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Model Questions for Entrance Test for PhD Admissions Department of Bio Technology

1. During protein synthesis, L-amino acid binds to t-RNA through
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 - a. α -amino group.
 - b. Hydrophobic Side Chain.
 - c. α -carboxyl group.
 - d. Carboxyl group of the side chain.
2. The peptide bond is planar
 - a. Due to restriction caused by rotation around ca-N bond
 - b. Due to restriction around ca-c' bond
 - c. Due to delocalization of the lone pair of electrons of the nitrogen onto carbonyl oxygen
 - d. Because amide protons and carbonyl oxygen are involved in hydrogen bonding.
3. Hydrogen bond length will NOT be
 - a. Independent of the nature of donor and acceptor atoms.
 - b. Dependent on donor and acceptor atoms.
 - c. Dependent on the solvent in which the molecule is dissolved.
 - d. Dependent on the other atoms bonded with the donor and acceptor atom.
4. Why a DNA duplex melts at a specific temperature (T_m) on heating?
 - a. Loss of base stacking energy
 - b. The double helix is intrinsically unstable
 - c. The single helix is more stable as compared to the double helix
 - d. The DNA double helix is a co-operative structure stabilized by hydrogen bonds and base pairing
5. Lipid bilayers can be formed by phospholipids which have variable head groups and fatty acyl chains. The fluidity of the membrane will depend on
 - a. Only the nature of head groups.
 - b. Only the length of the fatty acid chains irrespective of the extent of unsaturation.
 - c. Only unsaturation irrespective of the length of the fatty acid chains.
 - d. Length and degree of unsaturation of fatty acid chains.