Aromatics

Question Paper

Level	Pre U
Subject	Chemistry
Exam Board	Cambridge International Examinations
Topic	Aromatics- Aromatic chemistry
Booklet	Question Paper

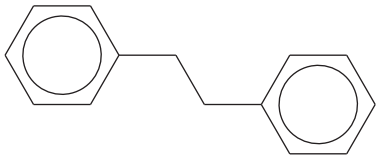
Time Allowed: **14 minutes**

Score: **/12**

Percentage: **/100**

Grade Boundaries:

1. A survey in 2008 of the 24 million known organic compounds identified the most common structural motifs. The 3rd most popular shape (after the hexagon and pentagon) was based on the 1,2-diphenylethane molecule.



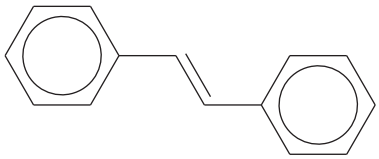
(a) How many signals would there be in the carbon-13 NMR spectrum of the 1,2-diphenylethane molecule?

.....[1]

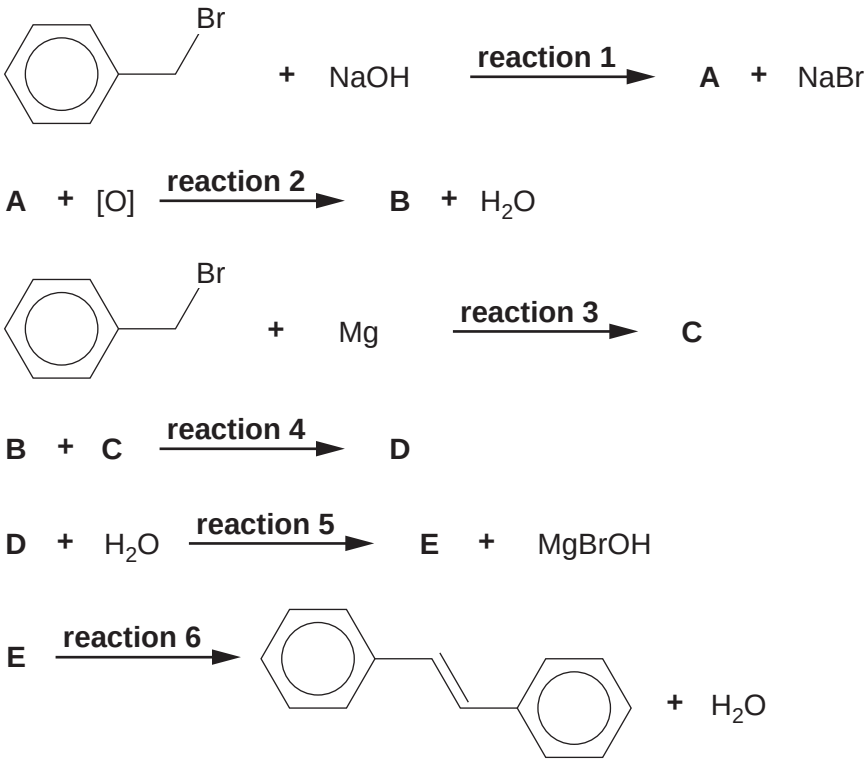
(b) If one of the hydrogen atoms on one of the phenyl groups of 1,2-diphenylethane is substituted with a chlorine atom, how many possible isomers would there be?

.....[1]

A closely related compound to 1,2-diphenylethane is 1,2-diphenylethene, commonly known as stilbene.



Stilbene can be synthesised from (bromomethyl)benzene according to the scheme below. The reactions are labelled **1** to **6** above the reaction arrows. The benzene ring does not take part in any of these reactions.



(c) **Reaction 2** is a partial oxidation. In the equation [O] represents the oxygen atom provided from some suitable reagents. Suggest such a reagent.

.....[1]

(d) What is the name of the **type** of compound produced in **reaction 3**?

.....[1]

(e) Classify the **type** of reaction in **1**, **5** and **6**.

reaction 1 .....[1]

reaction 5 .....[1]

reaction 6 .....[1]

(f) Draw the structures of unknowns **A** to **E**.

A

[1]

B

[1]

C

[1]

D

[1]

E

[1]

[Total: 12]