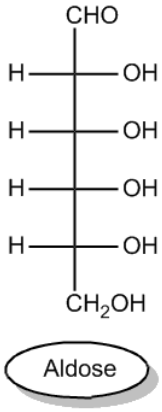
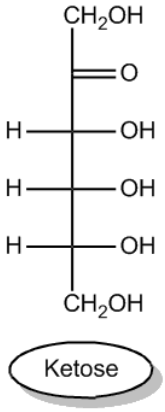
CONCEPT: INTRODUCTION TO CARBOHYDRATE MONOSACCHARIDES

Sugars or ***saccharides*** are also referred to as carbo-*hydrates*, implying that carbon has been combined with _____

- Monosaccharides are the most basic units of sugars
- All unmodified monosaccharides have the same general formula: _____, where n ≥ 3
- Monosaccharides can be represented as straight chains OR rings
    - □ One oxygen attached to each and every carbon atom, and 1 IHD regardless of form
- Monosaccharides begin as either _____ or _____
    - □ Aldehyde sugar = _____
    - □ Ketone sugar = _____



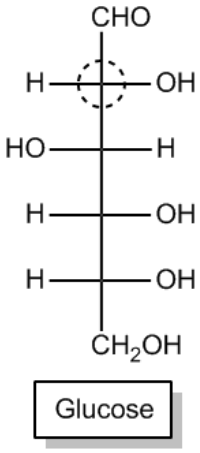


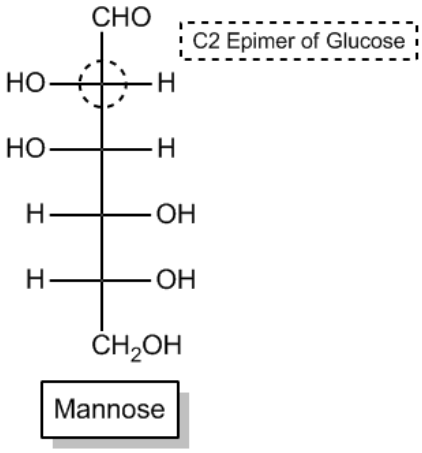
General Features:

Monosaccharides can be described by both ***generic names*** and ***specific names***. Generic naming involves:

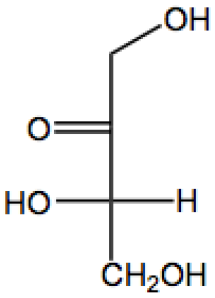
- Carbonyl type (i.e. aldo—)
- Carbon Chain Length (Pre-IUPAC) with –"ose" ending (i.e. –tri*ose*, -tetr*ose*, –pent*ose,* -hex*ose,* etc)
    - □ The total number of stereoisomers possible is described by _____
    - □ ***Epimers*** are stereoisomers of monosaccharaides differing at only ***one*** chiral carbon

EXAMPLE: Epimers of aldohexose

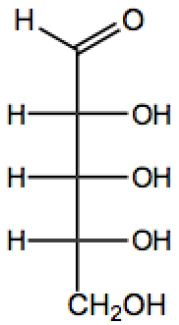




PRACTICE: Provide the *generic name* for the following monosaccharide.

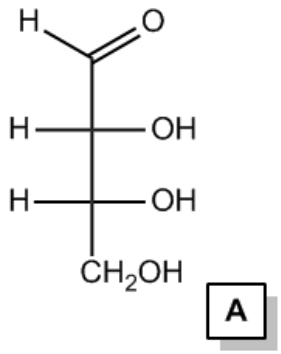


PRACTICE: How many possible stereoisomers AND epimers exist for the following aldopentose? Draw all of the possible epimers.

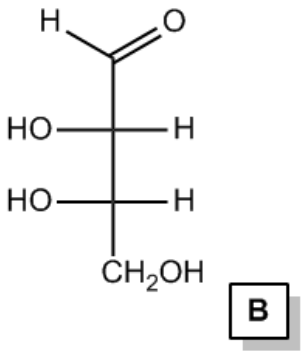


Ribose

PRACTICE: Identify and label all of the possible stereoisomers of aldotetrose as enantiomers, diastereomers or epimers of each other.



A



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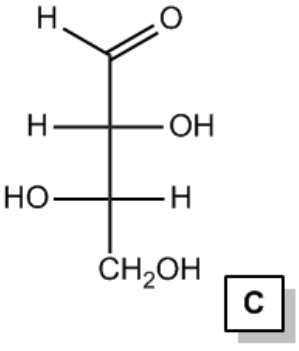

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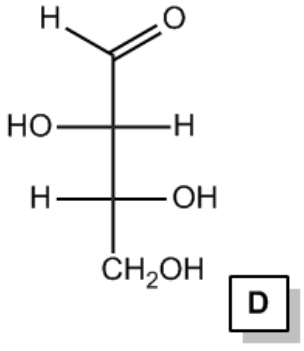

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