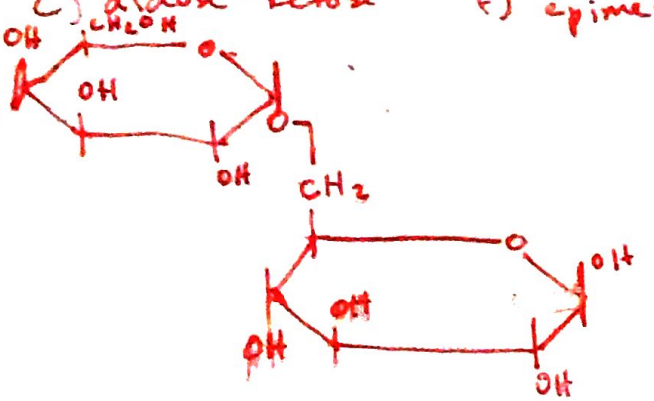
Biochem HW

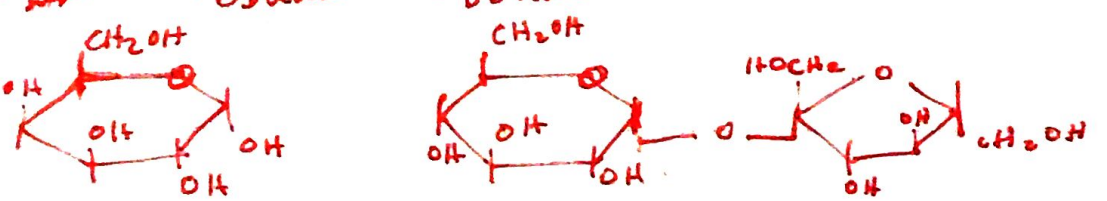
6) a) 10
b) 6
c) 8
D) 9
e) 2
f) 4
g) 1
h) 5
I) 7
J) 3

7) a) aldose - ketose
b) epimer
c) aldose - ketose
d) anomers
e) aldose - ketose
f) epimers

10)



11c)



22) Cellulose only has 1, 4 glycosidic bonds meaning the sheets of polysaccarides will stack together well in sheets. In contrast glycogen can form 1, 6 glycosidic bonds which will form branches. The polysaccharide chains will not

fit together the same

25) glycosalaminoglycans have amino groups attached to them which means there is charge This charge can regulate water in the cartilage such that it can cushion our fall (release water) or be under normal circumstances (water bound. or no cushioning)

27) Asparginine, Serine, threonine

38)

A) glycosalamino glycan is present in cartilage (as discussed for cushioning), so it will be present in the aggrecan component of cartilage. If aggrecan is degraded, glycosalaminoglycan will be released

b) glycosalaminoglycan can be degraded by an enzyme that can not degrade aggrecan

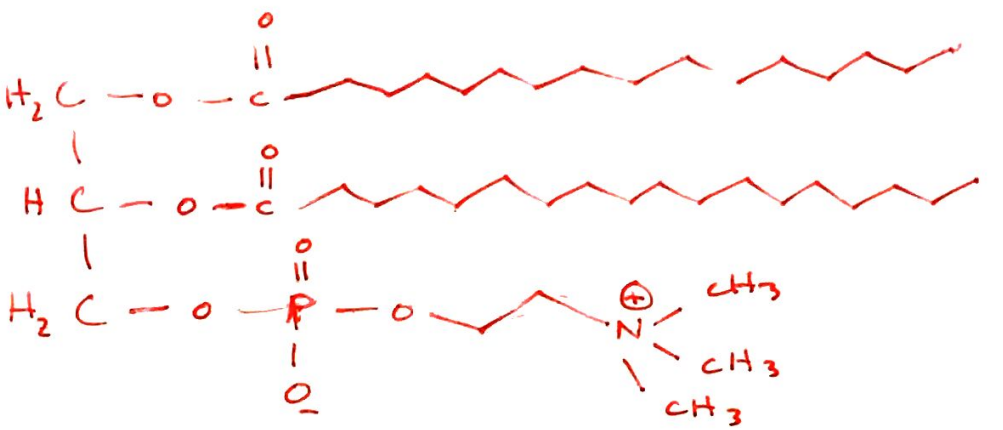
c) to set a base line or reference point it allows us to tell if there is change. The IL-2 line is meaningless on its own. It has to be compared to something

went out of order

e) The activity of the enzyme is significantly decreased. Less glycosaminoglycan is released & it is closer to no enzyme present meaning inhibition was successful. It can also be assumed aggrecan degredation decreased

D) adding IL-2 significantly increases the production of glycosaminoglycan and this is directly correlated to the degredation of aggrecan. Aggrecan was degraded significantly

12-1)



12-2) so they can live in extreme environments. The ether linkages do not have electrophillic carbonyl carbons found in fatty acid ester linkages, thus can not be hydrolyzed. This structure makes them more stable

12-3) 5.4 A° per turn, ~4 amino acids per turn

$$\frac{30\ A^\circ \text{ lipid bilayer}}{5.4\ A^\circ} \simeq 5.56 \text{ turns}$$

$$(5.56 \text{ turns})(4\ AA/\text{turn}) \simeq 22\ AA$$

12-4) hydrophillic amino acids such as serine threonine and asparginine. These are able to interact w/ the hydrophillic enviroment in cytoplasmic and extracellular regions since they would be protruding

12-5) The fluid mosaic model is the idea that due to similar IMFs & side chain length, lipids in the membrane can diffuse laterally, but don't flip. This can be regulated in a variety of ways. The main method is through the use of lipid rafts which combines cholesterol with shingolipids, glycolipids, & GPI anchored proteins to hold proteins together and be able to have rapid responses while still respond well/quickly to signals

12-6) increasing the amount of cholesterol in the membrane (more = less fluid)

increasing length of chains (longer = more LDF = less fluid)
increasing number of cis double bonds in chain
(less LDF → less interaction, more fluid)