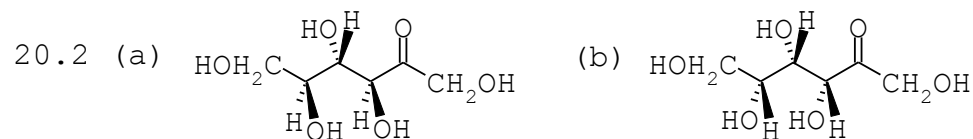
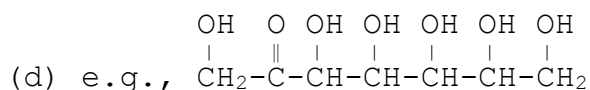
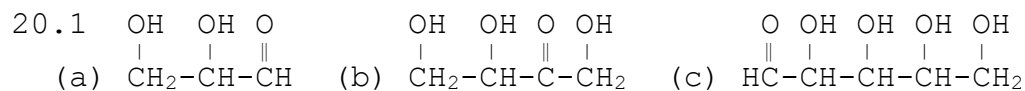
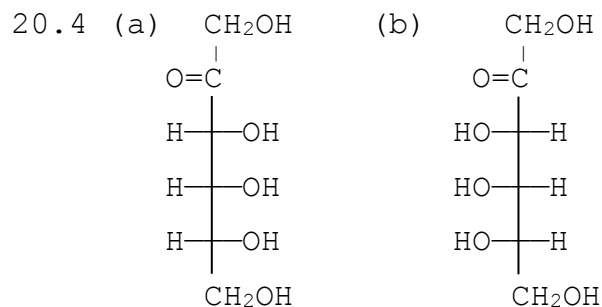
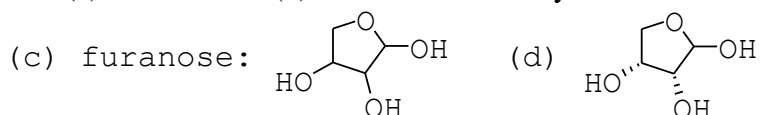


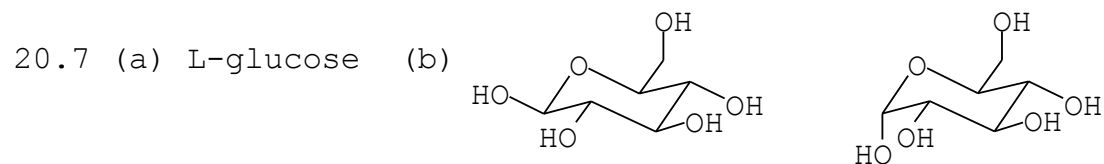
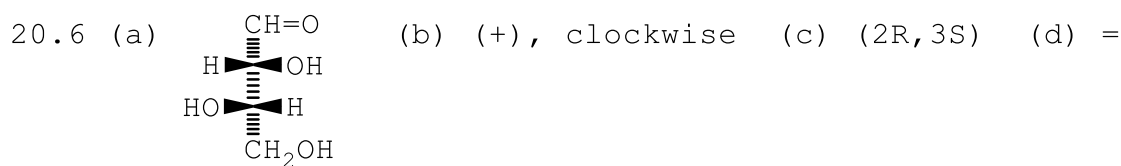
Answers to Puzzles of Chapter 20  
Carbohydrates



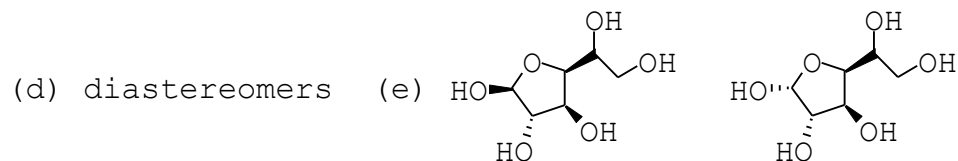
20.3 (a) aldotetrose (b) it forms a relatively unstrained five-membered ring



