

**B.Sc. Semester-IV
Core Course-IX (CC-IX)
Organic Chemistry-III**



**III. Heterocyclic Compounds
20. Replacement Nomenclature**



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Heterocyclic Compounds

2-Systematic Names (IUPAC):

B-Replacement Nomenclature

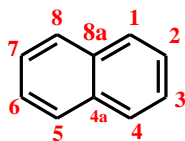
- In replacement nomenclature, the heterocycle's name is composed of the corresponding carbocycle's name and an elemental prefix for the heteroatom introduced (if more than one heteroatom is present they should be listed according to the priority order. According to this nomenclature, tetrahydrofuran, for instance, is called oxacyclopentane.



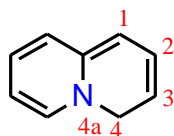
cyclohexane



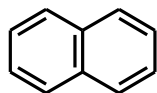
Thiacyclohexane



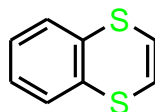
naphthalene



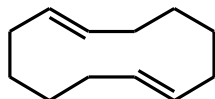
4*H*-4a-azanaphthalene



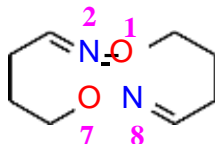
naphthalene



1,4-dithianaphthalene














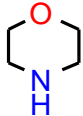
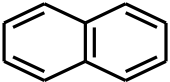
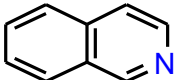


cyclododecadiene



1,7-Dioxa-2,8-diazacyclododeca-2,8-diene

Heterocyclic Compounds

	Benzene		1,4-Diazabenzene
	Cyclopentadiene		Oxacyclopenta-2,4-diene
	Cyclopentadiene		1-Oxa-3-azacyclopenta-2,4-diene
	Cyclopropane		Oxacyclopropane
	Cyclopropene		Oxazacyclopropene
	Cyclopentadiene		1-Thia-2-azacyclopenta-2,4-diene
	Cyclohexane		1-Oxa-4-azacyclohexane
	Naphthalene		2-Azanaphthalene

Heterocyclic Compounds

2. Systemic Names (IUPAC) :

- ❑ Hetero-atom is to be counted as 1 or as low as possible
- ❑ When there is more than one hetero-atom (**and they are different**), preference is given to **O**, then **S**, then **N**, then **C**. Also N-H presides over –N=. Mnemonic: (**O** > **S** > **N** > **C**) **the first one in periodic table number 1**
if the 2 elements are the same we use; di, tri, tetra before the prefix
- ❑ When there is more than one hetero-atom, numbering should be as direct as possible from one to the other
- ❑ Substituents are numbered as low as possible
- ❑ Acceptable prefixes include **O=Oxa**; **S=Thia**; **N=Aza**
- ❑ Common suffixes for N- and non-N-heterocycles For partially unsaturated systems, H is(are) are used to indicate the location of saturation
- ❑ Hantzsch-Widman System is for systematic naming of heterocyclic compounds
- ❑ Final of prefixes is dropped when followed by a vowel (a,e,i,o and u)