



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE

SCH 202: ORGANIC CHEMISTRY II

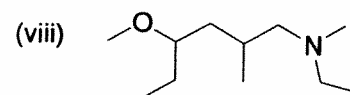
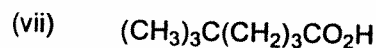
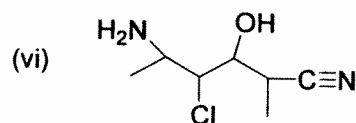
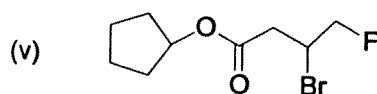
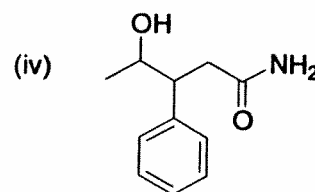
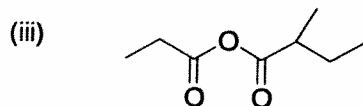
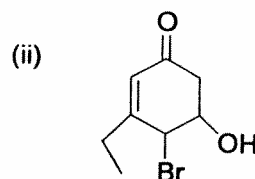
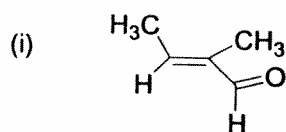
DATE: Monday, 26th March, 2012

TIME: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS: Answer ALL questions.

Q1.

- (a) Give systematic (IUPAC) names of the following compounds indicating the stereochemistry where possible.



(8 marks)

- (b) Draw the structures of each of the following organic compounds indicating the stereochemistry where possible.

(i) 2-Ethyl-3-methyl-2-butenal

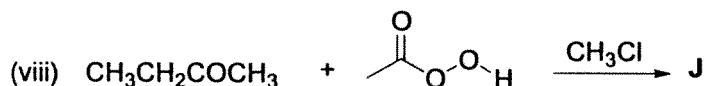
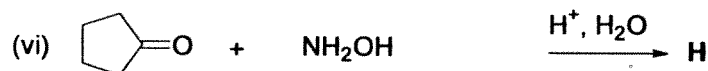
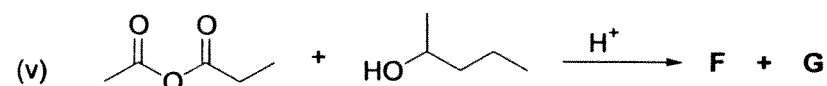
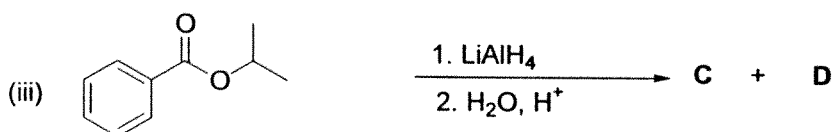
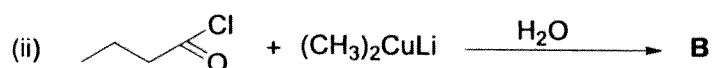
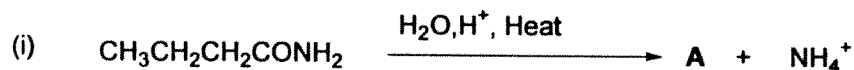
(ii) 3-Amino-2,4-dichlorocyclopentanone

- (iii) (Cis)-2-Methyl-3-phenyl-2-butenic acid
- (iv) 5,5-Dimethyl-4-oxoheptanenitrile
- (v) Benzoic propanoic acid anhydride
- (vi) 3-Bromo-2-chloro-2-methylpentanoyl bromide

(8 marks)

Q2.

(a) Predict the major organic compounds (A-J) in the following reactions.



(10 marks)

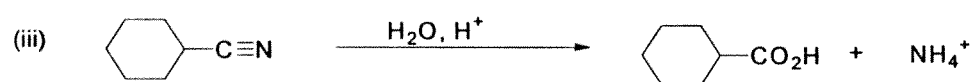
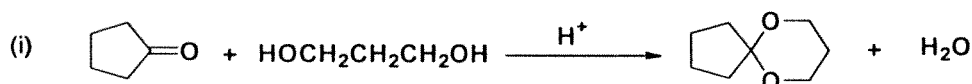
(b) Explain the following using appropriate equations and/or structures.

- (i) Methanal is more reactive than acetone towards nucleophilic addition reaction. (2 marks)
- (ii) Amines are more basic than amides and the basicity depends on the number of alkyl groups attached to nitrogen (4 marks)

- (iii) The reaction of carboxylic acid with alcohol to form ester only takes place in an acidic medium and not in basic medium. However, Sodium hydroxide is preferred to hydrochloric acid in the hydrolysis of an ester. (4 marks)

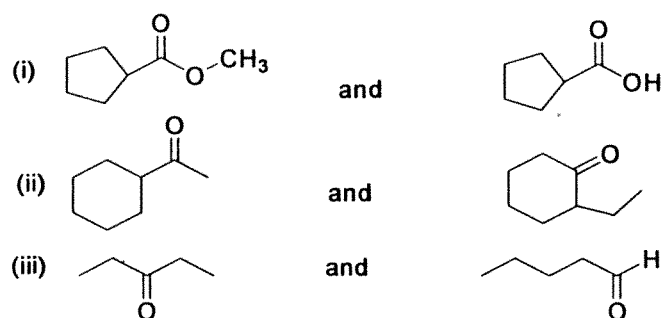
Q3.

- (a) Using Curly arrows, write a possible reaction mechanism for each of the following transformations.



(13 marks)

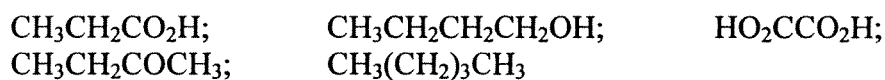
- (b) Give a simple visual chemical test, including the observations, you would use to differentiate between the following pair of compounds.



(6 marks)

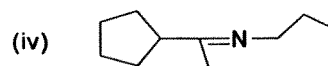
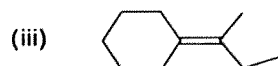
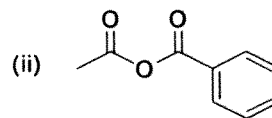
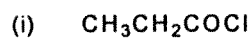
Q4.

- (a) Arrange, with reasons, the following compounds in increasing order of their boiling points.



(5 marks)

(b) Suggest the starting reagents for the following compounds.



(6 marks)

(c) In the Aldol condensation of propanal and acetone in presence of a basic medium, four different Aldol products are obtained. Draw structures of the expected products and give their systematic names.

(4 marks)
