

KABARAK



UNIVERSITY

EXAMINATIONS

2008/2009 ACADEMIC YEAR

**FOR THE DEGREE OF BACHELOR OF EDUCATION
SCIENCE**

COURSE CODE: CHEM 312

COURSE TITLE: ORGANIC CHEMISTRY III

STREAM: SESSION V & VII

DAY: WEDNESDAY

TIME: 9.00 – 11.00 A.M.

DATE: 08/04/2009

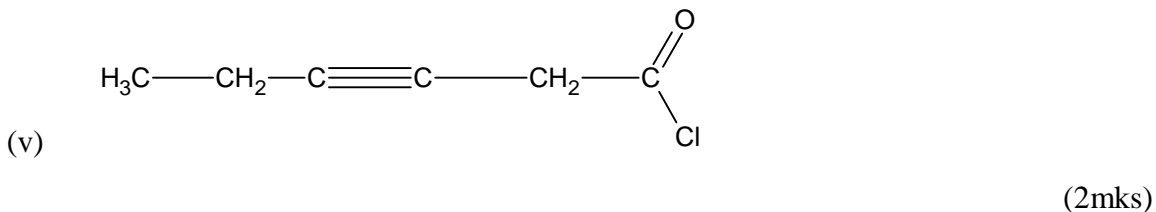
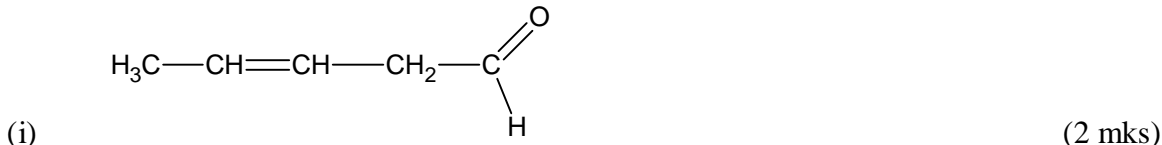
INSTRUCTIONS:

Attempt all questions

PLEASE TURN OVER

QUESTION ONE 17 ½ MKS

(a) Give the IUPAC names of the following compounds:



b) Describe a simple chemical test that would distinguish between each of the following pairs of compounds.

i) Pentane and 3- pentanone

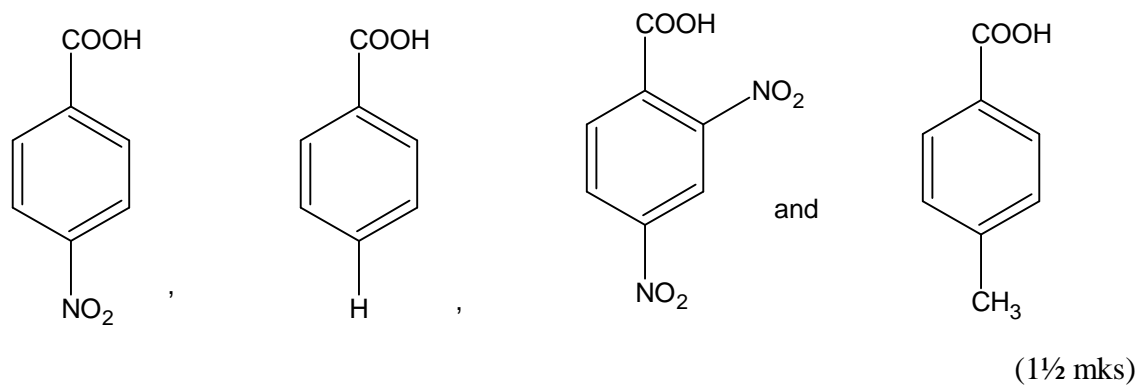
ii) Benzoic acid and Benzyl alcohol

{4mks}

c) Briefly explain why aldehydes and ketones generally have lower boiling points than alcohols of comparable molecular size.

