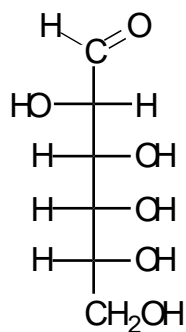
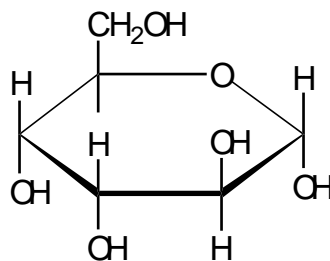


1. For the carbohydrate whose Fischer projection is given by **A**, depict the α form of the cyclic hemiacetal by adding appropriate H or OH groups in cyclic structure **B**. (15%)

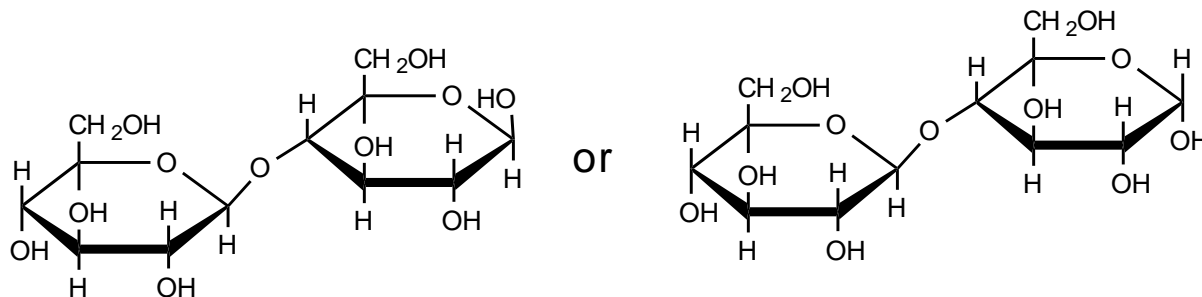


A

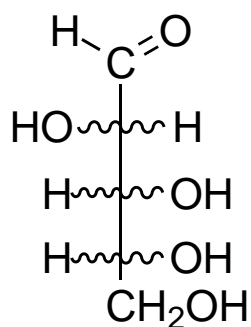


B

2. Cellobiose is disaccharide containing two D-glucose molecules with a $\beta(1\rightarrow4)$ glycosidic linkage. Draw cellobiose. (10%)

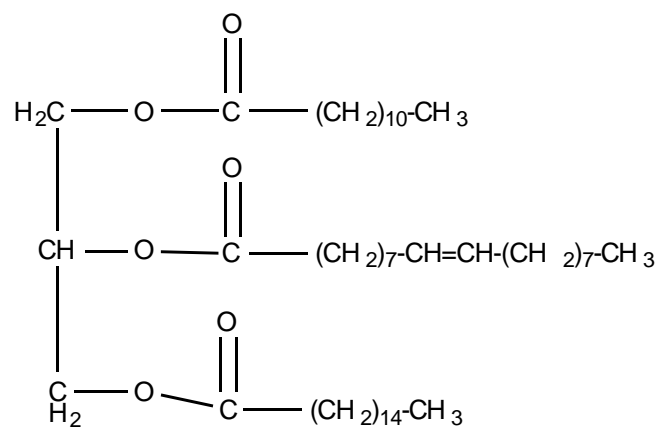


3. Draw a Fischer projection of an aldopentose. (10%)

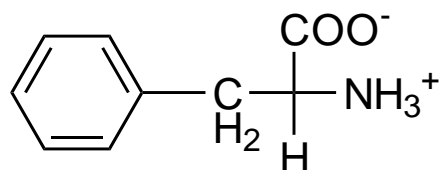


Any combination of H and OH
on each stereocenter is okay

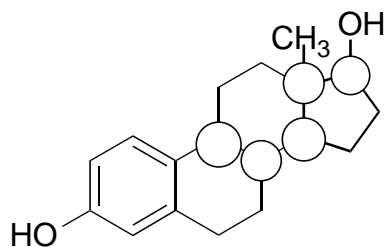
4. Draw the structure a triglyceride (fat) which gives glycerol, lauric acid, palmitic acid, and oleic acid upon hydrolysis. (10%)



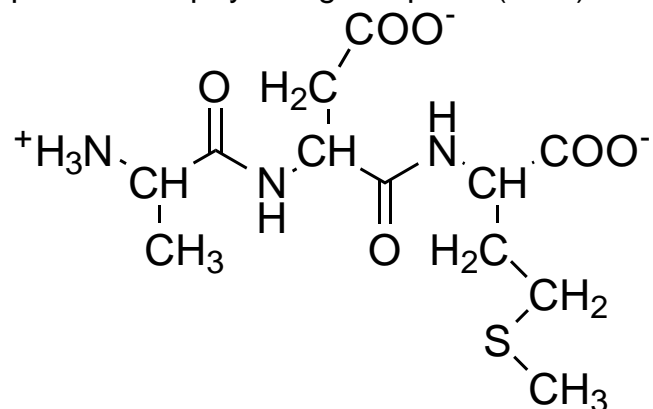
5. Draw a Fischer projection of the zwitterionic form of S-phenylalanine. (10%)



6. Circle the tetrahedral stereocenters in the steroid below. (10%)



7. Draw the structure of the tripeptide Ala-Asp-Met that would be present at physiological pH. (15%)



8. Complete the following equations. (20%)

