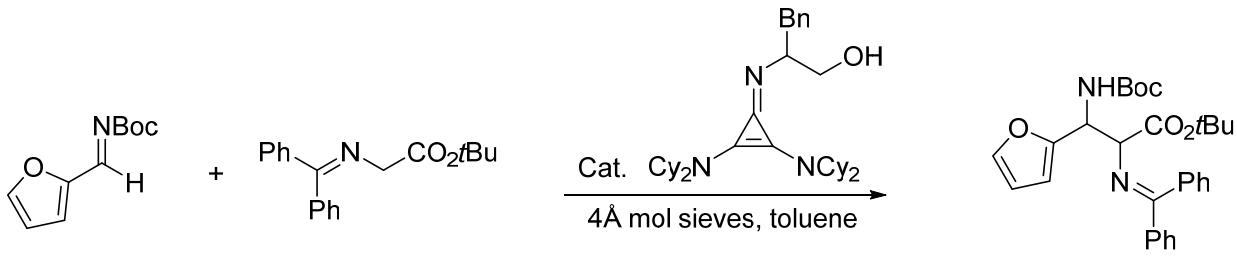
(B) 

(C) 

(D) 

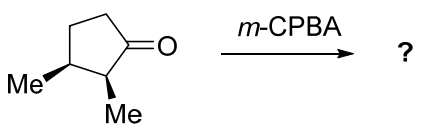
(E) 

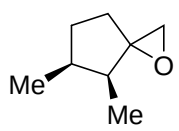
38. Which is the name reaction in the following reaction?

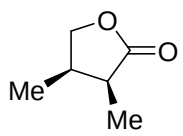


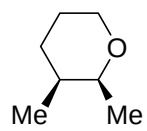
(A) Mannich reaction (B) McMurry reaction (C) Wolff-Kishner reaction
(D) Dess-Martin reaction (E) Dieckmann reaction.

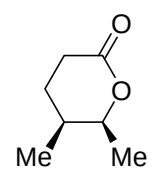
39. What is the **major** product of the following reaction?

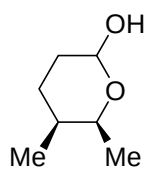


(A) 

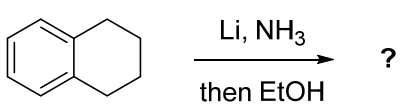
(B) 

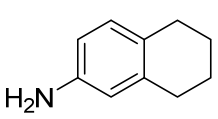
(C) 

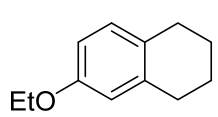
(D) 

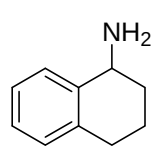
(E) 

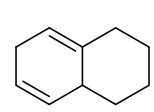
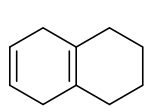
40. Predict the structure of the **expected** product for the following reaction.



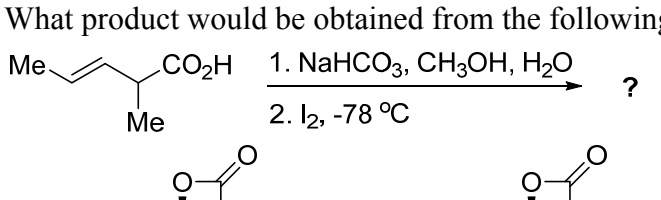
(A) 

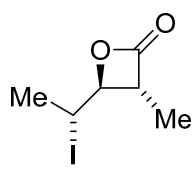
(B) 

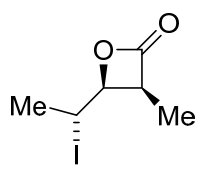
(C) 

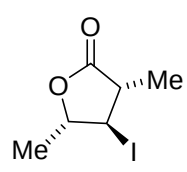
(D) 
(E) 

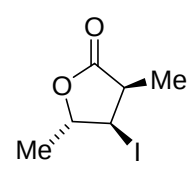
41. What product would be obtained from the following reaction?

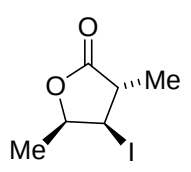


(A) 

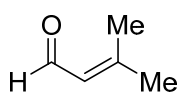
(B) 

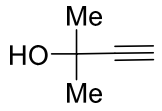
(C) 

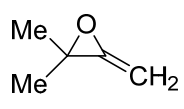
(D) 

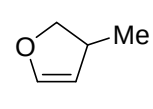
(E) 

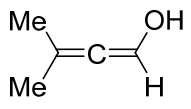
42. Which structure for the compound **A** (formula C_5H_8O) that fit the following proton NMR data?
Chemical shift δ: 1.55 (singlet, 6H), 2.27 (broad singlet, 1H), 2.46 (singlet, 1H) ppm.

