

How to Show Locants in a Pyranose Ring

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Question:

How can we place locants on the atoms of a pyranose ring?

Answer:

Use the `\sixsugarh` command in place of the `\pyranose` command, because the ‘atomlist’ argument of the former is crucial to apply the technique described below.

The `\pyranose` command has been defined by starting from a more basic macro `\sixsugarh`, where the atomlist (the first main argument) is fixed and only the sublist (substituents lists, the second main argument) can be varied. Hence, `\pyranose` cannot be used for the present purpose. Instead, We use the atomlist (the first main argument) of `\sixsugarh` to apply the technique of deriving spiro rings.

First, we should define the following command `\lcntNo` as a hypothetical spiro unit:

```
\def\lcntNo(#1,#2)#3{\put(#1,#2){\hbox to0pt{\hss\scriptsize #3\hss}}}
```

The first two arguments (`#1`, `#2`) specify shift values along the x - and y -coordinates. The values (`#1`, `#2`) are determined by `\unitlength` (`=0.1pt`) as a unit. Note that the locant number specified by the argument (`0,0`) is placed just at the original place of each atom.

Then, the `\lcntNo` command is placed at each atom by using the atomlist of `\sixsugarh`, as shown in the following code:

```
\sixsugarh{6==0;%
1s==\lcntNo(-50,-20){1};
2s==\lcntNo(-20,30){2};
3s==\lcntNo(30,30){3};
4s==\lcntNo(50,-20){4};
5s==\lcntNo(30,-70){5};
5s==\lcntNo(-60,130){6}%
}{2Sa==OH;3Sb==OH;4Sa==HO;5Sb==CH$_{2}$OH;1Sa==OH}
```

This code prints out the following formula with locant numbers:

