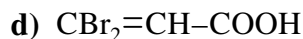
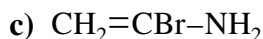
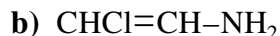


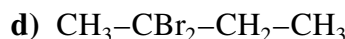
Problems of Isomerism of Organic compounds

1) Which of the following compounds have geometric (*cis-trans*) isomerism? Give an explanation as to why the compound has geometric isomerism.



2) Write formulae and give names for all the isomers of C_5H_{12} and indicate the type of isomerism that exists between them.

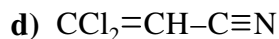
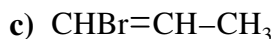
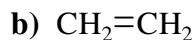
3) Which of the following compounds have asymmetric (or chiral) carbon atom? Mark the asymmetric carbon atom with an asterisk.



4) Write formulae and give names for all the isomers of bromophenol and indicate the type of isomerism that exists between them.

5) Write formulae and give names for all the isomers of $\text{C}_3\text{H}_8\text{O}$ and indicate the type of isomerism that exists between them.

6) Which of the following compounds have geometric (*cis-trans*) isomerism? Give an explanation as to why the compound has geometric isomerism.



7) Write formulae and give names for all of the isomers of C_4H_8 .

8) Write formulae and give names for all the isomers of C_4H_{10} and indicate the type of isomerism that exists between them.

9) Write formulae and give names for all the isomers of chloronitrobenzene and indicate the type of isomerism that exists between them.

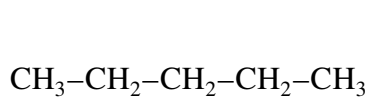
10) Write formulae and give names for all of the isomers of $\text{C}_4\text{H}_8\text{BrCl}$ that have an asymmetric (or chiral) carbon and indicate the type of isomerism that exists between them.

Problems of Isomerism of Organic compounds

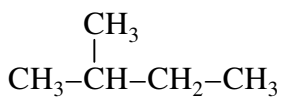
Answers:

1) Compound **b**): $\text{CHCl}=\text{CH}-\text{NH}_2$
Each carbon of the double bond has two different groups attached.

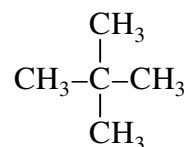
2) Three chain isomers:



pentane

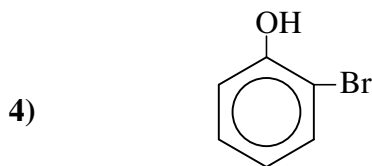


methylbutane

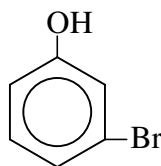


dimethylpropane

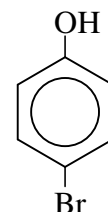
3) Compound **c**): $\begin{array}{c} \text{H} \quad \text{O} \\ | \quad || \\ \text{CH}_3-\text{C}^*-\text{C}-\text{H} \\ | \\ \text{Cl} \end{array}$ 2-chloropropanal



o-bromophenol



m-bromophenol



p-bromophenol

Three positional isomers.

5) (1) $\text{CH}_3-\text{CHOH}-\text{CH}_3$
2-propanol

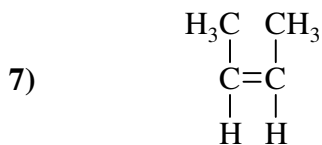
(2) $\text{CH}_3-\text{CH}_2-\text{CH}_2\text{OH}$
1-propanol

(3) $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_3$
ethyl methyl ether

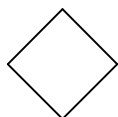
#1 and #2 are positional isomers. #3 is a functional isomer of #1 and #2.

6) Compound **c**): $\text{CHBr}=\text{CH}-\text{CH}_3$

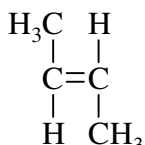
Each carbon of the double bond has two different groups attached.



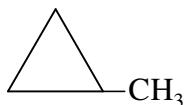
cis-2-butene



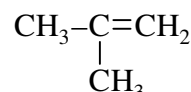
cyclobutane



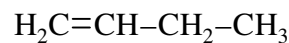
trans-2-butene



methylcyclopropane



methylpropene

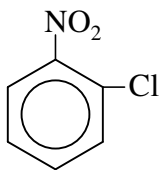


1-butene

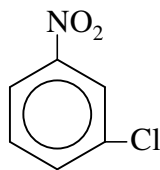
8) Two chain isomers:
 $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_3$ butane
 $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{CH}-\text{CH}_3 \end{array}$ methylpropane

Problems of Isomerism of Organic compounds

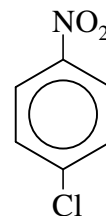
9)



o-chloronitrobenzene



m-chloronitrobenzene



p-chloronitrobenzene

Three positional isomers.

10)

