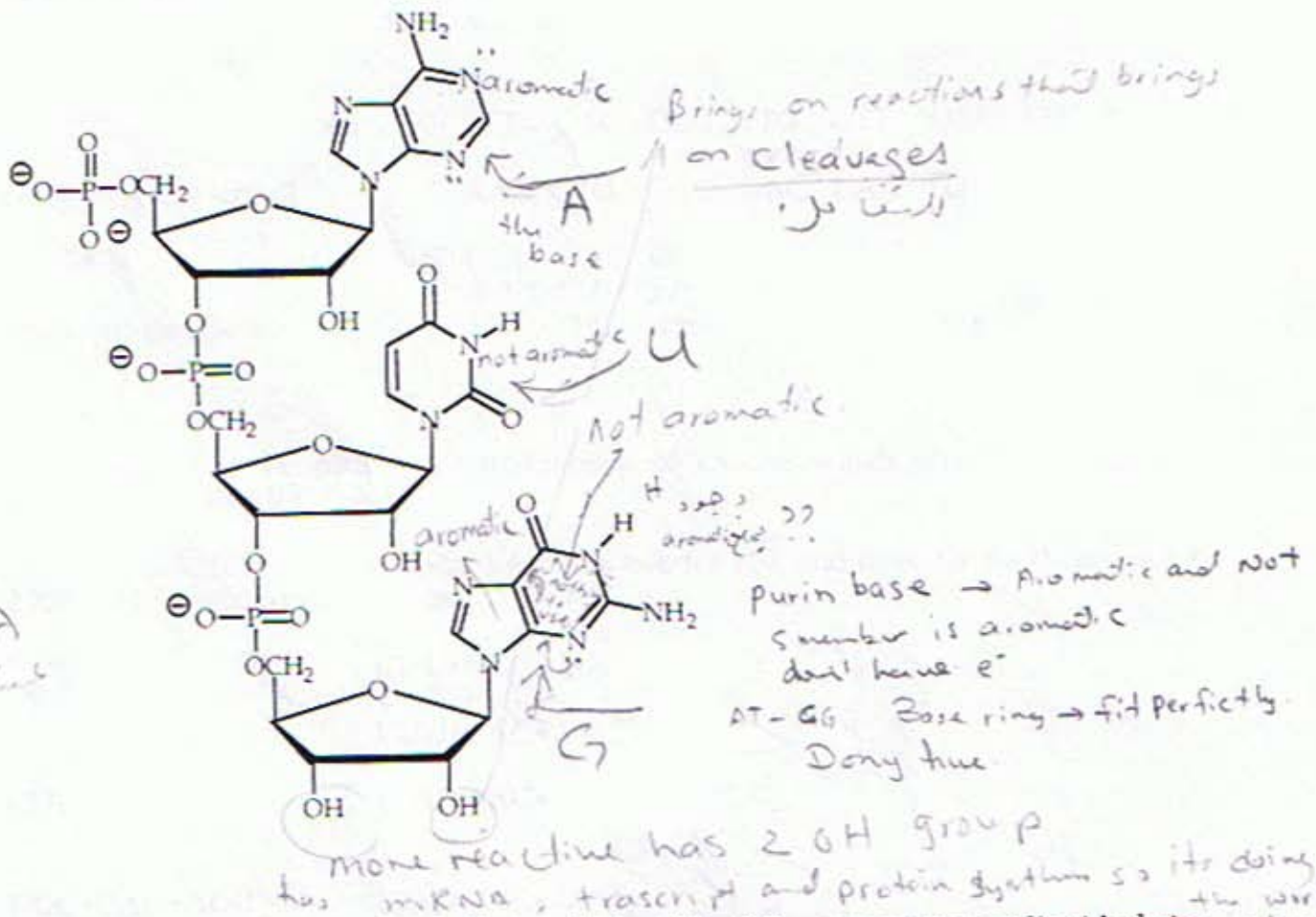


d. the RNA trinucleotide A-U-G



4. For a globular protein, indicate which of the following amino acid's sidechains are likely to point toward the center of the structure and which will point toward the surface when the protein is dissolved in water.

Arg, Phe, Ile, Glu, Asp, Tyr

Toward the surface: Arg (side chain will be protonated and ionic and can interact with water as a hydrogen bond acceptor), Glu (the side chain will be ionized and the carboxylate ion can interact with water as a hydrogen bond acceptor), Asp (the amide side chain is polar and can interact with water as a hydrogen bond donor and acceptor), and Tyr (the OH group is polar and can interact with water as a hydrogen bond donor and acceptor).

Toward the center: Phe and Ile (both side chains are nonpolar and will prefer to turn inward away from the surface and interact with other nonpolar groups in order to maximize London dispersion forces).