(A) 

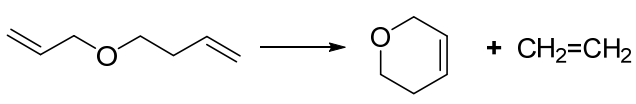
(B) 

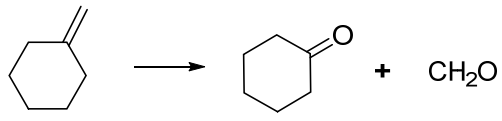
(C) 

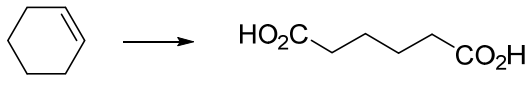
(D) 

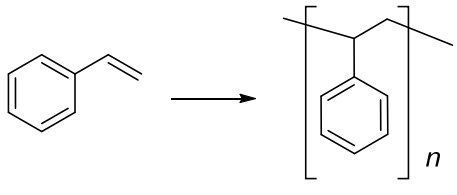
(E) 

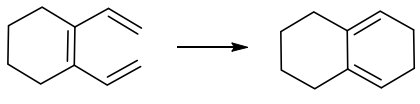
43. Which of the following reactions is often called olefin metathesis?

(A) 

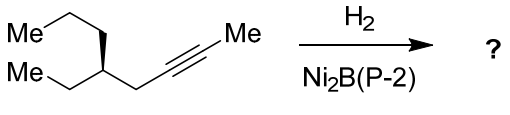
(B) 

(C) 

(D) 

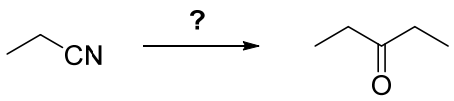
(E) 

44. For the reaction shown below, the resulting stereochemistry of the **expected** product is best described as:



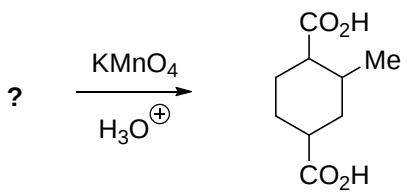
(A) (*R*, *E*) (B) (*S*, *E*) (C) (*R*, *Z*) (D) (*S*, *Z*) (E) only (*S*).

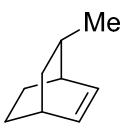
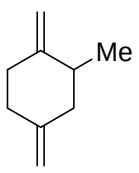
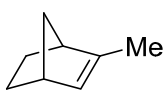
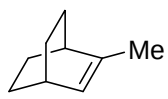
45. How would you prepare the following carbonyl compound from a nitrile?



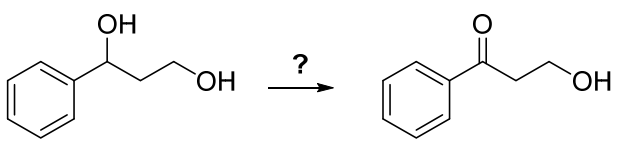
(A) 1) EtMgBr; 2) NaOH, H_2O (B) 1) EtMgBr; 2) $LiAlH_4$; 3) $H_3O^{\oplus}$ (C) 1) EtMgBr; 2) H_2O
(D) 2) EtMgBr; 2) CO_2; 3) $H_3O^{\oplus}$ (E) 1) EtMgBr; 2) PCC

46. Which one is the reactant of the following reaction?



(A)  (B)  (C)  (D)  (E) 

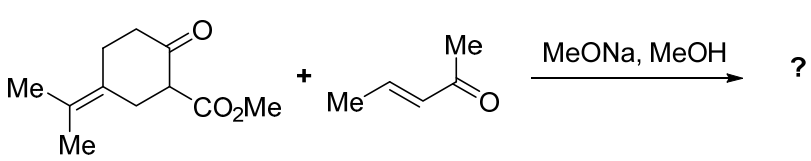
47. Which is the **best** reagent for following reaction?

