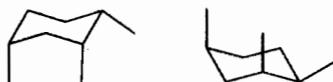


※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一、複選題 (20 分、每題 2 分)

1. The following structures are:

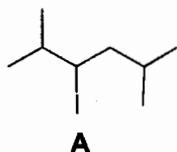


(1) diastereomers (2) constitution isomers (3) stereoisomers (4) conformations (5) enantiomers

2. For isopentanol: (1) It is a primary alcohol. (2) It shows a characteristic absorption at 1720 cm^{-1} in the IR spectrum.

(3) It has four signals in the broad band decoupled ^{13}C NMR spectrum. (4) It is a stereoisomer of pentanol.

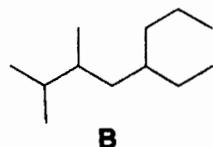
3. What is the IUPAC name of the compound A?



(1) 3-Iodo-2,5-dimethylhexane (2) 4-Iodo-2,5-dimethylhexane

(3) 2,5-Dimethyl-3-iodohexane (4) 2,5-Dimethyl-4-iodohexane

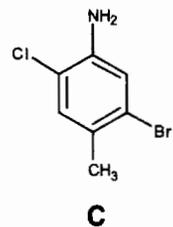
4. What is the IUPAC name of the compound B?



(1) 2,3-Dimethyl-5-propylheptane (2) 2,3-Dimethyl-5-ethyloctane (3) 5-Ethyl-2,3-dimethyloctane (4)

5,6-Dimethyl-3-propylheptane (5) 4-Ethyl-6,7-dimethyloctane

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

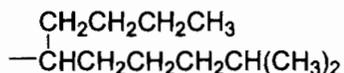


(1) 3-Bromo-6-chloro-4-methylaniline (2) 5-Bromo-2-chloro-4-methylaniline (3) 2-Chloro-4-methyl-5-bromoaniline

(4) 2-Bromo-4-amino-5-chlorotoluene (5) 4-Amino-2-bromo-5-chlorotoluene

6. The IR spectrum of a compound exhibits a broad absorption band at $2500\text{--}3200\text{ cm}^{-1}$ and a sharp band at 1710 cm^{-1} . Which of the following compounds could it be? (1) butanoic acid (2) butanol (3) acetic anhydride (4) ethyl acetate

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



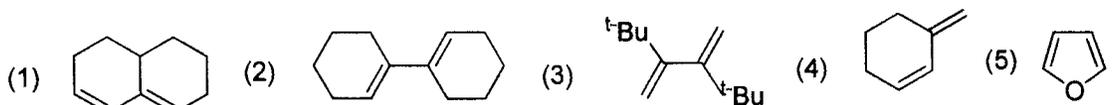
(1) 1-Butyl-4-methylhexyl (2) 4-Methyl-1-butylhexyl (3) 2-methyldecyl (4) (3-methyl-1-hexyl)-pentyl

8. Which statements are correct for the reaction shown below?

Treatment of chlorobenzene with NaNH_2 in NH_3 gives aniline.

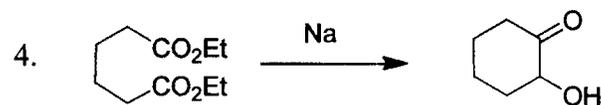
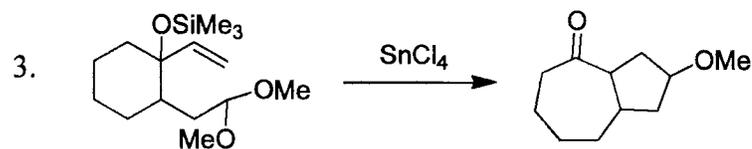
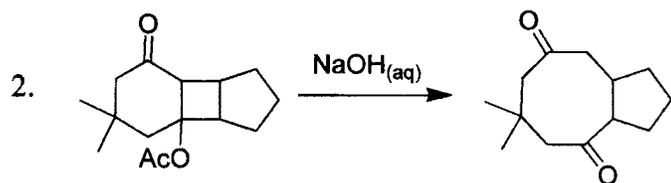
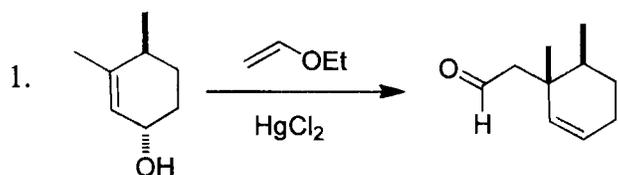
- (1) This reaction is an electrophilic aromatic substitution.
- (2) This reaction is a $\text{S}_{\text{N}}1$ Substitution.
- (3) This reaction is a nucleophilic aromatic substitution.
- (4) Benzyne is the reaction intermediate.
- (5) This reaction is a $\text{S}_{\text{N}}2$ Substitution.

9. Which of the dienes can undergo a Diels-Alder reaction?



10. Which reactions below will give a different product for the reaction of *trans*-2-pentene and *cis*-2-pentene? (1) hydrogenation (2) Br_2 addition (3) ozonolysis (4) hydroboration-oxidation

二、請寫出下列各反應的反應機構。(20 分，每題 5 分)



三、請寫出下列各反應的生成物。(60 分，每題 4 分)

