

EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE-2014/2015

(November/December' 2016)

FIRST SEMESTER

CH 204 REACTION MECHANISM AND AROMATICITY

(Repeat)

Answer all questions

Time Allowed: One hour

(a) Predict the products from the reaction of the following compounds with ethoxide ion in ethanol.

i) ethyl cyclohexylacetate

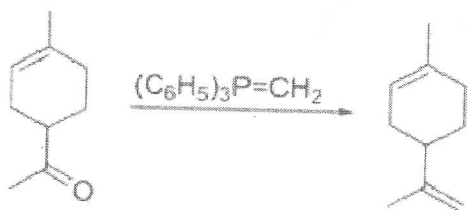
ii) ethyl pentanoate

(30 Marks)

(b) A Dieckmann cyclization reaction involving diethyl 3-methylheptanedioate produces two β -ketoester products. The yields of these two products were approximately equal. Draw their structures.

(20 Marks)

(c) Write a suitable reaction mechanism for the given reaction.

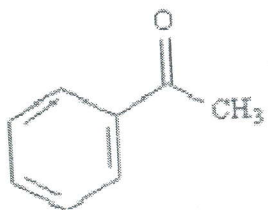


(20 Marks)

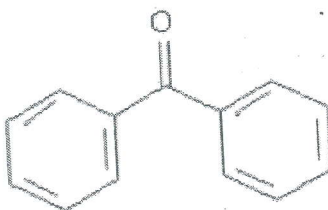
Contd...

(e) Draw the structure of the aldol self-condensation product for each of the following compounds.

If a compound does not undergo aldol self-condensation, explain why it does not.



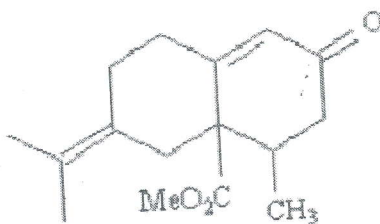
i)



ii)

(30 Marks)

2 (a) Propose a detailed mechanism for the formation of the following product of a Robinson annulation reaction.

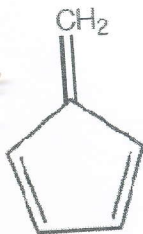


(10 Marks)

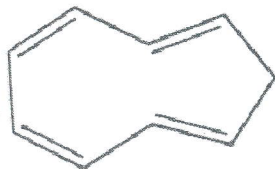
(b) i) What is 'Huckel rule' for predicting Aromaticity?

(10 Marks)

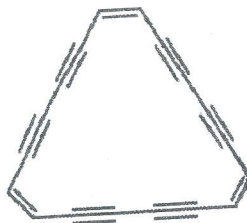
ii) Using the above rule determine the aromaticity of the following molecules;



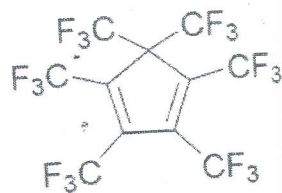
i)



ii)



iii)



iv)

(20 Marks)

Contd...

(c) Using polygon & Circle method to find out whether the following compounds are aromatic or not.

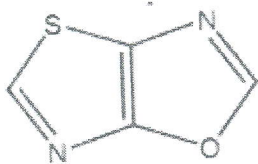
- i) Cyclo-octatriene dianion
- ii) Cyclobutadiene

(20 Marks)

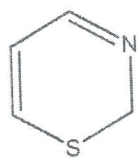
(d) Suggest a plausible mechanism on benzaldehyde reacts with propanoic anhydride in the presence of potassium propanoate.

(20 Marks)

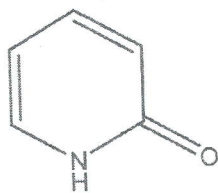
(e) Give the IUPAC name for each of the following Heterocyclic Compounds.



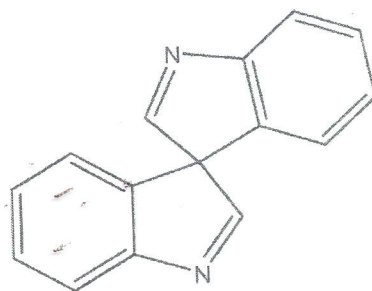
i)



ii)



iii)



iv)

(20 Marks)

End of paper