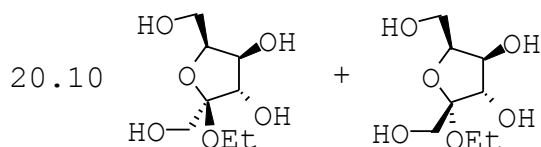
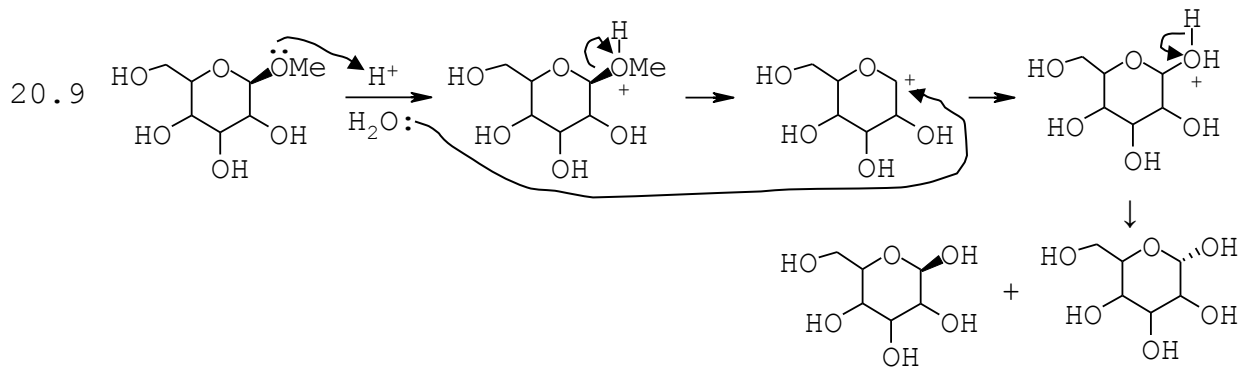
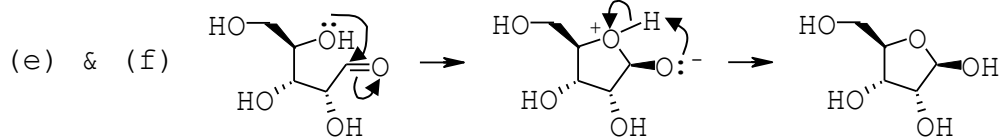
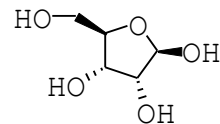
20.5 (a) enantiomers (b) diastereomers (c) identical (d) diastereomers (e) identical (f) constitutional isomers



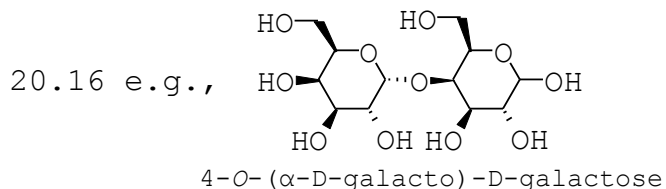
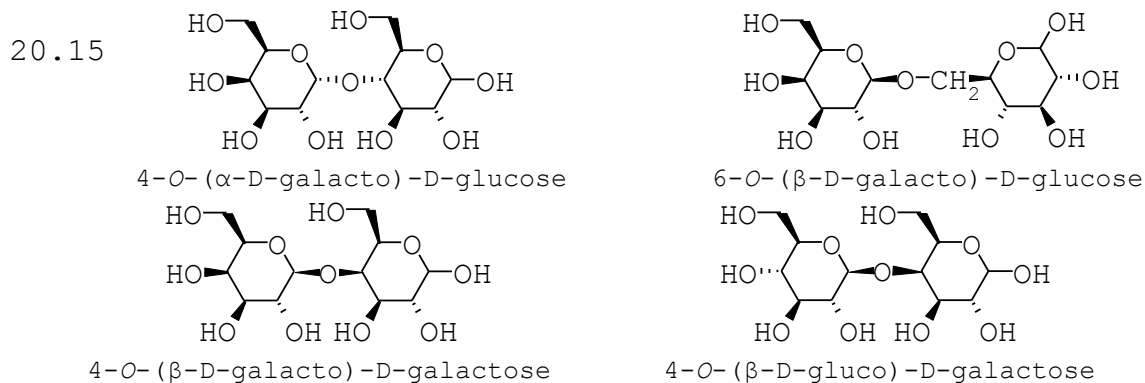
(c) First because all of its substituents are equatorial



