



# higher education & training

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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

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**INSTRUCTIONS AND INFORMATION**

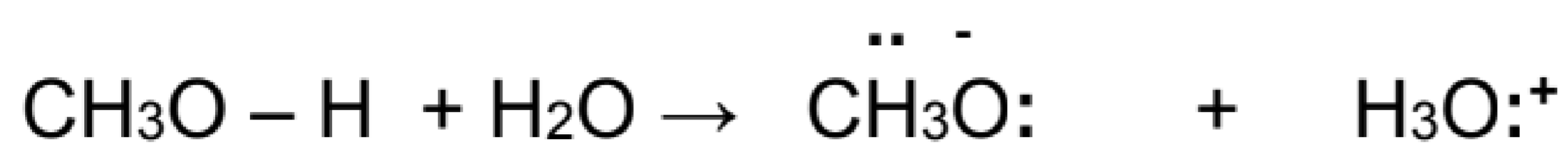
1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers according to the numbering system used in this question paper.
  4. Write neatly and legibly.
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**QUESTION 1: INTRODUCTION TO ORGANIC CHEMISTRY AND ALKANES**

1.1 Reaction 1:



Reaction 2:



- 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  $\text{CH}_3\text{CH}_2\text{CHCH}_2$
- 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]**