

Noted
Sunday

18 Friday

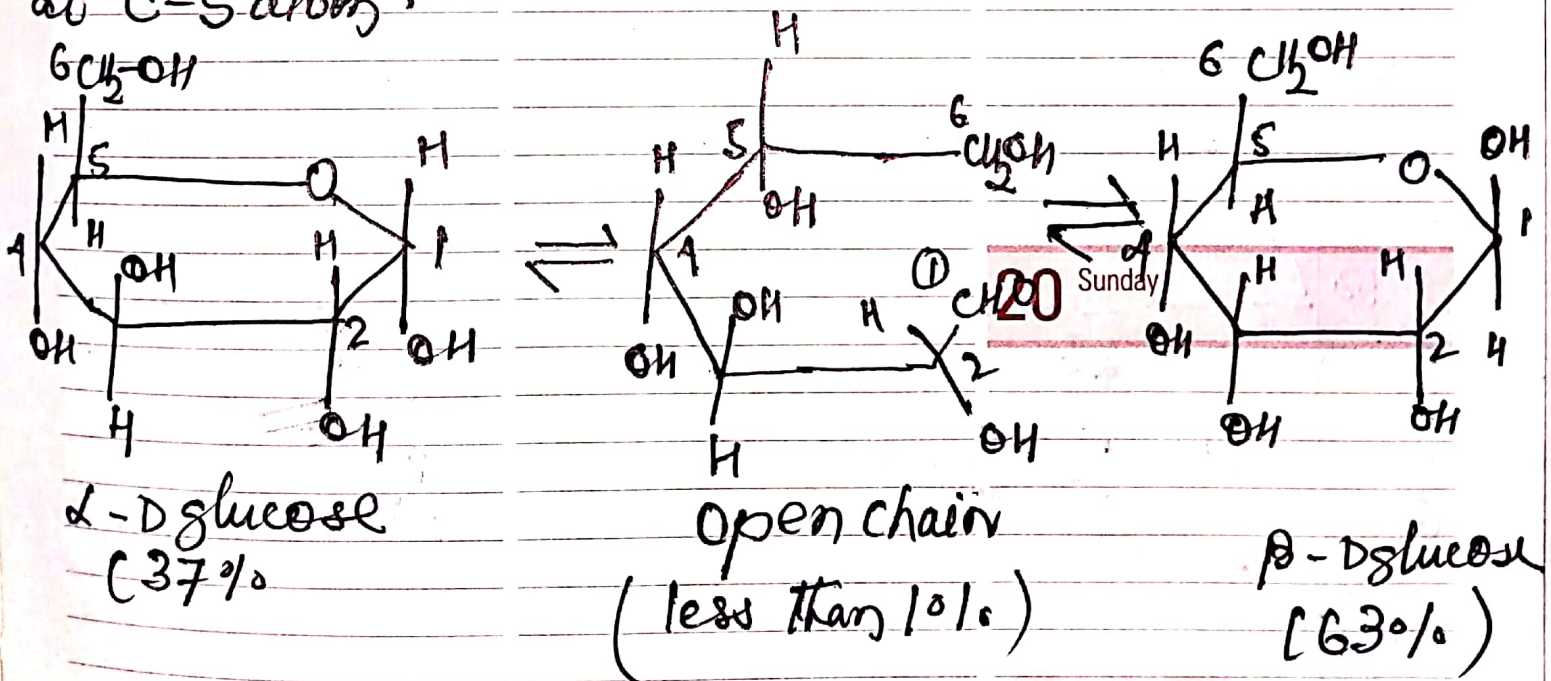
19 Saturday

Mutarotation:-

The phenomenon in which the specific rotation of freshly prepared aqueous solution of reducing sugar is changed to a constant equilibrium value is called Mutarotation.

An aqueous solution of glucose shows mutarotation i.e. its specific rotation gradually decreases from $+112^\circ$ to $+52.7^\circ$ in case of α -D-glucose and rises from $+19^\circ$ to $+52.7^\circ$ in case of β -D-glucose.

This rises due to fact that D-glucose involves an intramolecular hemiacetal ring between the $-CHO$ and $-OH$ group at C-5 atom.



Explanation of mutarotation

In the solid state, these two forms of glucose

OCTOBER							NOVEMBER							DECEMBER						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
31	1	2	3	4	5	6	1	2	3	4	5	6	7	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30	31				26	27	28	29	30	31	

November 2016

21 Monday

22 Tuesday

23 Wednesday

are stable, but in aqueous solution, these are converted into one another via open chain aldehyde form and gradually change in the specific rotation is attributed to establishment of equilibrium between the two forms.

The final value of $+52.7^\circ$ corresponds to the equilibrium mixture of α -form and β -form. This value is not an average of $+19^\circ$ and $+112^\circ$. This implies that the equilibrium mixture does not contain equal amount of the two anomers. Calculations have shown that it contains 63% of β -form and 37% of α -form and less than 1% of the open chain aldehyde form.

