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1. The general structure of all amino acids are same except for _____

- a) Lysine
- b) Glycine
- c) Proline
- d) Alanine

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Answer: c

Explanation: In general, all α -amino acid consists of an amino group, a hydrogen atom, and a distinctive side chain, all bonded to α -carbon. Proline is the only amino acid which has a cyclic distinctive side chain which differs from all other amino acids.

2. An amino acid is an amphoteric molecule.

- a) True
- b) False

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Answer: a

Explanation: When an amino acid dissolved in water, it acts as acid or base and called as the zwitterion or dipolar ion. Hence, an amino acid is an amphoteric molecule.

3. Which of these amino acids are not optically active?

- a) Cysteine
- b) Lysine
- c) Arginine
- d) Glycine

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Answer: d

Explanation: When a carbon atom has four different constituents, it is said to be chiral. All amino acids have chiral carbon except glycine and hence they are optically active.

4. Which of these are used to measure optical activity?

- a) Polarimeter
- b) Planometer
- c) Psychrometer
- d) Photometer

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Answer: a

Explanation: Polarimeter is used to measure the rotation of polarized light while planometer is used for area measurement and psychrometer measure humidity. Similarly, photometer measures illuminance or irradiance.

5. A solution of L-alanine (4.0g/50 ml of 6 N HCl) has a rotation of $+1.61^\circ$ in a 2dm polarimeter tube. Calculate the specific rotation of L-alanine in 6 N HCl.

- a) $+15.1^\circ$

- b) +10.1°
- c) +11.1°
- d) +16.1°

View Answer

Answer: b

Explanation: $[\alpha] = A^\circ / l \times C$; $+1.61/2 \times 0.08$
 $[\alpha] = +10.1^\circ$.

6. Name the amino acid, which exists in two non-superimposable mirror images of each other.

- a) Epimer
- b) Anomer
- c) Enantiomer
- d) Chiral carbon

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Answer: c

Explanation: When an amino acid with a chiral carbon exists in two non-superimposable mirror images of each other, it is called enantiomers. It can be easily identified by its configuration.

7. Which of these are rare amino acid in a protein?

- a) Leucine and serine
- b) Lysine and glutamic acid
- c) Tryptophan and methionine
- d) Leucine and lysine

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Answer: c

Explanation: Tryptophan and methionine are rare in protein as they have only one codon for each while lysine, leucine, serine and glutamic acid have more than one codon for each protein.

8. In which amino acid Imidazole group, an aromatic ring found?

- a) Lysine
- b) Arginine
- c) Histidine
- d) Glutamate

View Answer

Answer: c

Explanation: Histidine contains imidazole group which can be uncharged or positively charged, depending on its local environment. Lysine & arginine contains positively charged R group while glutamate has negatively charged R group.

9. What is the maximum wavelength that Tryptophan and tyrosine absorb?

- a) 280nm
- b) 260nm
- c) 257nm

d) 230nm

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Answer: a

Explanation: Tryptophan, tyrosine, and phenylalanine are aromatic amino acids and absorb ultraviolet light (UV). Absorption at 280nm is used for quantification and detection of purified proteins. The absorbance of proteins is dependent on number and position of aromatic amino acid residues.

10. How is the secondary structure of a protein stabilized?

a) Van der Waals forces

b) Hydrogen bonding

c) Covalent bond

d) Hydrophobic bond

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Answer: b

Explanation: Hydrogen bonding can bring together two chains which are at distance in terms of a sequence. Depending on hydrogen bonding, proteins have two structural conformations α -helix and β -sheets.