{2mks}

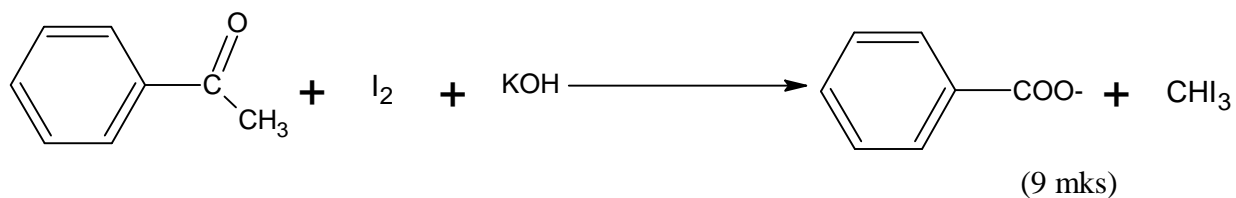
d) Arrange the following compounds according to their increasing acidity.



QUESTION TWO – 17 ½ mks

Write a possible mechanism for each of the following reactions

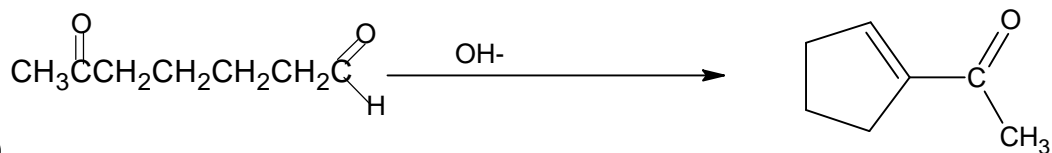
(a)



(b)



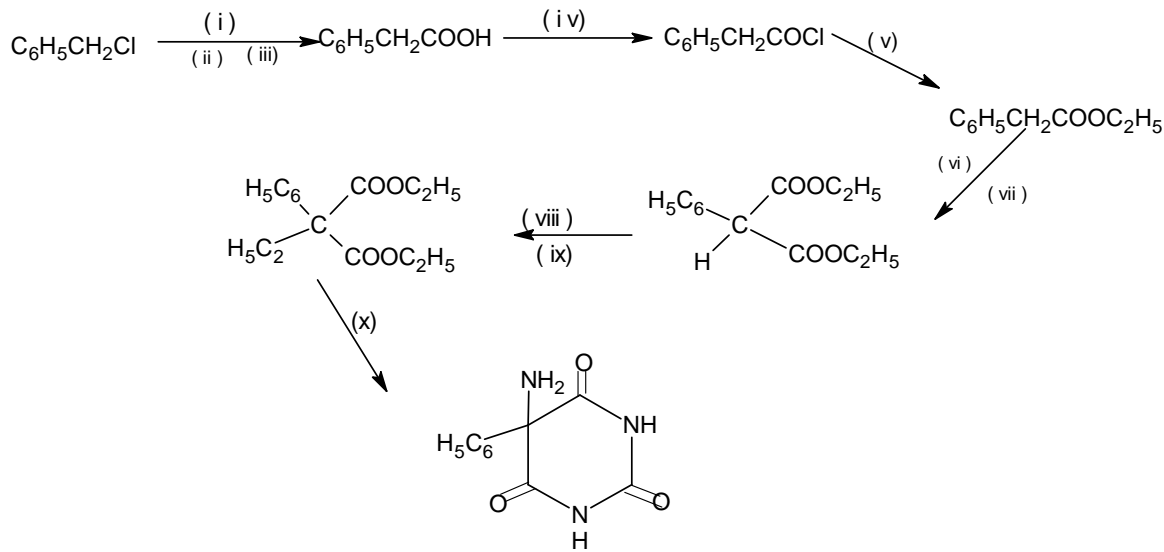
(c)



(4 ½ mks)