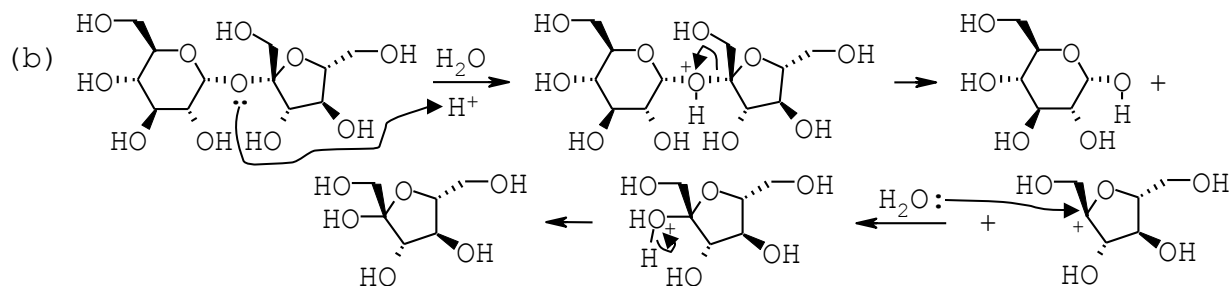
20.8 (a) furanose (b)  $\alpha$  (c) aldopentose (d)



20.14 (a) no, a polymer of galactose (b) acetal carbons at the right of each ring (c) no, no hemiacetals (d)  $\alpha$ , acetal link is trans to  $\text{CH}_2\text{OH}$

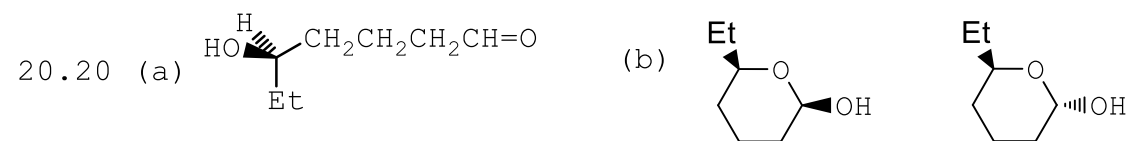
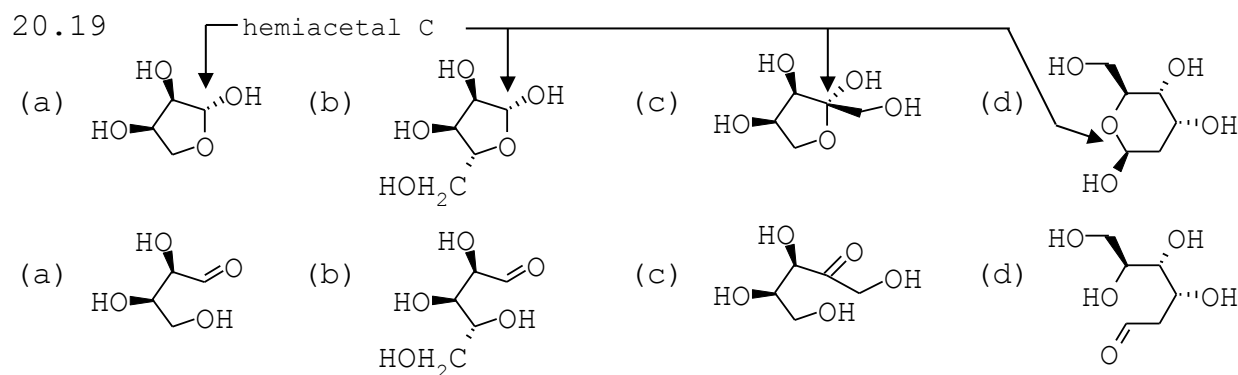


20.17 (a) C(1) of the glucose moiety and C(2) of the fructose moiety are acetal carbons.



(c) The glucose is the preferred leaving group because the fructose carbocation with 2 C groups is stabilized not only by resonance but by extra hyperconjugation.

