higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

CHEMISTRY N5

(15040015)

27 November 2019 (X-Paper)
09:00–12:00

Calculators may be used.

This question paper consists of 6 pages and 1 periodic table.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
CHEMISTRY N5
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Write neatly and legibly.

QUESTION 1: INTRODUCTION TO ORGANIC CHEMISTRY AND ALKANES

1.1 Draw the structure of 2,2,3-trimethylpentane. (2)

1.2 1-chloropropane is formed when the chlorine bond is homolytically broken by irradiating it with light. The chlorine radicals are further collided with propane molecules.

1.2.1 Explain the term *radicals*. (1)

1.2.2 Give ONE example of a chlorine radical. (1)

1.2.3 Use hybridisation theory to explain the orbital overlap that occurs in propane. (3)

1.2.4 Briefly discuss *homolytic bond breakage*. (2)

1.3 Briefly differentiate between an *electrophile* and a *nucleophile*. (2 + 2) (4)

1.4 A certain saturated hydrocarbon was isolated from coal tar. The compound has five carbon atoms.

1.4.1 Give the molecular formula of the compound. (1)

1.4.2 What is the general formula of the compound? (1)

1.4.3 Name the compound. (1)

1.4.4 Is the compound soluble in water? (1)

1.4.5 If the boiling point of this compound is compared to the boiling point of methane, which one will have a higher boiling point? Explain the answer. (2)

1.4.6 Draw ALL possible structural isomers of the compound. (6)

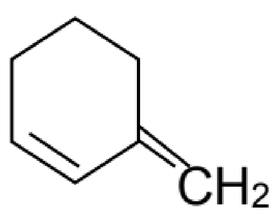
[25]

QUESTION 2: ALKENES, ALKYNES AND AROMATIC COMPOUNDS

2.1 Classify each of the following compounds as a conjugated, isolated or cumulated polyene:

2.1.1 $CH_2 = CH - CH_2 - CH_2 - CH = CH_2$

2.1.2 $CH_2 = CH - CH = CH_2$

2.1.3 

(3 × 1) (3)