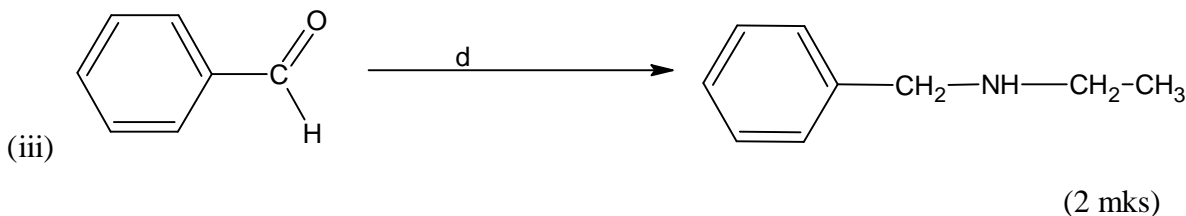
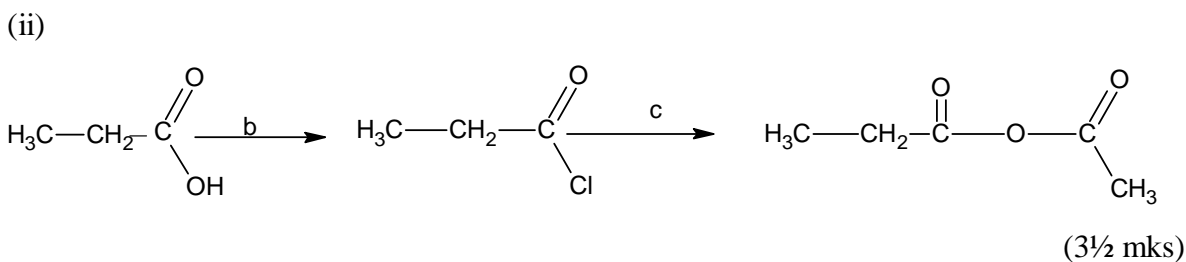
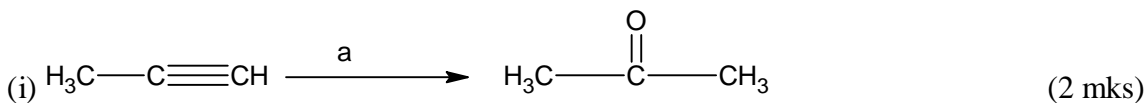
QUESTION THREE 17 ½ MKS

- a) Outlined below is a synthesis of phenolbarbital identify the reagents required for each transformation;



(10mks)

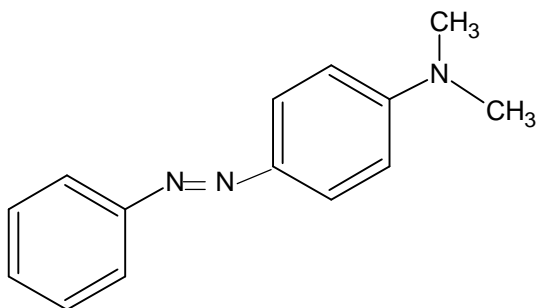
- b) Give the reagents required to carry out each of the following reactions.



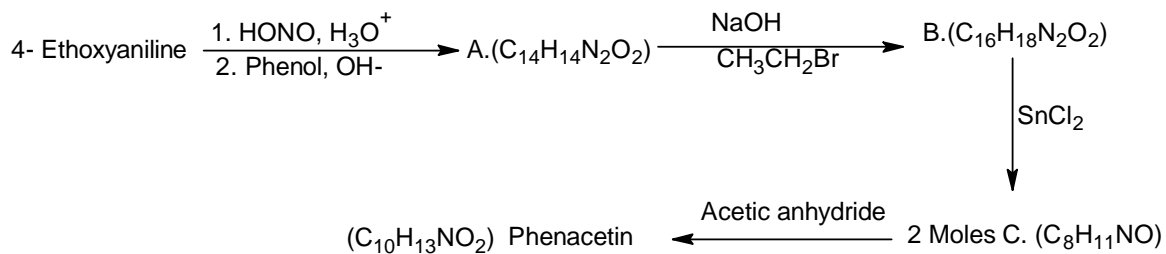
QUESTION FOUR 17 ½ MKS.

- a) Butter yellow is a dye which was once used to colour Margarine. It has since been shown to be carcinogenic and its use in food is no longer permitted. Outline a synthesis of butter yellow from Benzene and N, N – Dimethylaniline.

(8 ½ mks)



- (b) Phenacetin is an analgesic and antipyretic compound, and was the P of APC tablets (Asprin – Phenacetin – Caffeine) Phenacetin is no longer used medically due to its toxicity. The following is the synthesis of phenacetin, propose structures for the intermediates A – C and phenacetin.



(9 mks)