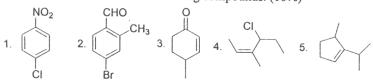
⑤ 學年度國立成功大學化學所究 系 有机化学 試題 共 2 頁 有七班招生考試化了所究 所 有机化学 試題 第 / 頁

(1) Write IUPAC names for the following compounds. (10%)



- (2) Draw the structural formulas for the following compounds. (6%)
 - 1. (Z)-3-Methyl-2-hexen-1-ol
- 2. 2-bromo-1-ethyl-4-nitrobenzene
- 3. trans-3-Phenyl-2-propenal
- (3) For the aromatic electrophilic substitution reaction, methoxy group is an activating group and also an ortho-para director. Explain why? (3%)
- (4) For the S_N1 reaction, the relative reactivity of alkyl halide is $3^{\circ} > 2^{\circ} > 1^{\circ} >$ methyl. Explain why? (3%)
- (5) Arrange the following compounds in the order of increasing acidity. (3%)

$$\mathsf{MeO} \hspace{-2pt} \longleftarrow \hspace{-2pt} \mathsf{OH} \hspace{2pt} \hspace{2pt} \hspace{2pt} \hspace{2pt} \hspace{2pt} \mathsf{OH} \hspace{2pt} \hspace{2pt$$

(6) Draw the structural formulas for the product of the following reactions. (30%)

1.
$$H_{3}C - C - OCH_{3} = \frac{1. C_{6}H_{5}MgBr}{2. H_{2}O}$$
2. $CI - CH_{3} = \frac{CH_{3}CH_{2}ONa}{CH_{3}CH_{2}OH}$
3. $CH_{3}CH_{2}OH$
4. $CH_{3}CH_{2}OH$
5. $CH_{3} = \frac{CH_{3}CH_{2}OH}{CH_{3}CH_{2}OH}$
6. $CH_{3} = \frac{RCO_{3}H}{CH_{2}CI_{2}}$
7. $CI = \frac{RCO_{3}H}{CH_{2}CI_{2}}$
8. $CI = \frac{RCO_{3}H}{CH_{2}OH}$
9. $CI = \frac{1. Ph_{3}P}{2. BuLi}$
9. $CI = \frac{NaSPh}{H_{3}C}$
10. $CI = \frac{NaOH}{H_{3}C}$

(7) Give the reagents for the following reactions. (9%)

(背面仍有題目,請繼續作答)

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- (8) Write a stepwise mechanism for the following reactions. (16%)

(9) Which of the following compounds are aromatic? Explain why? (8%)

(10) Draw the chair conformation for the following compound and state which chair is more stable. (2%)

(11) Provide structure for compounds A - C. (6%)

(12) Reaction of salicyaldehyde 1 and acetic anhydride in the presence of sodium acetate gives compound 2. Spectral data for compound 2 are collected below. Deduce the structure of 2. Mass spectrum: m/z = $146(M^+,100\%)$; IR (Nujol): $1704 \text{ cm}^{-1}(s)$; ¹H NMR (CDCl₃): δ 6.42 (d, J = 9 Hz, 1H), 7.23-7.35 (m, 2H), 7.46-7.56 (m, 2H), 7.72 (d, J = 9 Hz, 1H). (4%)