

## Chemistry

## Section I (continued)

## Part B – 60 marks

## Attempt Questions 16–27

Allow about 1 hour and 45 minutes for this part

Answer the questions in the spaces provided.

Show all relevant working in questions involving calculations.

Marks

## Question 16 (6 marks)

You have carried out a first-hand investigation to compare the reactivity of an alkene with its corresponding alkane.

- (a) State the name of the alkene. 1

Cyclohexene

- (b) Outline a procedure to compare the reactivity of this alkene with its corresponding alkane. 2

This experiment was conducted in a fume cupboard where in two test tubes - one containing cyclohexene and the other cyclohexane. <sup>none</sup> Each were mixed with the same amount of bromine water and the reactions observed.

- (c) Describe the results obtained from this first-hand investigation and include relevant chemical equations. 3

In test tube one, that contained cyclohexene the brown bromine water turned colourless as the <sup>alkenes</sup> reactive double bond opened.

$$\begin{array}{c}
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 | & & | & & | & & | \\
 \text{C} & = & \text{C} & & \text{C} & - & \text{C} \\
 | & & | & & | & & | \\
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 | & & | & & | & & | \\
 \text{H} & & \text{H} & & \text{H} & & \text{H}
 \end{array}
 + \text{Br}_2 \rightarrow
 \begin{array}{c}
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 | & & | & & | & & | \\
 \text{C} & - & \text{C} & & \text{C} & - & \text{C} \\
 | & & | & & | & & | \\
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 \text{H} & & \text{H} & & \text{H} & & \text{H} \\
 | & & | & & | & & | \\
 \text{H} & & \text{H} & & \text{H} & & \text{H}
 \end{array}$$

The cyclohexane however remained as a brown solution with no bromine water reacting with the alkane.