MINISTRY OF EDUCATION

NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

RTB RWANDA TVET BOARD

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BUGESERA DISTRICT

TSS 2nd TERM DISTRICT COMPREHENSIVE ASSESSMENT
SCHOOL YEAR: 2024-2025

SECTOR:

……/100 MARKS

TRADE:

RQF LEVEL: L4BDC

MODULE CODE AND TITLE: GNOC: INTRODUCTION TO ORGANIC CHEMISTRY

DURATION: 3HOURS

DATE: …./……/2025

INSTRUCTIONS TO CANDIDATE:

- ✓ **This exam has three sections.**
- ✓ **Maximum marks……../……. Marks**
- ✓ **Attempt all Questions in A**
- ✓ **Choose only three questions in section B.**
- ✓ **Choose only one question in section C.**

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Q1 Define the following terms: **(4marks)**

a) Alicyclic compounds b) Aliphatic compounds

Q2. All are organic compounds except. **(2marks)**

a. C_6H_{10} b. $CoCl_2$ c. $C_{12}H_{22}O_{11}$ d.C_2H_6 e. CH_4

Q3. The following list represents the different types of bonds**.** **(2marks)**

A. Ionic bond B. Peptide bond C. Covalent bond D. Metallic bond.

Choose only one bond which can be formed between two

amino acid molecules**.** **(2marks)**

Q4 General formula of alkene is CnH2n: which of the following formulae represents an alkene? **(2marks)**

(a) $CH_3CH_2CH_3$ (b) CH_3CH_3 (c) $CH_3CH_2CHCH_2$ (d) CH_3CH_2Cl

Q5. Write two uses of methane. **(2marks)**

Q6. Mach each of the following functional groups to their corresponding chemical compounds as they are provided in the table. **(5marks)**

Functional group	**Chemical compounds**
1.Alcohol	a)CH_3COCH_3
2.Amine	b)CH_3COOCH_3
3.Carboxylic acid	c)$CH_3CH_2NH_2$
4.ketone	d)CH_3CH_2OH
5.Ester	e)CH_3CH_2COOH

Q7. Identify four classes of carbohydrates. **(4marks)**

Q8. Give IUPAC name for each of following compounds. **(3 marks)**

a) $CH_3CH_2CH_2CH_3$ b) $CH_3CH_2CH_2OH$ c) CH_3COCH_3

Q9 Amphiphilic lipids are molecules that have both properties of hydrophilic and hydrophobic:

i) Lipids are hydrophobic: explain briefly. **(2marks)**

ii)Lipids are hydrophilic: explain briefly. **(2marks)**

Q10 Write two hydrophobic lipids. **(2marks)**

Q11 Write two uses of the Cellulose **(4marks)**

Q12. Identify any two sources of nucleic acids. **(2marks)**

Q13 a) Identify 2 main sources of protein**.** **(2marks)**

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b) Write one example for each source protein. **(2marks)**

Q14 Write in full word the following terms: **(2marks)**

a) DNA b) RNA

Q15. What is the meaning of the following terms: (**2marks)**

a) Monomer (1 mark) b) Polymer (1 mark)

Q16. Write four (4) types of biological macromolecules. (**4marks)**

Q17Classification of polymers based on the origin/source: they are three types:

a) Write three types of polymers based on the origin. **(3marks)**

b) Differentiate homopolymer from heteropolymer. **(2marks)**

Section B: Among the five (5) questions, attempt any three (3) (30 marks)

Q18 Methane is a member of homologous series of alkanes.

a) Define the term homologous series. (**2marks)**

b) Identify four characteristics of homologous series. **(4marks)**

c) Draw the structure formula of the following organic compounds. **(4marks)**

I) pent-1-ene or 1-pentene.

II) methoxy ethane or ethyl, methyl ether

Q19) a) Differentiate empirical formula from molecular formula. **(4marks)**

b) An organic compound on analysis gave the following data: carbon(C)=57.82%, hydrogen(H)=3.6% and the rest is oxygen. Its vapor density is 83. Found its empirical and molecular formula. **(6marks)**

C=12, H=1, O=16.

Q20.) a) What are nucleic acids? **(2marks)**

b) Write three main types of RNA. **(3marks)**

c) Identify any three functions of RNA. **(3marks)**

d) List any two functions of DNA. **(2marks)**

Q21.a) Differentiate addition polymerization from condensation **(4marks)**

polymerization.

b) Discuss the application of polymers. **(6marks)**

Q22. a) Identify three (3) classes of alcohols. **(3marks)**

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b) Match the compounds in column A with their corresponding general formulae B **(5marks)**

A.compounds	B. Function group
1.Alkanes	a)RCOR
2.Alkenes	b)C=C
3.Alcohols	c)RH
4.Ethers	d)ROH
5 Ketones	e)ROR

c) . Draw the structure formula of the following organic compounds. **(2marks)**

i) 3,4-dimethylpentanal

ii) 4-methylpent-1-ene

Section C: Among the two (2) questions, attempt any one (1) (15 marks

Q23 a) Describe vitamins. **(2marks)**

b) Vitamins comprise different classes.

i) Differentiate fat-soluble vitamins from water-soluble vitamins**.** **(5 marks)**

ii) Given the following vitamins A, B, C, D, E and K. Classify each of these vitamins as: **(6 marks)**

. Fat-soluble

. Water-soluble

c)Identify sources of vitamins. **(2marks)**

Q24 a) Define the term polymerization. **(3marks)**

b) Identify four types of monomers. **(4marks)**

c)Explain any four properties of polymers. **(8marks)**

END OF ASSESSMENT!!!

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