Name of the Student:_____
Max. Marks : 15 Marks **Time : 15 Minutes**

Q1.

The alkanes form an homologous series of hydrocarbons. The first four straight-chain alkanes are shown below.

methane	CH_4
ethane	CH_3CH_3
propane	$CH_3CH_2CH_3$
butane	$CH_3CH_2CH_2CH_3$

(a) (i) State what is meant by the term *hydrocarbon.*

_____

_____

(ii) Give the general formula for the alkanes.

_____

(iii) Give the molecular formula for hexane, the sixth member of the series.

_____

(3)

(b) Each homologous series has its own general formula. State **two** other characteristics of an homologous series.

_____

_____

_____

(2)

(c) Branched-chain structural isomers are possible for alkanes which have more than three carbon atoms.

(i) State what is meant by the term *structural isomers.*

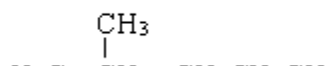
_____

_____

_____

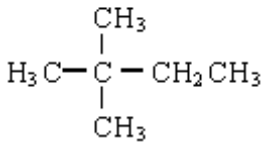
(ii) Name the **two** isomers of hexane shown below.

Isomer 1



Name _____

Isomer 2



Name _____

(iii) Give the structures of **two** other branched-chain isomers of hexane.

Isomer 3 *Isomer 4*

(6)

(d) A hydrocarbon, **W,** contains 92.3% carbon by mass. The relative molecular mass of **W** is 78.0

(i) Calculate the empirical formula of **W**.

_____

_____

_____

_____

(ii) Calculate the molecular formula of **W**.

_____

_____

(4)

(Total 15 marks)