

HALOALKANES & HALOARENES ^{1.}

Chemistry
29-05-2020

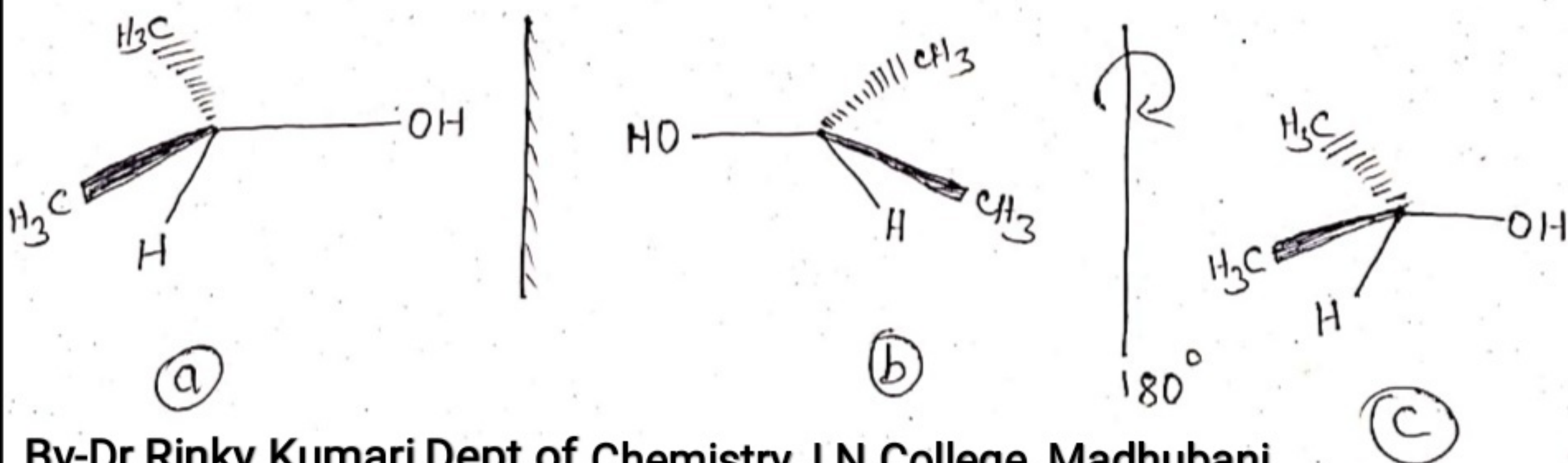
Lecture-9

Class-XII
Unit-10

Topic - Optical Isomer Continued..

- * The molecules having stereocentre have no symmetry and referred to as asymmetric molecule.
- * The objects which are non-superimposable on their mirror image are said to be chiral and the property is known as chirality.
- * The objects which are superimposable on their mirror images are called Achiral.
- * Let us consider two simple molecules :-

Propan-2-ol and butan-2-ol and their mirror images.

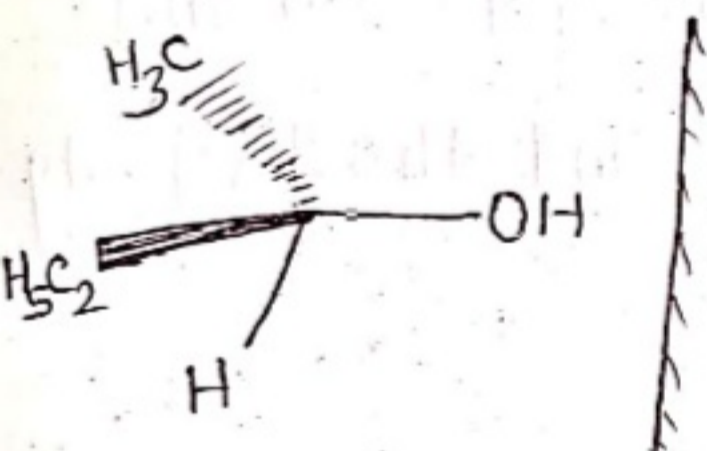


(c) Obtained by rotating (b) by 180° .

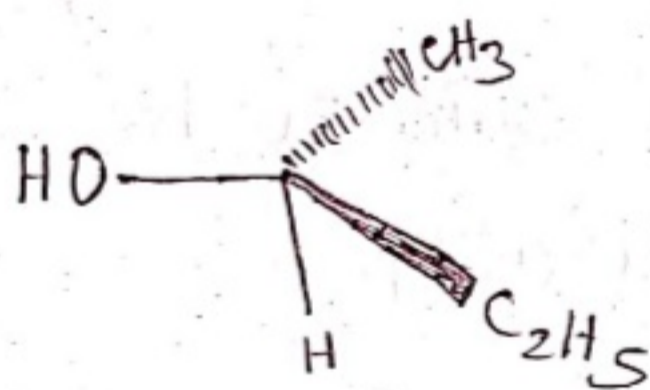
* (c) is superimposable on its mirror image (a)

** Propan-2-ol does not contain an asymmetric carbon. Thus, it is an achiral molecule.

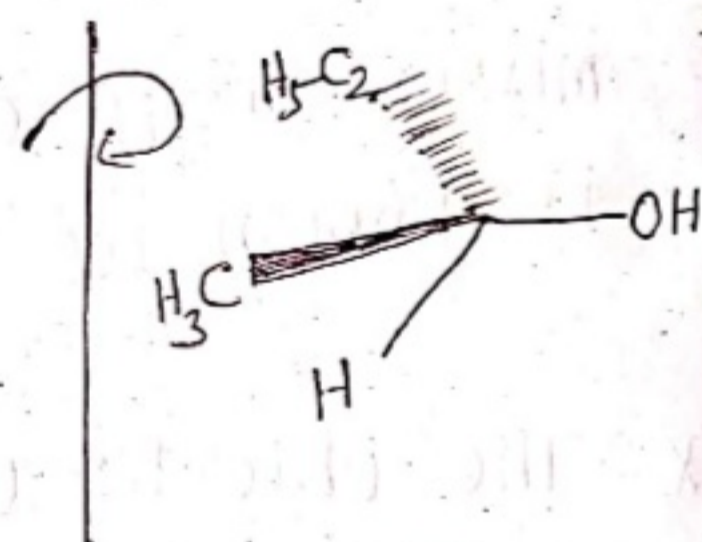
Butan-2-ol



(d)



(e)

 180°

(f)

(f) obtained by rotating (d) by 180° .

(f) is non superimposable on the mirror image (d).

* Butan-2-ol has four different groups attached to the tetrahedral carbon and as expected is chiral.

* some common examples of chiral molecules:—
2-chlorobutane, 2,3-dihydroxypropanal etc.—

Enantiomers : — The non-superimposable mirror 3
images of a chiral compound are known as Enantiomers

* Enantiomers possess identical physical properties namely melting point, boiling point, solubility, refractive index etc.

They only differ with respect to the rotation of plane polarised light. They rotate plane of polarised light in opposite direction, but to the equal extent.

* If one of the enantiomer is dextro rotatory the other will be laevo rotatory.

* Enantiomers have identical chemical properties. However, their reactivity i.e. rate of reaction with other optically active substances are different.

To be continued in next lecture..

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