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Rajarata University of Sri Lanka
Mihintale.

RAJARATA UNIVERSITY OF SRI LANKA

FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences

First Year Semester II Examination– November / December 2016

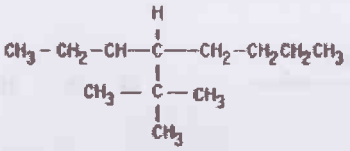
CHE 1203 – ORGANIC CHEMISTRY I

Answer any **FOUR** questions. Time: 02 hours

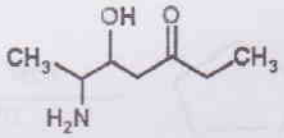
01.

(a). Give IUPAC names of the following compounds

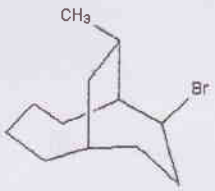
i).



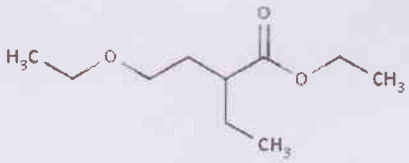
ii).



iii).



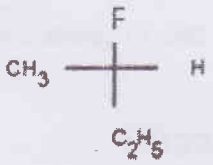
iv).



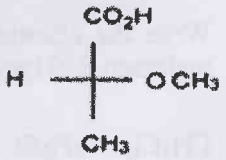
(12 marks)

(b). Give IUPAC names of the following compounds with R/S, *cis/trans* or E/Z configurations

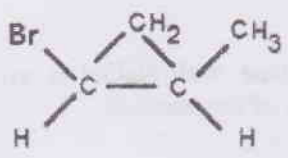
i).



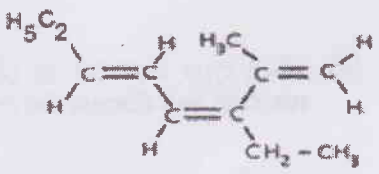
ii).



iii).



iv).



(12 marks)

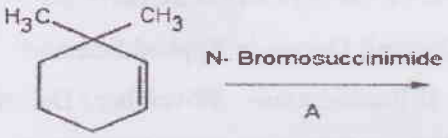
(c). Draw the structure of the compound (2*E*, 4*Z*)-1-chloro-2,4-heptadiene

(03marks)

02.

(a). Identify the products and complete the following reactions

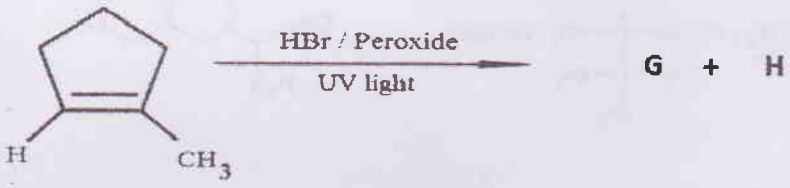
i.



3,3 dimethylcyclohexene

ii.

iii.



(08 marks)

(b). Write a brief note on factors affecting S_N1 type reations

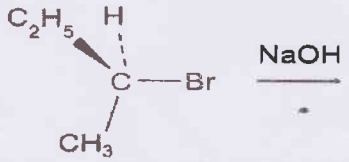
(06 marks)

(c). Write the equations and compare the the rate of reactions when following componds undersgo S_N2 type reaction with HCN.

CH_3Cl, C_2H_5Cl, $CH_3CH(CH_3)Cl$, $(CH_3)_3CCl$

(04 marks)

(d). S_N2 type reaction of (S)-2-Bromobutane with NaOH is given below. Complete the reaction and discuss the energy diagram of the reaction.



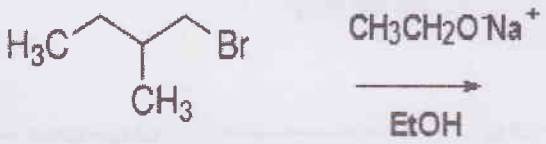
(07 marks)

03.

(a). Write a short note on charactoristics and results of the reaction mechanisms

(06marks)

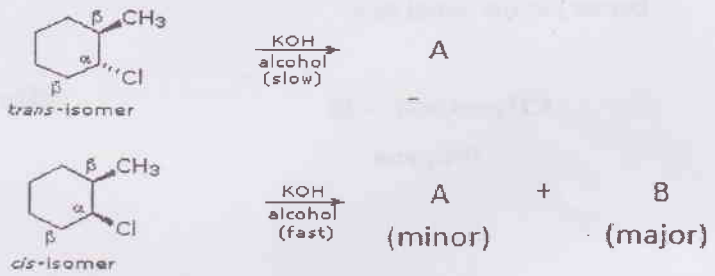
(b). Identify the products, write the mechanism and discuss the following elimination reaction according to the Zaitsev's Rule.



