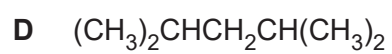
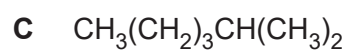
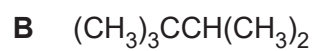
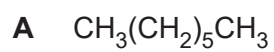


1 Which alkane has the highest boiling point?



Your answer

[1]

2. The structure of hydrocarbon **A** is shown below.



(a) Hydrocarbon **A** can be reacted with bromine in the presence of ultraviolet radiation to prepare  $(\text{CH}_3)_3\text{CCHBrCH}_3$ .

What is the systematic name for  $(\text{CH}_3)_3\text{CCHBrCH}_3$ ?

..... [1]

(b)  $(\text{CH}_3)_3\text{CCHBrCH}_3$  has stereoisomers.

(i) Explain the term stereoisomers and name this type of stereoisomerism.

Explanation: .....

.....

.....

Type of stereoisomerism: ..... [1]


(ii) Draw 3D diagrams for the stereoisomers of  $(\text{CH}_3)_3\text{CCHBrCH}_3$ .

[2]

- (c) Complete the table to show the mechanism for the reaction of hydrocarbon **A** with  $\text{Br}_2$  to form  $(\text{CH}_3)_3\text{CCHBrCH}_3$ .

Use skeletal formulae for all organic compounds.

Use 'dots' (•) to show the position of unpaired electrons.

<b>Initiation</b>
.....
<b>Propagation</b>
 + ..... → ..... + .....
..... + ..... → ..... + .....

[3]

- (d) State **two** limitations of using radical substitution in organic synthesis.

1 .....

.....

2 .....

.....

[2]