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DEPARTMENT: NURSING

MATRIC NO: 19/MHS02/036

COURSE CODE: CHEM 102 ASSIGNMENT

QUESTION 1

Name the functional groups present in each of the following molecules

- i. $\text{CH}_2=\text{C}(\text{OH})\text{HCHO}$
- ii. $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3$
- iii. $\text{CH}_3\text{C}=\text{CHCH}(\text{OH})\text{CHO}$

Answer

- i. $\text{CH}_2=\text{C}(\text{OH})\text{HCHO}$ - Alkene
 - Alkanol
 - Aldehyde
- ii. $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3$ -Amides
 - Ketones
- iii. $\text{CH}_3\text{C}=\text{CHCH}(\text{OH})\text{CHO}$ - Alkene
 - Alkanol
 - Alkanal

QUESTION 2

A 0.856g sample of pure (2R, 3R) tartaric acid was diluted to 10cm^3 with water and placed in a 1.0dm Polari meter tube. The observed rotation at 20°C was $+1.0^\circ$. Calculate the specific rotation of (2R, 3R) tartaric acid.

Answer

Mass of pure (2R, 3R) tartaric acid= 0.856g

Volume= 10cm^3

Length of Polari meter tube=1.0dm

$$\text{Concentration of pure (2R, 3R) tartaric acid} = \frac{0.856}{10} = 0.0856\text{g}/\text{cm}^3$$

$$\text{Specific rotation} = \frac{\text{observed rotation}}{(\text{concentration}) \times (\text{path length of sample cell in dm})}$$

$$\text{Specific rotation} = \frac{1.0}{\left(\frac{0.0856\text{g}}{\text{cm}^3}\right) \times (1.0\text{dm})}$$

$$= 11.68\text{g/cm}^3 \text{ dm}^{-1}$$

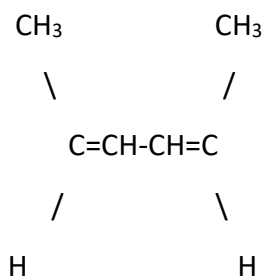
QUESTION 3

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

- i. Hexa-2,4-diene
- ii. 2,3-dimethylbut-2-ene

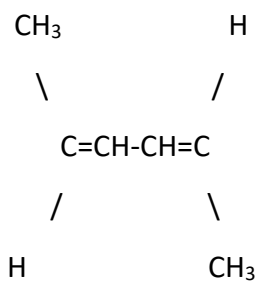
Answer

(A). Hexa-2, 4-diene



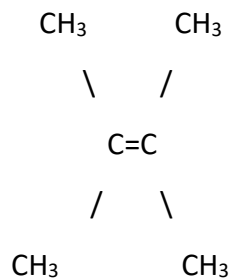
Cis Hexa-2, 4-diene

(B).



Trans Hexa-2, 4-diene

(C). 2, 3-dimethylbut-2-ene



There is no possible Geometric isomer for 2, 3-dimethylbut-2-ene