

Carbohydrates Worksheet and Key

1) Define: aldoses, ketose, hexose, aldopentose, ketotetrose, alcohol sugar, deoxy sugar, amino sugar, carboxylic acid sugar, anomeric carbon, glycosidic bond, hemiacetal, acetal, and cyclic hemiacetal

Compare and contrast: Haworth Projection vs. Fischer Projection

Compare and contrast: monosaccharide, oligosaccharide, and polysaccharide

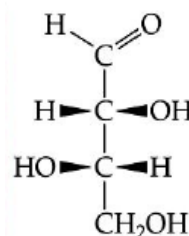
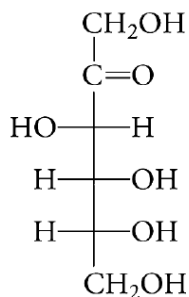
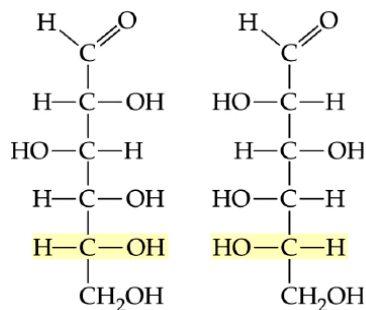
Compare and contrast: D-sugar vs. L-sugar

Compare and contrast: starch vs. glycogen

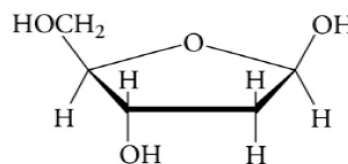
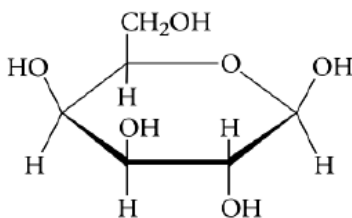
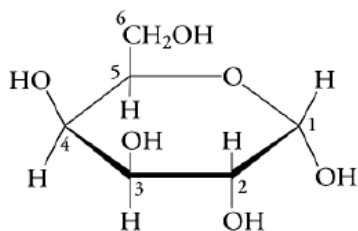
Compare and contrast: amylose vs. amylopectin

Compare and contrast: cellulose vs. amylose

2) Identify the following as D- or L- monosaccharides:

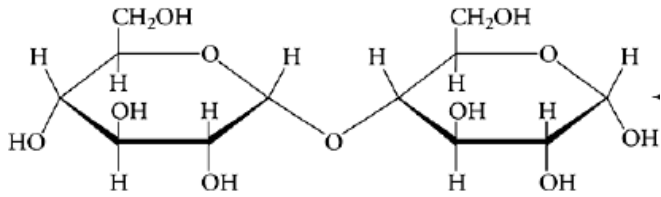


3) Identify the following as the α or β anomer:

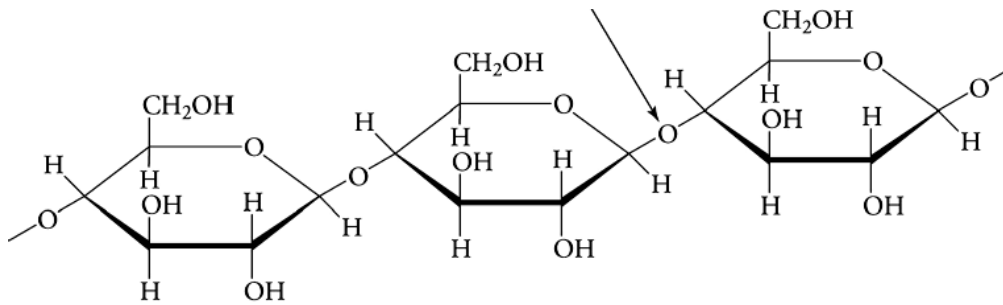


4) Identify the type of glycosidic bond for each of the following sugars. Choose from α -(1 \rightarrow 2), α -(1 \rightarrow 3), α -(1 \rightarrow 4), α -(1 \rightarrow 5), α -(1 \rightarrow 6), β -(1 \rightarrow 2), β -(1 \rightarrow 3), β -(1 \rightarrow 4), β -(1 \rightarrow 5), β -(1 \rightarrow 6), or α,β -(1 \leftrightarrow 2)

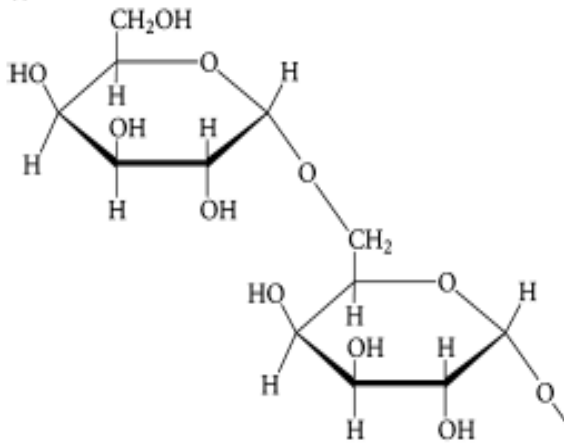
a)



