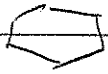


Aug 30 / SEP 1


Ch 2 Alkanes

1. Physical Properties of alkanes (m.p., b.p., density)
← unbranched alkanes C_nH_{2n+2} remember the trend!
 cycloalkanes C_nH_{2n} not values.
e.g.  cyclohexane

read chap. 2.6

① b.p. For hydrocarbons, regular increase of 20-30°C / ^{additional} carbon
⇒ determined by the strength of intermolecular attraction

gas \rightleftharpoons liquid \rightleftharpoons solid \uparrow vaporization
intermolecular attraction (van der Waals)

shape matters  (19.4°C) ^(A)

 (36.1°C) ^(B)

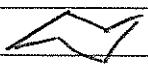
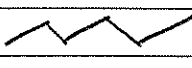
the higher m.w. \uparrow , mol. surface \uparrow
the greater v.d.W. Force
the higher b.p. \uparrow

(A) has less surface/volume ratio, thus v.d.W. Force

② m.p. characteristics to I.D. org. cpds.
determined by the stability of crystal structures
of a certain substance

Q: Rank the order of m.p. values of ^(A) ^(B)
 (-16.8°C) (-129.8°C)
packed well more stable. less symmetrical less stable

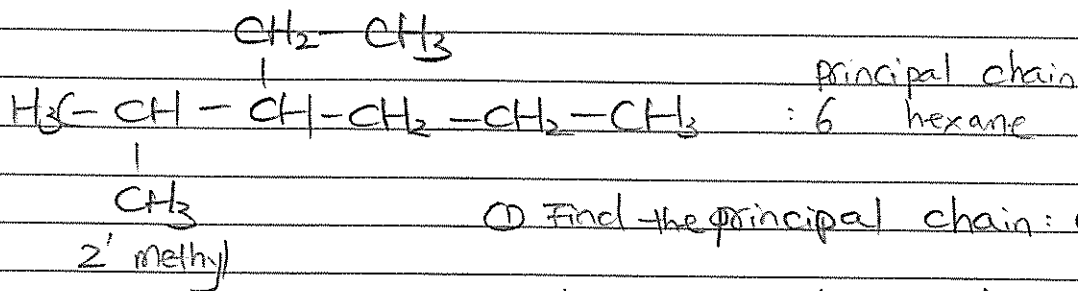
Example:

 m.p. 6.6°C  -95.3°C

Sept 1

Nomenclature

3' ethyl



① Find the principal chain: 6 (hexane)

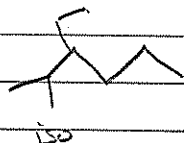
② two options w/ same length, choose the chain w/ more branches

3-ethyl-2-methylhexane

③ number the carbons

④ name each substituent

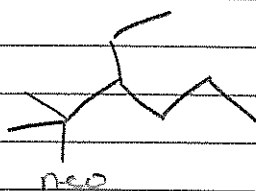
Skeletal structure



⑤ order the substituents by alphabetical

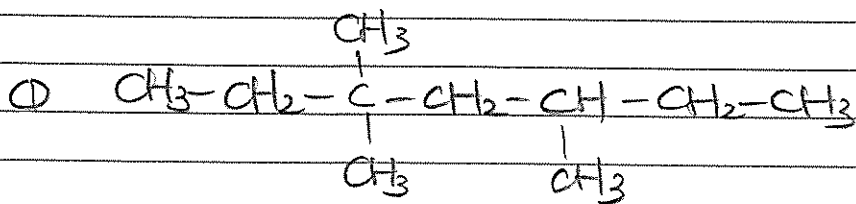
⑥ construct the name

Q: how about



3-ethyl-2,2-dimethylhexane

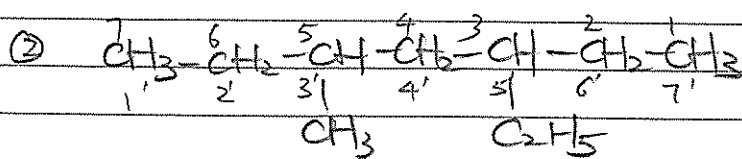
pay special attention to:



3,3,5-trimethylheptane

Numbering

not 3,5,5



3-ethyl-5-methylheptane

not

5-ethyl-3-methylheptane