JASH KALPESH DESAI BT305-LAB05 Assignment 200106037

Ans01: Total SASA increases with size/

Structure	Residue	SASA
1L27-MODEL13	20	1917.7
1PGB	56	3677.3
ALPHA-HELIX	14	1615.1
BETA-SHEET-1	20	2318.4

Ans02: The average Solvent-Accessible Surafce Area (SASA) per residue of all four test sets : ***98.20884***

Ans03:

Structure	Residue	SASA	SASA per Residue
1L27-MODEL13	20	1917.7	95.88500
1PGB	56	3677.3	65.66607
ALPHA-HELIX	14	1615.1	115.36429
BETA-SHEET-1	20	2318.4	115.92000
Average SASA per residue (total)			98.20884

SASA per residue decreases with increase in size due to the increases number of interaction between the residues. As a protein gets larger, there are more opportunities for residues to be buried in the protein's core and shielded from solvent. Due to increased size and increased interactions the structure is more packed and thus while calculating SASA, we get decreasing per Residue SASA with increasing residue count.

Ans04: The low values of solvent-accessible surface area (SASA) for the TRP residue is due to its hydrophobic nature and its tendency to be buried inside the protein's interior core. TRP contains an aromatic ring (Indole Group - benzene ring fused to a pyrrole ring) that can participate in hydrophobic interactions, which lead to its burial in the protein's core and reduces it’s exposure to solvent molecules. Also, TRP is known to have a relatively large side chain which can cause steric hinderance for its accessibility to solvent, thus contributing to its low SASA values.