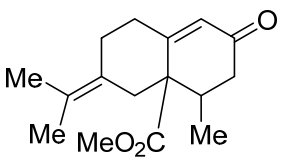
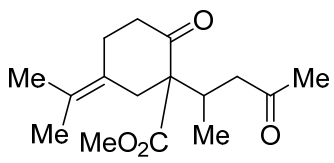
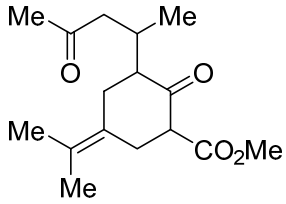
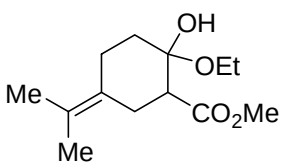
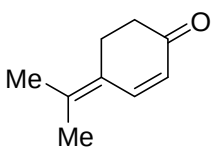


(A) PCC (B) Jones reagent (C) MnO_2 (D) Ag_2O (E) $KMnO_4$

48. An epoxide compound may undergo the ring-opening reaction with water to generate
(A) Triol (B) Peroxide (C) Glycol (D) Glycol ether (E) Ethylene oxide.

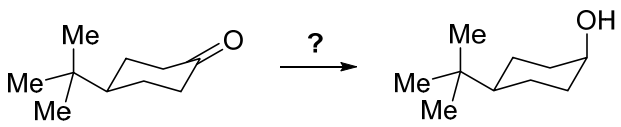
49. Show how you might use an annulation reaction to synthesize the following compound. Draw the structure of final product.



(A)  (B)  (C) 
(D)  (E) 

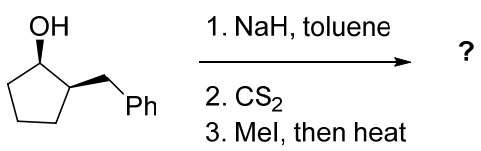
50. Which of the following ethers **can't** be prepared by a Williamson ether synthesis?
(A) *t*-Butyl phenyl ether (B) Isopropyl methyl ether (C) Anisole
(D) *t*-Butyl methyl ether (E) None of the above.

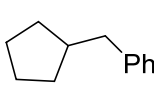
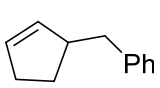
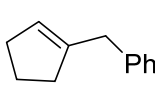
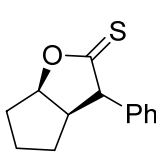
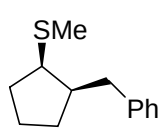
51. Which of the following reagents is **suitable** for the following transformation ?



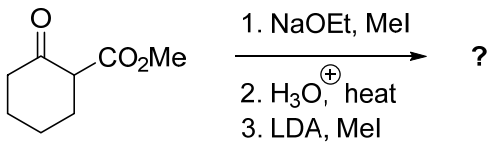
I. $LiAlH_4$ **II**. $LiAl(t\text{-}BuO)_3H$ **III**. $LiB(s\text{-}Bu)_3H$
(A) **I** (B) **II** (C) **III** (D) **I**, **II** (E) **II**, **III**

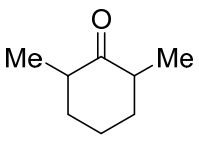
52. What product would be obtained from the following reaction?

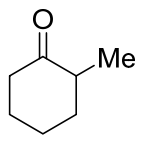


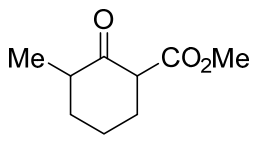
(A)  (B)  (C)  (D)  (E) 

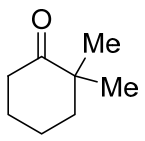
53. What is the product of this reaction?

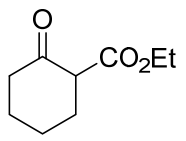


(A) 

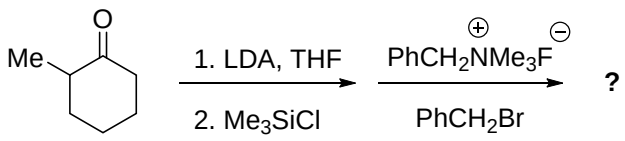
(B) 

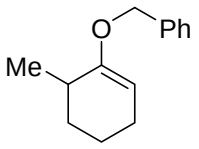
(C) 

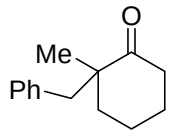
(D) 

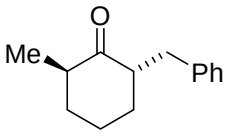
(E) 

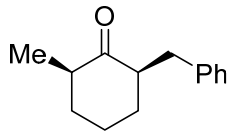
54. What is the **major** product would you obtain for the following reaction?



(A) 

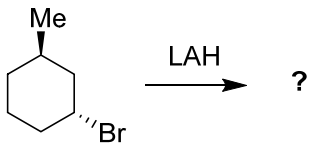
(B) 

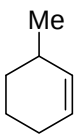
(C) 

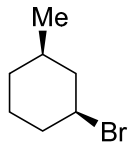
(D) 

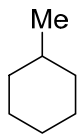
(E) None of the above.

