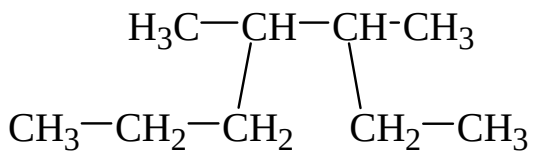
# Organic Nomenclature Exercises

1. Draw and name the 5 different isomers of $C_6H_{14}$.
2. Draw and name the 9 different isomers of $C_7H_{16}$.
3. Draw and name all the isomers of $C_8H_{18}$ which have a single side chain.
4. Draw and name all the isomers of $C_8H_{18}$ which have two side chains.
5. Draw the following:
   a) 2-methyloctane
   b) 4-ethyloctane
   c) 2,3-dimethyloctane
   d) 4-propylnonane
   e) 2,3,4,5-tetramethylhexane
   f) 4,6-diethyl-5-propylnonane
   g) propylcyclopropane
   h) 2-cyclopropylpropane
   i) 3,3-diethylpentane
   j) 1,2-dicyclobutylethane
6. Name the following.

a)

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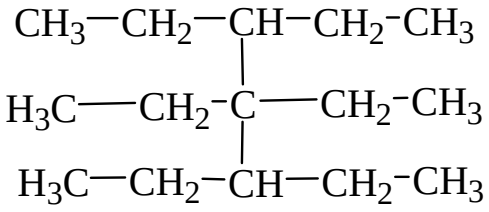


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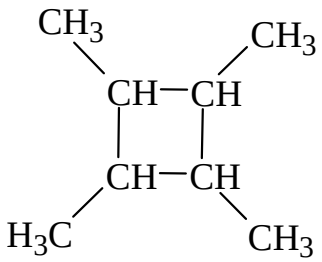
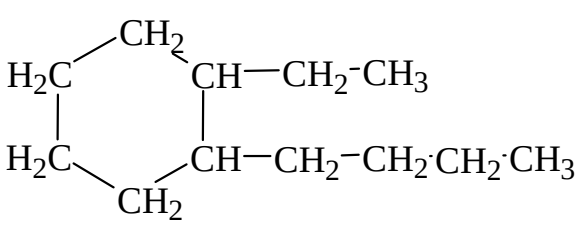
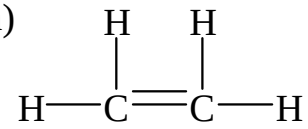


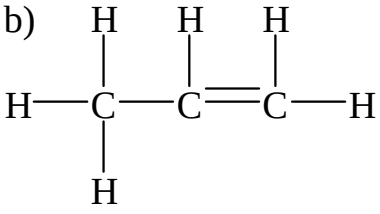

d)



7. Draw the following.
   a) 1-hexyne
   b) 3-heptene
   c) 3-methyl-2-pentene
   d) 3-cyclopropyl-1-pentene
   e) 1,2,3-trimethylcyclopropene
   f) 1,1-dicyclopropyl-2-methyl-1-propene

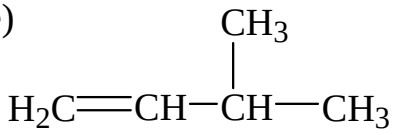
8. Name the following.

a) 

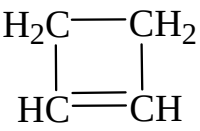
b) 

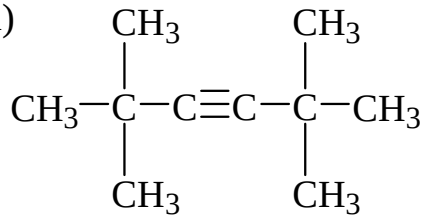
c) $CH_3-C\equiv CH$

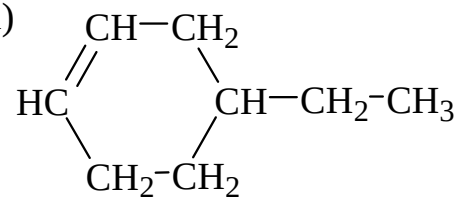
d) $CH_3-CH_2-C\equiv C-CH_3$

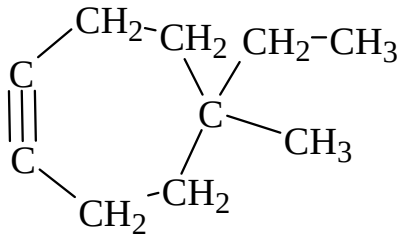
e) 

f) $CH_3-CH_2-CH_2-C\equiv CH$

g) 

h) 

i) 

j) 

9) What is wrong with the following?
   a) 2-ethene
   b) 2,2,2-trimethylpropane
   c) 3,5-dimethyl-4-ethyl-4-hexene

Exercises

## I. Halo, Amino, Nitro

1) Name the following:

a) $CH_3CH_2Br$ b) $Cl\text{-}CH_2CH_2\text{-}Cl$ c) $CH_3\text{-}NH_2$

d) $I_2CHCHI_2$ e) $ClC{\equiv}CCH_2NH_2$ f) $CF_3\text{-}CCl_3$

g) $CH_3\text{-}NH\text{-}CH_3$ h) $ClCH_2\text{-}CH_2\text{-}N(CH_3)\text{-}CH_3$

2) Draw the following:

a) 2-nitrobutane b) trichloromethane

c) 1,3-dinitrocyclobutane d) 2,3-diamino-2-pentene

e) 1-amino-3-bromo-5-ethyl-2-methyl-4-nitro-2-heptene

f) 1,4-diamino-1-cyclohexene g) 3-methylaminopentane

h) 2-ethylpropylamino-3-chloro-1-hexene

## II. Ethers

3) Draw the following:

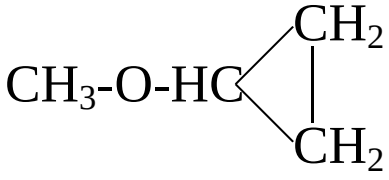
a) 1-propoxypentane b) 1,2-dimethoxyethane

c) 2,3-diethoxybutane d) cyclobutoxybutane

e) 1,3,5-triethoxycyclohexane

4) Name the following:

a) $CH_3\text{-}O\text{-}CH_3$ b) $Cl\text{-}CH_2CH_2\text{-}O\text{-}CH_3$

c) 


d) $CH_3\text{-}O\text{-}CH_2CH{=}CHCH(Cl)\text{-}CH_3$

## III. Alcohols

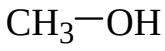
5) Draw the following:

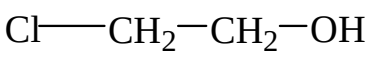
a) 3-pentanol b) ethenol c) cyclopentanol

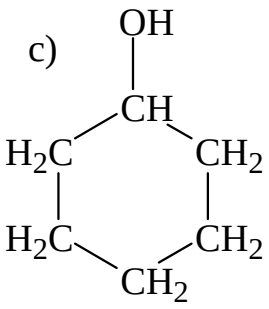
a) 3-amino-1-cyclobutenol

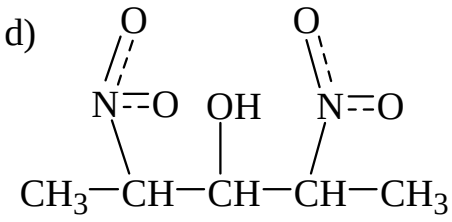
b) 3-bromo-2,3-dimethyl-2-butanol

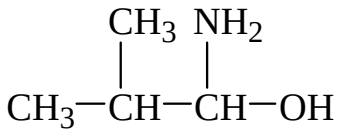
6) Name the following:

a) 

b) 

c) 

d) 

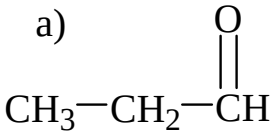
e) 

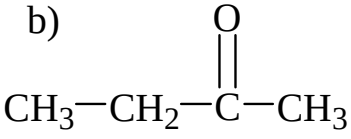
IV. Aldehydes and Ketones

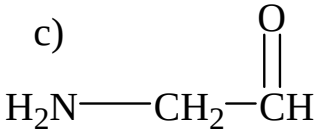
7. Draw the following:

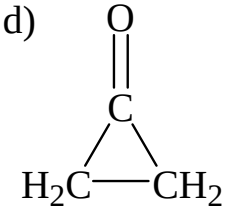
a) methanal
b) 2-aminopropanal
c) 2-ethylhexanal
d) 2-cyclopentenone
e) 3-cyclopropyl-4-methyl-2-pentanone

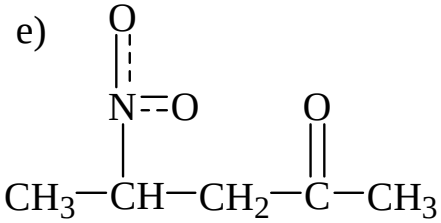
8. Name the following:

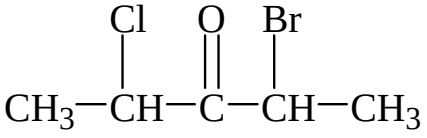
a) 

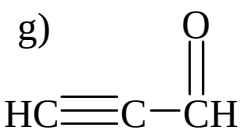
b) 

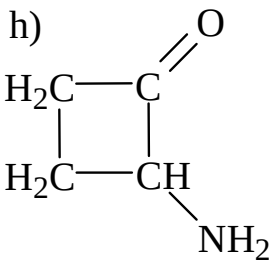
c) 

d) 

e) 

f) 

g) 

h) 

Carboxylic Acids

9) Draw the following:

a) butanoic acid
b) 2-aminoethanoic acid
c) trifluoroethanoic acid
d) 2-chloro-2-penteneoic acid

10) Name the following:

a) H-COOH
b) $CH_3CH_2CH=CH\text{-}COOH$
c) $CH_3\text{-}C(CH_3)_2\text{-}COOH$
d) $CH_3\text{-}C(Cl)(Br)\text{-}COOH$

V. Esters

11) Draw the following:

a) methyl methanoate
b) ethyl butanoate
c) ethyl ethanoate
d) hexyl pentanoate
e) 2-chloroethyl ethanoate
f) ethyl 2-chloroethanoate
g) 2-methylpropyl propanoate

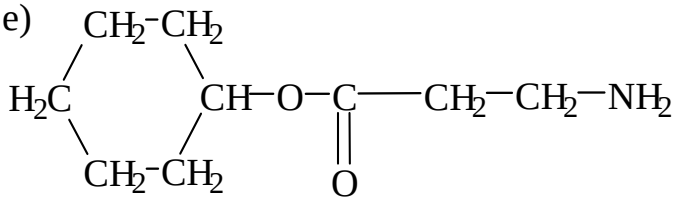
12) Name the following:

a) $CH_3-CH_2-C(=O)-O-CH_2-CH_2-CH_3$

b) $CH_3-CH(CH_3)-C(=O)-O-CH_3$

c) $H_2C=CH-C(=O)-O-CH_3$

d) $Cl-CH_2-CH_2-C(=O)-O-CH_2-CH_2-Cl$

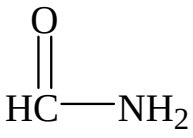
e) 

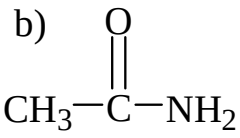
Amides

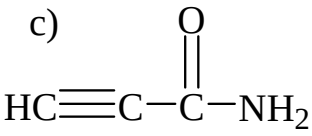
13. Draw the following:

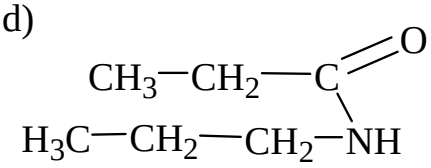
a) pentanamide
b) 2-methylbutanamide
c) chloromethanamide
d) N-methylmethanamide
e) cyclopropylethanamide
c) 2-chloro-N-ethyl-N-methylbutanamide
d) N,N-diethylhexanamide

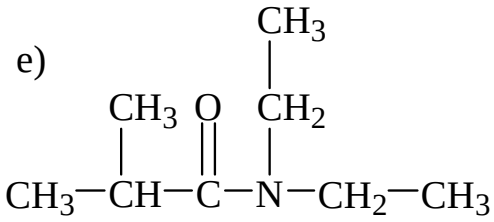
14. Name the following:

a) 

b) 

c) 

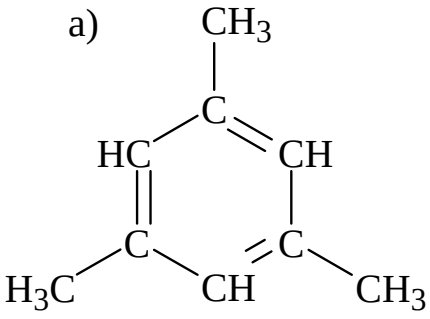
d) 

