

系所組別：化學系

考試科目：有機化學

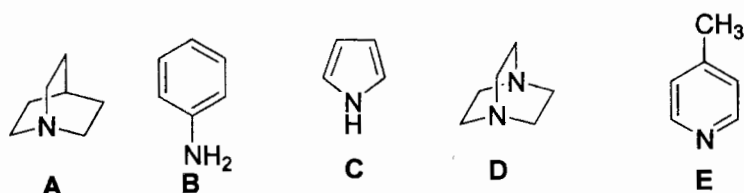
考試日期：0223，節次：2

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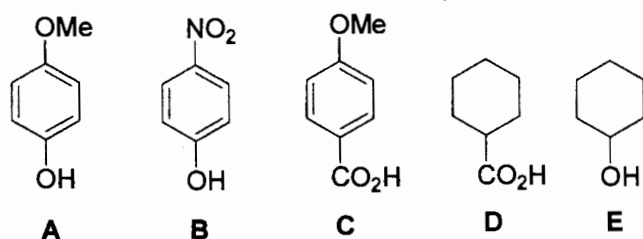
一、複選題 (20 分，每題 2 分)

1. How many ^1H NMR peaks would *trans*-1,2-dibromocyclopropane give? (1) 1 (2) 2 (3) 3 (4) 4

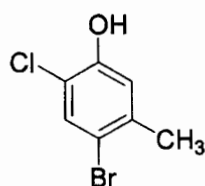
2. Arrange the following nitrogen containing compounds in the order of increasing basicity.

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

3. Arrange the following compounds in the order of increasing acidity.

(1) $A < B < E < C < D$ (2) $E < A < B < C < D$ (3) $B < A < D < C < E$ (4) $B < A < E < D < C$ (5) $C < E < B < A < D$ 4. A compound with the molecular formula $\text{C}_{10}\text{H}_{13}\text{Br}$ gave the following ^1H NMR spectrum δ 1.6 (s, 6H), 3.1 (s, 2H), 7.2 (m, 5H). The most likely structure for this compound is (1) $\text{C}_6\text{H}_5\text{CH}_2\text{CBr}(\text{CH}_3)_2$ (2) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{CHBrCH}_3$ (3) $\text{C}_6\text{H}_5\text{C}(\text{CH}_3)\text{BrCH}_2\text{CH}_3$ (4) $\text{C}_6\text{H}_5\text{CHBrCH}(\text{CH}_3)_2$

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



(1) 4-bromo-6-chloro-3-methylphenol (2) 4-bromo-2-chloro-5-methylphenol (3) 2-chloro-4-bromo-5-methylphenol

(4) 2-bromo-5-hydroxy-4-chlorotoluene

(背面仍有題目，請繼續作答)

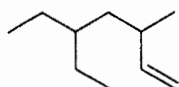
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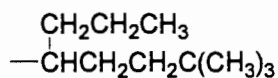
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6. What is the IUPAC name of the following compound ?



- (1) 5-ethyl-3-methyl-1-heptene (2) 4-ethyl-2-vinylhexane (3) 3-ethyl-5-methyl-6-heptene (4) 3-ethyl-5-vinylhexane

7. What is the IUPAC name of the alkyl group?



- (1) 1-propyl-4,4-dimethylpentyl (2) 4,4-dimethyl-1-propylpentyl (3) 2,2-dimethyloctyl (4) (3,3-dimethyl-1-butyl)-butyl

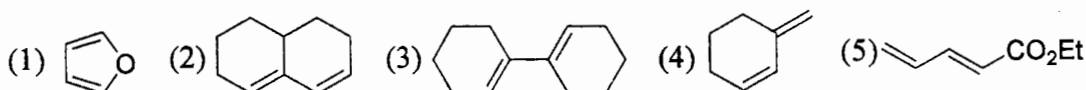
8. What is the major product for the addition of Cl_2 to *cis*-2-butene?

- (1) 2-chlorobutane (2) meso-2,3-dichlorobutane (3) racemic mixture of (2R,3R) and (2S,3S)-2,3-dichlorobutane (4) 1,2-dichlorobutane

9. Which statement is true for a chiral molecule?

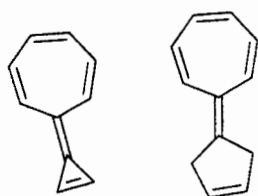
- (1) The molecule has an enantiomer.
 (2) The molecule has a superimposable mirror image.
 (3) The molecule may be a meso compound.
 (4) The molecule is optical active.

10. Which of the following compounds can undergo Diels-Alder reaction with maleic anhydride?

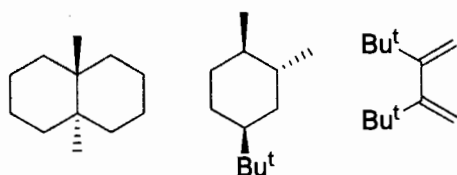


二、簡答題 (6 分，每題 3 分)

1. Which of the following compounds should be stabilized by resonance to a greater extent? Please account for your answer.



2. Draw the most stable conformation of the following compounds.



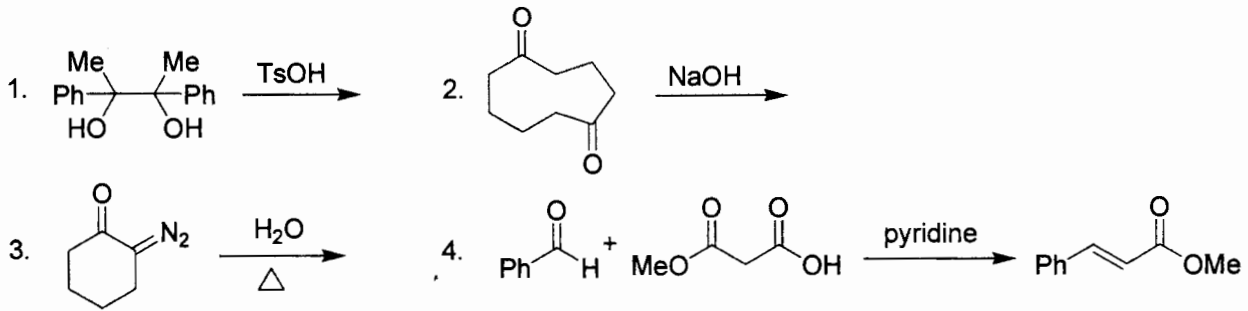
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三、請寫出下列各反應的反應機構 (20 分，每題 5 分)



四、請寫出下列各反應的生成物 (54 分，每題 3 分)

