

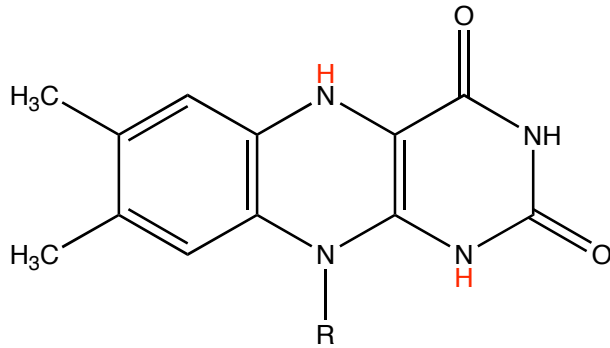
## Solutions to PS B

1a) Oxidation:  $\text{NAD}^+$ ,  $\text{NADP}^+$ , FAD, FMN, Ubiquinone (Coenzyme Q).

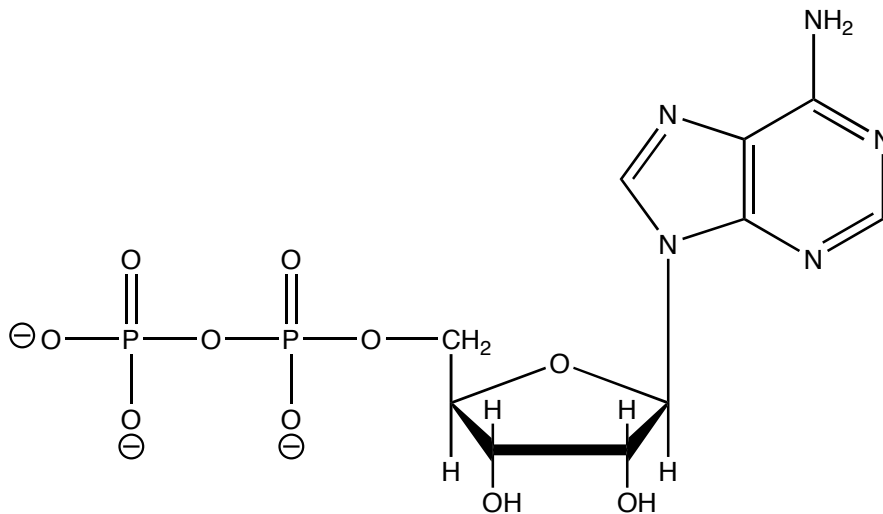
b) Coenzyme A

2) No.  $\text{NAD}^+$  acquires 2 electrons but only one proton. The second proton is released into solution.

3) The protons that added when FAD is reduced to  $\text{FADH}_2$  are shown in Red.



4) ADP (see below)



ADP

5) Vitamin A, vision; Vitamin D, Ca<sup>2+</sup> utilization (intestinal absorption and deposition in bones); Vitamin E, reducing agent that scavenges radicals and antioxidant; Vitamin K, blood coagulation/clotting.

6) Lipid vitamins are stored and accumulate in fat cells, if more is consumed than is needed (which is typical in the American diet). Water soluble vitamins are continually flushed away via excretion (urine, sweating, tears ) and are therefore depleted more quickly than lipid vitamins.

7) Vitamin K