NAME: AKPARANTA FAVOUR DEPT: MECHANICAL ENGINEERING MAT NO: 19\ENG06\005 COURSE CODE: CHM 102

## ASSINGMENT

1. Name the functional group present in each of the following molecules.

i.  $CH_2=C(OH)HCHO$ : Hydroxyl group or alkanol (OH) and aldehyde , alkanal (CHO) and alkene(double bond)

ii. C<sub>6</sub>H<sub>5</sub>CH(NH<sub>2</sub>)COCH<sub>3</sub>: Amine(NH<sub>2</sub>) and ketones(c=o)

iii.CH<sub>3</sub>C=CHCH(OH)CHO: Hydroxyl group or alkanol (OH), aldehyde or alkanal (CHO) and alkene(double bond)

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

i. Specific rotation is given by[  $\alpha$ ] in g<sup>-1</sup> cm<sup>3</sup> dm<sup>-1</sup>

ii.  $\alpha$ = observed rotation in degree

iii .c=concentration of optically active solute in gcm<sup>-3</sup>

iv. L=path length in dm

Recall that,

[α] = α\CL

C=0.0856g\cm<sup>3</sup>,

L=1.0 dm,

α=1.0°,

T=20°c, wavelength=589nm

[x] = Specific rotation In g-1 cm dm-1 d = Observed rotation in degree C = Concentration OF OPLICALLY ACTIVE Solute In gcm L= path length In dm Relall that T= Tempreture X = Wave length Used = 589nm NB. The most common wavelength used is 589nm 0.8569 - 10 cm3 x 9 - 1000 cm 3  $\frac{0.856 \times 1000}{10} = 85.691 \, dm^3$ concentration in gicm3 = concentration (gldm3) 1000  $C = \frac{85.6}{1000} = 0.0856 \text{ g/cm}^3$  $\begin{bmatrix} \mathcal{L} \end{bmatrix}_{589}^{20} = \mathcal{L}$  $T = \frac{10}{0.0856 \times 1} = 11.68^{\circ}g^{-1}cm^{\circ}dm^{\prime}$ 

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

i. Hexa-2,4 diene

ii.2,3 di methyl but 2-ene

(Y i · Hexq -2,4 diene Hà diene CH3 = CH3 diene Trans -P 11 dimethyl byt-2-ene 23-CH3 Thereith is no geometric isomer