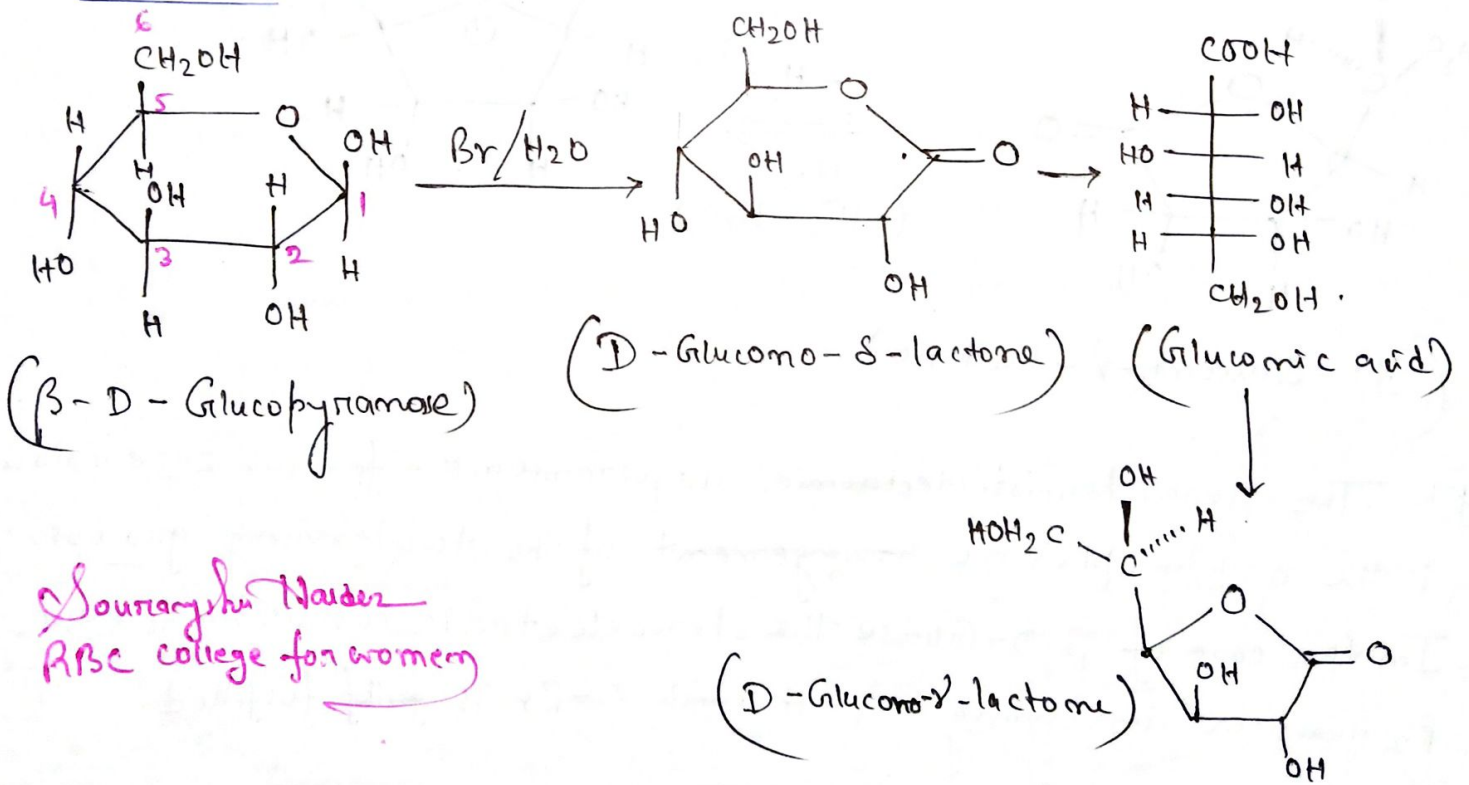


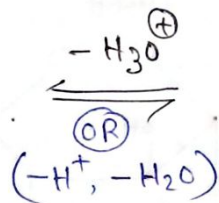
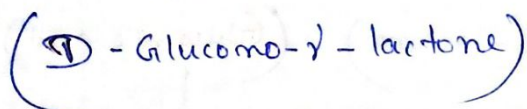
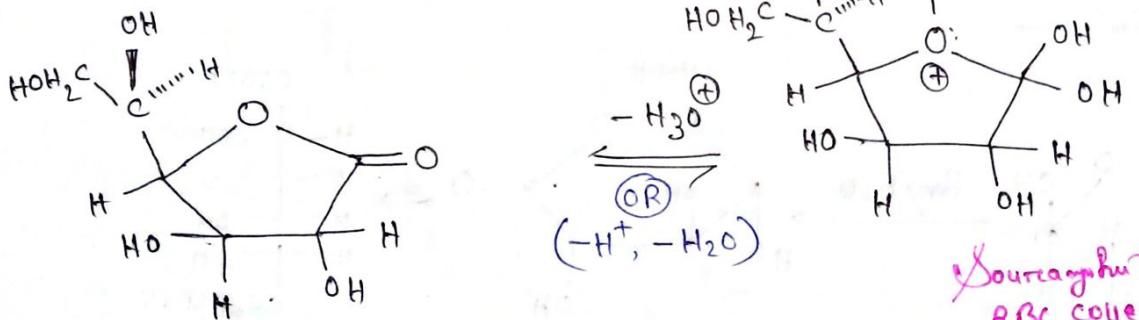
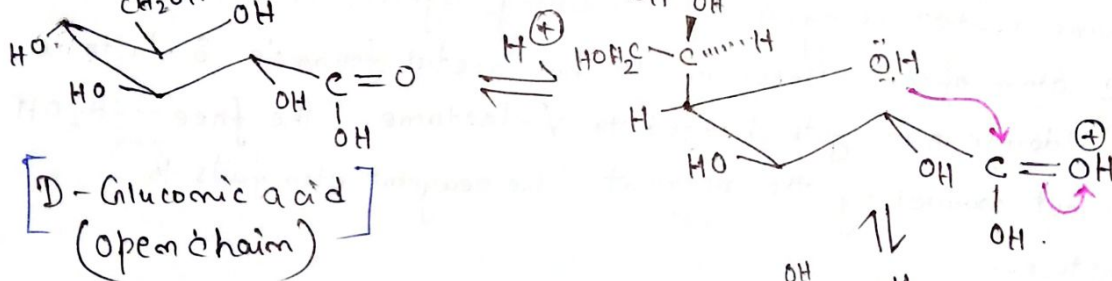
