

CHUKA



UNIVERSITY

SUPPLEMENTARY/ SPECIAL EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF EDUCATION SCIENCE, BACHELOR OF SCIENCE

CHEM 103: GENERAL ORGANIC CHEMISTRY I

STREAMS: BSC, BED SCIE

TIME: 2 HOURS

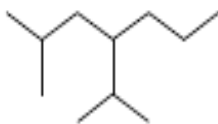
DAY/DATE: MONDAY 01/02/2021

8.30 AM – 10.30 AM

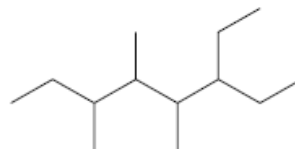
INSTRUCTIONS:**ANSWER ALL QUESTIONS**

1. Give systematic IUPAC names of the following organic compounds (6 marks)

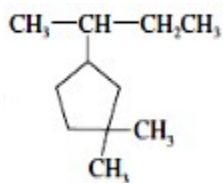
i)



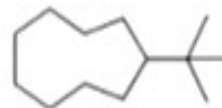
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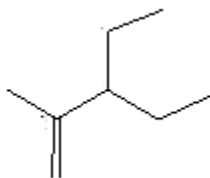
iii)



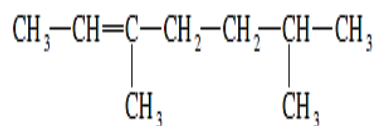
iv)



v)



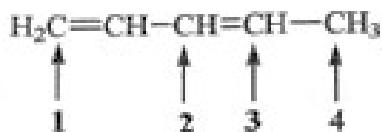
vi)



2. Draw the structures of the following compounds (4 marks)

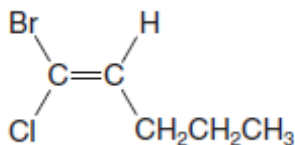
- i. 6-isopropyl-2,3-dimethylnonane
- ii. Cis-1-ethyl-3-methylcycloheptane
- iii. Trans-1-cyclopropyl-2-methylcyclohexane
- iv. 6-Bromo-3-propylhex-1-ene

3. Give the correct hybridization for the indicated carbon atoms (2 marks)

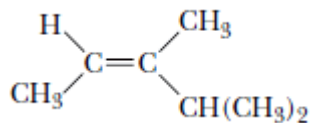


4. Give the IUPAC names for each of the following compounds using E/Z designation (3 marks)

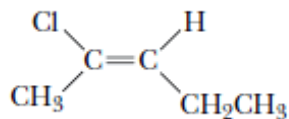
i)



ii)

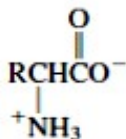


iii)



5. Write the structural formula for all the five constitutional isomers with the molecular formula C_6H_{14} and name them by IUPAC system (5 marks)

6. Give the mechanism of reaction when methane (CH_4) reacts with bromine (Br_2) in presence of light showing initiation, propagation and termination steps. (5 marks)
7. Some of the most important organic compounds in biochemistry are the α -amino acids, represented by the general formula shown (Where R is an alkyl group)

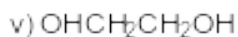
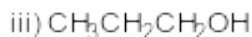
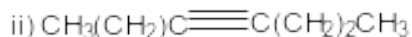


Write structural formulas for the following α -amino acids, (3 marks)

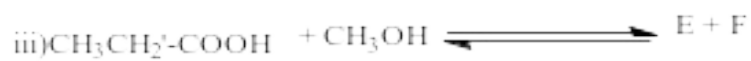
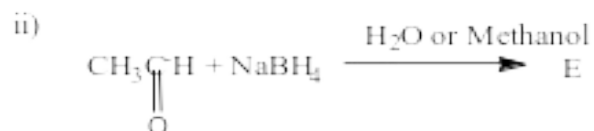
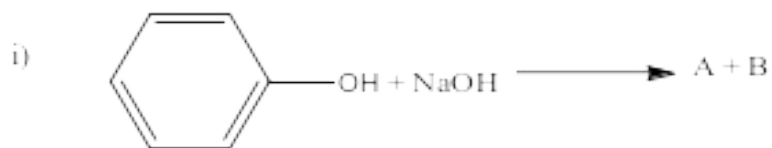
- Alanine (R = methyl)
 - Leucine (R = isobutyl)
 - Isoleucine (R = sec-butyl)
- 8 State two uses of alkanes (2 marks)

QUESTION 2 (20 MARKS)

- a) Give systematic IUPAC names of the following organic compounds (5 marks)



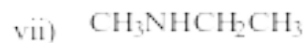
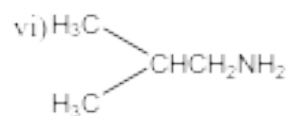
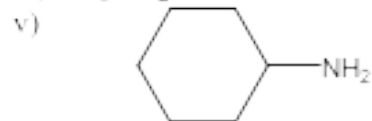
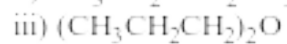
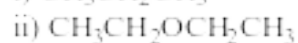
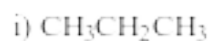
- b) Using equations give two methods of preparation of alkynes. (4mks)
- c) Write one way in which you can differentiate between a ketone and an aldehyde in the laboratory. (2mks)
- d) Complete the following reactions giving the major product(s) (5mks)



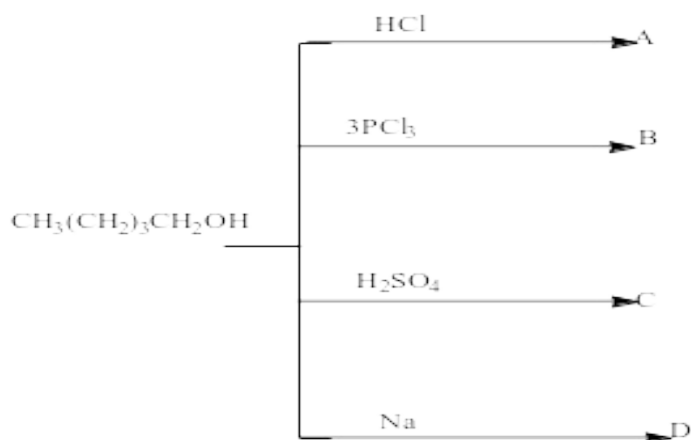
e) Give the physical properties of alcohols (4mks)

QUESTION THREE (20 MARKS)

a. Write the IUPAC names of the following (8mks)

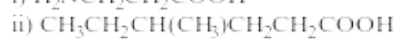
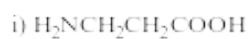


f) Write the major product(s) of the following reaction (5mks)

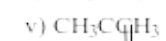
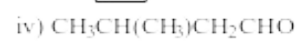
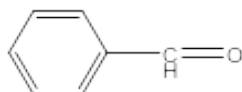


g) Write the IUPAC names of the following

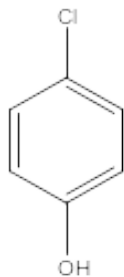
(7 mks)



iii)



vi)



vii)