(07 marks)

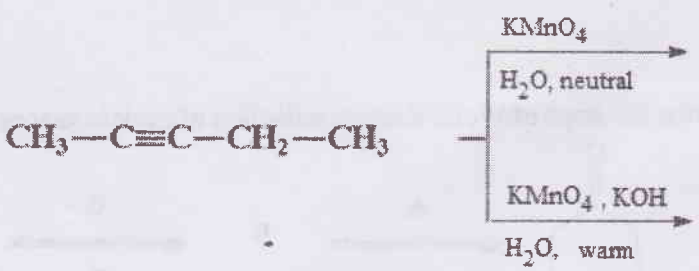
(c). *trans*-1-chloro -2-methyl- cyclohexane produced one compounds (A) when undergoes E_2 reaction with alcoholic KOH, but *cis* isomer gives off two products (A , B). Identify the products and justify the answer.

1-chloro -2-methyl- cyclohexane



(08 marks)

(d). Identify the products and complete following reactions

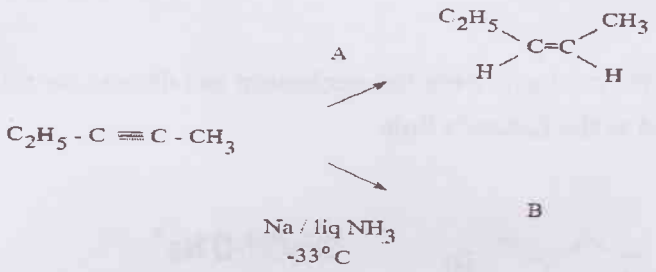


(04 marks)

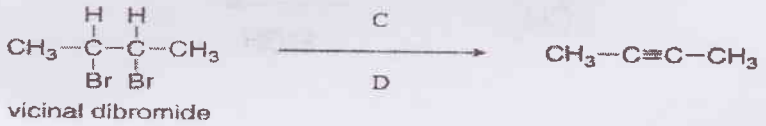
04.

(a). Identify reaction conditions / products and complete following reactions

i).



ii).



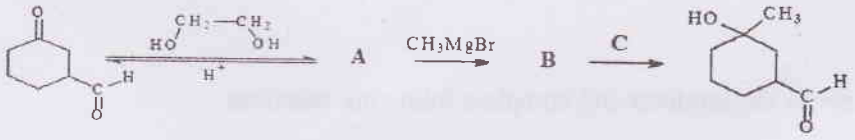
iii).

(09 marks)

(b). Outline all steps in the synthesis of 1-propanal from propyne using Sia_2BH (Disiamyl borane) in the initial step.

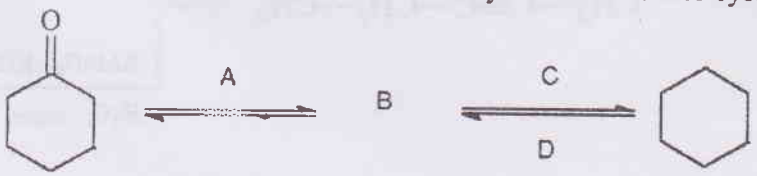
(06 marks)

(c). Identify the intermediates & reagents, and complete the following reaction



(05 marks)

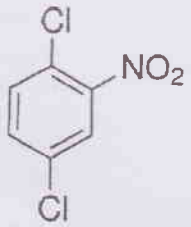
(d). Describe the steps of Wolff-Kishner reduction of cyclohexanone into cyclohexane.



(05 marks)

5.

(a). Discuss the synthesis of mixture of 1,4-Dichloro-2- nitrobenzene and 1,2-Dichloro-4-nitrobenzene from benzene



1,4-Dichloro-2- nitrobenzene

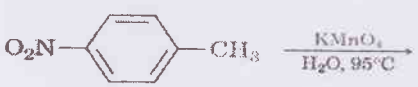
(05 marks)

(b). " - CHO deactivates the benzene ring towards electrophilic aromatic substitution reactions and directs substitution to the meta positions" , explain the above sentence.

(09 marks)

(c). Complete the following reactions

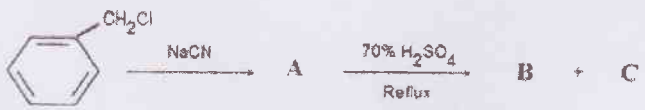
i.



p-Nitrotoluene

(02 marks)

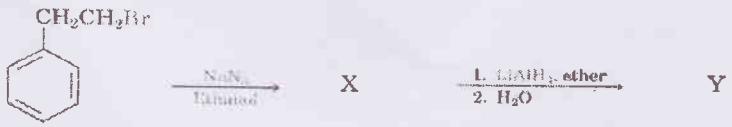
ii.



Benzyl chloride

(05 marks)

iii.



1-Bromo-2-phenylethane

(04 marks)