20.18 (a) aldotetrose, not deoxy (b) ketopentose, deoxy (c) ketopentose, not deoxy  
(d) ketoheptose, deoxy

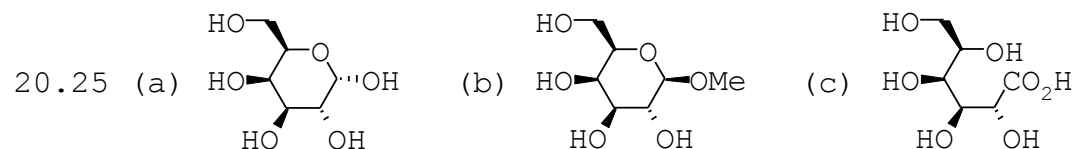
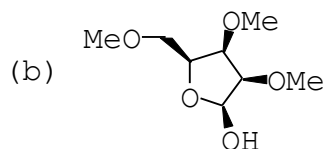


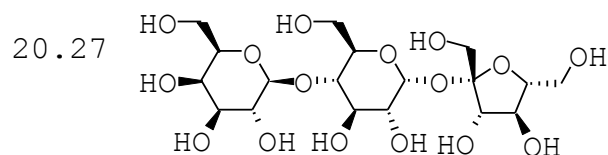
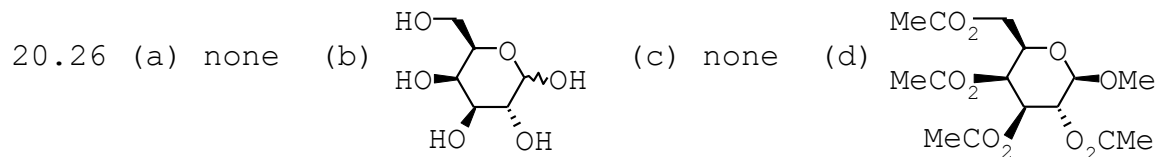
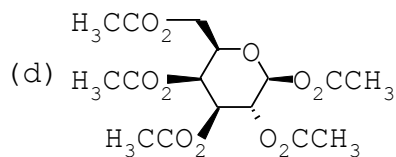
(c) First, because both substituents can be equatorial.

20.21 (a)  $\alpha$ -D (b)  $\alpha$ -D (c)  $\alpha$ -L (d)  $\alpha$ -L

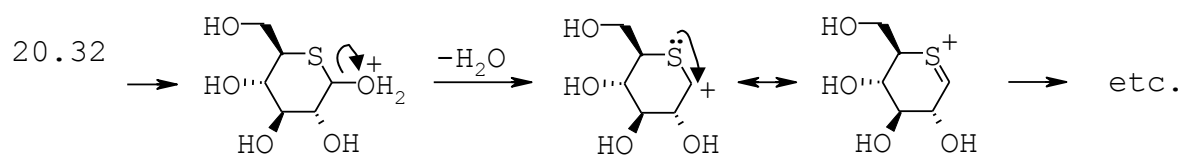
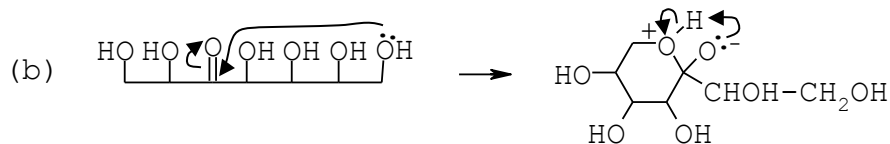
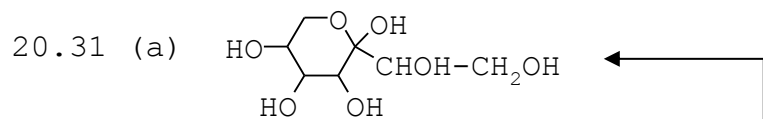
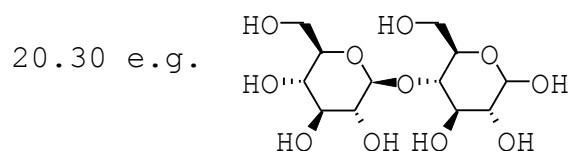
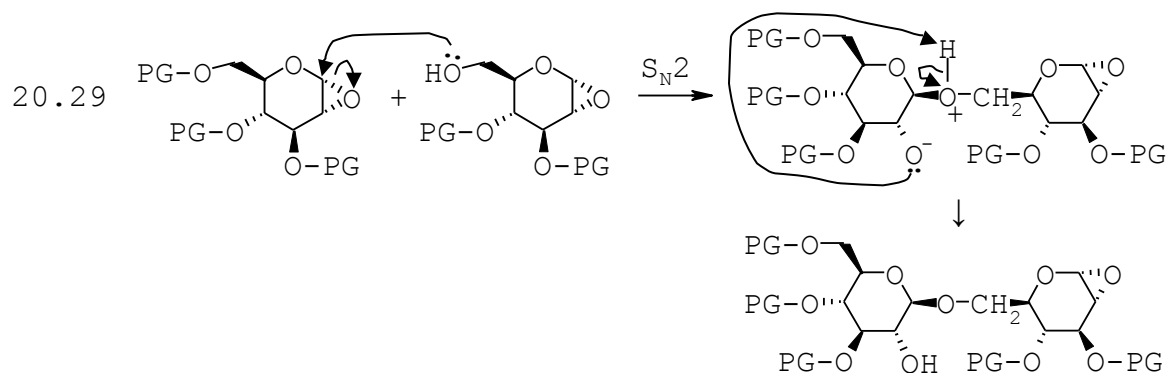
20.22 (a)  $\beta$ -D (b)  $\beta$ -L (c)  $\alpha$ -D (d)  $\beta$ -L

