UNIVERSITY OF JAFFNA, SRI LANKA

FACULTY OF ALLIED HEALTH SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION IN BPharmHons – 2019

PHACH 1264 PHARMACEUTICAL CHEMISTRY II

Date: 27.01.2022 **Time: 3 Hours**

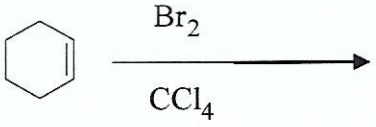
ANSWER ALL THE SIX QUESTIONS

1. **1.1** Define "Chemical reaction". **(10 Marks)**

   1.2 Discuss,the factors that determine the product formation. **(60 Marks)**

   1.3 Explain how the catalyst effect the rate of the reaction. **(30 Marks)**

2. **2.1** Considering the following substrate and reagents and answer the following questions.



   2.1.1 Predict the type of the reaction and define it. **(20 Marks)**

   2.1.2 Give the reaction mechanism and specify the stereochemistry of the product. **(30 Marks)**

   2.1.3 Draw the energy level diagram. **(20 Marks)**

   2.1.4 Draw the structures of transition state and intermediates. **(30 Marks)**

3. **3.1** Define Alkyne. **(15 Marks)**

   3.2 Give the preparation methods of alkyne. **(45 Marks)**

   3.3 List the pharmaceutical applications of the followings:

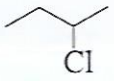
   3.3.1 Alkyne

   3.3.2 Alkyl halide **(40 Marks)**

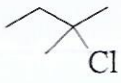
4. **4.1** **4.1.1** What is meant by carboxylic acids? **(15 Marks)**

4.1.2 Describe the physical properties of carboxylic acids. **(40 Marks)**

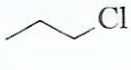
4.2 Arrange the following molecules in the order of increasing reactivity/ability for a unimolecular elimination reaction (E1) with justification.



4.3.1



4.3.2

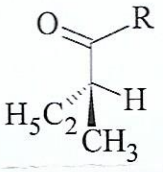


4.3.3

(45 Marks)

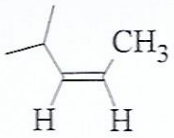
5. **5.1** Give the final products and mechanism of the following reactions.

5.1.1



$\xrightarrow[H_2O]{\text{Me MgBr}}$

5.1.2



$\xrightarrow[Zn]{O_3}$

5.1.3

$\xrightarrow[FeBr_3]{Br_2}$

5.1.4

$\xrightarrow{Ph_3P{=}CH\text{-}C_2H_5}$

5.1.5 $Ar\text{-}CH_2\text{-}CH_2\text{-}N^+Me_2O^-$ $\xrightarrow{100\ ^\circ C}$

(100 Marks)

6. **6.1** Briefly describe the therapeutic importance of pyridine. **(30 Marks)**

6.2 Give the different types of reactions that occur in pyridine. **(40 Marks)**

6.3 Explain why electrophilic substitution in pyridine occurs at position C-3 and not at C-2. **(30 Marks)**