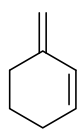
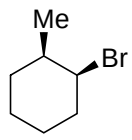
55. Provide the structure of the **major** organic product in the reaction shown below.



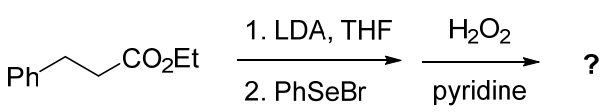
(A) 

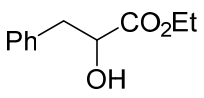
(B) 

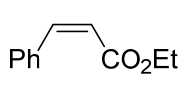
(C) 

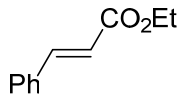
(D) 
(E) 

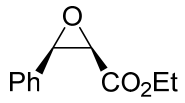
56. What product would be obtained for the following reaction?

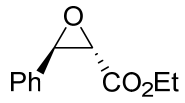


(A) 

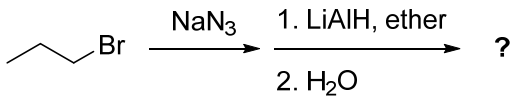
(B) 

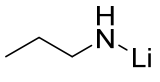
(C) 

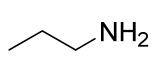
(D) 

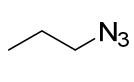
(E) 

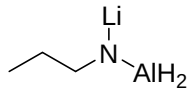
57. Please predict the product of the following reaction.

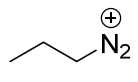


(A) 

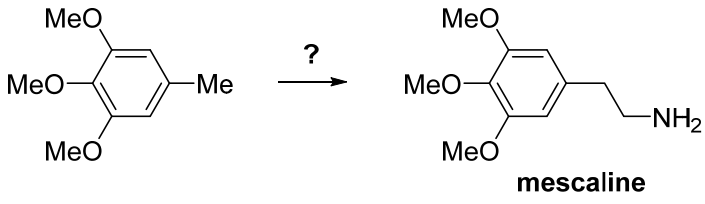
(B) 

(C) 

(D) 

(E) 

58. Mescaline is a hallucinogenic alkaloid isolated from peyote cactus. Synthesize mescaline from 3,4,5-trimethoxytoluene. Show all reagents toward the target compound.

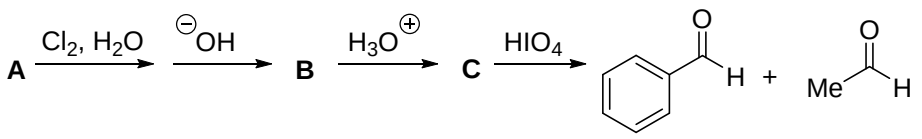


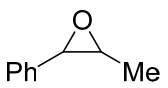
mescaline

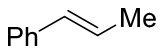
(A) 1) NBS; 2) NaCN; 3) $LiAlH_4$ (B) 1) *n*-BuLi; 2) $BrCH_2NH_2$ (C) 1) Br_2; 2) $LiCH_2CN$
(D) 1) light; 2) $BrCH_2NH_2$ (E) 1) NBS; 2) $LiCH_2NH_2$

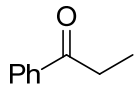
59. Which set of reagents will **best** convert 2,2-dimethylpropan-1-ol to 4,4-dimethylpentan-2-ol?
(A) 1) HCl, $ZnCl_2$; 2) 2 eq. Mg; 3) CH_2O; $H_3O^{\oplus}$ (B) 1) $SOCl_2$; 2) 2 eq. Mg; 3) MeCHO; $H_3O^{\oplus}$
(C) 1) $SOCl_2$; 2) 2eq. Mg; 3) CH_2O; $H_3O^{\oplus}$ (D) 1) HCl, $ZnCl_2$; 2) 1 eq. Mg; 3) CH_2O; $H_3O^{\oplus}$
(E) 1) HCl; 2) 1 eq. Mg; 3) MeCHO; $H_3O^{\oplus}$

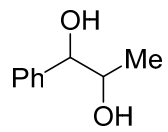
60. Compound **A** can make Br_2/CCl_4 become colorless. What is the structure of compound **B**?

