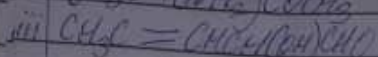
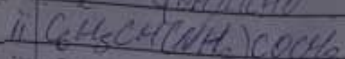
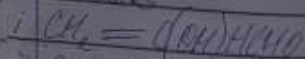


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ASSIGNMENT

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



Molecules	Functional groups
i. $\text{CH}_2 = \text{C}(\text{OH})\text{HCHO}$	-Aldehyde (-CHO) -Alkene (-C=C)
ii. $\text{C}_6\text{H}_5\text{C}(\text{NH}_2)\text{COCH}_3$	-Carbonyl (-CO) -Amino (-NH ₂)
iii. $\text{CH}_2 = \text{CHC}(\text{OH})\text{CHO}$	-Hydroxyl group (-OH) -Aldehyde (-CHO) -Alkene (-C=C)

2. A 0.450g sample of pure (2R,3R)-tartaric acid was diluted to 100 cm³ with water and placed in a 1.0 dm polarimeter cell. The observed rotation at 20°C was +1.0°. Calculate the specific rotation of (2R,3R)-tartaric acid.

$$[\alpha] = \frac{\alpha}{cl}$$

where $[\alpha]$ = specific optical rotation
 α = observed rotation
 c = concentration of acid
 l = pathlength (in dm)

$$\alpha = +1.0^\circ$$

$$l = 1.0 \text{ dm}$$

$$c = ?$$

The concentration is always measured in g/ml in the question. We were already given the mass in g so convert the volume to ml (100 cm³) to ml.

Here = 100000^2
 $10^5 = 10^5$

~~$1000^2 \times 1000$~~
 ~~1000^3~~ $\Rightarrow 1000^3 \times 1000 = 1000^4 \Rightarrow 10^4 = 10000$

$[Ox] = Ox = 1.0$

$Cl = 10 \times 10$

$[Ox] = 1$

10

$[Ox] = 0.1^0$

\therefore The spiro version of (SR, SR) - tartaric acid is 0.1^0

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

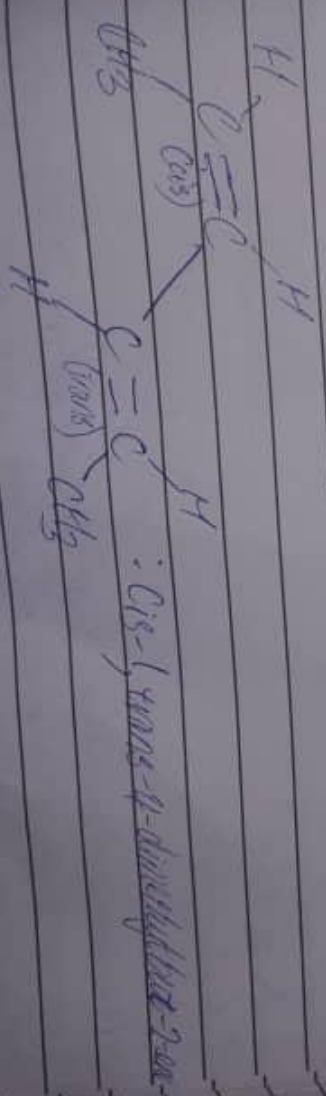
1. Hexa-2,4-diene

2. 2,3-Dimethyl but-2-ene

Answers

1. Hexa-2,4-diene $[CH_2=CH-CH=CH_2]$

Possible geometric isomers



iii) Trans-1,2-dimethylcyclopropane



iv) 2,3-Dimethylbut-2-ene



Possible geometric isomers

I. 1,2-Di-2-trimethylcyclopropane



II. 1-methyl-2-trimethylcyclopropane



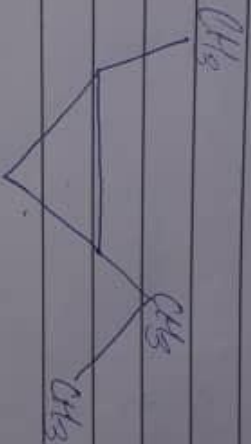
III. Cis-1,2,3-trimethylcyclopropane



Cis-1,3-dimethylcyclobutane



Cis-1-methyl-2-ethylcyclopropane



Trans-1,3-dimethylcyclobutane



Trans-1,3-dimethylcyclobutane

1,3

