



RAJARATA UNIVERSITY OF SRI LANKA

FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree

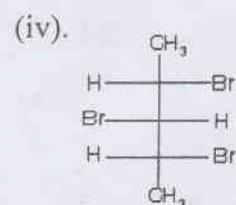
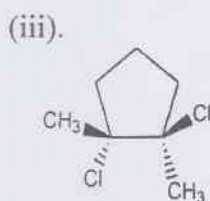
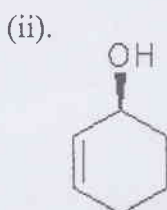
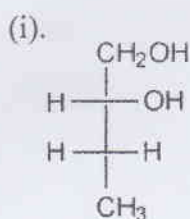
Second Year Semester I Examination– October / November 2015

CHE 2202 – ORGANIC CHEMISTRY II

Answer any four (04) questions.

Time: 02 hours

1. (a). Name the following compounds using RS nomenclature. Draw necessary steps and write IUPAC names of the compounds.



(12 marks)

- b). Draw the Fischer projection of (2S,3R,4S)-2,4-Dichloro-3-methyl hexane

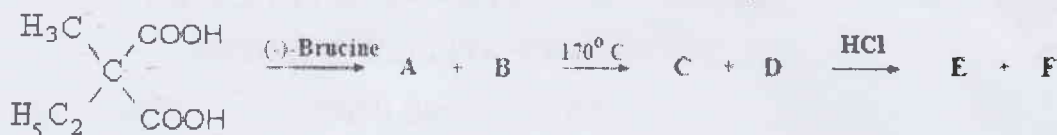
(04 marks)

- (c). Draw the conformations of 1,2 dichloroethane using Newman projection formulae and plot the potential energy vs angle of rotation curve for the rotation of C1 – C2 bond through 360°C

(09 marks)

2.

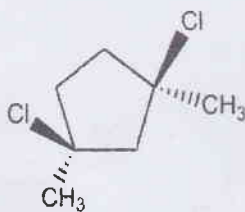
- (a). Outline the necessary steps involve in the following reaction starting from Ethyl methyl melonic acid.



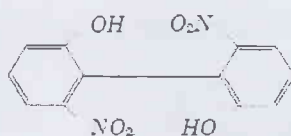
(06 marks)

- (b). Discuss the optical activity of the following compounds

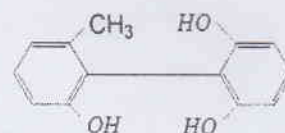
(i).



(ii).



(iii).



(06 marks)

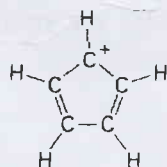
- (c). "The addition of  $\text{H}_2$  to  $\text{C}=\text{C}$  normally gives off about 118 kJ/mol, and two conjugated double bonds in cyclohexadiene add 2  $\text{H}_2$  to give off 230 kJ/mol".

Discuss this statement with relevant to benzene.

(07 marks)

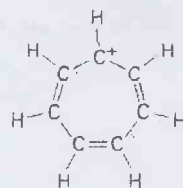
- (d). Explain the aromaticity of the following complonds using Huckels rule

(i).



Cyclopentadienyl anion

(ii).



Cycloheptatrienyl cation

(iii).

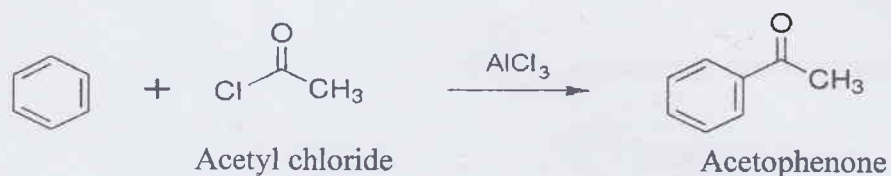


Thiophene

(06 marks)

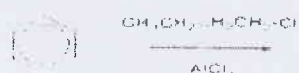
3.

- (a). Write the mechanism of the following acylation reaction between benzene and acetyl chloride.



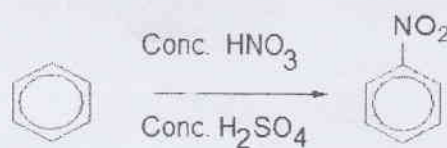
(06 marks)

- (b). Complete the following reactions



(08 marks)

- (c). The nitration reaction of Benzene can be expressed as follows. Write the detailed mechanism of the reaction and discuss the energy diagram of the reaction.



(08 marks)

- (d). Write all products of the following reaction



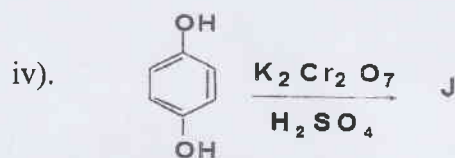
(03 marks)

4.

(a). Briefly explain the acidity of Phenol with necessary resonance structures

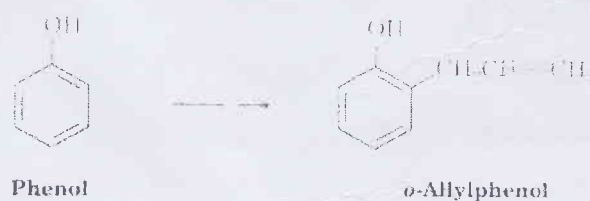
(07 marks)

(b). Complete following reactions



(10 marks)

(c). Write all chemical equations in the conversion of phenol to allyl phenol. Write the name of the rearrangement.



(08 marks)

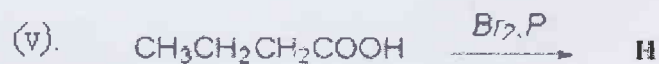
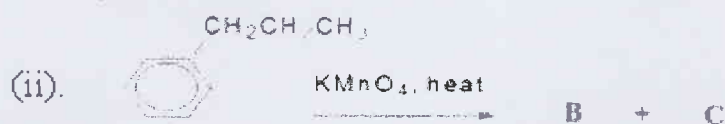
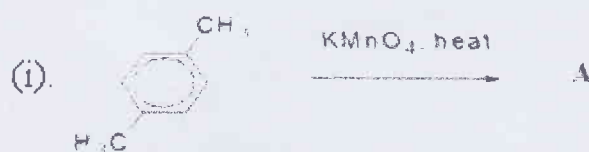
5.

(a). Elaborate the synthesis of epoxides;

- (i). using Halohydrin method, starting from cyclohexene
- (ii). when cycloheptene treated with a peroxyacid

(08 marks)

(b). Complete following reactions



(10 marks)

(c).

- (i). Discribe "Colour fastness" and factors affect the color fastness.
- (i). Write a short account on "disperse dyes" used to color fabricks

(07 marks)

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