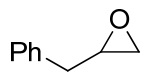


(A) 

(B) 

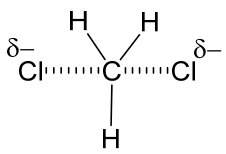
(C) 

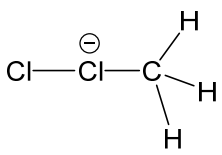
(D) 

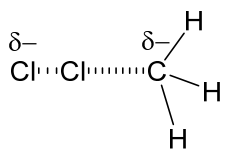
(E) 

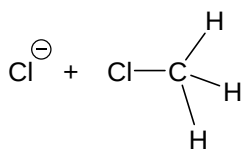
【單選題】每題 2 分，共計 40 分，答錯 1 題倒扣 0.5 分，倒扣至本大題零分為止，未作答，不給分亦不扣分。

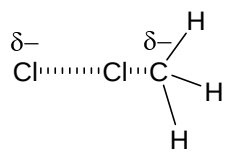
61. The reaction of Cl_2 with a methyl radical has a positive ΔH°. Which of these drawings is the **best** representation of the transition state of this reaction?

(A) 

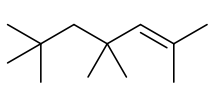
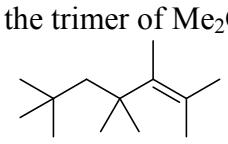
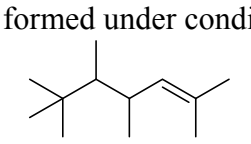
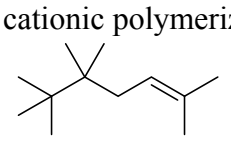
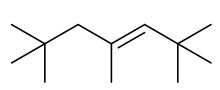
(B) 

(C) 

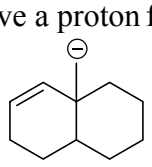
(D) 

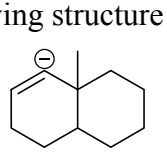
(E) 

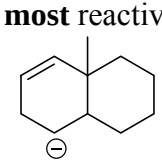
62. Which structure corresponds to the trimer of $Me_2C{=}CH_2$ formed under condition of cationic polymerization?

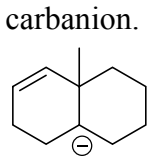
(A) 
(B) 
(C) 
(D) 
(E) 

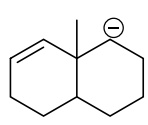
63. Remove a proton from the following structure to create the **most** reactive (least stable) carbanion.

(A) 

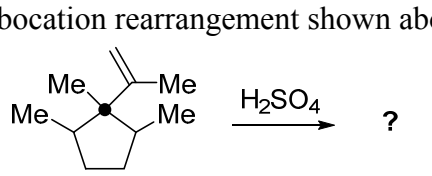
(B) 

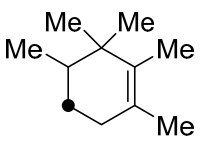
(C) 

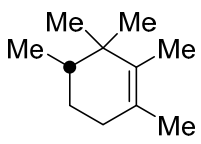
(D) 

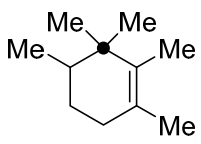
(E) 

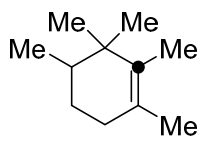
64. The carbon marked by a dot (•) is ^{13}C isotope. Which structure below shows the **correct** position of the ^{13}C in the product for the carbocation rearrangement shown above?

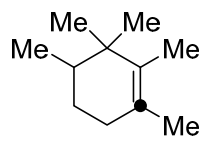


(A) 

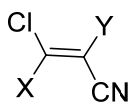
(B) 

(C) 

(D) 

(E) 

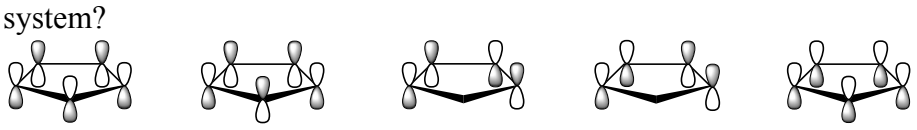
65. Choose substituents X and Y (listed in order below) for the following compound so as to make a *Z* isomer.



