NOTES: TAKE-HOME POINTS ON WATER-SOLUBLE VITAMINS

1. Vitamins are all organic nutrients with various metabolic functions, required in small amounts in the diet because they cannot be synthesized by the body.

2. Apart from Vitamin C, the water-soluble vitamins are all members of the B complex and act as enzyme co-factors.

3. Thiamin is a co-factor in decarboxylation of α-keto acids. Lipoic acid is involved as a co-factor in oxidation of α-keto acids.

4. Riboflavin and niacin are both important co-factors in oxidation-reduction reactions. Riboflavin is present as flavin mononucleotide or flavin adenine dinucleotide, and Niacin is present in the NAD⁺ and NADP⁺ cofactors of many dehydrogenase enzymes.

5. Pantothenic acid is present in Coenzyme A and acts as an important acyl group carrier in many important enzyme reactions. Pyridoxal phosphate is the co-enzyme for several enzymes of amino acid metabolism.

6. Biotin is the co-enzyme for several carboxylase enzymes.

7. As well as having separate functions, vitamin B₁₂ and folic acid take part in providing one-carbon residues for nucleic acid synthesis.

8. Ascorbic acid is a water-soluble anti-oxidant that maintains many metal cofactors in their reduced states.