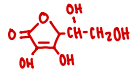
TEST-PREP

Mock Exam

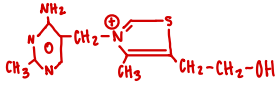
Unit 3

1) Draw the following vitamins when ingested.

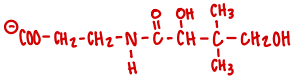
- Ascorbic acid/Ascorbate



- Vitamin B1



- Pantothenic Acid



2) The biologically active form of a fatty acid is the thioester of Coenzyme A.

3) What are the three requirements/characteristics for vitamin use?

1) Required for metabolism

2) Cannot be synthesized from basic components (must be consumed and altered into correct form)

3) Required in small amounts (mg)

4) Organic molecules required by enzymes to enhance catalysis are called?

Coenzymes

5) Define asparagine-linked oligosaccharide

An N-linked heteroglycan: oligosaccharides linked to proteins through asparagine residues

6) In which of the following reactions is the reactant oxidized?

a) ATP→AMP

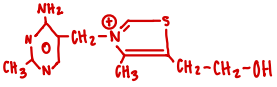
b) NAD^+→NADH

c) NADH→NAD^+

d) Acetaldehyde→ethanol

7) Draw the vitamin that causes Beri - Beri when deficient.

Thiamine (B1)



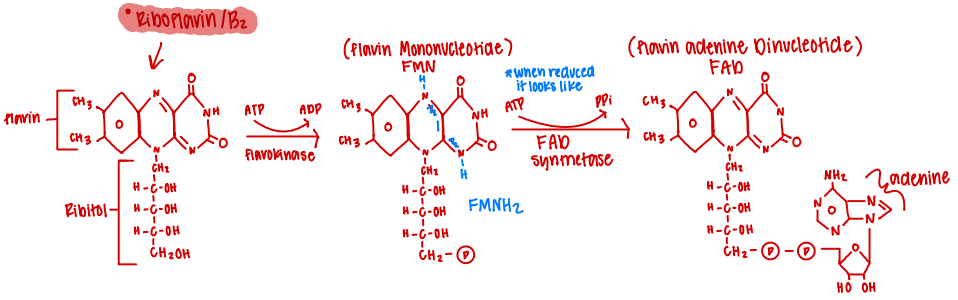
8) Why do we need thiamine?

Decarboxylases require thiamine pyrophosphate (TPP) to function. This is important for aerobic respiration.

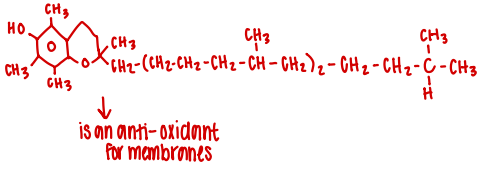
9) What is the functional sugar on Vitamin B2 called?

Ribitol

10) Draw the transformation that riboflavin must undergo in order to be used in the body.

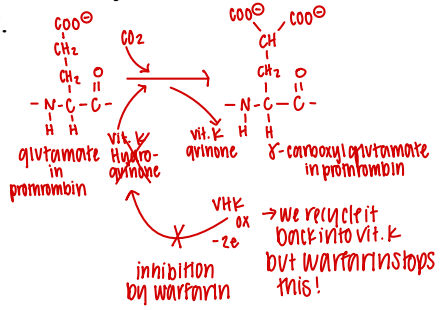


11) Draw alpha-tocopherol : aka vit.E



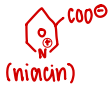
12) If someone were to have a disorder that causes their blood to form clots too easily and frequently, what type of medication would you prescribe in this situation? Draw the reaction of this vitamin and how your medicine would help deter clots from forming.

*use of an anticoagulant
↓
aka blood thinner

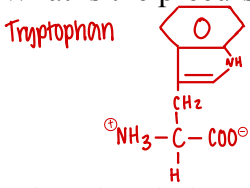


13) Draw the vitamin that when deficient, causes pellagra.

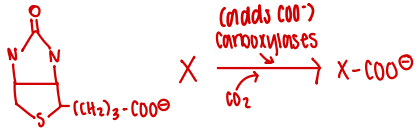
niacin



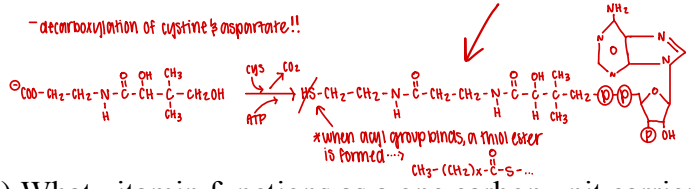
14) What is the precursor molecule of Niacin?



15) What vitamin is required for the function of carboxylases? Draw this reaction/interaction.



16) What is the product formed after ingesting pantothenic acid? Draw the reaction/interaction. Coenzyme A "CoA" is an acyl carrier



17) What vitamin functions as a one carbon unit carrier and causes megaloblastic anemia when deficient? Folic acid/Folate

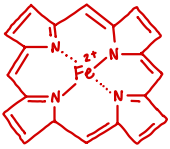
18) What protein binds to vitamin B12 (Cobalamine)? What is its purpose?

Intrinsic factor: a protein whose sole purpose is to bind to B12 in order to absorb it into the small intestine.

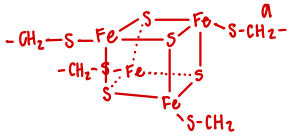
19) Pyridoxine is involved in what kind of reactions?

Amine transfers! The enzymes, amine transferases, are involved in ping-pong mechanisms.

20) Draw a hemoprotein



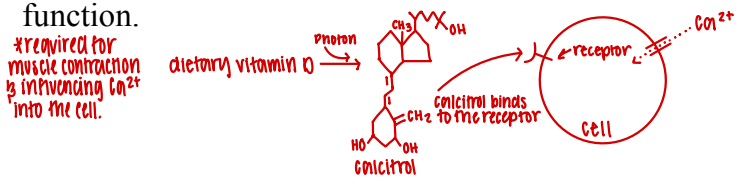
21) Draw 4Fe-FS



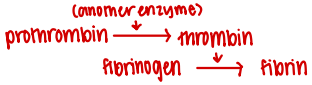
22) What is the function of vitamin a? How is it ingested?

Vitamin A is great at absorbing the energy of light (due to conjugated bonds). We ingest vitamin A as B-carotene which is commonly found in carrots, tomatoes, etc.

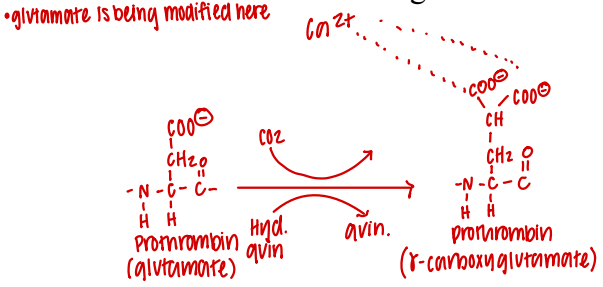
23) Draw the transformation of vitamin D and include its function.



24) Draw the blood clotting cascade



25) What reaction is vitamin K involved in? Draw this reaction. What amino acid being made more negative here?



26) Draw hydroxyproline