



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya

Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,

Website: info@must.ac.ke Email: info@must.ac.ke

University Examinations 2023/2024

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN MEDICAL LABORATORY SCIENCES

SCS 3103: ORGANIC CHEMISTRY

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

a) Draw the structural formulae of the following organic molecules

(i) Methane (1 mark)

(ii) Tetrachloromethane (1 mark)

(iii) Ethanol (1 mark)

b) Discuss the term hybridisation (1 mark)

c) Give the possible structural formulas for all the compounds with molecular formula

C_3H_8O (2 marks)

d) Define the term mole (1 mark)

e) Name the following organic compounds

i $CH_3CH_2CH_2CH_2CH(CH_3)CH_3$ 1 mark

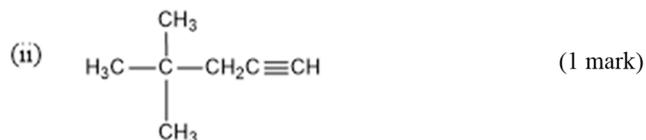
ii $CH_3CH_2CH(CH_2CH_3)CH_2CH_2CH_3$ 1 mark

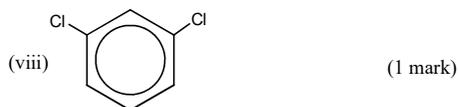
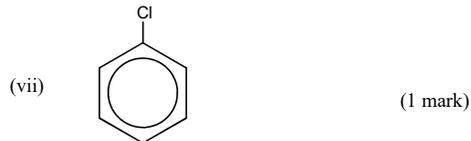
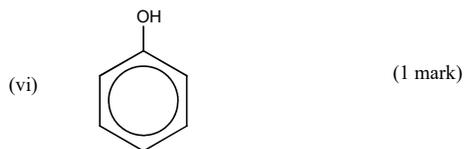


f) Alkanes are relatively unreactive to most common reagents. Explain (3 marks)

g) Differentiate between saturated and unsaturated hydrocarbons (2 marks)

h) Name the following organic compounds





- i) Explain any two uses of halogen derivatives (2 marks)
- j) Explain how one can detect presence of halogen in an organic compound in the laboratory (4 marks)

QUESTION TWO (20 MARKS)

- a) Discuss with use of equations halogenation of methane using chlorine (8 marks)
- b) Discuss ozonolysis of ethane include all the equations (6 marks)
- c) Discuss with examples primary, secondary and tertiary alcohols (6 marks)

QUESTION THREE (20 MARKS)

- a) Discuss methods of preparing alkynes use equations where appropriate (16 marks)
- b) Identify the functional group for each of the following (4 marks)
- (i) Alkylhalide
 - (ii) Alcohol
 - (iii) Ether
 - (iv) Ketone

QUESTION FOUR (20 MARKS)

- a) Discuss methods of preparing alkanols (10 marks)
- b) Combustion of 5.17 mg of a sample gives 10.32 mg of CO₂ and 4.23 mg of water. The molecular weight of the compound is 88. What is the molecular formula of the compound (10 marks)