Structural and stereo isomerism

141. (d) When isomers have the structural formula but differ in the relative arrangement of atoms or groups in space with in the molecule, these are known as sterioisomers and the phenomenon as sterio isomerism. Stereoisomerism is of three types (i) Geometrical isomerism (ii) Optical isomerism (iii) Conformational isomerism.

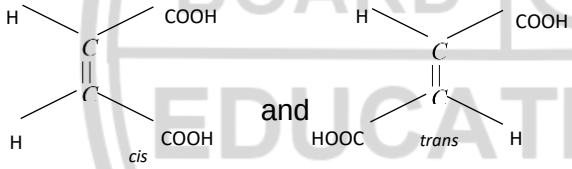
142. (b) Stereoisomers

143. (b) Position isomerism

144. (a) $CH_3 = CH - CH_2 - CH_3$; $CH_3 - CH = CH - CH_3$;

$$CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} = CH_2$$

145. (c)



146. (d) *Trans* configuration is more stable than *cis* configuration because in *cis*-configuration the *H* groups are thrown closely enough together to cause crowding or repulsion. Again between 1,2-and 1,3-configurations, in 1-3, the *OH* groups are placed further apart to minimise the repulsion. Hence, more stable is 1,3-configuration.

147. (a)Chirality of carbon compound is because of its tetrahedral nature of carbon.

148. (c) $\underset{\text{1-chloro-2-nitroethene}}{O_2NHC = CHCl}$

For highly substituted alkenes E and Z system of nomenclature is used, which is based on a priority system developed by Cahn, Ingold and Prelog.

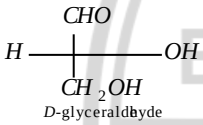
149. (b) $C_2H_5CHO \xrightarrow[H^+/H_2O]{CH_3MgBr} C_2H_5-\underset{CH_3}{\overset{H}{\underset{|}{\overset{|}{C^*}}}}-OH$

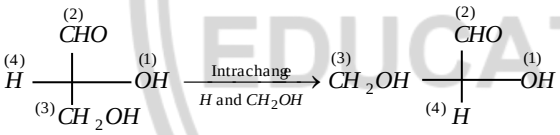
C^*-chiral carbon as all the four valencies are attached with different substituents or groups.

150. (b) $Br-\underset{H}{\overset{CH_3}{\underset{|}{\overset{|}{C^*}}}}-Cl$ * asymmetric or chiral carbon

All the four valencies of carbon are satisfied with different atoms/substituents.

151. (c)The configuration in which, OH group are on right side, H-atom are on left side, CHO group are on upper side & CH_2OH are on lower side found in fischer projection known as D-configuration.





or