

17TH APRIL, 2020.

AKPOFURE TESE

100 LEVEL

19/MHS01/077

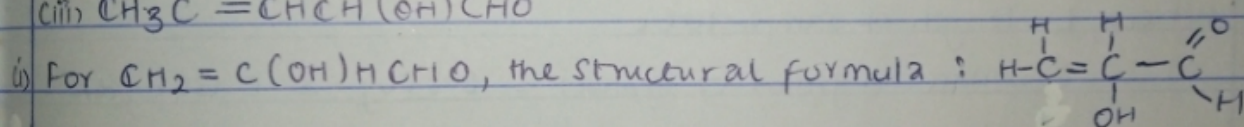
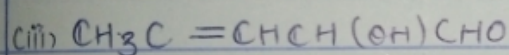
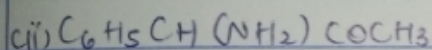
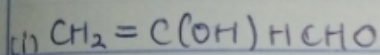
MEDICINE AND SURGERY

MEDICINE AND HEALTH SCIENCES

CHM 102 - GENERAL CHEMISTRY II

ASSIGNMENT (STEREOCHEMISTRY AND FUNCTIONAL GROUP)

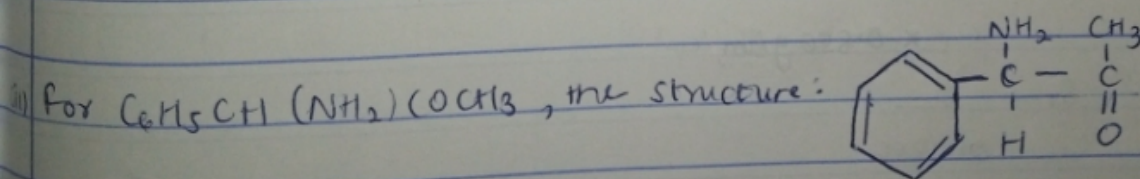
1. Name the functional groups present in each of the following molecules:



Functional groups present are: a) Double bond chain, = (Alkene)

b) OH (Hydroxyl group)

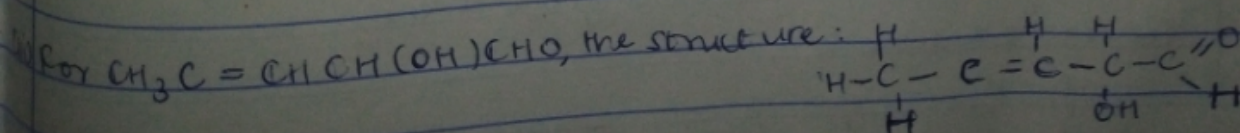
c) $\text{C} \begin{array}{l} // \text{O} \\ \backslash \text{H} \end{array}$ (Alkanal)



Functional groups present are: a) Phenyl group (C_6H_5) with double bonds.

b) Amine ($\text{R}-\text{NH}_2$)

c) Ketones (Alkanones - $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}$)



Functional groups present are: a) Alkene (C=C) - Double bond chain
 b) Hydroxyl group (OH)
 c) Alkanal (C=O)

2. A 0.856g sample of pure (2R,3R)-tartaric acid was diluted to 10cm³ with water and placed in a 1.0dm polarimeter tube. The observed rotation at 20°C was +1.0°. Calculate the specific rotation of (2R,3R)-tartaric acid.

Solution

Recall;

$$[\alpha]_D^{25} = \frac{\alpha}{l \times c} (S_r)$$

where, l = length of sample tube

$$c = \frac{\text{Mass (g/dm)} \text{ or } (g/mol)}{\text{Volume}} = \frac{0.856g}{10cm^3} = 0.0856g/cm^3$$

$$\alpha = \text{Observed rotation} = +1.0^\circ$$

S_r = Specific rotation

$$S_r = \frac{1.0^\circ}{1.0dm \times 0.0856g/cm^3}$$

$$S_r = \frac{1}{0.0856}$$

$$S_r = 11.68^\circ g^{-1} cm^3 dm^{-1}$$

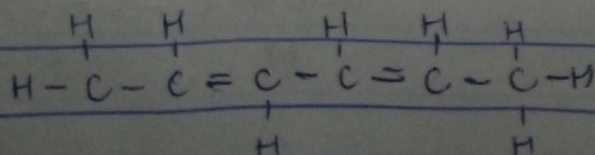
$$S_r = 11.68^\circ g^{-1} cm^3 dm^{-1}$$

$$S_r = 11.68^\circ g^{-1} cm^3 dm^{-1}$$

3. Draw the possible geometric isomers (where possible) for each of the following compounds:

(i) Hexa-2,4-diene (ii) 2,3-Dimethylbut-2-ene

For hexa-2,4-diene:



For 2,3-Dimethylbut-2-ene:

