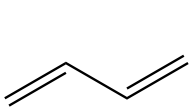
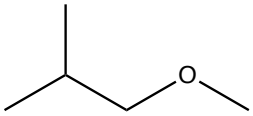
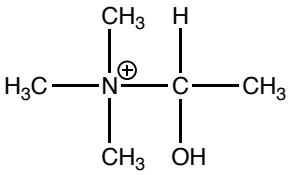
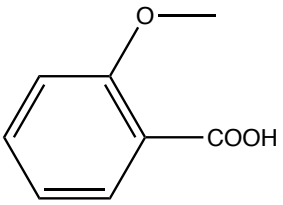
# Hw2: Classification, Representation & Nomenclature

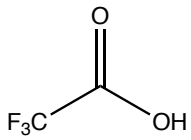
1. Identify function group(s), and give classification for the following compounds:

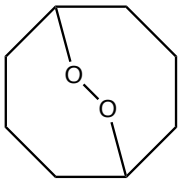


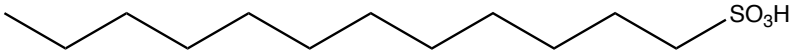


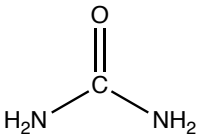




2. Draw a Lewis structure for the following compounds:

**(e)** $CH_2{=}CHCH_2OCH_2CH(CH_3)_2$

**(f)** $(CH_3CH_2)_2C{=}CH_2$

**(g)** $(CH_3)_3CCH_2CH_2OH$

**(h)** $CH_3CH_2CH_2CH_2CH_2CH_3$

**(i)** $CH_3CH_2CH_2OCH_3$

**(j)** $(CH_3CH_2CH_2)_2CHOH$

**(k)** $(CH_3CH_2)_2CHCH_2OCH_3$ **(l)** $(CH_3)_2CHCH_2OH$

3. Draw a skeletal formula for the following compounds:

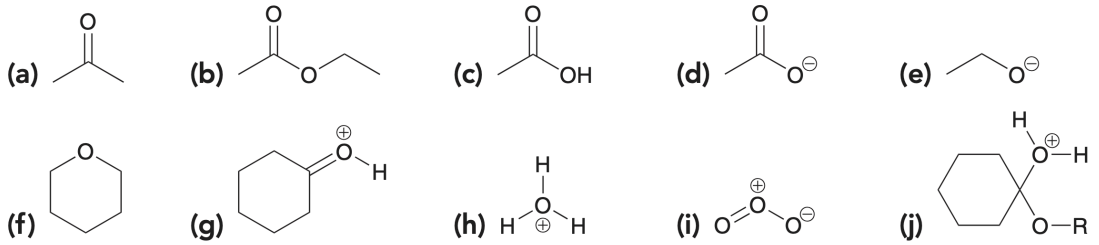
**(g)** $(CH_3)_2CHCH_2OH$ **(h)** $CH_3CH_2CH_2OCH_3$ **(i)** $(CH_3CH_2)_2C{=}CH_2$

**(j)** $CH_2{=}CHOCH_2CH(CH_3)_2$ **(k)** $(CH_3CH_2)_2CHCH_2CH_2NH_2$

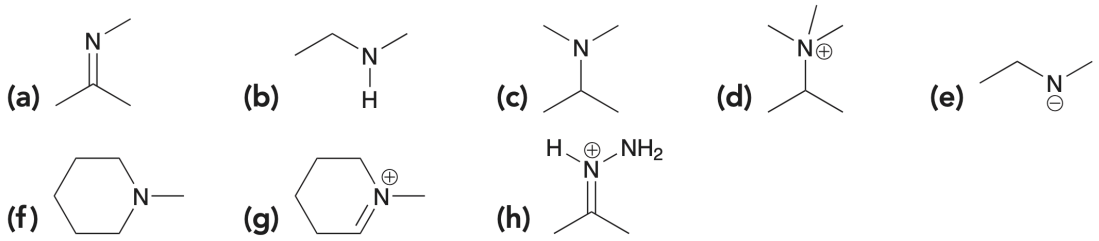
**(l)** $CH_2{=}CHCH_2OCH_2CH(CH_3)_2$ **(m)** $CH_3CH_2CH_2CH_2CH_2CH_3$

**(n)** $(CH_3CH_2CH_2)_2CHCl$ **(o)** $(CH_3)_2C{=}CHCH_2CH_3$

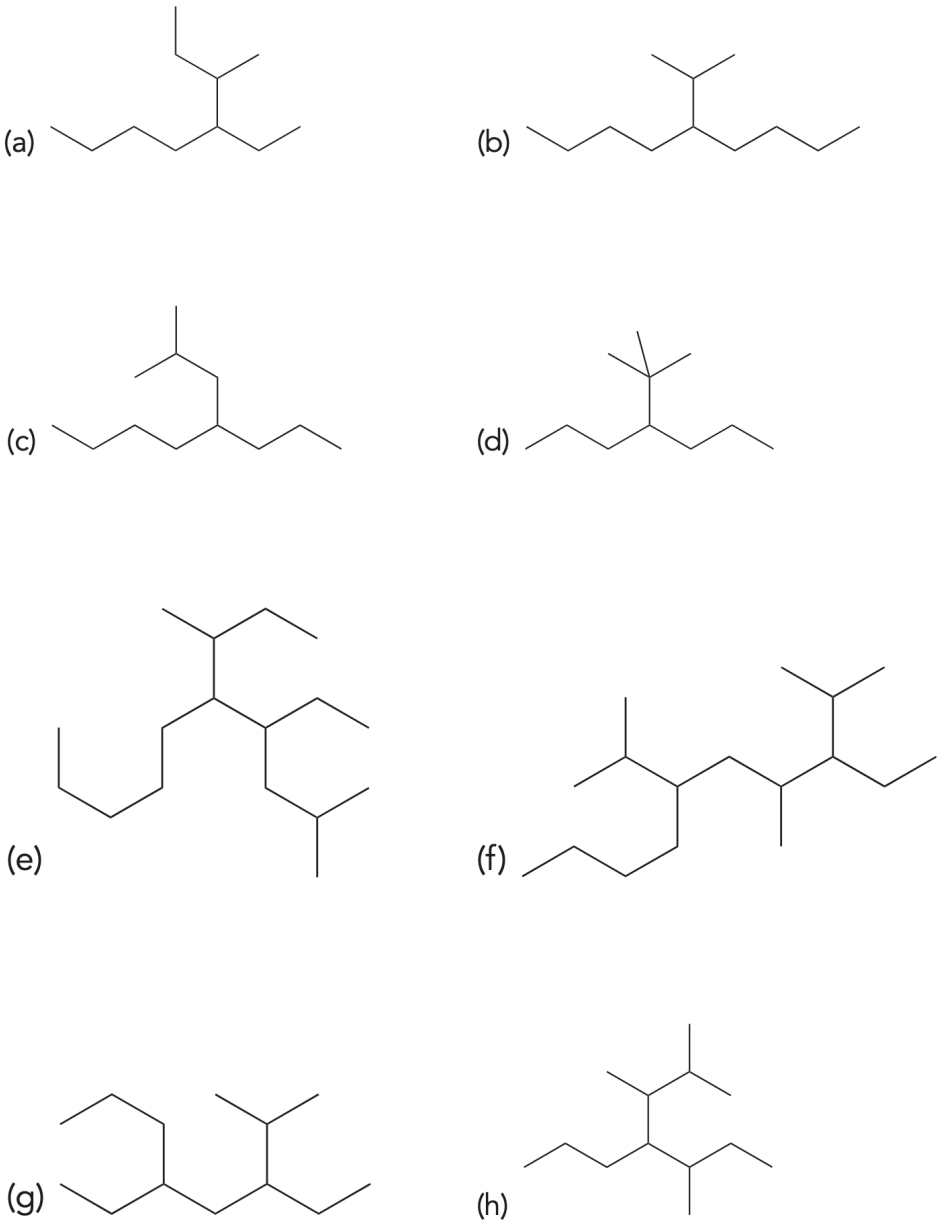
4. Draw all lone pairs on each of the oxygen atoms in the following structures:

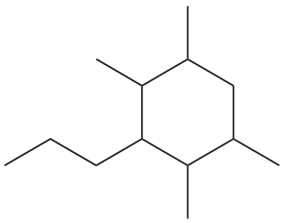


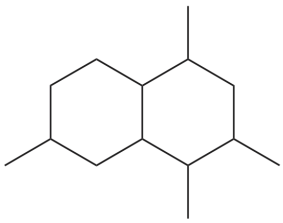
5. Draw all lone pairs on each of the nitrogen atoms in the following structures:

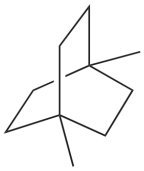



6. Provide a systematic name for each of the following compounds (in Chinese and English):



(i) 

(j) 

(k) 

7. Draw a skeletal formula for each of the following compounds:

(a) 2,2,4-trimethylpentane

(b) 1,2,3,4-tetramethylcycloheptane

(c) 3-isopropyl-2,6-dimethyloctane

(d) 4-ethyl-2-methyloctane

(e) 3,7-diethyl-2,2,8-trimethyldecane

(f) 1,6-dimethylbicyclo[4.4.0]decane

(g) 8-methylbicyclo[4.3.0]nonane

(h) 2,4-diethylbicyclo[1.1.0]butane

(i) 2,4,8,10-tetramethylspiro[5.5]undecane

(j) 5-ethyl-1-methylspiro[3.4]octane

8. Each of the following descriptions applies to more than one alkane. In each case, draw and name two structures that match the description.

(a) an isopropylheptane

(b) a diethyldecane

(c) a (2,3-dimethylpentyl)cycloalkane

(d) a bicyclohexane

9. The following names are all incorrect or incomplete, but they represent real structures. Draw each structure and name it correctly.

(a) 2-ethylpentane

(b) 3-isopropylhexane

(d) 2-dimethylbutane

(e) 2-cyclohexylbutane

(f) 2,3-diethylcyclopentane