higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T360**(E)**(A9)T

NATIONAL CERTIFICATE

CHEMISTRY N5

(15040015)

9 April 2019 (X-Paper)
09:00–12:00

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 Reaction 1:

$$C\ell{:}C\ell \xrightarrow[\text{light}]{} C\ell\cdot + \cdot C\ell$$

Reaction 2:

$$CH_3O-H + H_2O \rightarrow CH_3O{:}^{-} + H_3O{:}^{+}$$

1.1.1 Which reaction involves a homolytic bond cleavage? (1)

1.1.2 Name the species formed in reaction 1. (1)

1.1.3 Reaction 2 involves the formation of an electrophile and a nucleophile.

Which product is the nucleophile? (1)

1.1.4 Briefly define the term *electrophile*. (2)

1.1.5 Write a reaction equation for the chlorination of methane. (4)

1.1.6 Classify the reaction mentioned in QUESTION 1.1.5 as a substitution or addition reaction. Justify the answer. (2)

1.1.7 Briefly describe heterolytic bond cleavage. (2)

1.2 $CH_3CH_2CHCH_2$

1.2.1 Name the type of hybridisation that occurs at C1 and C4. (2)

1.2.2 Is the compound a saturated or unsaturated hydrocarbon? Justify the answer. (2)

1.3 Give ONE example of each of the following:

1.3.1 Aliphatic compound

1.3.2 Aromatic compound

1.3.3 Heterocyclic compound

(3 × 1) (3)

[20]