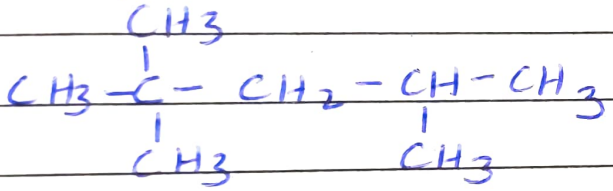
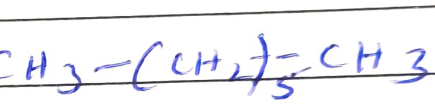
OCTANE NUMBER (ON):

Knocking capacity of a fuel is measured in terms of Octane number. Branched chain compounds produce low knocking while straight chain compounds produce high knocking. Iso-Octane (2:2:4 trimethyl pentane) with excellent combustion characteristics is given ON = 100 while n heptane which knocks highly is given ON = 0





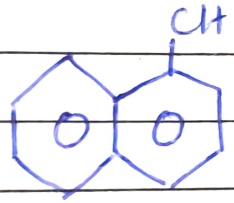
Iso Octane ON = 100 n-heptane ON = 0

Octane number of a fuel is defined as the percentage by volume of Iso Octane in a mixture of Iso Octane and n heptane which has the same knocking capacity as the gasoline under test.

Thus if the ON of a gasoline is 70 it means that its knocking characteristics are similar to that of the knocking characteristics of a mixture of 70% isooctane + 30% n heptane

CETANE NUMBER (CN)

Cetane number is an indicator of the readiness with which a given diesel undergoes compression ignition. Straight chain compounds undergo easy compression ignition and n-Cetane is chosen as the upper limit of cetane number = 100. Branched chain and cyclic compounds do not undergo compression ignition readily and methyl napthalene is chosen as the lower limit of cetane number = 0



$CH_3-(CH_2)_{14}-CH_3$

Methyl napthalene CN = 0 n Cetane CN = 100

Cetane number of a diesel is the percentage by volume of n-Cetane in a mixture of n-Cetane and 1-methyl napthalene that gives the same knocking as the diesel under consideration