



Damietta University

Faculty of Science

Chemistry Department



First Year (Natural Science) (Enrolled to Repeat) Course: Organic Chemistry (Chem 103)

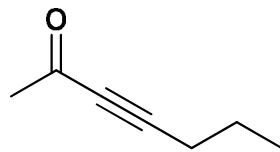
Answer **all** questions: (90 Marks)

Date: 21-05-2013

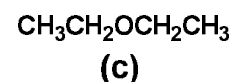
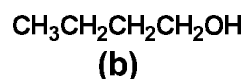
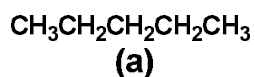
Time: 3hrs.

(exam in 5 pages)

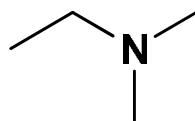
(1) (a) (i) Determine the sp and sp^2 hybridized atom in the following compound. (3 marks)



(b) Which compound will have the highest boiling point? Indicate with drawing the reasoning behind your choice. (4 marks)



(c) Draw the complete Lewis structure, including lone pairs, for the following compound. (3 marks)



(d) Choose the correct answer: (12 marks)

(i) Which is the product of the following reaction?



- a) CH_4 b) CH_3CH_3 c) CH_3OH d) CH_3OCH_3

(ii) The product of the reaction of ethylene with $\text{Br}_2/\text{H}_2\text{O}$ is

- a) 1,2- Dibromoethane b) Bromoethane
c) 2- Bromoethanol d) 1- Bromoethanol

(iii) Which of the following compound has a dipole moment?

- a) Cl_2 b) CO_2 c) CCl_4 d) CHCl_3

(iv) Which of the following compounds has *cis* and *trans* isomers?

- a) 2-Methyl-2-butene b) 1-Heptene
c) 2,3-dimethylpent-2-ene d) none of them

(v) Which of the following has the highest boiling point?

- a) 3,3-Dimethylpentane b) n-Heptane
c) 2-Methylhexane d) 2-Methylheptane

(vi) Cyclohexanol is

- a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) Phenol

(2) (i) Write the structures for the following compounds: (6 marks)

- (a)** 2,2-dimethylpropane **(b)** 2-bromo-3-methoxybutan-1-ol

(c) 1-Ethyl-2-methylcyclobutane (d) Ethanoic anhydride

(e) Propanoyl chloride

(f) 5-Methoxyhexanenitrile

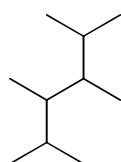
(ii) Write the correct IUPAC names for the following compounds: (6 marks)

(a) 2-Ethyl-3-methylpentane

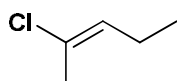
(b) 3,4-Dimethylpentane

(c) 2-Isopropylhexane

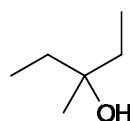
(iii) Write the IUPAC names of the following compounds: (20 marks)



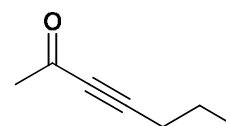
(a)



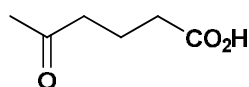
(b)



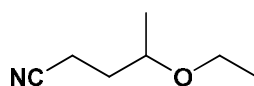
(c)



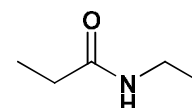
(d)



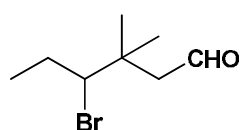
(e)



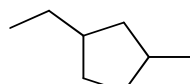
(f)



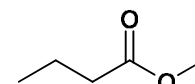
(g)



(h)

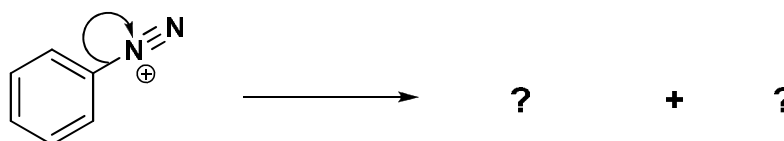


(i)

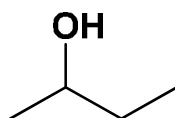


(j)