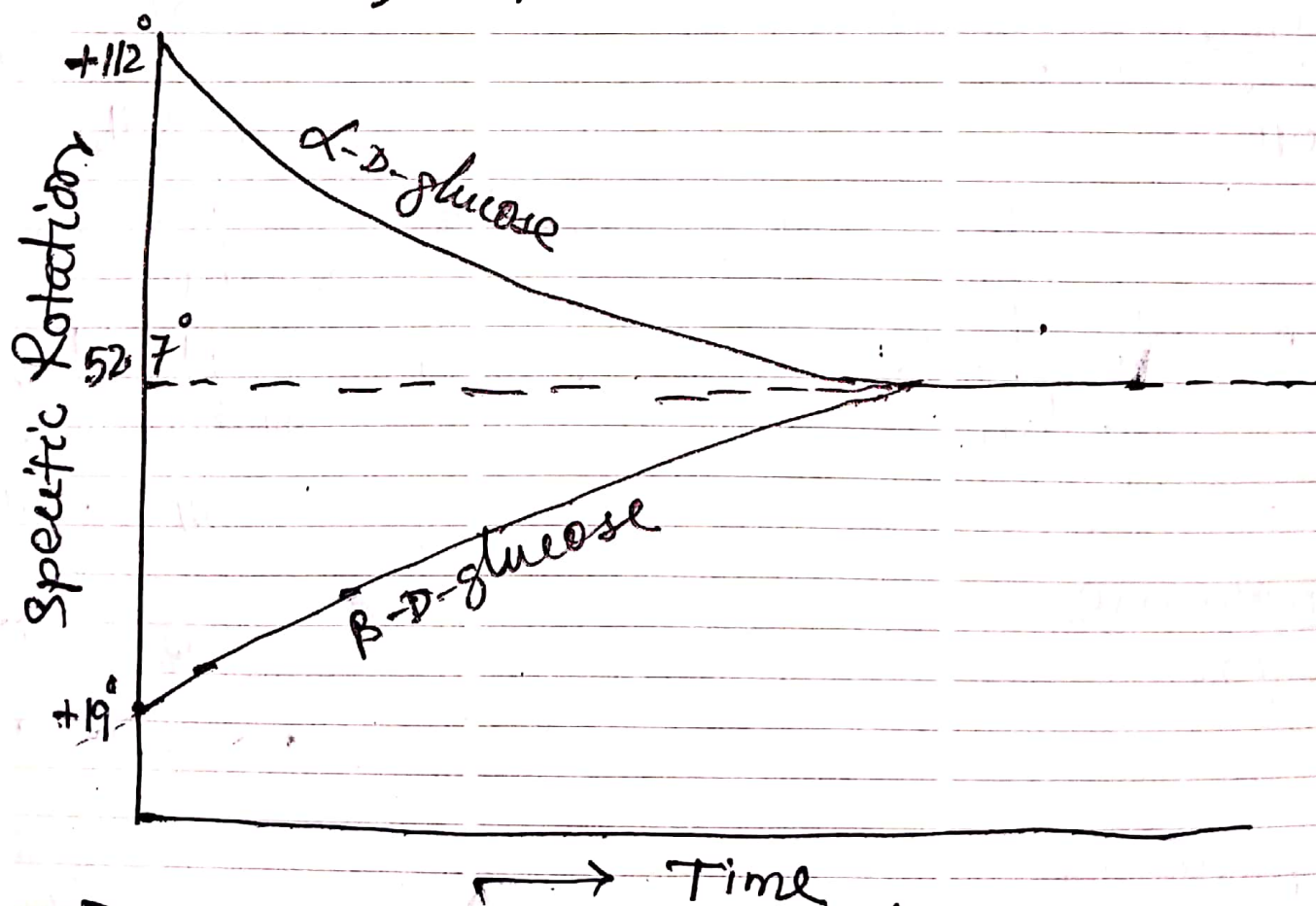


Fig. 5. Mutarotation of α -D-glucose and β -D-glucose.

November 2016

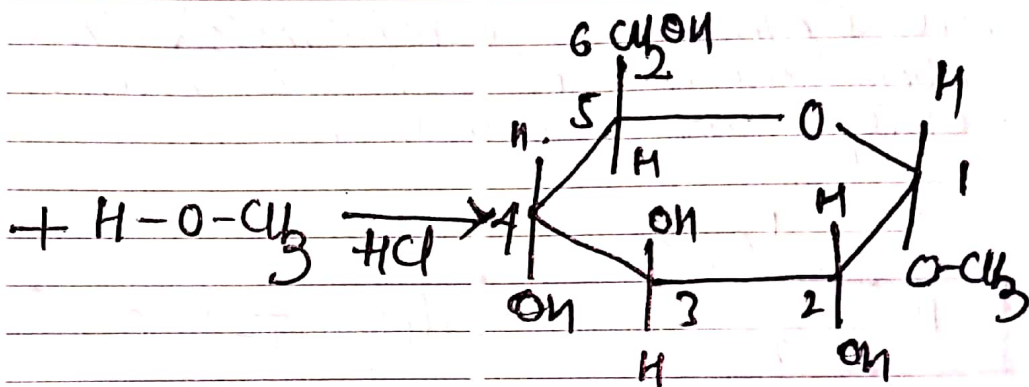
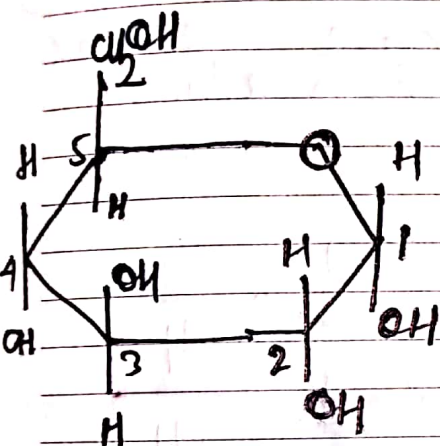
24 Thursday

25 Friday

26 Saturday

Glycoside linkage:-

The C-O-C linkage which joins the two components of the acetal is called glycosidic linkage. In carbohydrate chemistry, acetals derived from glucose is called glycosides.



methyl α -D-glycosides. $+ H_2O$