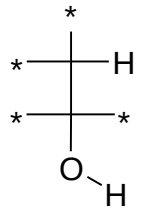
ASSIGNMENT 10 (Amino Acids)

Submit on October 5th

Q1. The amino acid threonine ($C_4H_9NO_3$) has two chiral carbon centers, each of them having one hydrogen and two substituent groups respectively.

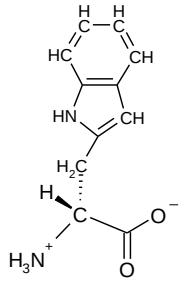
a) From the skeleton given below construct the different stereo isomers of threonine and draw them as Fischer projections.

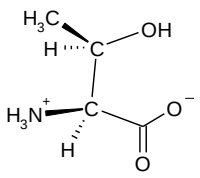


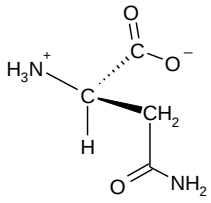
b) Hence assign labels R and S to the two chiral centers in each of the structures. and use these assignments to identify one pair of Enantiomers and one pair of Diastereomers respectively.

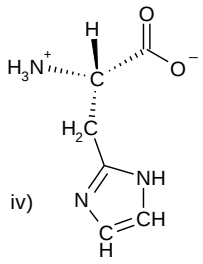
c) Given that the biologically active stereoisomer of threonine is 2-S, 3-R, pick out the biologically active structure and give the IUPAC name.

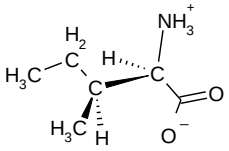
Q2.

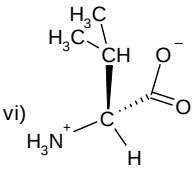
i) 

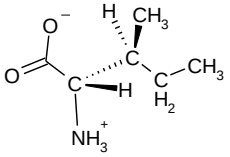
ii) 

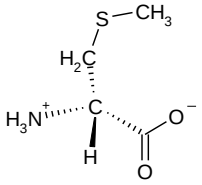
iii) 

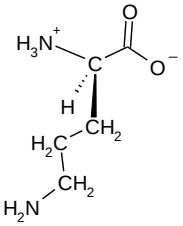
iv) 

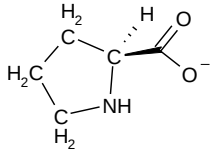
v) 

vi) 

vii) 

viii) 

ix) 

x) 

The amino acid structures above are drawn with explicit designation of the stereo chemistry at each of the asymmetric carbon atoms. Some (or all) of the structures however do not accurately describe naturally occurring amino acids. In each of the cases identify the errors if any and redraw the structure with necessary corrections. Also provide the correct names and one letter symbols for the corrected amino acid structures