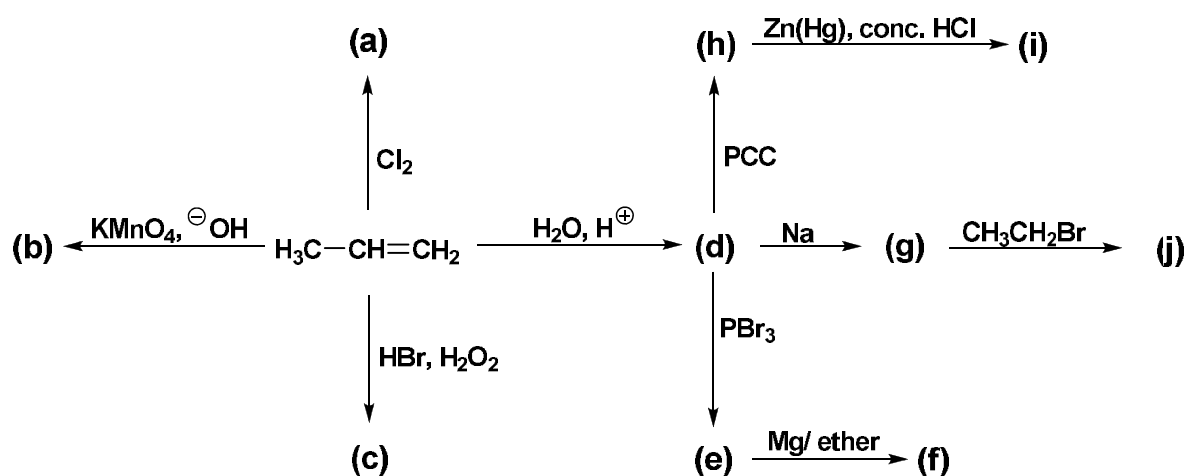
(3) (i) Complete the following equation. (3 marks)



(ii) How could you prepare the following compound by **two** different methods?
(5 marks)

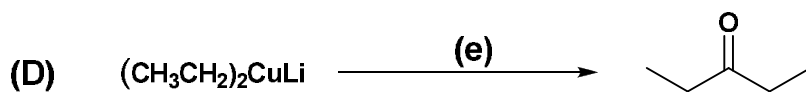
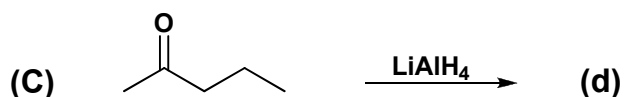
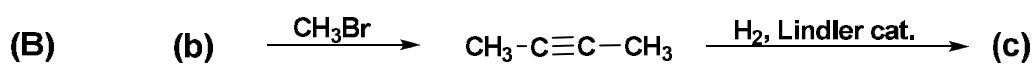
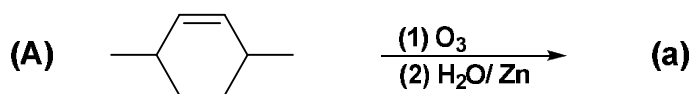


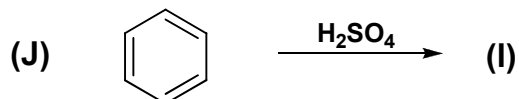
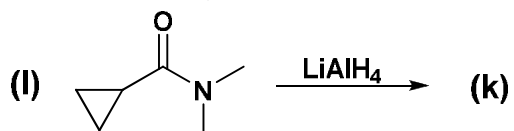
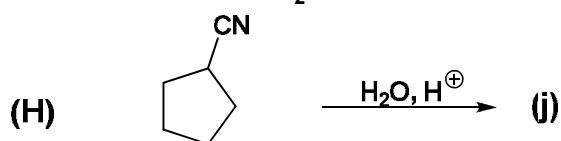
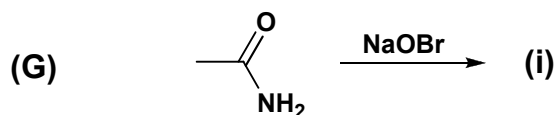
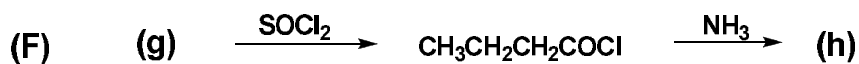
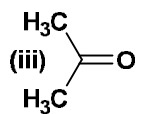
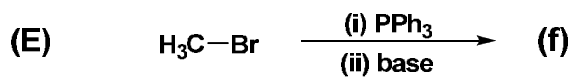
(iii) Complete the following **Scheme 1**: (10 marks)



Scheme 1

(4) (i) Complete the following equations: (12 marks)

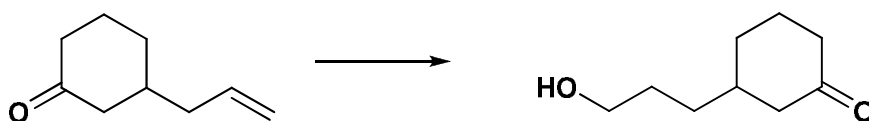




(ii) Convert (Answer only two of the following questions): (6 marks)

(a) 2-Propanol to propane-1,2-diol

(b)



(c) Cyclopentanol to 1-ethylcyclopentene

With my best wishes

Dr. Ali El-Agamey