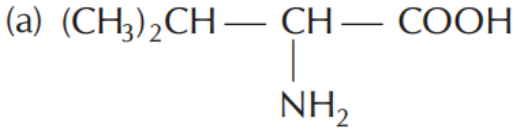
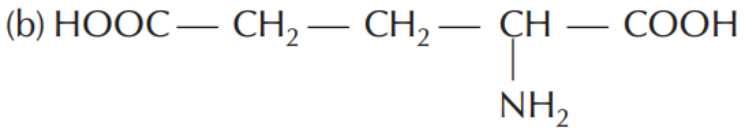
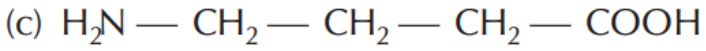
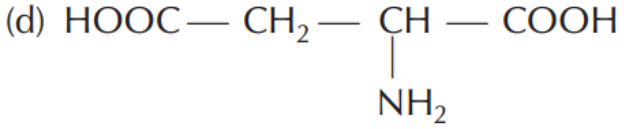
Q. 23 Amino acids are classified as acidic, basic or neutral depending upon the relative number of amino and carboxyl groups in their molecule. Which of the following are acidic?

(a) 

(b) 

(c) 

(d) 

Thinking Process

This problem is based on concept of nature of amino acid, that either it is acidic, basic or neutral.

Depending upon the number of acidic COOH *group, and basic* —NH_2 *group amino acid, proteins can be classified as*

(i) If number of COOH *groups = number of* NH_2 *groups, amino acid is neutral.*

(ii) If number of COOH *groups > number of* NH_2 *groups, amino acid is acidic.*

(iii) If number of COOH *group < number of* NH_2 *group, amino acid is basic.*

Ans. ***(b, d)***

(b) $HOOC - CH_2 - CH_2 - \underset{\displaystyle NH_2}{\underset{|}{CH}} - COOH$

Number of COOH groups = 2

Number of NH_2 group = 1

Since, number of COOH groups (2) > number of NH_2 group (1). Therefore, this amino acid is acidic amino acid.

(d) $HOOC - CH_2 - \underset{\displaystyle NH_2}{\underset{|}{CH}} - COOH$

Number of COOH groups = 2

Number of NH_2 groups = 1

Since, Number of COOH groups (2) > Number of NH_2 groups (1). Therefore, amino acid is acidic. While other two are neutral amino acid as number of NH_2 group in equal to number of COOH group in then.