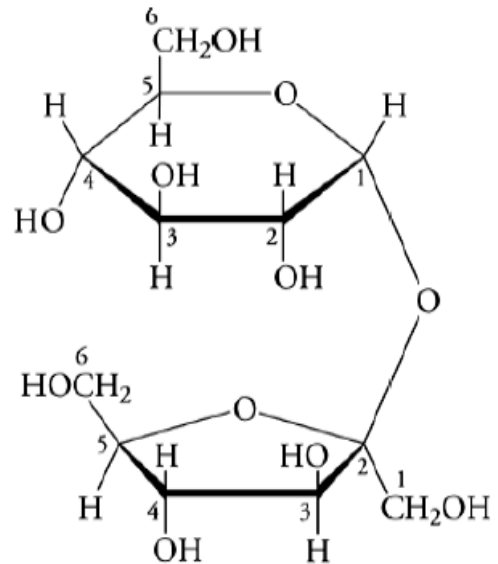
b)



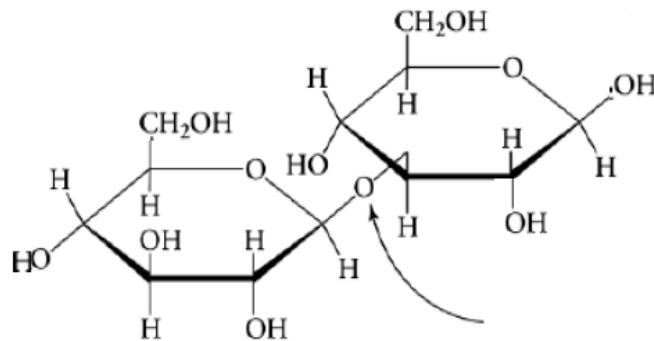
c)



d)



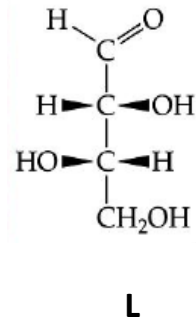
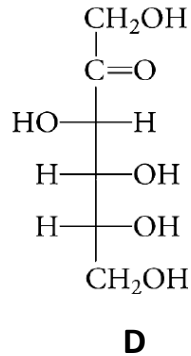
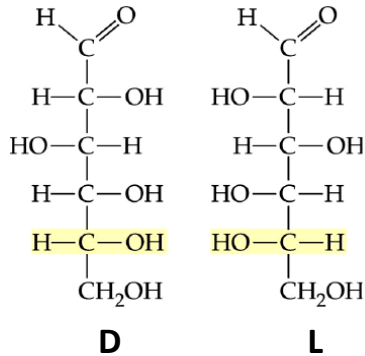
e)



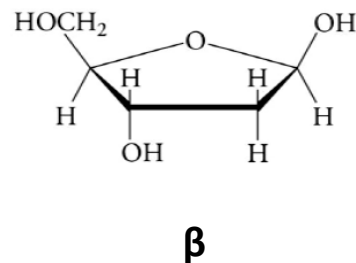
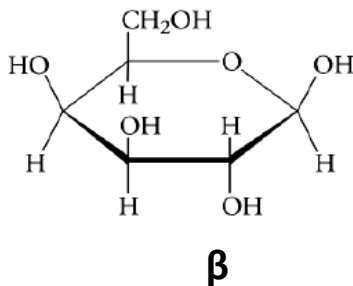
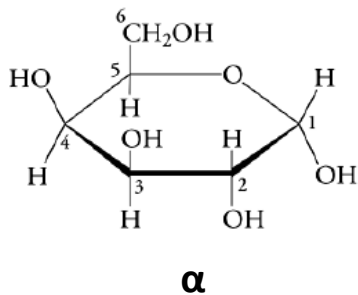
KEY

1) SEE YOUR LECTURE NOTES or the TEXTBOOK

2) Identify the following as D- or L- monosaccharides:



3) Identify the following as the α or β anomer:



4) Identify the type of glycosidic bond for each of the following sugars. Choose from α -(1 \rightarrow 2), α -(1 \rightarrow 3), α -(1 \rightarrow 4), α -(1 \rightarrow 5), α -(1 \rightarrow 6), β -(1 \rightarrow 2), β -(1 \rightarrow 3), β -(1 \rightarrow 4), β -(1 \rightarrow 5), β -(1 \rightarrow 6), or α,β -(1 \leftrightarrow 2)

a) α -(1 \rightarrow 4)

b) β -(1 \rightarrow 4)

c) α -(1 \rightarrow 6),

d) α,β -(1 \leftrightarrow 2)

e) β -(1 \rightarrow 3)