higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

CHEMISTRY N5

7 AUGUST 2019

This marking guideline consists of 5 pages.

QUESTION 1: INTRODUCTION TO ORGANIC CHEMISTRY AND ALKANES

1.1 1.1.1 C2 : Sp^3 hybrid
C3 : Sp^3 hybrid (2)

1.1.2 C_nH_{2n} (1)

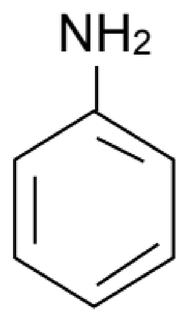
1.1.3 Saturated hydrocarbon.✓ It is only composed of single bonds.✓ (2)

1.1.4 Radicals (1)

1.1.5 It is a type of bond cleavage that occurs in polar reactions where each fragment leaves with an unpaired electron of the bonding electrons.✓✓

$$C\ell : C\ell \xrightarrow[\text{Light}]{} C\ell^{\cdot} + C\ell^{\cdot}$$ ✓✓✓ (5)

1.2 1.2.1 $CH_3(CH_2)_3CH_3$

1.2.2 

1.2.3 

(3 × 2) (6)

1.3 1.3.1 Electrophile
1.3.2 Nucleophile
1.3.3 Nucleophile

(3 × 1) (3)
[20]

QUESTION 2: ALKENES, ALKYNES AND AROMATIC COMPOUNDS

2.1 2.1.1 C_6H_{12} (2)

2.1.2 Alkenes (2)

2.1.3 1-Methylcyclopentene (2)

2.1.4 The compound is insoluble in water because it is an alkene and all alkenes do not dissolve in water. (2)

2.1.5 **Major product**
1-Bromo-2-methylcylopentane
Minor product
1-Bromo-1-methylcyclopentane (2 × 2) (4)

2.1.6 During the addition of HX to an alkene, the H attaches to the carbon with fewer alkyl substituents and the X attaches to the carbon with more alkyl substituents. (2)

2.2 2.2.1 2-Butene✓
Major product
1-Butene✓
Minor product

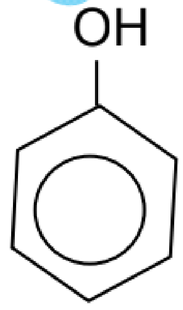
2.2.2 Base-induced elimination reactions generally give more highly substituted alkene products.
(2 × 2) (4)

2.3 $CH_3 – CH_2 – CH_2 – CH_2 – CH_3$
Pentane (2)

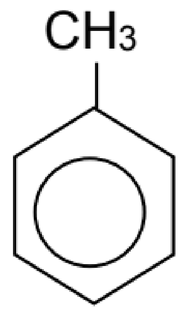
2.4 2.4.1 $CH_2 = CH – CH = CH – CH = CH_3$

2.4.2 1,2,3–Hexatriene
(2 × 3) (6)

2.5 2.5.1



2.5.2



(2 × 2) (4)
[30]