(A) −Br, −NHMe (B) −F, −CHO (C) −I, −OMe (D) $-CO_2H$, $-CH_2NH_2$ (E) −Br, $-CO_2H$

66. Rank the degree of unsaturation in each of the following compounds.
I. Cholesterol , $C_{27}H_{46}O$ **II**. DDT, $C_{14}H_9Cl_5$ **III**. Prostaglandin E1, $C_{20}H_{34}O_5$ **IV**. Caffeine , $C_8H_{10}N_4O_2$
(A) **I** > **III** > **II** > **IV** (B) **II** > **IV** > **I** > **III** (C) **I** > **II** > **III** > **IV** (D) **II** > **IV** > **III** > **I** (E) **I** > **IV** > **II** > **III**

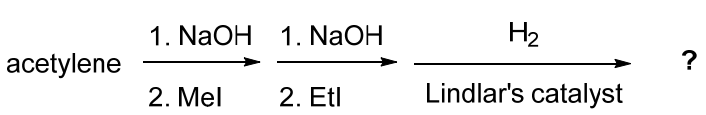
67. This cyclic carbocation has two sets of degenerate *pi*-molecular orbitals. Choose the **correct** order MO's energies for this system?

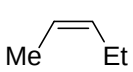


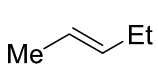
I **II** **III** **IV** **V**

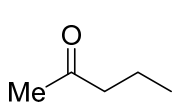
(A) **V** = **I** < **IV** < **III** = **II** (B) **V** < **IV** = **II** < **I** = **III** (C) **III** = **II** < **I** = **IV** < **V**
(D) **III** = **IV** < **II** < **I** = **V** (E) **V** < **I** = **IV** < **II** = **III**

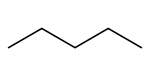
68. What product would be obtained for the following reaction?



(A) 

(B) 

(C) 

(D) 
(E) None of the above.

69. When 1-methyl-1-cyclohexene is respectively treated with the following reagent set, which will give the **same** product?

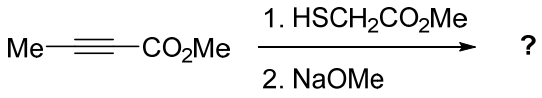
I. 1) BH_3, THF; 2) H_2O_2, NaOH, H_2O **II**. 1) $Hg(OAc)_2$, H_2O, THF; 2) $NaBH_4$

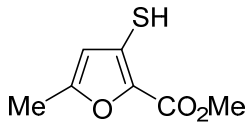
III. 1) *m*-CPBA; 2) $H_3O^{\oplus}$ **IV**. 1) OsO_4; 2) $NaHCO_3$, H_2O

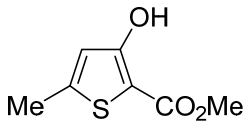
V. $H_3O^{\oplus}$

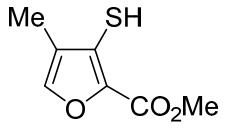
(A) **II**, **V** (B) **III**, **IV** (C) **II**, **III**, **V** (D) **I**, **V** (E) **I**, **III**

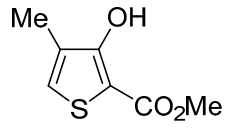
70. Predict the outcome of the following sequence of reactions.

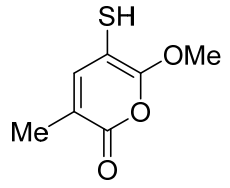


(A) 

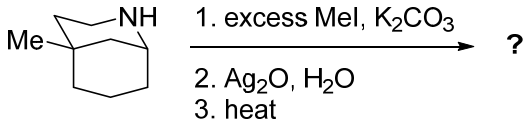
(B) 

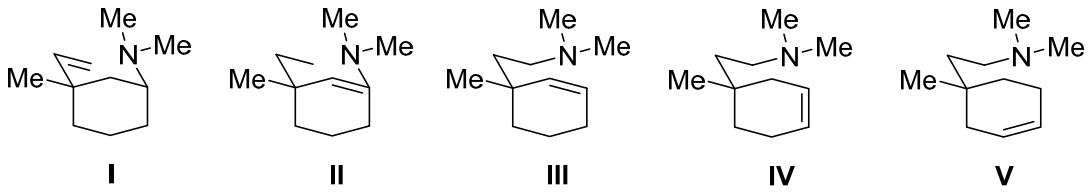
(C) 

(D) 

(E) 

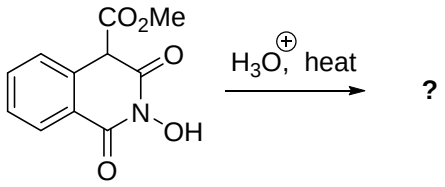
71. The following substrate is a starting material in the synthesis of compounds having opioid activity. Show **all** products that would result from the reaction below.