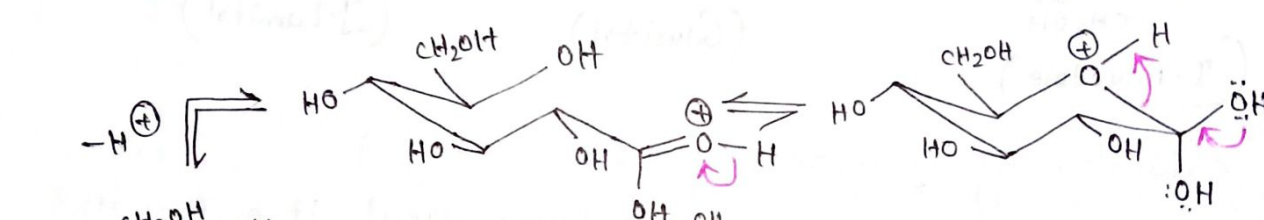
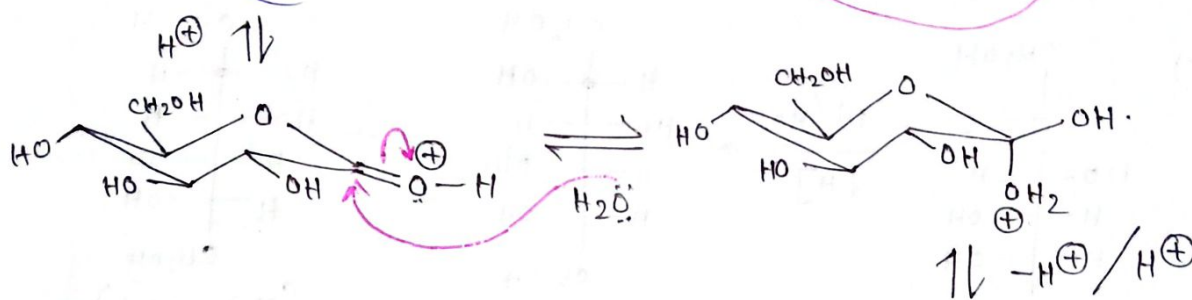
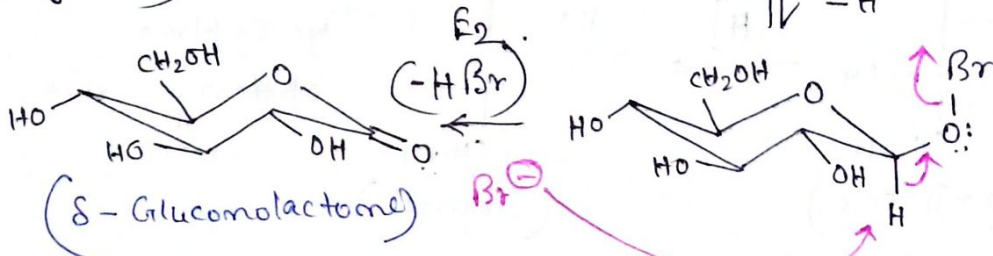
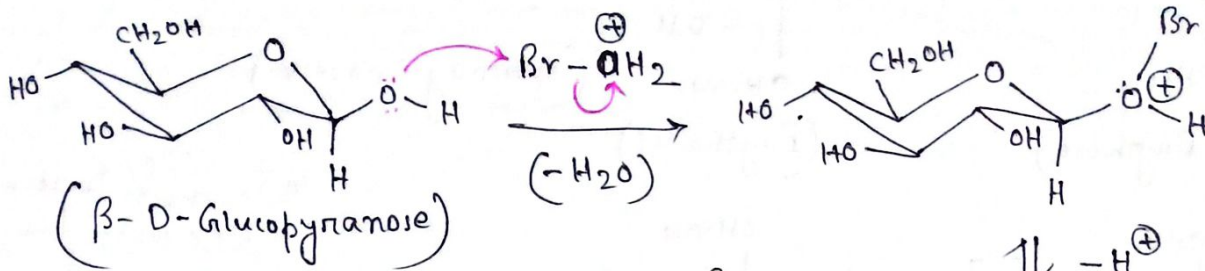
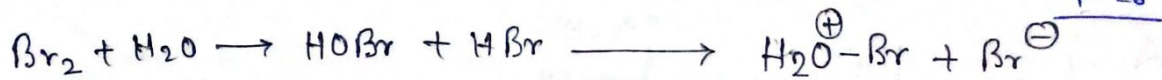
Oxidation by Bromine water :-

