Unless otherwise noted, assume below that:

T=25°C

R= 1.99 cal mol^-1 deg^-1

Faraday’s Constant= 23,062 cal volt^-1 equiv ^-1

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Please explain with as much detail as possible!! Thank you!!

Problem:

How much energy is needed for the Na/K pump to move 3 Na out and 2 K in when

Nai (Na inside)= 9.2mM, Nao (outside)= 115, Ki (K inside)= 135mM and Ko (K outside)= 3mM.

Include the effects of membrane potential; it will have to be calculated based on the given ion

concentrations and PNa/Pk of 0.013.