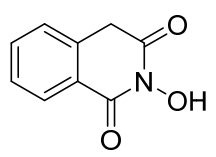


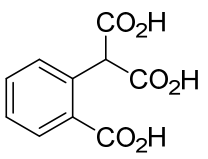


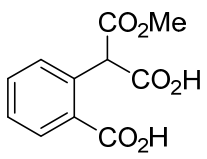
(A) **I**, **II**, **III** (B) **I**, **III**, **IV** (C) **I**, **III**, **V** (D) **II**, **III**, **IV** (E) **II**, **IV**, **V**

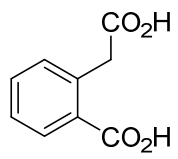
72. Predict the structure of the hydrolysis product.

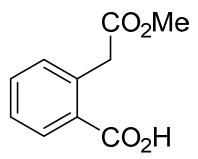


(A) 

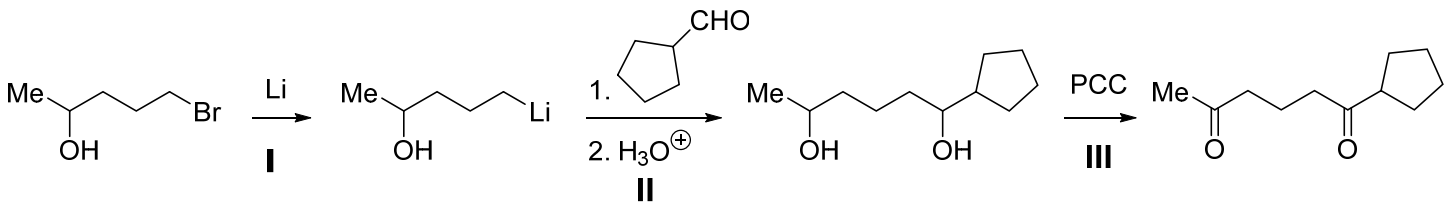
(B) 

(C) 

(D) 

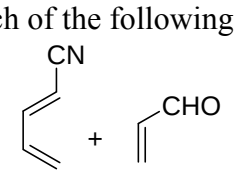
(E) 

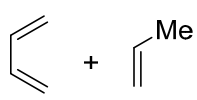
73. In order to synthesize the final product shown below, predict when should a protecting group be added and when should it be removed?

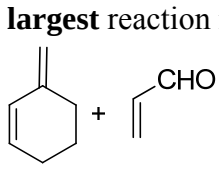


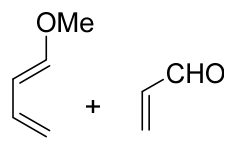
(A) The hydroxyl group should be protected before step **I** and removed after step **I**
(B) The hydroxyl group should be protected before step **I** and removed after step **II**
(C) The hydroxyl group should be protected before step **I** and removed after step **III**
(D) The hydroxyl group should be protected before step **II** and removed after step **III**
(E) There is no need for a protecting group in this synthesis.

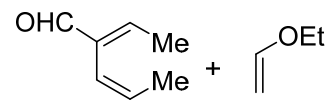
74. Which of the following Diels-Alder reactions has the **largest** reaction rate constant?

(A) 

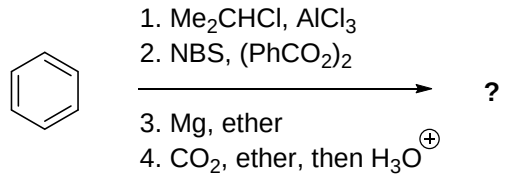
(B) 

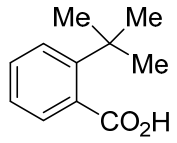
(C) 

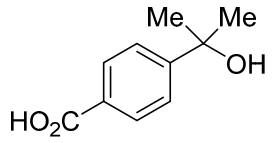
(D) 

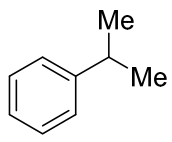
(E) 

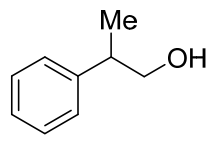
75. What is the product of this reaction?

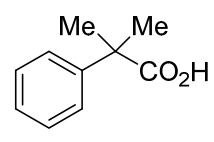


(A) 

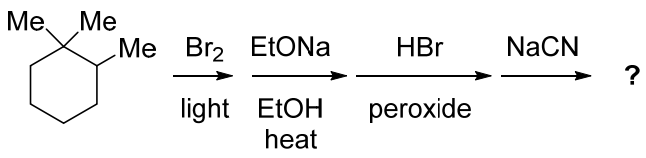
(B) 

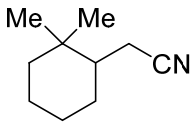
(C) 

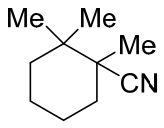
(D) 

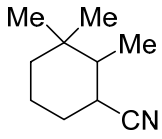
(E) 

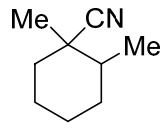
76. What is the **major** product obtained from the following reaction sequence?