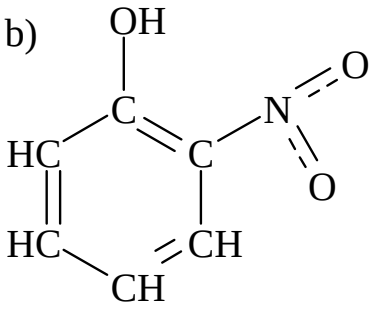
e) 

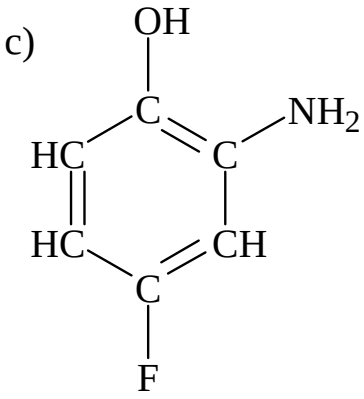
VI. Aromatic compounds

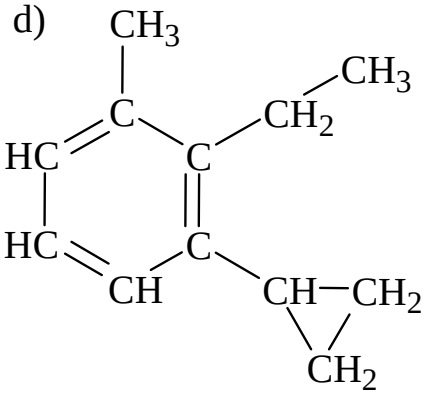
15. Draw the following:
    a) 1,2,3-trimethoxy-5-propylbenzene
    b) p-dihydroxybenzene
    c) 1,2,3,5-tetrachlorobenzene  d) o-diaminobenzene
    e) 1-chloro-2-hydroxy-4-methoxybenzene
    f) m-methylethylbenzene

16. Name the following:

a) 

b) 

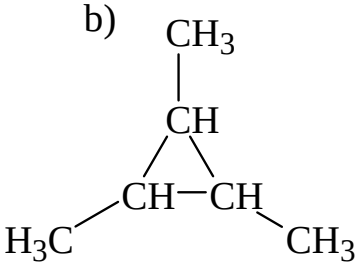
c) 

d) 

17. Draw and name the 4 isomers of $C_3H_6Cl_2$.
18. Draw and name the 6 isomers of $C_4H_8Cl_2$.
19. Draw and name all the isomers (appr. 10) of $C_5H_{10}$.
20. Draw the following:
    a) 2-aminopropanoic acid
    b) 3-chloro-2-buteneamide
    c) 1,4-dicyclopropylcyclohexane
    d) 1-amino-4,4-difluoro-2-pentanol
    e) methyl 2,3-dimethoxypropanoate
    f) 3-nitropropenal
    g) methanamide
    h) meta bromochlorobenzene
    i) ethyl pentanoate
    j) 4-nitro-3-butenal
    k) 3-cyclopentenone
    l) methoxybenzene
    m) dichloroethanoic acid
    n) 3,4,5,6-tetramethylnonane
    o) p-diaminobenzene

21. Name the following:

a) 

b) 

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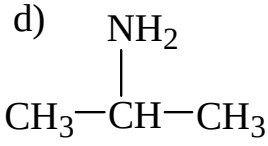
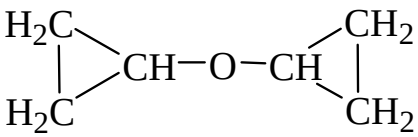
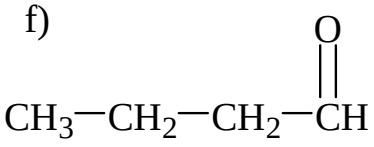
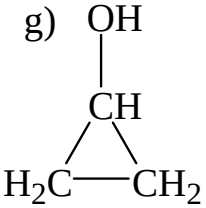
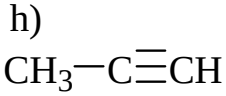
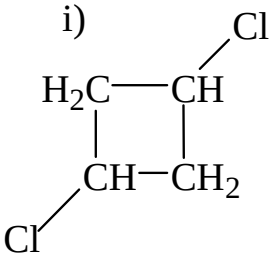
d) 

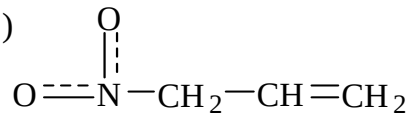
e) 

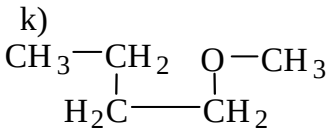
f) 

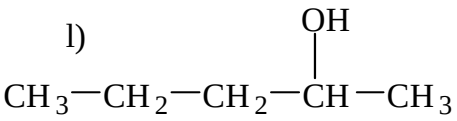
g) 

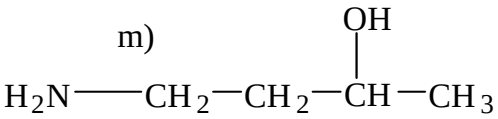
h) 

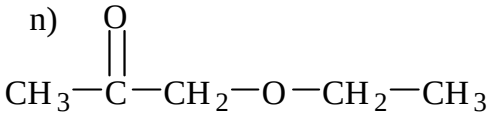
i) 

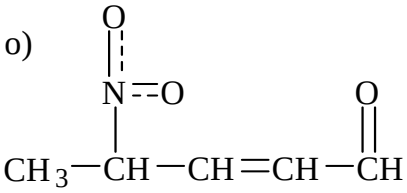
j) 

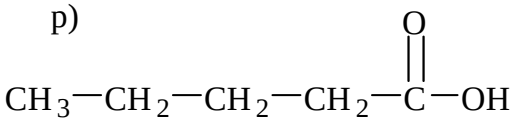
k) 

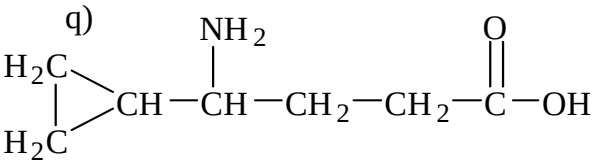
l) 

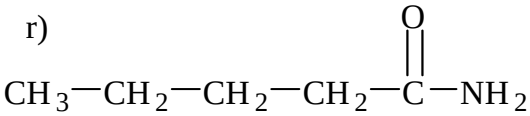
m) 

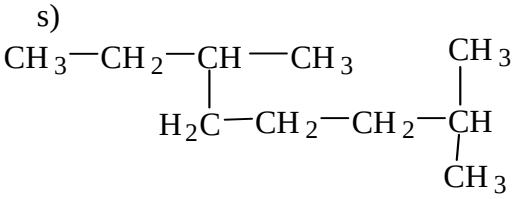
n) 

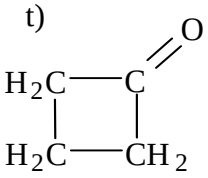
o) 

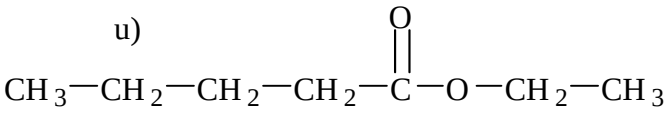
p) 

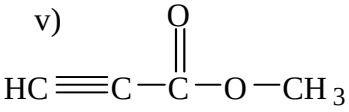
q) 

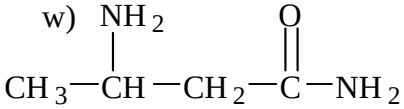
r) 

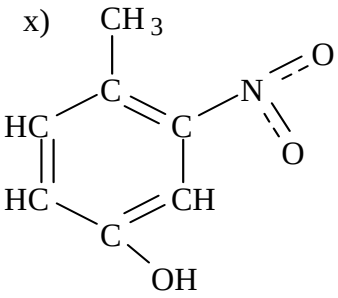
s) 

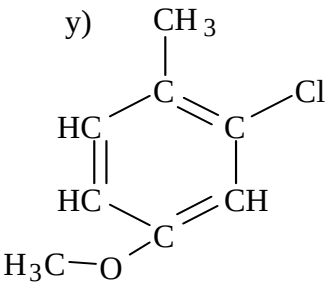
t) 

u) 

v) 

w) 

x) 

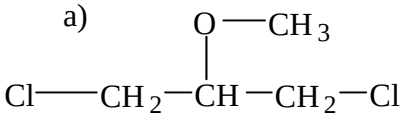
y) 

22) Draw the following:

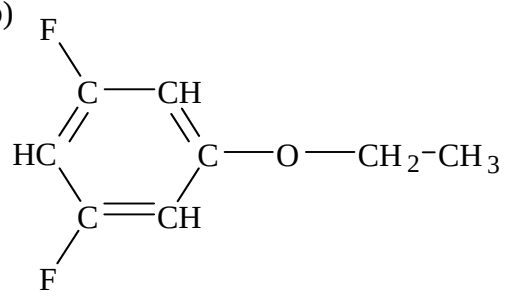
a) 1,3-diaminohexane
b) 3,5-diethyl-4,4-dimethylheptane
c) 3-cyclopropoxybutanoic acid
d) cyclopentanone
e) 2-bromo-3-chloro-2-butenamide
f) ethyl hexanoate
g) 1,2,3-trihydroxybenzene
h) 4-ethyl-2-methyl-3,3-dicyclopropyl-1-hexane
i) o-dinitrobenzene
j) cyclooctane
k) 3-pentynal
l) 1,3,4-triaminobenzene
m) dinitromethane
n) chloromethanoic acid
o) 1-bromo-2-pentanone

23) Name the following:

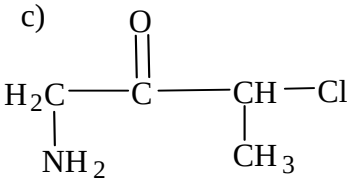
a)



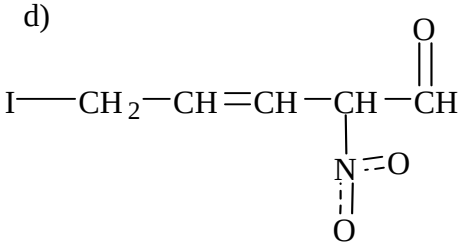
b)



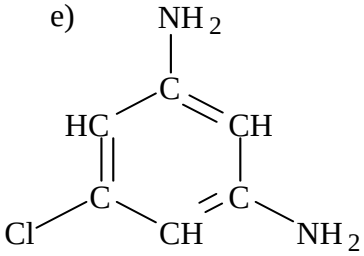
c)



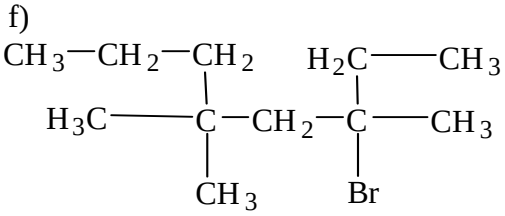
d)



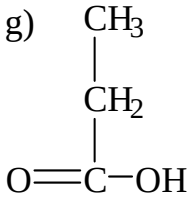
e)



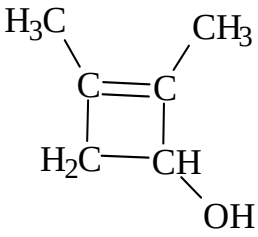
f)



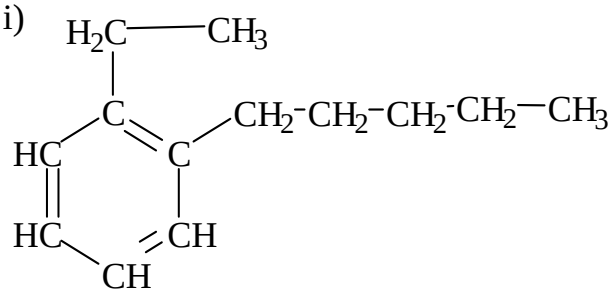
g)



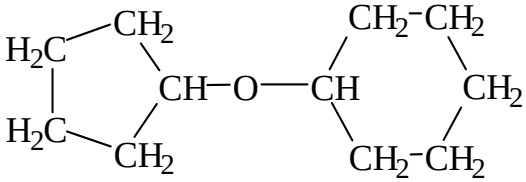
h)



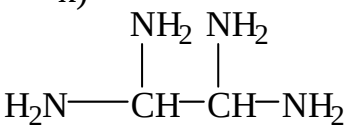
i)



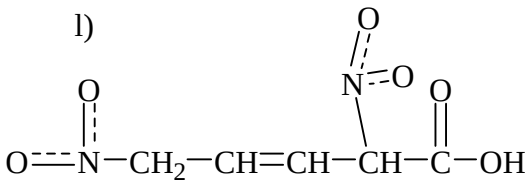
j)



k)



l)



m)