## 國立嘉義大學九十六學年度

## 生物醫藥科學研究所碩士班招生考試(甲組)試題

## 科目:有機化學

1. Predict the major product of the following reactions. (20%, 5% each)

(1)

(2)

(3)

(4)

$$\begin{array}{ccc} \mathsf{CH}_3 & \mathsf{H}_2\mathsf{SO}_4, \text{ heat} \\ \mathsf{H}\mathsf{-C}\mathsf{-OH} & & \longrightarrow \\ \mathsf{CH}_3 & & & \end{array}$$

- 2. Drawing and compared the energy difference of cyclohexane in the following conformation states. (20%, 5% each)
  - (1) chair (2) boat (3) twist (4) half-chair.
- 3. Please provide the structures for A E. (20%, 4% each)

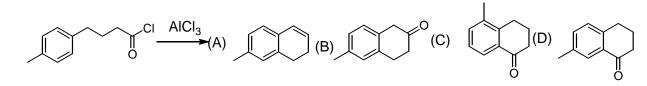
$$CH_2Br$$
 $NaCN$ 
 $D$ 
 $i) LiAlH_4$ 
 $ii) H_2O$ 
 $E$ 

- 4. Select the best answer for the following questions. (20%, 4% each)
  - (1) What is the correct name of the following compound?

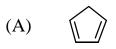
OCH3

- (A) Methyl benzyl ether
- (C) Anisole

- (B) 4-
  - (B) 4-Methoxybenzene
- (D) 4-Hydroxyanisole
- (2) Which would be the structure of the product for the following Friedel-Crafts reaction?



(3) Which is aromatic of the following species?







(C)



- (4) What would be the major product from the addition of cyclopentene with Br<sub>2</sub>/CCl<sub>4</sub>?
  - (A) *trans*-1,2-dibromocyclopentane
- (B) cis-1,2-dibromocyclopentane
- (C) *trans*-1,3-dibromocyclopentane
- (D) cis-1,4-dibromocyclopentane
- (5) Which of the following compound has a sharp IR absorption at 1610 cm<sup>-1</sup>?
  - (A) CH<sub>3</sub>COCH<sub>3</sub>
- (B) CH<sub>3</sub>CH<sub>2</sub>OH
- (C) CH<sub>3</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>3</sub>
- (D) trans-CH<sub>3</sub>CH=CHCH<sub>3</sub>
- 5. Predict the <u>organic product</u> and propose a <u>mechanism</u> for each of the following reactions. (20%, 10% each)

(A) 
$$Ph_3P = CHCH_3 - i) PhLi, -78 °C ii) t-BuOH$$