20.24 (a) The glycoside MeO: it yields a C<sup>+</sup> stabilized by resonance:





20.28 (a)  $\alpha$  and  $\beta$  acetal linkage (b)  $\beta$  linkage gives a linear shape;  $\alpha$  linkage gives a helical shape.

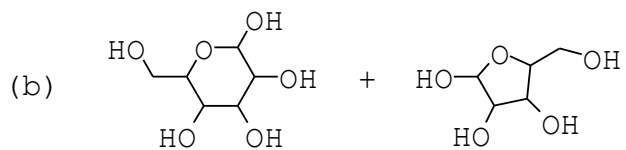


Resonance does not stabilize the  $C^+$  very well because the large  $p$  orbital of S does not overlap

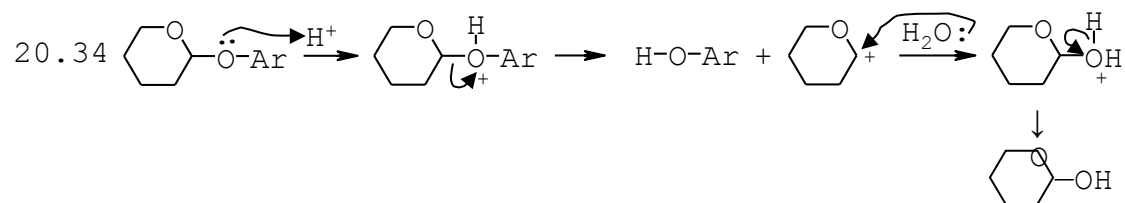
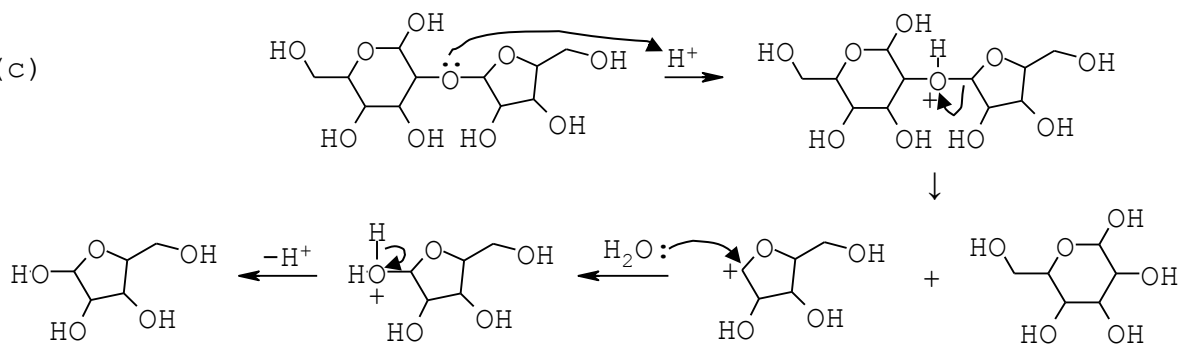
well with the smaller  $p$  orbital of C. So it's harder to form the relatively unstable  $C^+$ .

20.33 hemiacetal  acetal

(a)



(c)



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