Bromine water being a mild oxidising agent, it oxidises the carbonyl C atom of the aldoses in the hemiacetal form to  $\delta$ -lactone which via aldonic acid gets changed to  $\gamma$ -lactone. The free  $-CH_2OH$  group does not oxidised by the reagent. The reagent also fails to oxidise ketoses.

Overall Rx<sup>n</sup> :-



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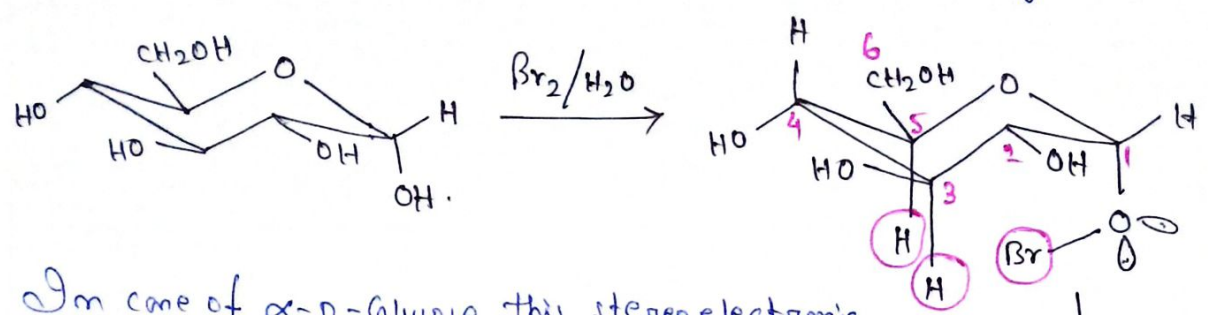


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(\*) The stereoelectronic requirement for an E<sub>2</sub> reaction is the anti-periplanar arrangement of the two leaving groups. In the case of  $\beta$ -D-Glucose the stereoelectronic condition for the E<sub>2</sub> reaction involving C<sub>1</sub>-H and O-Br is ~~not~~ fulfilled.



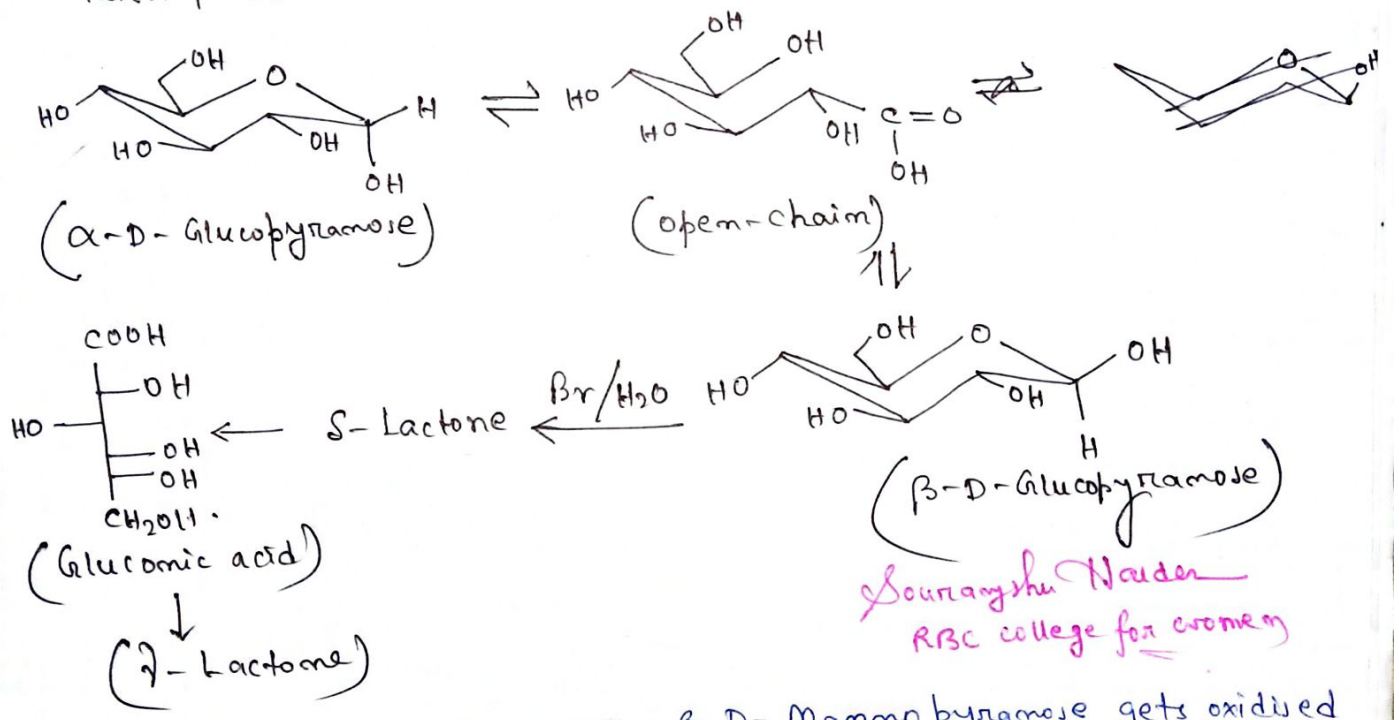
Here H of C<sub>1</sub> and Br of O-Br are two leaving groups.



In case of  $\alpha$ -D-Glucose this stereoelectronic condition does not exist because of the 1,3-Diaxial interaction involving C<sub>1</sub>-O-Br / C<sub>3</sub>-H and C<sub>1</sub>-O-Br / C<sub>5</sub>-H as shown above.

NO E<sub>2</sub> rxn

It has been ~~not~~ reported that,  $\beta$ -D-Glucopyranose undergoes ~~br~~ Br<sub>2</sub>-H<sub>2</sub>O oxidation 250 times faster than  $\alpha$ -D-glucopyranose. It is stated that,  $\alpha$ -D-glucopyranose 1st converts to  $\beta$ -D-glucopyranose via the open chain form and then oxidation takes place.



\* Like  $\beta$ -D-Glucopyranose,  $\beta$ -D-Mannopyranose gets oxidised to D-Mannono- $\gamma$ -lactone via D-mannono- $\delta$ -lactone and open chain D-Mannonic acid by Br<sub>2</sub>-H<sub>2</sub>O.