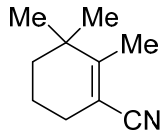


(A) 

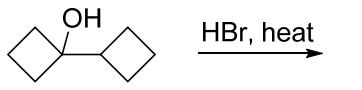
(B) 

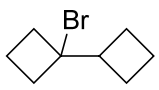
(C) 

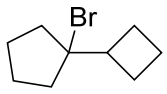
(D) 

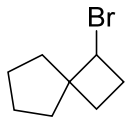
(E) 

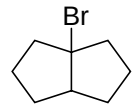
77. What is the **major** product of the following reaction?

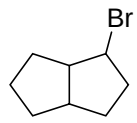


(A) 

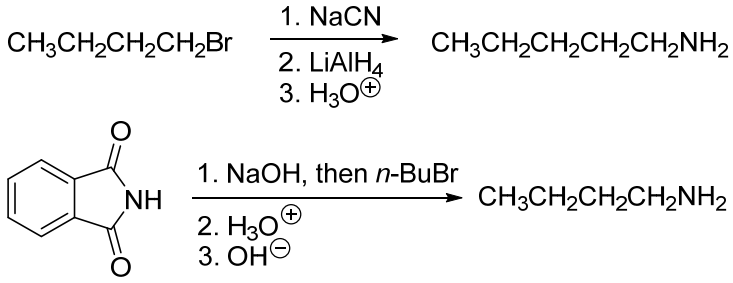
(B) 

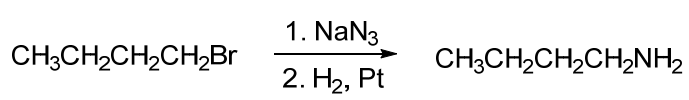
(C) 

(D) 

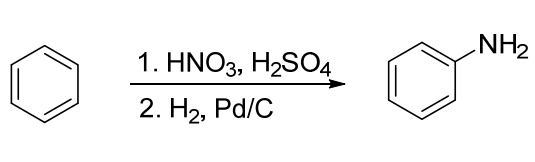
(E) 

78. Which of the following reactions is called Gabriel synthesis?

(A) 

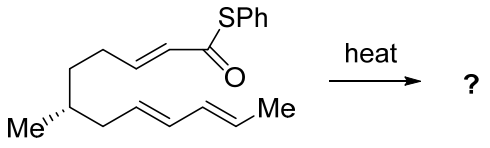
(B) 

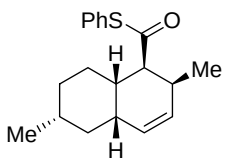
(C)

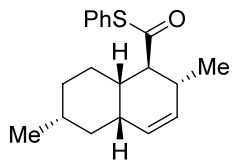
(D) 

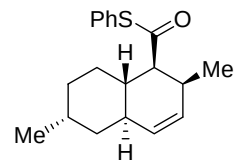
(E) None of the above.

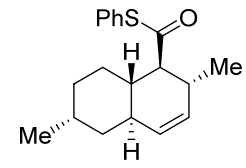
79. What is the **major** product of the following triene to undergo the intramolecular Diels-Alder reaction?

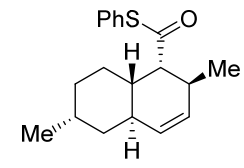


(A) 

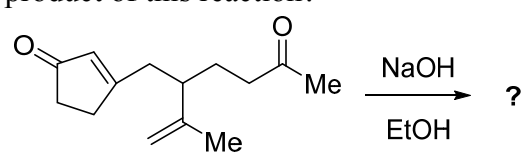
(B) 

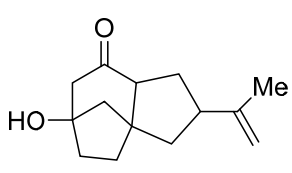
(C) 

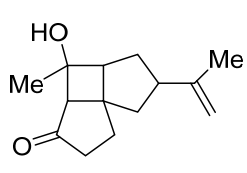
(D) 

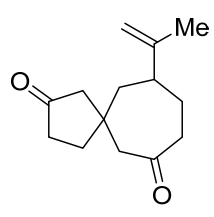
(E) 

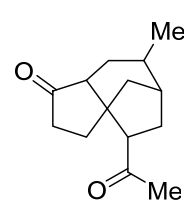
80. The following reaction involves an intramolecular Michael reaction followed by an intramolecular aldol reaction. What is the **major** product of this reaction?



(A) 

(B) 

(C) 

(D) 

(E)