



UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

**SECOND YEAR EXAMINATION FOR THE DEGREES
OF BACHELOR OF SCIENCE (GEN), BACHELOR OF
EDUCATION (SCIENCE), BACHELOR OF SCIENCE
(BMED)**

CHEM 212: ORGANIC CHEMISTRY II

STREAM: R

TIME: 2 HRS

DAY: FRIDAY [11.30AM – 13.30]

DATE: 09/12/2022

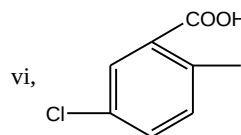
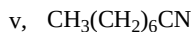
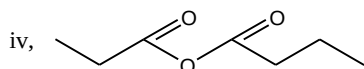
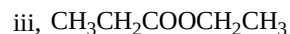
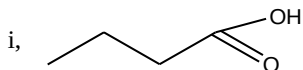
THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTIONS: - Attempt ALL the Questions**QUESTION ONE**

(a) Use the IUPAC naming system to name the following compounds. (6 marks)



(b) Draw the following structure: (6 marks)

(i) 3-Chloro-2-fluoroheptanamide

(ii) 3-Bromo-2-methylheptanoyl chloride

(iii) Hexanoic octanoic anhydride

(iv) Propyloctanoate

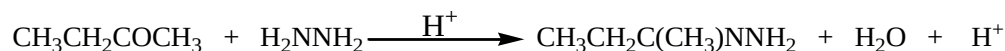
(v) 2-Chloro-3-ethyloctanoic acid

(vi) 2-Bromo-5-methyloctanenitrile

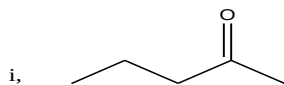
(c) (i) Explain and illustrate why Amides have quite high boiling points. (2 marks)

(ii) Explain why Carboxylic acids are polar (2 marks)

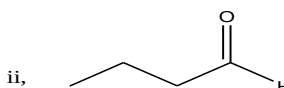
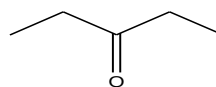
(d) Write the following reaction mechanism (10 marks)



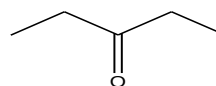
(e) Describe a simple chemical test that would distinguish between each of the following compounds. (4 marks)



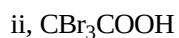
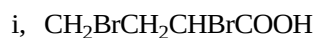
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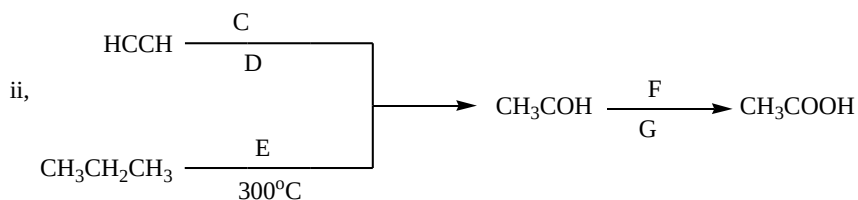
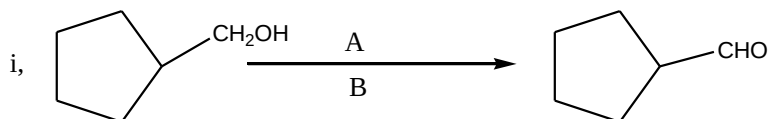
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**QUESTION TWO**

(a) Arrange the following acids in their increasing order of acidity and discuss their trend (6 marks)



(b) Write the missing products and reagents of the following reactions. (8 marks)



(c) (i) Explain and illustrate why Carboxylic acids have high boiling points than their corresponding alcohols (3 marks)

(ii) Explain and illustrate why lower Aldehydes and Ketones are appreciably soluble in water. (3 marks)

QUESTION THREE

(a) (i) Define Haloform reactions. (1 mark)

(ii) Write the general Haloform reaction mechanism of a methyl Ketone in basic condition. (11 marks)

(b) Write the general reaction mechanism of carbonyl compounds where Z is both a leaving and not a leaving group. (8 marks)